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CALIFORNIA ENERGY COMMISSION

In the matter of:

Business Meeting	)	Docket No. 24-BUSMTG-01

BUSINESS MEETING

CALIFORNIA NATURAL RESOURCES AGENCY BUILDING
FIRST FLOOR AUDITORIUM
715 P STREET
SACRAMENTO, CALIFORNIA 95814

IN-PERSON AND VIA VIDEO AND TELECONFERENCE

WEDNESDAY, MARCH 13, 2024

10:00 A.M.

Reported by:

Martha Nelson

APPEARANCES

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PUBLIC ADVISOR

Mona Badie

APPEARANCES

PUBLIC ADVISOR

Dorothy Murimi

ALSO PRESENT

Rob Jackson, Stanford University

Yannai Kashtan, Stanford University

Patrick Dobson, Lawrence Berkeley National Laboratory

Chris Busch, Energy Innovation

Robert Meyer, California Employment Training Panel

PUBLIC COMMENT

Jamie Katz, Leadership Council for Justice and Accountability

Ben Schwartz, The Clean Coalition

Joan Taylor

Shane Ysais, Center for Community Action and Environmental Justice

Woody Hastings, The Climate Center

Steven King, Environment California

Jessica Tovar, Local Clean Energy Alliance

Brett Garrett

Vicki Hover, BorgWarner EV Charging

Rene Wise, Solar Rights Alliance

Anna Bella Korbatov, Fermata Energy

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Alexis Sutterman, California Environmental Justice Alliance

Susanna Porte

Robert Hawley

Bob Cipolla

Roger Lin, Center for Biological Diversity

Lorenzo Kristov

Joel Leong

Charles Adams

Charlene Woodcock

Yvette Dicarlo

Julee Malinowski-Ball, California Biomass Energy Alliance

Claire Broome, 350 Bay Area

Kevin Hamilton, Central California Asthma Collaborative

Barbara Stebbins, Local Clean Energy Alliance

Julie Dowell, Sierra Club

Magi Amma, Climate Alliance of Santa Cruz County

Sahm White

Wade Stano, MCE

Marc Costa, Local Government Sustainable Energy Coalition

Steve Campbell, Volt Solar

APPEARANCES

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P R O C E E D I N G S

10:00 a.m.

WEDNESDAY, MARCH 13, 2024

(Whereupon an introduction video is played and not transcribed.)

CHAIR HOCHSCHILD: Well, good morning and welcome friends. I'm David Hochschild, Chair of the California Energy Commission. Today is Wednesday, March 13th. I call this meeting to order.

Joining me here in person are Commissioner Monahan and Commissioner Gallardo. And our ever-traveling, amazing Vice Chair, Siva Gunda, is patching in from India, so welcome to you, Vice Chair Gunda.

Let's begin by standing for the Pledge of Allegiance.

(Whereupon the Pledge of Allegiance is recited in unison.)

CHAIR HOCHSCHILD: Thank you.

We'll begin with public comment and then move on to agency announcements.

MS. BADIE: Good morning. This is Mona Badie, the Public Advisor for the California Energy Commission.

The Energy Commission welcomes public comment at its business meetings. This initial public comment period is for any item on the agenda, including non-voting or

informational items. There will be additional comment periods for voting items.

And there are multiple ways you can let us know you'd like to make a comment. If you're joining us in the room, we're asking folks to use the QR code or visit the Public Advisors table in the back of the room to let us know you'd like to comment. And if you're joining us by Zoom online, you'll use the raise-hand feature on your screen. And if you're joining by phone, you're going to press star nine to raise your hand.

And so I'm going to go to folks in the room first.

Bruce Severance, if you can please approach the podium. Please state and spell your name for the record before making your comment. And we are asking for comments to be two minutes or less. Bruce, are you in the room with us? All right, I think we lost Bruce.

So let me go to folks on Zoom.

Jamie, Jamie Katz, I'm going to open your line. If you could please spell your name for the record. And we're asking for comments to be two minutes or less.

MR. KATZ: Hi, good morning. Yeah, Jamie Katz, J-A-M-I-E K-A-T-Z, with Leadership Council for Justice and Accountability.

Leadership Council for Justice and Accountability

works alongside some of the most impacted communities in the San Joaquin and Eastern Coachella valleys. communities. We appreciate and support staff's recommendation to grant the petition to begin a proceeding to consider non-energy benefits and social costs.

Too often, the communities we work alongside are forced to live with polluting industries and excluded from investments which would benefit them, including those that would help them through the energy transition. For example, we work alongside many residents who live near massive dairies with thousands or tens of thousands of animals. They are forced to live with substantial air and water pollution, the associated health impacts, and quality of life impacts including odor and flies.

California has and continues to fund and facilitate the installation of anaerobic digesters at these massive factory farm dairies. The science shows that a digester not only locks in the most polluting practices, those of extremely concentrated herds and managing manure in water, but in fact makes air and water pollution worse.

It is important to note that there are alternatives to anaerobic digesters that provide significant non-energy benefits, including cleaner air, cleaner water, and a better quality of life for nearby communities.

The Commission should have considered these impacts before funding anaerobic digesters. However, granting this petition is an important first step in the right direction. We ask the Commission to grant this petition and to prepare a timeline and schedule for this proceeding.

Thank you very much.

MS. BADIE: Thank you, Jamie.

Next, we'll hear from Ben Schwartz.

Ben, I'm going to open your line. If you could please spell your name for the record? We are asking for comments to be two minutes or less.

MR. SCHWARTZ: Thank you. Ben Schwartz, B-E-N S-C-H-W-A-R-T-Z. Again, my name is Ben Schwartz, and I'm the policy manager with The Clean Coalition. The Clean Coalition was one of the signatories for petition for rulemaking on non-energy benefits and social costs.

So I'd like to start by thanking the Energy Commission for taking this issue up and seriously considering the merits of such a proposal. We agree with the staff recommendation to grant the substance of this petition and request a more concrete timeline and schedule to help implement these subjects.

I'd just like to make it pretty clear that from the perspective of a number of non-energy benefits,

including resilience, not having any way to value these benefits or even to consider how they apply in a regulatory framework has given them a functional value of zero. And that's meant that it's been very easy for our policy to not consider the actual harms and benefits that occur in our communities, particularly frontline communities.

So, you know, I think that considering non-energy benefits will help unlock additional funds for local clean energy solutions and will also help internalize many of the consequences or the externalities that communities are currently shouldering without any sort of additional help from the state and our regulatory agencies.

So thank you, again, and I urge the Energy Commission to grant this petition.

MS. BADIE: Thank you for your comment.

Next, we'll hear from Joan Taylor.

Joan, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. TAYLOR: Good morning. Joan Taylor, J-O-A-N T-A-Y-L-O-R, speaking as an individual ratepayer.

Just another voice in favor of properly valuing non-energy benefits of DER in order to meet our 2030 decarbonization goal. Without robust energy efficiency and demand response, our decarb targets will be constantly

moving goalposts, and all ratepayers will be saddled with ever greater transmission costs, which are growing faster than the cost of energy.

I urge you to put a definite timeline on this analysis. Time is of the essence. Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Shane Yesais. Excuse me if I've mispronounced your name, Shane. I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. YSAIS: Hello Commissioners. I want to thank you for your leadership in this critical issue. My name is Shane Ysais from Center for Community Action and Environmental Justice.

I want to first start by agreeing with staff's recommendation to grant the substance of the petition to open a proceeding and request that staff prepare a timeline and schedule to resolve the proceeding.

Although the current SB 100 process includes non-energy benefits and social costs, the process only does so to evaluate the degree of trade-offs of prioritizing biomethane, bad hydrogen, and even continue using fossil fuels, and we do not accept trade-offs. Consideration of social costs will require the CEC to consider the local and

air and water pollution and other environmental impacts from biofuels, fossil fuels, and carbon capture.

Consideration of non-energy benefits will unlock additional funds for local clean energy solutions to promote public health and environmental justice in other low-wealth income communities. Non-energy benefits unlock additional funds that do not burden ratepayers. The state must determine how much to fund more clean investments in environmental justice and low-income communities simply to meet SB 100 and our climate targets.

I want to close by just restating that I agree with staff's recommendation, too, and request a timeline and schedule. And thank you all Commissioners for your leadership in correcting the significant omission of these impacts in our clean energy transition and decision-making. Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Woody Hastings.

Woody, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. HASTINGS: Yeah, thank you. Good morning, Woody Hastings with the Climate Center. It's W-O-O-D-Y H-A-S-T-I-N-G-S. And thanks for the opportunity to comment.

I am also just calling to chime in to thank you for the leadership on this issue and wanting -- The Climate Center supports and agrees with the staff recommendation to begin the proceeding, to grant the petition and begin a proceeding on non-energy benefits of decentralized solar.

So that's really all I called in to say. Thank you very much.

MS. BADIE: Thank you. And also just a reminder, we'll have a comment period for item five, as well. This is the open public comment period and it's also available.

Next, we'll hear from Steven King.

Steven, I'm going to open your line. Please spell your name for the record. we're asking for comments to be two minutes or less.

MR. KING: Hi there. Can you hear me?

MS. BADIE: Yes.

MR. KING: All right. My name is Stephen King, that's S-T-E-V-E-N K-I-N-G. Good morning, Commissioners. And I'm the Clean Energy Advocate with Environment California. I just wanted to thank you for considering this petition on non-energy benefits and for taking leadership on this critical issue.

We also agree with the staff recommendation to grant the substance of the petition and open a proceeding to appropriately incorporate non-energy benefits and social

costs into CEC analyses, policies, and programs.

We also request that staff prepare a timeline and a schedule to resolve this proceeding as quickly and effectively as possible. The CEC is long overdue in considering the environmental, public health, and other local benefits in deciding which energy resources to prioritize in our journey to 100 percent clean energy.

Failure to consider these benefits can lead to counterproductive regulatory outcomes that jeopardize our clean energy progress, such as gutting critical rooftop solar incentives. We can't afford to stack the deck against clean energy investments with the greatest societal benefits.

Clean energy brings lots of benefits that should be considered, including cleaner air and water, energy resilience, and other important local benefits.

Please take this decisive action to maximize the benefits of the clean energy transition for all Californians. Thank you.

MS. BADIE: Thank you.

Next, we'll hear from a call-in of Local Clean Energy Alliance. I'm going to open your line. If you could please state and spell your name for the record? We're asking for comments to be two minutes or less.

MS. TOVAR: Hello, everyone. This is actually

Jessica Tovar of the Local Clean Energy Alliance. And the work that my organization does is building equitable clean energy solutions as an extension of the environmental justice and climate justice movement. We do work to build energy democracy, just recognizing that dirty energy has been impacting our communities for way too long, and specifically addressing the fact that it's been affecting people's lives and really robbing us of our basic human rights. And so just to name that.

And also, really, I really appreciate and want to support the work to actually include the social cost and really putting like the human need and face back on the issues of energy. Because the only way that we will build energy democracy and solutions and actually create thriving communities is to actually really listen to the communities that have been affected for generations.

So I really want to uplift the effort, thank the Center for Biological Diversity for weighing in on this, because we do need to change our energy system so that it is transformed from a bad into a good that actually uplifts communities that have been affected for way too long.

And so what I'd like to say is clean power to the people. I look forward to you all voting being in favor of helping us transform this energy system into something that works for us all. Clean power to the people.

MS. BADIE: Thank you for your comment, Jessica.

Next, we'll hear from Brett Garrett.

Brett, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. GARRETT: Good morning. My name is Brett Garrett from Santa Cruz speaking in support of item five, non-energy benefits and social costs. First name, B-R-E-T-T, last name, G-A-R-R-E-T-T.

It's basic common sense that all decision making should take into account the effects on health and the environment. And I've also heard that more federal funding will be available to California under the Inflation Reduction Act if we take these benefits into account for people in the environment.

So please support the staff recommendation and the other callers that I heard speaking on this issue. Thank you very much.

MS. BADIE: Excuse me. Thank you.

Next, we'll hear from Vicki Hover.

Vicki, I'm going to open your line If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. HOVER: Thank you. Vicky, V-I-C-K-I, Hover, H-O-V-E-R. I'm with BorgWarner EV Charging. BorgWarner is

very excited for the opportunity to serve as lead agency and to provide B2X chargers to satisfy GFO-22-612. BorgWarner thanks the CEC for overseeing this grant process, and David Wenzel, RKM (phonetic), for his ongoing technical support.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Rene Wise.

Rene, I'm going to open your line. If you could spell your name for the record? We're asking for comments to be two minutes or less.

MR. WISE: Hi, my name is Rene Wise. I live in Fremont. My name is spelled R-E-N-E, last name is Wise, W-I-S-E, and I'm affiliated with the Solar Rights Alliance.

Commissioners, for several years now, it appears the California Public Utility Commission has gone rogue, and not in a good way. Instead of protecting California ratepayers by properly regulating the independently owned utilities, they seem to be siding with them in all their legislation and have crippled our best weapon against climate change, the rooftop solar industry in California.

Today, I am urging the California Energy Commission to make things more even on behalf of all Californian ratepayers seeking to utilize rooftop solar to save money and save the planet at the same time. Let's

start today by having this Commission approve the petition to consider non-energy benefits and social costs.

The CPUC chooses to ignore the impact of the decisions on local communities, land use, jobs, and local air and water pollution. I'm asking you to reject that premise and instead support adding non-energy benefits and social costs. What's the point of shifting to clean energy if we're not putting local communities at the center of all our climate decisions? I can't emphasize enough the importance of this decision.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Anna Bella, and I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. KORBATOV: Thank you. My name is Anna Bella Korbatov, A-N-N-A B-E-L-L-A, first name, last name, K-O-R-B-A-T-O-V, from Los Angeles, California. I'm Fermata Energy's Director of Regulatory Affairs, and I want to thank the Commission for the opportunity to provide comments today.

Founded in 2010, Fermata Energy is a leading vehicle-to-everything, or V2X, bidirectional charging services provider, with several active projects in

California and throughout the country. Fermata Energy is part of the project team that was awarded funding under CEC GFO-22-612, the Electric School Bus Bidirectional Infrastructure Grant. I'd like to, on behalf of Fermata Energy, express our gratitude to the Commission and CEC staff for issuing CEC GFO-22-612 and for recognizing the importance of bidirectional charging to the state's transportation, electrification, and decarbonization goals.

We would also like to extend our sincere thanks to the CEC for awarding our proposed projects in partnership with BorgWarner and Lion Electric and American Transportation Systems, the maximum funding amount requested. I'd also like to thank our Commission Agreement Manager, David Wenzel, for all of his diligent work and guidance during the post-award process.

This grant will include the installation of 21 BorgWarner 125 kilowatt bidirectionally-enabled chargers paired with 20 Lion D all-electric school buses. Fermata Energy's V2X software platform will optimize and manage the charging and discharging of the buses to maximize grid benefits and VTX revenue for the school districts. We look forward to working with cost-saving bidirectional charging solutions and to sharing best practices and lessons learned.

For our company, this represents a major

milestone, our first successful CEC grant. In terms of installed capacity, this 2.5 megawatt project could potentially be the largest V2G deployment in the state of California. We hope the learnings from this project, in addition to the other bidirectional infrastructure projects funded under this GFO, will help more school districts in the state and beyond to adopt V2G solutions as they embark on their fleet electrification journeys.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Alice Sung. Alice, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. SUNG: Thank you. Can you hear me?

MS. BADIE: Yes.

MS. SUNG: Thank you. Alex Sun, Principal of Greenbank Associates. My name is spelled A-L-I-C-E S-U-N-G.

I'm here to support item number five. I could reiterate what Jessica Tovar said from the Local Clean Energy Alliance, but I'd also like to emphasize a couple of other points in favor of the staff recommendation to support petitioners for the non-energy benefits and social costs, and these two things are, you know, beyond

everything that has been said and what is contained in the wonderfully written six-page memo by staff. There are two other important opportunities for the Energy Commission to lead in our energy system and to address our state energy and climate goals.

My background, as some of you may know, has been in green schools, green building, championing green buildings, and zero carbon in our environment, in our built environment, and the transformation to building decarbonization towards a renewable energy and resilient future.

So two of the things that I'm also involved in are the California Energy Efficiency Coordinating Committee, the CAEEC at CPUC, as well as the energy -- Equity & Market Support Co-Working Groups. The two issues that are involved with this process, if it's well-designed, can have the possibility to finally coordinate the CPUC's regulatory actions with the CEC and its leadership in energy and climate goals, number one, in defining metrics for equity and social costs, and then two, looking at the cost effectiveness formula and looking at examining what is now called the TSB, total systems benefits.

You have two opportunities to actually involve the people, as has been mentioned, and to do the deep work that it takes with impacted communities to finally resolve

this and evaluate what should properly be social costs.

Thank you so much.

MS. BADIE: Thank you.

And I wanted to pivot back to the room.

Bruce Severance, if you've rejoined us, we'd welcome your comment at this time.

And also, we have Alexis Sutterman.

Alexis, if you are in the room with us and like to make your comment, please approach the podium. And if you could please spell your name for the record before beginning your comment? And we're asking for comments to be two minutes or less.

Real quick, just to clarify, if there is anyone in the room who wanted to make comments on item number five and is able to stay until item five is heard, we'd prefer the comments to be said then, but if you're not able to stay, then you can go to the back, fill out a card to make your comment at this time.

MS. SUTTERMAN: Great, thank you so much. My name is Alexis Sutterman. It's A-L-E-X-I-S, and Sutterman is S-U-T-T-E-R-M-A-N. I'm here representing the California Environmental Justice Alliance. And I'm here to express support for the staff's recommendation to grant the petition to account for non-energy benefits and social costs.

California has sacrificed the needs of low-income communities and communities of color for far too long. These communities are living near gas plants, oil refineries, and other fossil fuel infrastructure. Breathing in this pollution is making our families sick, and it has been for generations.

Even though California is shifting to clean energy, we're not seeing it happen fast enough and actually reaching the communities living near these fossil fuel plants whose children are growing up with asthma from breathing in toxic pollution. This is because California does not account for the cost to human health and the environment when looking at the mix of energy resources to prioritize as a state.

Our state is keeping fossil fuels online longer, oftentimes because they consider some of them cost effective. But what about the cost of taking care of our family members getting sick every year from breathing in fossil fuel pollution?

This is why we're very excited and supportive of the CEC staff's recommendation to grant the petition to incorporate non-energy benefits and social costs into its analyses. This will require the Energy Commission to actually look at the non-energy benefits of living with cleaner air to breathe, cleaner water, a healthier and safe

environment, as well as the real human costs of keeping fossil fuels online longer or building new things that still rely on fossil fuels. By actually looking at the real costs and benefits, this will mean more funding for local clean energy projects in low-income communities and communities of color so that they can walk around in their neighborhoods and breathe in clean air.

Moving forward, we're really hoping for the Energy Commission to grant this petition and to distribute a timeline and a schedule because this decision has been long overdue and we need to correct this omission. Since we are already so far behind, we want to make sure we can sharpen these metrics as soon as possible so we can advance climate, health and environmental justice.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from a Haley Robert in the room.

Haley, if you're still with us, if you could please approach the podium?

And then, okay, so we also --

CHAIR HOCHSCHILD: Okay, and I just really want to stress, we're hearing a lot of public comment on item five. We will be taking public comment before we vote on item five. So if you were planning to stay through that discussion, that's really the appropriate time, for those

of you who are able to stay, we'll take the comments then. And if you have to go before then, you can give your comment now.

MS. BADIE: In the queue, we also have Susanna Porte.

Susanna, if you're in the room with us, please approach the podium. We're asking folks to limit their comments to two minutes or less, and please spell your name before beginning your comment.

MS. PORTE: Hi, I apologize. I also am commenting on item five, but I'll be quick. My name is S-U-S-A-N-N-A P-O-R-T-E. I'm a private citizen and a music teacher in Berkeley.

I want to thank you so much for taking leadership on this critical issue, so I'm urging you to grant the substance of the petition and open a proceeding, and let's prepare a timeline and a schedule to resolve of this proceeding.

I urge you to consider the local air and water pollution and other environmental impacts from fossil fuels. We consider them cheap, but they're only cheap in the short run, not in the long run in terms of public health and the environment.

Consideration of non-energy benefits will unlock additional funds and these funds will not burden

ratepayers. California will receive more federal funds if we consider the non-energy benefits, such as improved air quality and public health.

So once again, I wanted to thank you so much for considering this and I would like to request a timeline and schedule for this proceeding. Thank you so much.

MS. BADIE: Thank you for your comment.

And I wanted to give one last chance to Haley or Holly Robert, if they're in the room, please spell your name for the record. And we're asking for comments to be two minutes or less.

MR. HAWLEY: First off, the name is Robert Hawley, H-A-W-L-E-Y. So I'm from San Jose. I'm going to address the land issue, the land use issue raised in the item 5 petition.

California has three big goals for the future of its power system, electrification which expands the power needed, green generation which restricts how that power is generated, and cost since we, the ratepayers, are going to have to pay for all this.

To meet those goals you'll need more power, a lot. Your green initiative means that that cannot come from fossil fuels. Environmental groups are going to prevent nuclear and hydro. Wind will also get pushback. So that leaves solar.

Before NEM 3.0, we were on track to bring 28.5 gigawatts of rooftop solar online by 2045. With NEM 3.0, that's largely not going to happen. The impact is that this is going to require the loss of 148,000 acres of land. That's half the area of Los Angeles. Utilities would love to build all the transmission lines to all that power built in remote locations, but they guarantee that they'll do it in the most expensive way possible.

Going back to your three goals, without rooftop solar, you're going to have to give up on one of them. Will it be the increased cost? Will it be the increased needs of electrification, green power, or cost?

During the Senate Energy Committee meetings last month, the senators demanded the state agencies be honest with them if goals cannot be met. What are you going to tell them?

Thank you.

MS. BADIE: Thank you for your comment.

And I'm just doing a refresh on our QR code queue. That concludes public comment for item one.

Back to you, Chair.

CHAIR HOCHSCHILD: Okay. Thank you all for those comments.

In terms of agency announcements, one really important milestone on our journey to a clean

transportation future that I wanted to highlight, and particularly recognize Commissioner Monahan and her team, has been the opening of the Tesla network. So we've been negotiating this for over a year and a half. And it's basically turning a private garden into a public park. The Tesla network is very well maintained and the chargers are very fast. The site selection is excellent.

And over the course of the last half year or so, every major automaker in the market that's making EVs has converted to what's called the NACS standard, the North American Charger Standard, which is good. This is a single charge plug design and I think will really help accelerate electric vehicle adoption.

What they're doing is phasing in by auto manufacturer, starting with Ford. So right now, Ford EVs are able to plug in. Next month, they're adding GM and Rivian, and then just going to go through all the automakers. And it should be concluded by the fourth quarter of this year. Tesla has about 6,000 fast chargers in California. They're going to be roughly tripling that over the next two years.

I really want to recognize my chief of staff, Kat Robinson, who worked really hard on this. Commissioner Monahan's been spectacular. Her team, Hannon Rasool, Governor's Office, CARB, and all the rest. This is

definitely part of the mosaic we have to build to be able to make charging your car as accessible.

You know, when you buy a phone, nobody ever asks, where am I going to get electricity to charge your phone? That's certainly not a barrier to buying a phone, but that is where we are with charging now, it's still a concern. Where we are in the adoption curve is such that it's a big issue and we have to make it friction-free for people to get around and charge easily. And this is a big milestone, so I just wanted to recognize that and thank everybody for working that.

We have also now passed 100,000 EV chargers in the state. So we're at 105,000 combined with private chargers. We're now more charge plugs than gasoline nozzles in California. And we're adding about 1,200 electric vehicles a day, 25 percent new vehicle sales. So, good momentum there. I think we got to just lean in extra hard and keep that going.

And I really just want to commend Commissioner Monahan for the incredible work on deploying these many billions of dollars we're now putting into the EV charging infrastructure and just couldn't be more grateful for your work. And I don't know if you want to share any thoughts on that topic as well?

COMMISSIONER MONAHAN: Well, you're so eloquent.

The only thing I would add is that, you know, we've been doing here at the Energy Commission a series of grants to support EV manufacturing here in the state, EV and related manufacturing in the state. And we just hit 60 EV-related manufacturers in the state of California. We're really the new Michigan when it comes to EV manufacturing. So I just wanted to highlight that, really, we're firing on all cylinders except, of course, in an electric vehicle.

CHAIR HOCHSCHILD: Okay. Great.

Commissioner Gallardo, any agency announcements? Yeah, go ahead.

COMMISSIONER GALLARDO: Well, congratulations on that note as well. Buenos dias. Good morning, everybody.

I did want to let you all know that the Energy Commission, if you didn't already know, has an annual event called the Clean Energy Hall of Fame Awards, and this is going to be held December 5th this year. And what we do is celebrate and honor and uplift six local leaders throughout the state who are contributing to a 100 percent clean energy future.

So we are taking nominations until May 10th. I encourage you all to submit. It's not too hard of a form to fill out and you can find it on our webpages. I will share the link to the Clean Energy the Hall of Fame Award webpage in the Zoom. And for those of you in the room, you

can go to the website to find it. It's right on the homepage.

And then I wanted to end with saying happy Women's History Month. So it's important to celebrate these types of, I feel like, cultural milestones where we're uplifting each other, and this month it's women. And so to all of you out there who identify as a woman, thank you for being a warrior. Appreciate you.

CHAIR HOCHSCHILD: Thank you.

Vice Chair Gunda, any agency announcements?

VICE CHAIR GUNDA: None from me, Chair. Thank you.

CHAIR HOCHSCHILD: Okay, so today's meeting, we're going to be considering approval for over $77 million of investments contributing to California's economic recovery.

With that, let's go to item three, the consent calendar. We're going to be removing item D. And I believe Commissioner Monahan has a statement.

You don't have a statement?

Okay, so let's see if we have any public comment on item three, keeping in mind item D is being removed.

MS. BADIE: Good morning again. This is Mona Badie, the Public Advisor for the Energy Commission.

The Energy Commission now welcomes public comment

on item three. If you're in the room with us, we're asking folks to use the QR code or visit the Public Advisor's table in the back of the room. And if you're joining us by Zoom, please use the raise-hand feature. It looks like an open palm on your screen. Also you can press star nine if you're joining us by phone to comment and just giving that brief moment.

We don't have any commenters for item three.

Back to you Chair.

CHAIR HOCHSCHILD: Okay, unless there's Commissioner discussion, I'd welcome a motion from Commissioner Gallardo on items 3A through C and items E through G.

COMMISSIONER GALLARDO: To clarify, are we separating them?

CHAIR HOCHSCHILD: We are. Those are all the items with the exception of item D.

COMMISSIONER GALLARDO: Okay, because (indiscernible). Sorry. Okay.

I move to approve items 3A through C and 3E through G.

CHAIR HOCHSCHILD: Is there a second from Commissioner Monahan?

COMMISSIONER MONAHAN: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That passes four to zero.

We'll turn now to item four, which is an information item, Recent Findings on Indoor Air Emissions and Concentrations of Benzene Associated with Residential Gas Stoves.

I welcome Rob Jackson and Yannai Kashtan from Stanford University to present. Thank you both for being here.

MR. JACKSON: First of all, hello everyone, and thank you to the Commission and to the audience. Thank you for your work. My name is Rob Jackson. Sorry, this is hard for a teacher to have my back to the audience. My name is Rob Jackson. I teach energy and the environment at Stanford, and I'll be speaking today with Yannai about our work on gas appliances.

So we have, for a decade, studied emissions of methane and carbon dioxide, greenhouse gases that come from gas appliances. We also measure indoor air pollutants,

such as carbon monoxide, nitrogen dioxide, which is a NOx gas and an asthma trigger, and benzene, which is classified as a known human carcinogen.

So next slide, please. One more.

So if you remember anything from the presentation today, this is it, so electric induction and electric coil stoves emit zero benzene and zero nitrogen dioxide pollution. Those are the two bars on the left of each panel that you're looking at here. And fossil gas and propane emit substantial amounts of both of those pollutants.

So in each of these two plots, benzene on the left, nitrogen dioxide on the right, you're seeing the difference between electric and fossil. And that difference sort of sets the stage for what happens in a home. What fuel a homeowner chooses dictates whether or not they will have sources of these pollutants in their home from their appliances or whether they won't. So gas and propane emit substantial amounts, electric and induction, none.

And then finally, you can reduce risk through ventilation and behavioral changes, which is what Yannai will talk about, but you can't eliminate it. So for the next slide, I mean, can't we just turn our hoods on to get rid of this pollution?

Next slide, please.

And the answer is, no, you can't. The ventilation hoods help some but they don't eliminate the risks. And I say this based on more than a decade of research here in California, much of it led by Brett Singer's lab and Lawrence Berkeley Lab.

Here are a couple of examples from our work. On the left, you're seeing benzene concentrations in a kitchen. In the case of the house on the left, all those concentrations rose above the eight-hour California recommended exposure limit, the safe threshold. The stars are with the hood off, the circles are with the hood on. So the hood lowers those concentrations a bit but in both cases the concentrations reached in this kitchen stay above that safe threshold. So the hood helps some, but does not eliminate the risk.

The house on the right's a little bit different. This is a lower-polluting home, so the concentrations stay below the eight-hour REL. But in this case, the resident turns the hood on and it does nothing to change the concentration. And this is a kind of thing that we see regularly and that other investigators have found.

Next slide, please.

So to think about why, here's a home, a picture of a home that we sampled in Bakersfield. This is what we

often see, particularly in residences of lower-income neighborhoods. This house has no ventilation hood. And it doesn't just depend on whether or not you have a hood, it depends on what kind of hood it is. Many hoods don't vent the pollution outdoors but, in fact, we circulate the air, mix it back into the home, which does nothing to eliminate the concentrations of benzene and nitrogen dioxide that we see.

And I'll also point out in this slide that California has the highest percentage of gas stove usage in the whole United States. Seventy percent of our residences have gas stoves. So what we decide to do here in California influences tens of millions of people.

CHAIR HOCHSCHILD: Just kind of curious. What's the percentage nationwide of cooking that's on gas?

Probably closer to half cost half.

CHAIR HOCHSCHILD: Half?

MR. JACKSON: Half-ish.

CHAIR HOCHSCHILD: Okay.

MR. JACKSON: So we're quite high, which I actually don't know the historical reasons for, but 30 to 40 percent nationwide. So anyway, what we decide to do makes a big difference for exposure for tens of millions of people.

Next slide, please.

So forgive a couple of graphs, but I want to take just a couple minutes and show what we actually measure in people's homes. This is benzene on the vertical or y-axis at an eight-hour time course on the horizontal axis. White on the left is when the stove is on, in this case, an oven, and darker to the right is when it's off. And what you see in all of these six houses is benzene concentration starting near zero and then rising within half an hour or an hour above the two health benchmarks that you see there, the eight hour towards the bottom and the more sort of stronger acute or short-term threshold to the top.

In all cases, benzene emissions go up. In three of these six cases, they go up above these health benchmarks. Not only do they rise above safe thresholds, but they stay there for hours after the stove is off. And I think that's the key thing I think a lot of people don't understand is that the pollution doesn't just stay in the kitchen, it migrates through the home.

And I'll go to the next slide, please. And then one more.

This is just for nitrogen dioxide instead of benzene, the same situation, a half a dozen houses. In three of the cases, they're still emitting NO2, but the concentrations don't reach above the EPA and World Health Organization concentration guidelines, but in three, they

do. And once again, they linger in the bedrooms. These are the farthest bedrooms down the hall from the kitchen.

So the concentrations that we reach with some stoves and some homes are dangerous. Hoods help somewhat to alleviate this risk but they do not eliminate the risk entirely.

So I think I'll turn it over to Yannai and he'll take a few minutes and discuss some of the factors. What contribute most to the pollution? And what can we do about it?

MR. KASHTAN: Thanks. Next slide, please.

So as Rob highlighted, the first portion of our work focused on asking the question, do gas stoves emit benzene? And then measuring and quantifying how much benzene and NO2 these gas stoves emit. And we also measured concentrations in a few homes.

But to answer the question systematically, how much pollution are people exposed to across the nation from gas stoves, and in the state of California, we turned to a computer model where we were able to input all the relevant parameters. So our own data on pollution emissions from gas stoves, statistical distributions of how much gas people use, what kinds of range hoods people have, how useful they are, and how much people actually use them, people's home sizes, how long people spend in different

rooms, even how long people spend with their windows open and what the ambient weather is. So all these factors going into this indoor air quality model to produce this population-wide estimate of exposure.

Next slide, please.

What we found was that across the board for nitrogen dioxide, for carbon monoxide, and for benzene, just having a gas stove and using it normally increases your overall long-term exposure.

And zooming in on nitrogen dioxide specifically, we found that, on average, people who have a gas stove reach three quarters of the WHO health benchmark just from the stove alone, and that's putting aside all outdoor sources of NO2. So more gas use means more exposure to NO2.

And perhaps unsurprisingly, people who live in smaller houses, all else equal, are exposed to more pollution from stoves than people who live in larger houses, simply because you have less volume in which to dilute that stove pollution. And this disparity in exposure from housing size in turn drives disparities in exposure by socioeconomic status and racial groups because, on average, folks who are lower income tend to live in smaller houses and therefore are exposed to higher levels of pollution from stoves.

Next slide, please.

So I've talked specifically about exposure from stoves, but we wanted to contextualize this. After all, there are many sources of pollution in our lives, and we wanted a sense of how the pollution from stoves fits into this bigger picture.

Comparing exposure to NO2 from stoves with exposure to NO2 from all outdoor sources combined, we found that, on average, gas stoves are responsible for about one-third of NO2 exposure among people who have gas or propane stoves. The exact ratio depends on how clean the outside air is, so if you're in a rural area, relatively more of your exposure will be from your stove. If you're in an urban area, you can see that second column in the plot, relatively more of your exposure will be from the outside.

But if you're a cook, a home cook spending a lot of time in the kitchen, these ratios flip. And as you can see the fourth column in the plot, two-thirds of your NO2 exposure comes from your stove, whereas only one-third comes from all outdoor sources combined. And again, slight differences based on whether you're in a rural area with cleaner outside air or in an urban area with more NO2 in the outside.

We've also chosen to plot them against WHO safety benchmarks, and you can see that gas stove use can,

depending on how clean your outside air, push your exposure over, in the case of the general population, the WHO's chronic exposure threshold, and in the case of home cooks above the WHO's higher safety threshold, its higher intermediate target.

Next slide, please.

So zooming out and looking at our work overall, we found that two things affect exposure to gas stove pollution most. Fuel choice. Do you have a gas or propane stove, or do you have an electric coil or induction stove? That's the number one. And then after that, how much you actually use a gas stove. So how much gas you're actually burning? And those two factors affect your exposure quite a bit.

Next, we looked at hoods. A we found hoods, you know, hoods, when turned on, do some to alleviate exposure, especially if they are outside vented. But it's important to note that about two-thirds of people hardly ever use their hoods or never use their hoods, and that's for people who even have outside venting hoods. Many people lack outside venting hoods.

And finally, to note on this point, however good your hood is, it does nothing to address the greenhouse gas emissions from stoves, which just get emitted to the outside.

And third, just to go back to our main point, we found that gas, typical regular gas stove use can lead to benzene and NO2 exposures that can and do cross safety benchmarks in some households.

With that, I'll turn it back to any questions. Thank you very much.

CHAIR HOCHSCHILD: Thank you so much. Let me go to my colleagues.

Commissioner Monahan?

COMMISSIONER MONAHAN: Really interesting study.

I'm curious, did you find difference in emissions from the stove versus the stovetop or the oven versus the stovetop?

MR. KASHTAN: Yeah, so it's a little bit of a different story for benzene versus nitrogen dioxide. For nitrogen dioxide, really it's a linear relationship between how much gas is burned and how much NO2 you get. So ovens, say set to, you know, set to, say, 350 Fahrenheit will emit generally more NO2 than just a burner on medium, just because they're burning more gas.

For benzene, it's a bit more complicated. Some stoves are high emitters, others are lower emitters. In general, ovens tend to be higher emitters than cooktops, although there's quite a bit of variation between these.

COMMISSIONER MONAHAN: Have you looked at

anything specific to children and impacts to children?

MR. KASHTAN: So we're looking specifically at exposure, so basically how much, what the, you know, the integral being basically how much you're exposed to over time. We're not health experts looking at quantifying the outcomes of that.

But that said, we know that both nitrogen dioxide and benzene are more potent against children. So benzene is a leukemogen and it's more potent at causing leukemia in children. NO2 is an asthma trigger and it is more potent at causing and exacerbating asthma in children. We do know that.

COMMISSIONER MONAHAN: And then one last question. Have you looked at any like California-specific data? And I'm thinking particularly that because we have two severe non-attainment zones with high NO2/NOx emissions, I'm guessing the air pollution impact actually may be different in California than the national average --

MR. KASHTAN: Yeah. So what right now --

COMMISSIONER MONAHAN: -- which is not to say it's not important.

MR. KASHTAN: Yes.

COMMISSIONER MONAHAN: I'm just saying like --

MR. KASHTAN: Yeah.

COMMISSIONER MONAHAN: -- we need to deal with

air pollution and we need to deal with indoor air pollution.

MR. KASHTAN: Oh, yes, both outdoor and indoor are super important. And, you know, as we do a better and better job on outdoor the relative importance of indoor sort of rises as well. We're working on exactly that. We're producing sort of a zip code-based map of exposures, that's in progress, trying to compare very locally geographically sort of relative indoor versus outdoor exposures.

CHAIR HOCHSCHILD: I'm just curious about income, if you have looked at health impacts by income bracket? Because my understanding is it's more severe for low-income households that have lower quality beds, hoods, or don't have ventilation.

MR. KASHTAN: So we have, with the caveat that, of course, our estimate is only as precise as the model's input data, and there is not the best data on hood efficacy as a function of income. But even just looking mostly at just housing size, you know, how big on average are, you know, the houses of people in different income brackets, we find that lower income people on average are exposed to more pollution from stoves and higher income people, even just in this model, which ignores these other effects about, you know, differences in hood efficacy, for

instance, yeah.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Interestingly, Commissioner Monahan, I also immediately thought about kids as you were delivering the presentation. I thought about my two young kids and these like fumes following them around, so it does feel scary.

I was curious about one the homes that were studied. How were those selected and why? And then I have another question but I'll let you answer that one first.

MR. KASHTAN: Yeah, so the first portion of the study was just looking at emission rates, just trying to answer the question, you know, how much pollution is coming off the stove? And there it was a combination of just online survey signups. We had a few Airbnbs, as well, trying to get the homes. And we found no clear correlation between emission rates from the stove and the age, brand, price point, you know, visible cleanliness of the stove, so we felt like that was a fair way to get the sample size.

The second part, we were actually looking at concentrations. We wanted to -- we intentionally tried to get diversity of housing sizes and layouts, so we intentionally chose those to represent different kinds of houses.

CHAIR HOCHSCHILD: Unless, are there any

questions from the Vice Chair?

COMMISSIONER GALLARDO: I had one more question.

CHAIR HOCHSCHILD: You have one more?

COMMISSIONER GALLARDO: Yeah, so --

CHAIR HOCHSCHILD: Sorry, go ahead, Vice Chair, why don't you go, and we'll go back to Commissioner Gallardo.

VICE CHAIR GUNDA: Yeah, thank you, Chair.

Thank you so much for the presentation. Just a quick question on the modeling itself.

How did you characterize the different types of houses? I don't know whether it's floor space, volume. To really understand the penetration, it would be helpful. Thank you.

MR. KASHTAN: Yeah, so the basis for the modeling was a set of floor plans that were already in this indoor air quality model called CONTAM that were designed to be representative of the U.S. housing stock. And we, you know, we assigned given houses in the residential energy consumption survey database to each of those floor plans based on, you know, first of all, the type. Is it a mobile home? Was it an apartment? Is it attached? Is it a detached house? Its square footage, number of stories. Does it have a central air conditioner or not? Sort of a decision tree of different factors.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: I'm just curious about the comment you made about the hoods and how people that have them may not even use them. Do you have any information about why that is?

MR. KASHTAN: A little bit. So this was going off of mostly research led by Brett Singer at LBNL. And his group has a paper specifically on factors affecting range hood use, so that's part measurement and part surveys. So noise was a big factor.

And also, lack, you know, lack of smell being correlated with a perception of not needing to use the hood. So if you're not cooking something smoky, then people don't think they need the hood. If you're just boiling water, if you just have the oven on, for instance. So if you're, you know, frying something very smoky, people might tend to turn on their hood, but if you're just boiling water, then, no.

CHAIR HOCHSCHILD: Well, unless there's other questions, let me thank you and Professor Jackson. Terrific presentation. Thank you for your work.

MR. JACKSON: Thank you.

MR. KASHTAN: Thank you very much.

CHAIR HOCHSCHILD: All right, with that, we'll turn toward item five, Petition For Rulemaking – Non-Energy

Benefits and Social Costs.

And I believe Commissioner Gallardo has a statement before we welcome Aleecia to kick us off.

COMMISSIONER GALLARDO: Yes, I do.

So item five is the Energy Commission's consideration of a petition for rulemaking filed by the Center for Biological Diversity and signed by several other community-based organizations, including the Greenlining Institute, a 501(c)(3) tax-exempt organization.

I am on the Board of Directors of the Greenlining Institute and serve as co-Chair. I can affirm that I have no economic interest in the nonprofit organization and have not accepted any compensation or things of value from the Green Lining Institute.

Additionally, I have never participated in a conversation with colleagues at the Greenlining Institute about this petition or whether the Greenlining Institute would sign this petition submitted to the Energy Commission. Therefore, there is no conflict of interest or incompatibility with my participation in the Energy Commission's consideration and vote on this item.

Thank you.

CHAIR HOCHSCHILD: Okay, Aleecia, over to you.

MS. GUTIERREZ: Thank you. Good morning, Chair, Vice Chair, and Commissioners. I'm Aleecia Gutierrez,

Director of the Energy Assessments Division. And this morning, I bring the staff recommendation in response to a petition for rulemaking on non-energy benefits and social costs filed by a group of 16 organizations.

Next slide.

On February 5th, a coalition of petitioners filed a petition for rulemaking to integrate non-energy benefits and social costs into the CEC's resource planning activities and investment decision-making and integrate non-energy benefits and social costs into all cost-effectiveness determinations. They requested a rulemaking to transparently and comprehensively address non-energy benefits and social costs and requested it be an iterative process that starts with specific categories and, over time, refined methodologies with other economic considerations and reflect qualitative lifecycle value of externalities as standards for resource portfolios.

They also specifically requested that this rulemaking inform the 2025 SB 100 Interagency Report, which is due at the end of this year.

Next slide.

Staff agree that improving the integration of non-energy benefits and social costs into policy planning and decision-making may better public health, environmental outcomes and benefits for communities.

Next slide.

The petition was submitted to the 2025 SB 100 report docket and was intended to influence the 2025 report. The CEC, California Public Utilities Commission, and California Air Resources Board are required to submit a report every four years that reviews the policy, including technical, safety, affordability, and reliability aspects, assesses reliability benefits and impacts, assesses financial benefits and impacts, assesses the barriers and benefits to achieving the policy, and assesses alternative scenarios and the costs and benefits of each.

Next slide.

The first SB 100 report provided directional information to inform state policy and planning. It found that achieving SB 100 is technically feasible and indicated the need for 148 gigawatts of new storage and generation resources by 2045 in addition to new energy efficiency, customer solar, and demand response. It was not, however, intended to dictate utility procurement, which is determined by each load serving entity and publicly owned utility-specific planning processes.

Next slide.

The 2025 SB 100 report builds on the 2021 report and will include an overview of current statewide efforts and progress towards achieving the state's clean

electricity and identify opportunities to enhance those processes. It will also evaluate alternative scenarios to understand the impact of uncertainty of cost, technology innovation, and project development on achieving SB 100.

This report process kicked off in August, 2024, and we've had workshops on the power system modeling and land use approach for the report thus far. Directly related to this petition, we are holding a workshop on non-energy benefits and social costs on April 16th. We anticipate having results for this analysis in late summer, with the report due January 1st, 2025.

Next slide.

The CEC has contracted a consultant to support SB 100 non-energy benefit analysis in this report. Through a public process, the joint agencies are evaluating options to address the following categories of NEBs: land use impacts; public health and air quality; water supply and quality; economic impacts; and resilience.

Next slide.

While staff agree with the petitioners on the importance of further evaluating the usage of the non-energy benefits and social costs, granting the petition in full would present limitations to what appear to be the objectives of the petitioners and foreclose the possibility of more meaningful public participation in a robust,

transparent, and public process.

Pursuant to the APA, granting the petition in full would require a regulations package would be made available immediately, including proposed regulatory language. The process initiated by granting the petition in full does not allow for a pre-rulemaking process, does not allow for the public to inform proposed language, and would not allow for the CEC to follow its standard outreach and engagement practices.

The petitioners did not propose specific regulatory language and acknowledge the need for process to comprehensively address non-energy benefits and social costs.

Next slide.

Staff believes, however, that opening an order instituting informational proceeding, or OIIP, would be responsive and allow for a robust and transparent public process and stakeholder engagement, providing an opportunity for input from multiple perspectives. OIIPs are more flexible and iterative processes. Development in an OIIP can address the petitioner's request to inform CEC analyses, planning, and decision-making processes.

While development in the OIIP may inform the 2025 report, if timing allows, staff acknowledged that the timing of the petition submittal considered with the time

needed for a robust and transparent public process will make it very difficult.

SB 100 staff are currently developing the NEB analysis for this report with a workshop planned next month. However, methodologies and outcomes may also inform the longer-term OIIP.

Next slide.

Staff recommendation -- or staff recommends that the Commission grant the petition in part in its request for CEC to initiate a transparent public process and determine methodologies to integrate NEBs and social costs and to CEC planning processes and decision-making. To achieve this, staff recommend the Commission adopt a proposed order instituting an informational proceeding to serve as that forum.

Staff also recommend that the Commission deny the petition in part to the extent that it requests the CEC to adopt an order instituting a rulemaking and complete a rulemaking pursuant to Government Code sections 11340.6 and 11340.7.

Thank you, and that concludes my presentation.

CHAIR HOCHSCHILD: Thank you so much, Aleecia.

With that, we'll go to public comment on item five. For those of you who did not comment at the outset, we welcome you to provide comments now.

MS. BADIE: Hello again. This is Mona Badie, the Public Advisor.

The Commission now welcomes public comment on item five. As the Chair requested, if you've already commented on item five during our open public comment period, that was item one, we're asking you to not comment again. Your comments were heard and we want to make room for other speakers as well.

So if you're in the room with us, we're asking folks to use the QR code posted or to visit the Public Advisor table at the back of the room. If you're joining us on Zoom online, please use the raise-hand feature. It looks like an open palm on your screen. And if you're joining us by phone, you'll press star nine to raise your hand. And you can start doing all of those things now and we'll call on the order that we received the request.

So starting in the room, Tanya DeRivi (phonetic), if you could please approach the podium? Please spell your name for the record. And we're asking for comments to be two minutes or less. All right, Tanya, we don't have Tanya in the room.

So we'll move on to Sophie Ellinghaus (phonetic).

Sophie, are you here for item five? All right, we don't have Sophie in the room.

We'll go to Bob Cipolla. Excuse me if I've

mispronounced your name, Bob. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. CIPOLLA: Thank you. My name is Bob Cippola, spelled C-I-P-O-L-L-A. I'm here at the urging of the Solar Rights Alliance. I don't represent them specifically. I represent my own opinion about the petition, which I support. I wanted to tell you about my personal experience.

In 2017, the Tubbs fire came through the San Rosa area where my home is. And besides losing my home, my neighborhood, my community, there were a total of 5,300 other structures, homes that were destroyed in that time.

I took advantage of something you may have had part of doing, the Advanced Energy Rebuild Program. And even as a 40-year experienced general contractor, I learned about electrification. I learned about energy efficiency. I learned how to build a house for the future. And in doing that, I had 35 solar panels installed on the south side. I put a backup battery in place. I used induction cooktop, heat pump water heater, heat pump air conditioning and heating, and I'm very proud of that accomplishment. I added to that two electric vehicles in which we, my wife and I, use now.

So my story is interesting in that it's a story

of what has worked or what is working. It's also a story of what's not quite working as well as expected back then because of rate increases. In particular, PG&E's raised rates 23 percent this year from last year. How that affects me is I make more electricity, generate more electricity for my house than I can use, so some of it goes back to the grid. I also buy from the grid at night or during bad weather and the differential between those two is ridiculously unfair. Electricity should have a value and, yes, the grid is a problem.

But one thing I want to point out is that my house removed one demand, one house demand from the grid, thereby increasing the efficacy of the grid. So if we can encourage more homes to do this then we can, in fact, make the grid more available to those that need it. We can create more electricity for the goals of California.

Thank you.

MS. BADIE: Thank you, Bob.

And next, we'll hear from Roger Lin.

Roger, if you can please approach the podium and spell your name for the record before you begin? We're asking for comments to be two minutes or less.

And also, while you're approaching the podium, I just wanted to say for Tanya DeRivi and Sophie Ellinghaus, if you meant to comment on a different item than item five,

if you can please visit the Public Advisor table so we can make sure to capture your comments.

Thanks Roger.

MR. LIN: Thank you, Commissioners. Roger Lin, R-O-G-E-R L-I-N. I'm an attorney with the Center for Biological Diversity and one of the inaugural members of Disadvantaged Communities Advisory Group, where next month I'll be completing my term after six years. And I want to emphasize that at practically every single meeting that the advisory group has had, we have raised the need to consider non-energy benefits and social costs. So I thank the Commission for the leadership in tackling this critical issue.

We know the harms of fossil fuel and other combustion resources, and we know the land use impacts of relying on utility-scale bulk resources. We need to put those factors up front in decision-making, though. We do not need to accept tradeoffs. Environmental justice is no longer a novel concept, but our regulations and our decision-making has to catch up with that.

And also the benefits of clean energy, especially in environmental justice communities, if we don't fix our cost-benefit analyses, these projects will continue to not pencil out and we won't be able to access available funding. And I want to stress that it's available funding,

whether maximizing state subsidies or increasing access to federal funding.

With the Inflation Reduction Act, the White House and the federal EPA are clear, we have to tackle local pollution in addition to climate. This proceeding, if granted, would allow us to show the federal government that California knows how to tackle the climate emergency and environmental injustice.

But to do that, we need to act quickly, so we thank staff for including a timeline to begin this proceeding, but we also request staff to include a timeline to produce actionable results and have that timeline ready at the first proposed workshop over the summer.

So thank you again for leading on this critical issue. We agree with staff recommendation and thank staff for the collaboration and urge you to grant this petition.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Lorenzo Kristov.

Lorenzo, if you can please approach the podium? Please spell your name for the record. We're asking for comments to be two minutes or less.

MS. KRISTOV: Okay. Hello. My name is Lorenzo Christoph. L-O-R-E-N-Z-O, last name K-R-I-S-T-O-V. I'm an independent consultant working with the Climate Center

largely, but speaking on my own behalf as someone who's worked in electricity policy in California for 30 years, including almost 19 years at the California ISO.

So I want to first of all say, I support the staff recommendation and I applaud the Commission on leadership on taking on this really important issue. Other speakers have been very eloquent about the importance of net-energy benefits and social cost. What I want to emphasize really is the methodology gap in planning that exists throughout the entire industry, not just in California.

For 100 years, basically, we've thought of the electricity system as bulk supply resources, high voltage transmission, and we're still in a kind of mental habit of thinking about DERs, distributed resources, as mainly being behind the meter and providing demand response rather than looking at them as a potentially very rich supply of renewable energy at a time when the supply of renewable energy needs to grow immensely.

Coming out of the SB 100 workshops, we talked a lot about land use constraints and the time it takes to build transmission and the time it takes, so there's huge benefits in being able to locate supply resources close to load. There's huge potential on the built environment. The problem is that our planning methods don't know how to

evaluate the concept of building supply close to load. What are the benefits of doing that? Historically, supply close to load has meant things like fossil fuel plants, but we don't have to be stuck in that anymore. We have alternatives now with clean energy.

So what I want to really just emphasize is that this proceeding that you're considering is really an effort, an opportunity for California to exercise leadership in an area that's really needed nationwide in the industry. We simply don't have planning methods that take into account the value, the benefits of building from the bottom up, starting with houses, as one of the earlier commenters said, then moving to the community level.

Thank you for your consideration.

MS. BADIE: Thank you.

Next, we'll hear from Joel Leong.

Joel, if you could please approach the podium? Please spell your name for the record. We're asking comments to be two minutes or less.

MR. LEONG: Thanks. My name is Joel Leong, spelled J-O-E-L, and last name is spelled L-E-O-N-G. I'm a retired mechanical engineer.

And so just thank you to the Commission for your leadership on this issue. Apparently, other state agencies are a little behind there. And please do everything in

your power to facilitate and expedite the transition from fossil fuels to sustainable clean energy.

And I'm just going to have a lot of talking points here, but the fellow advocates have spoken on it already.

Just, I'm agreeing with the staff recommendation to grant the substance of the petition and start those proceedings. And I'd also like to emphasize to request a timeline and schedule.

And pretty much that's it. Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Charles Adams.

Charles, if you could please approach the podium? Please spell your name for the record. We're asking for comments to be two minutes or less.

MR. ADAMS: Adams, A-D-A-M-S.

As practiced, Senate Bill 100 conflates the environment with union infrastructure projects. We worked on your solar farms and they are environmental catastrophes when compared with rooftop solar.

Policies reveal priorities. The CPUC's selected benefits promote cost-plus union infrastructure contracts and handouts to Wall Street tax equity investors. The excluded benefits demote private investment, local economies, ecosystem conservation, prime farmland, and

infrastructure cost reduction. Cal ISO has publicly acknowledged that rooftop solar reduces transmission cost. Power control systems certainly reduce distribution costs for all ratepayers. Honest rates must credit this.

The number of mistruths promoted by current policies are numerous. Private contracts are not public works. Tariffs are not subsidies. Destroying 600 companies that created 40 percent of the solar market is not a just transition. This has destroyed a lot of lives and a lot of nature.

The United States constitutes five percent of the world's population, consuming 24 percent of the world's energy. It would take five planet Earths for everyone to live like a U.S. resident. So by manipulating the numbers to promote an all-infrastructure model, you're accelerating many of the damaging cycles that create the current crisis.

Bornstein's numbers are wrong. We need to reach 100 percent clean energy while reducing consumption and allowing nature to heal itself. Rooftop solar, tiered rates, energy efficiency, local economies are being excluded by the Newsom administration. Please correct this accounting.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Charlene Woodcock.

Charlene, if you could please approach the podium? Please remember to spell your name for the record. And we're asking for comments to be two minutes or less.

MS. WOODCOCK: Charlene Woodcock, C-H-A-R-L-E-N-E W-O-O-D-C-O-C-K.

California needs to make clean, safe energy available to low-income communities. I strongly urge the Commission to approve the petition to consider non-energy benefits and social costs. The legislature needs to continue to consider local communities and how they are affected by energy policy in terms of air and water pollution, as well as land use, jobs, and health.

The rooftop solar companies have provided jobs up and down California. The recent policy changes pushed by the monopoly investor-owned public utilities are driving up the cost of rooftop solar and putting these firms out of business.

Currently, PG&E, supported by the CPUC, seems to be intent on discouraging the most efficient, quickly-achieved clean energy from rooftop solar on the many available appropriate roofs in California. Instead, they're reducing the net-energy rate and adding a new flat tax in addition to their several recent rate increases, all of which harms low and middle income California residents.

Net-energy metering repays the solar array owner

for the investment in solar that can return to the grid excess energy produced. It's called -- sorry, that is energy that PG&E and the other investor owned public utilities do not have to obtain from other sources. Solar roofs can especially benefit low-income families by reducing their energy bills.

Energy from local sources needs no additional transmission lines, saving the utilities a significant expense required by new transmission lines for industrial-scale solar and preventing the environmental harms that industrial scale solar can cause.

A much more rapid electrification and significant reduction of the use of gas is necessary for going to slow climate change, necessary for the health of children and the elderly. We need the state to bring clean energy up to the local level rather than focusing on industrial-scale solar.

Thank you.

MS. BADIE: Thank you.

Next, we have from Yvette DiCarlo.

Yvette, if you can please approach the podium? Please remember to spell your name for the record. We're asking for comments to be two minutes or less.

MS. DICARLO: Hi, my name is Yvette DiCarlo, Y-V-E-T-T-E, last name is D-I-C-A-R-L-O. Thank you for

taking up this petition, and I do urge the Commission to grant the petition today.

As a public citizen, it's critical to counter the utility's disinformation campaign, especially against rooftop solar. They say that its recent proliferation has created an enormous cost shift to low-income ratepayers in particular.

Utilities used to love rooftop solar. In fact, it was maybe six or seven years ago when they were touting it in its press releases that it helped them comply with their renewable portfolio standard requirements. But somehow that has shifted.

And what's not to like about rooftop solar? Private citizens invest their own money. They avoid expensive EIR costs, time delays for generating electricity. They save open space and have many other social and economic benefits. And also, solar rooftop customers pay an infrastructure fee. Contrary to popular belief that they don't, they absolutely do, it's written in their bills, so these costs must be accounted for during rulemaking.

One other thing I wanted to point out is last week the assembly held an information hearing and a gentleman from TERN (phonetic) was talking about how people inland who live in very hot climates are going to be

cranking their AC and may not be able to afford the skyrocketing cost. This is when rooftop solar shines, literally. It's when it's at its best. It's the fastest way to deploy electricity that's going to be badly needed as we continue to see hotter and hotter days being experienced in the Inland Valley.

So again, I just want to urge you to comply with this -- or to grant the petition and keep these considerations on the forefront of your minds.

Thank you very much.

MS. BADIE: Thank you.

And before we transition to Zoom, I just want to make sure I've covered everyone in the room. All right, so no one's waving their hand at me.

We're going to transition to zoom.

Oh, do we have one more?

MS. MALINOWSKI-BALL: Yeah. Sorry. My name wasn't called. I'm Julie Malinowski-Ball. On behalf of the California Biomass Energy Alliance, J-U-L-E-E M-A-L-I-N-O-W-S-K-I hyphen Ball, B-A-L-L. I represent the California Biomass Energy Alliance.

CBEA actually welcomes the decision here today and the conversation that will ensue. That is because the biomass industry has numerous non-energy benefits. In fact, it's our middle name. That is because the industry

partly takes over six and a half million tons of wood waste every year that would otherwise be used, it's used as fuel, and otherwise be open burned, clod the landfills or left in the forest decay and become fire hazard in the forest.

Our scientists at UC Berkeley, UC Davis, and many others have touted the air quality benefits of biomass energy. In fact, we know the benefits when some biomass facilities closed in the last decade. Open burning of crops and other wood waste nearly tripled in the Central Valley, creating a much more devastation air quality issue for that area.

So biomass is a solution far beyond the energy benefits, and we really look forward to this conversation.

Thank you for the opportunity to speak today.

MS. BADIE: Thank you.

All right, anyone else in the room before I transition to Zoom?

All right, Claire Broome, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. BROOME: Good morning, Commissioners. I'm Claire Broome. I'm representing 350 Bay Area, and we are one of the signatories to the petition.

So you've heard an eloquent discussion of the importance of environmental justice in this petition, and

also the fact, as Lorenzo Kristov stressed, that local planning is the essential element.

What I'd like to add to the discussion is non-energy benefits could also be considered as missing values. And since the CEC is such a central agency for planning California's energy future, the absence of these missing values distorts your energy planning. And I hope that this petition will be granted with a very swift timeline and taken really seriously as central to your energy planning.

What do I mean by missing values? Okay, what's the value for speed? You have asked California to go from 35 gigawatts of renewable to 73 gigawatts by 2030. The fastest way is local. No transmission. If you put front of the meter, storage and solar, we'll get there.

Number two, resilience. Ninety-eight percent of outages are on the distribution grid.

Number three, land use. You've heard a couple of eloquent comments about how brownfields and warehouses can really help spare our deserts and forests.

Finally, costs. We have an electricity crisis in cost in California. And the Public Advocate's Office just released a model where we saved $35 billion by 2030, just by EV charging out of peak.

So the final point I'd make is we're not starting from scratch. I think there's a lot to build on, both for

SB 100 and for non-energy benefits calculation in general. So I really look forward to this process and thank you for your consideration.

MS. BADIE: Thank you.

Next, we'll hear from Kevin Hamilton.

Kevin, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. HAMILTON: Good morning, Commissioners. Kevin Hamilton, Senior Director of Government Affairs for Central California Asthma Collaborative and a petitioner here. Thank you for hearing our petition and we thank you for considering it and recommend that you approve as staff has recommended.

Non-energy benefits are something that we have been pushing toward the CEC and the many, many projects that it funds for quite a number of years now. Non-energy benefits, we use the word benefits a loss, but it's the cost as well. And we see those every day in the homes of the asthmatics that we take care of up and down the San Joaquin Valley. Dr. Jackson earlier did a great job of presenting information from homes in Bakersfield, many of which we referred to his program that do house asthmatic children and vulnerable older adults.

One of the things that we can do is look to those

who've already walked this path before us. The International Energy Agency has been doing this work for the past 20 years.

We can look to the EU to note that they've been implementing energy efficiency strategies in homes and businesses for over 15 years now. They believe that this has allowed them to avoid even adding another power plant, the effect is so immense.

They have calculations already built for the cost and savings of these benefits and the variety of savings in the various parts of our daily living are pretty incredible. We have a healthier workforce, we have more money in the pockets of folks in those homes. We have healthier people so that they're able to go to work.

And generally, we're able to have the technology to literally take a home or a business off the grid with the technology that we have and become an energy provider rather than an energy user.

Yet we seem to hold back on those interventions and instead we continue to invest in combustion-based energy sources, and that just has to stop.

Thank you for your time today. We appreciate it.

MS. BADIE: Thank you.

Next, we'll hear from Barbara Stebbins.

Barbara, I'm going to open your line. If you

could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. STEBBINS: My name is Barbara Stebbins, B-A-R-B-A-R-A S-T-E-B-B-I-N-S. I work with Jessica Tovar, who you heard from earlier at Local Clean Energy Alliance. I appreciate the Commission for taking up this issue of non-energy benefits.

LCEA's work is advocating for energy policies that bring equity to underserved frontline communities. These communities must be prioritized for community-based renewable energy resources, such as rooftop solar and battery storage.

Through our work, we know the value of non-energy benefits that come with local clean energy resources. For instance, reduced emergency room visits because of asthma, as we just heard, when gas stoves are replaced with electric stoves. The ability to have cooling from heat pumps during extreme heat events, even if the grid goes down. The ability to keep refrigerators going so food doesn't spoil. It has been hard to deal with state-level decisions that do not take into account non-energy benefits when making crucial decisions about the value of local energy resources.

We are pleased that the Energy Commission is considering doing just that, and we urge the Commission to

grant the petition with the adjustments that staff is recommending, but a good timeline to make sure it happens.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Julie -- Julia Dowell, excuse me.

Julia, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MS. DOWELL: Good morning, Commissioners. My name is Julia Dowell, J-U-L-I-A D-O-W-E-L-L. I'm a Senior Field Organizer with Sierra Club. Thank you for taking leadership on this critical issue of considering non-energy benefits in energy planning.

Sierra Club agrees with the staff recommendation to grant the substance of the petition and open a proceeding. We also request that staff prepare a timeline and schedule to kick off this proceeding.

It is imperative that the CEC accounts for the local impacts of energy resources when deciding which resources to procure to meet the state's ambitious clean energy goals. For years, frontline communities near gas plants have been exposed to high levels of pollution because the cost-benefit analysis of resource procurement did not account for their health and environmental impacts

when deciding what resources to utilize.

It is vital that the impacts to communities air and water be a driving force in deciding which energy resources the state procures. This means that the CEC must consider the social and health costs to the local environment from biofuels, fossil fuels, and carbon capture in its cost-benefit analysis, in its modeling and planning. Once we account for the extreme negative externalities of fossil fuels and incorporate those costs into a more accurate cost-benefit analysis, we will be able to realize the full advantage of clean energy resources and prioritize putting those resources in disproportionately impacted communities.

Considering non-energy benefits can also unlock additional federal funds that prioritize DERs and reduce local pollution, which will be able to reach environmental justice communities. This will also help the state reach its SB 100 goals while better prioritizing its social justice goals.

In closing, the Sierra Club agrees with the staff recommendation, and we thank the staff and Commissioners for your leadership in moving toward a more just and equitable clean energy decision-making process.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Magi Amma. I'm going to open your line. If you could please spell your name for the record? And we're asking for comments to be two minutes or less.

MS. AMMA: Can you hear me?

MS. BADIE: Yes.

MS. AMMA: Thank you. My name is Magi Amma, M-A-G-I A-M-M-A, and I am representing the Climate Alliance of Santa Cruz County. I want to thank you for taking up this petition.

I support the staff recommendation to grant the substance of the petition and open the proceeding, please. Please prepare a timeline and schedule to resolve the proceeding. Time is of the essence.

I am asking you to add the non-energy and social costs. Consideration of non-energy benefits will unlock additional funds for local clean energy solutions to promote public health and environmental justice in other low-wealth communities. The State must determine how to reach and fund more clean energy investments in environmental justice and other low-wealth communities to simply meet SB 100 and our climate targets.

Thank you again.

MS. BADIE: Thank you.

Next, we'll hear from Sahm White.

Sahm, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less. Sahm, your line is open.

MR. WHITE: My name is Sahm White, S-A-H-M W-H-I-T-E, independent consultant.

I want to thank you for taking up consideration of non-energy benefits. As a consultant on energy policy for numerous non-profits engaged in dozens of formal proceedings, I've long advocated for this at the CPUC in particular which, despite expressing attention to equity and development of a societal cost test over many years, has yet to adopt or apply consistent consideration of societal costs and benefits. Leadership from the Energy Commission is needed and appreciated.

Policy development and decision-making on narrow energy-only factors inherently fails to consider the context and holistic impacts of such policies, with potentially profound impacts on the people of California and our environment. Clear guidance directing appropriate consideration of all realized impacts and benefits, both short and long term, is essential for cohesive and effective policy development.

I would like to express my support for the staff recommendation to pursue this matter and recommend adding a

clear timeline for consideration and near-term implementation to help better achieve multiple state goals.

Thank you very much.

MS. BADIE: Thank you.

Next, we'll hear from Wade.

Wade, I'm going to open your line. If you could please state and spell your name for the record? We're asking for comments to be two minutes or less.

MR. STANO: Thank you, Commissioners. Wade Stano, W-A-D-E S-T-A-N-O, with MCE. MCE offers strong support of the Commission's staff recommendation to adopt an OIIP on non-energy benefits and social costs.

MCE is a community choice aggregator who provides clean electricity service and clean energy programs to 37 member communities across Contra Costa, Marin, Napa, and Solano counties. MCE is a program administrator of energy efficiency, demand response, and decarbonization-focused programs serving residential, commercial, agricultural, and industrial customers.

Because of its experiences, MCE strongly supports studying, valuing, and making planning, program design, implementation, evaluation, and broader investment decisions informed by non-energy benefits and social costs. MCE believes NEBs and social cost-rooted decision-making will to deliver greater health, safety, comfort,

affordability benefits, in addition to greenhouse gas emissions reductions. MCE recognizes the lack of evaluation and consideration of NEBs and social costs presently as a key barrier to beneficial, clean and community-led investments in environmental and social justice communities.

MCE thanks the petitioners for its courageous leadership, bringing this critical petition forward and the Commission staff for its thoughtful recommendation today. MCE looks forward to partnering with all stakeholders on next steps to ensure the state's clean energy programs and planning decisions equitably benefit all Californians.

Thanks very much for your time.

MS. BADIE: Thank you.

Next, we'll hear from Marc Costa.

Marc, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. COSTA: Hi. Good morning. This is Marc Costa, M-A-R-C C-O-S-T-A. I'm the past Chair and current board member of LGSEC, the Local Government Sustainable Energy Coalition. LGSEC is a statewide nonprofit that represents over two-thirds of the state's population through our membership. LGSEC strongly supports the OIIP and clear timelines.

Local governments have a significant responsibility when it comes to meeting local climate action planning, which contributes to state goals. There's tremendous responsibility in land use and planning, passing local policies such as building performance standards.

NABs are critical in that they reflect that buildings are where multiple policies intersect, carbon, social, environmental, economic. As the CEC embarks on the IEPR updates, the SB 100 joint agency efforts, the relaunch of the Existing Buildings Energy Efficiency Action Plan and numerous other statewide policy actions. NEBs are a critical step to accelerate the decarbonization of our building stock and state's goals. IEPR Recommendation 3 calls for more granularity and demand forecasting and resource planning. AAEE and AAFS are increasing in unprecedented ways to get us to 2050.

So as we try to unlock the funds on equity and deliver benefits to those that need it most in our equity segments and income qualified customers, they require unique support and that needs to be reflective of non-energy benefits. The building industry is not on track including, according to the global status update on buildings and climate. We're just not on target to meet our state and our global climate goals, and California is a critical part of that. We're not in a bubble in

California. We need to contribute our leadership, exporter thought capital, and leadership and policy in that area.

So the urgency is there. All indicators have never been more clear that something needs to change. NEVs are a critical piece to unlock that. And that petition is the next step to put the state of California as a leader in achieving our climate goals.

Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Steve Campbell.

Steve, I want to open your line. And if you could please spell your name for the record? We're asking for comments to be two minutes or less. Steve, your line is open. You'll have to unmute on your end.

MR. CAMPBELL: Oh, good morning. Almost good afternoon, Commissioners. My name is Steve Campbell, S-T-E-V-E, Campbell, C-A-M-P-B-E-L-L. I'm at Vote Solar.

Thank you, CEC, for taking leadership on a long overdue goal. I have been tracking efforts to measure and quantify NEBs since 2013 across three different organizations. I first witnessed the impact of not incorporating non-energy benefits and the energy efficiency rolling portfolio rulemaking. And more recently, I have witnessed the same impacts of not incorporating NEBs on distributed generation decisions.

I'm glad the CEC staff have recognized that NEBs are important and agree with the staff recommendation to open a proceeding. I do request that staff prepare a timeline and schedule to ensure this positive momentum moving into the 2025 SB 100 update.

Thank you.

MS. BADIE: Thank you. And that concludes public comment for item five.

Right back to you, Chair.

CHAIR HOCHSCHILD: Thank you to all of you for providing public comment on item five.

We'll turn now to Commissioner discussion, starting with Vice Chair Gunda.

VICE CHAIR GUNDA: Thank you, Chair. And just want to extend my sincere gratitude to all the commenters today on just expressing the spirit and need for engaging hopefully on considering the next discussion. I have a few substantive comments.

Before I go into that, I just want to thank our staff, EAD, under the leadership of Aleecia and Liz Gill, our PAO under the incredible leadership of Mona, and our Chief Counsel's Office, both Chad and Lisa, who have worked really hard in making sure the petition is honored, the speed of the petition is honored, the substance of the petition is honored, and there was a pathway forward for us

to consider today as a Commission. So I really want to thank our staff for the work, the thoughtful work that they've done on this.

I also want to recognize, as we -- specifically to Roger Lin's comments today on the time he has spent on the DACAG and the time he has spent on advocating for NBEs to be a part of the conversation. I've had a chance to meet with the petitioners and a chance to speak to --

CHAIR HOCHSCHILD: Sorry, Vice Chair. Sorry.

VICE CHAIR GUNDA: Yes?

CHAIR HOCHSCHILD: Yeah, just because you're out of the country, our Chief Counsel's Office needs you to affirm that there is nobody with you in the room over the age of 18.

VICE CHAIR GUNDA: Yes, nobody here.

CHAIR HOCHSCHILD: I'm not sure why we --

VICE CHAIR GUNDA: Yeah.

CHAIR HOCHSCHILD: I'm just inquiring.

VICE CHAIR GUNDA: Sorry.

CHAIR HOCHSCHILD: Okay, so go. Please continue.

VICE CHAIR GUNDA: Yeah, my bad. I forgot to mention that. So, yes, I am by myself in the hotel room.

But I just wanted to just amend the conversation that I was able to have with the petitioners, led by Roger, on really thinking through how best to organize this.

So as we move forward in this decision, which I am completely supportive of, you know, and would consider, I would imagine all of our Commission members would be supportive of this without a question, I just wanted to raise a couple of pieces for thinking this through.

One, the CEC's role in energy planning. The CEC has this opportunity to be a neutral venue for ideating on ideas, on different things. We have done this incredibly well on land use in the 2015-2016 timeframe. Land use was not a part of our planning processes, which is standard today, but it started off more of an ideation on understanding what are the different ways to include that in planning.

We also want to recognize as we do that, it's an iterative process, it takes time. And it is only successful if we as a state agency bring and work well with all of our other state agencies and harmonize the efforts together and I do not want to lose that spirit here.

I want to recognize that the success of CEC in doing this work completely rests on our ability to convene a process that brings all the stakeholders, including our state agencies, in harmonizing the various efforts and using our unique ability of being a neutral venue forward this conversation.

I also want to recognize that some of the asks of

the petition was to make sure that we include, you know, the results of this effort into the SB 100. I do not want to set false expectations and fail. The SB 100 timeframe is pretty well laid out. I would not foreclose that we are not able to benefit from this proceeding, but I think we might have to be creative in thinking through how to think about NEBs in the conversation, just the 2025 SB 100 report.

We have discussed, with a few petitioners, the ideas of the mix of medicinal (phonetic) sensitivities, potentially developing clarity on some of the scenarios we are considering and making sure that becomes a part of the SAP 100 process.

Again, I do not want to foreclose any of the ideas to move forward from here. But I also want to be realistic in our expectation setting that we don't set expectations and make people unhappy or just fail people and continue to fail people.

The one other element I want to really raise as we think this through is the importance of the members, the petitioners, to really have a liaison that works with our planning team. The next conversation, along with SB 100 or forecasting and many of their modeling things that we do, are pretty complex. And it would be most beneficial if we have the opportunity of the petitioners to be actually a

part of that process and really follow the different elements of the modeling work.

And one of the things that we've discussed with the petitioners is maybe there is an entity that the petitioners feel more comfortable, more confident, more trusting of and, you know, that entity becomes really a part of our staff work and really tracks the work to make sure that they truly understand all the work as they provide feedback and improve on the existing work.

So with all that in the background, I really want to commend our staff again, really want to thank the petitioners for pushing the state agencies to continue to work on these important elements. I'm absolutely supportive of this work. And, you know, thank you for the opportunity, I'm speaking directly to the petitioner, for meeting with me and working with our staff to come up with a creative path here.

I do want to, again, reemphasize that the success of any of the work we do at the CEC is only as good as our ability to foster trust and the ability to move all the state agencies, their work harmonizing, and the requests we get from everybody in a cohesive togetherness forward.

So as the Commission deliberates on voting on this, I would also request Commissioner Gallardo if she would be willing to BK with me on this particular area.

So with that, I would really ask you, Chair, and also just thank you for your unwavering support, Commissioner Monahan's support, Commissioner Gallardo's support, as well as Commissioner McAllister's support. I feel blessed to have the Commission colleagues we have here who immensely care about this. And so as I seek your vote on this, I would request that we also empower Commissioner Gallardo to be a part of this work.

CHAIR HOCHSCHILD: Well, thank you so much, Vice Chair. And I just want to recognize it's 12 and a half hours ahead in India where you are now and you're higher functioning after midnight in India than we are here in the middle of the day. Thank you so much for all your hard work.

And, you know, for the stakeholders that have been working with the Vice Chair on this issue, I just want to emphasize how much is on his plate. Because in addition to issues like this, he's dealing with grid reliability and some of the price gouging issues associated with the petroleum market and so much else around SB 100. And we're just incredibly, incredibly grateful for all of his contributions and hard work on this issue.

With that, I'd open it up to Commission discussion, starting with Commissioner Gallardo.

COMMISSIONER GALLARDO: Thank you so much.

So Vice Chair Gunda, I also want to elevate your leadership and appreciate you asking me to be you're Associate Commissioner on this potential proceeding. And by BK, you mean Bagley-Keene, and that's, if the public isn't aware, just a way for us to ensure that two Commissioners can work together on a proceeding without violating any laws. So I would be honored to join you on this proceeding if it is voted -- if it is approved, excuse me.

And I also want to highlight that we had about 13 folks who commented today. So really value the time you took to do that because I know we know time is precious. And the 16 organizations also who were able to sign onto this petition and also work with our staff to engage and collaborate, I really appreciate that because you made an ask. It could have been a quick and blunt response we had, but instead there was this engagement done to get to a really thoughtful solution, even though it's different than what was originally asked, I think it landed in a better place.

So again, I'm really excited about that and, again, grateful for the folks who spent their time with us today to comment.

And I also wanted to emphasize to Bob Cippola, who shared his personal experience. I'm not sure if he's

still in the room today, but also that was a traumatic catastrophic experience he went through and turned it into something very positive and was willing to share that today, so I also appreciate that.

I'll leave it at that.

CHAIR HOCHSCHILD: Thank you.

Commissioner Monahan?

COMMISSIONER MONAHAN: Well, just very quickly, I want to thank Roger Lin for his leadership on this issue and his leadership generally with the Disadvantaged Communities Advisory Group. He's really been an instrumental leader and partner in this, so just thank him for bringing this forward.

And for all the folks that have come here today, either virtually or in person to provide input, it was clearly very heartfelt.

And I want to thank and acknowledge Vice Chair Gunda for his leadership here, too, and the creative solution. We don't want to slow down SB 100. We want to make sure that we integrate the, the learnings from this process into SB 100 but not slow it down. And I actually think this will allow for a richer discussion.

It is from my experience in the fuels and transportation division, we've been working on a community benefits work for a while now and it's actually, you know,

to really think through how to calculate a community benefit, how to estimate what it is, and how to ensure that we have some kind of record of that. It takes a lot of work and time and stakeholder input. So I think this process actually will allow for a deeper, richer conversation around non-energy benefits and impacts.

So I look forward to supporting this.

CHAIR HOCHSCHILD: Great.

With that, I would welcome a motion from Vice Chair Gunda on item five.

MS. DECARLO: Oh, really quickly. Sorry, apologies. We do not have -- the order doesn't currently have Commissioner Gallardo as Associate Member. So I would just suggest including in your motion the addition of Commissioner Gallardo in the order instituting information.

CHAIR HOCHSCHILD: Oh, thank you for clarifying.

So, Vice Chair, if you could include Commissioner Gallardo as your Bagley-Keene partner as part of the motion, that'd be great.

VICE CHAIR GUNDA: Yeah, thank you, Chair. I think with a deep sense of humility, and both an honor kind of and with the steps of courage, I'm going to, you know, ask for us to move the motion on five, including adding Commissioner Gallardo as the Bagley-Keene on this.

CHAIR HOCHSCHILD: Thank you.

Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor, say aye.

Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item five passes four to zero.

What we're going to do at this point, I'm sorry, Jim and team from LBNL, but we're going to take up item six right after. We have a closed session on item 28 that we're going to adjourn for.

We will come back. We have a long agenda. I'd like to reconvene at 12:45 and we'll take up item six. Thank you.

(The Commission recessed into closed session from 11:54 a.m. until 12:55 p.m.)

CHAIR HOCHSCHILD: Thank you and welcome back, everybody. We will continue. Closed session is completed, no actions were taken, and we will move on to item six. I do want to apologize, we had to end the session, got restarted, so my apologies for that. But we're back on,

and I wanted to move now to item six, which is an information item, Lawrence Berkeley National Laboratory presentation on the lithium resource in California.

And welcome Chuck Gentry and Patrick Jobson from LBNL to present. Yeah, a button there. Do you have a button? Is that mic on? Pop it.

MR. GENTRY: Is it on? Yeah, it's on.

CHAIR HOCHSCHILD: It's on now. There you go. Thank you.

MR. GENTRY: Good morning, Chair and Commissioners. My name is Chuck Gentry and I work in the Energy Research and Development Division.

Let's go to the slides. All right, next slide.

The Energy Commission has invested over $16 million in grant funding into lithium recovery technologies and geothermal projects in the Salton Sea region. The Commission continues to support Lithium Valley with additional grant funding. There are currently two active funding opportunities.

Next slide.

The $23 million EPIC solicitation was recently released with the purpose of reducing costs associated with corrosion and scaling and advancing technologies to improve the process and profitability of mineral recovery from Salton Sea geothermal brine. Applications are due April

15th. Next slide.

The Geothermal Grant and Loan Program released a solicitation to fund projects focused on geothermal energy and lithium recovery from geothermal grind. This will be a two-phase solicitation. Phase 1 is for technical assistance to develop the full application. Phase 2 has $4.5 million available for the full projects. The deadline for phase two will be in the fourth quarter of 2024.

Next slide.

Now I'd like to turn the time over to Patrick Dobson from LBNL to provide us with an overview of a project recently completed dealing with the characterizing the geothermal lithium resource in the Salton Sea. And although the Energy Commission did not fund this project, Patrick has been generous enough to come here and provide results for our information.

MR. DOBSON: Thanks, Chuck, and good afternoon, Chair, Vice Chair, and Commissioners. Thanks very much for the invitation to share a brief summary of our team's research results with you.

As Chuck mentioned, our study focused on characterizing the lithium resource associated with the brines from the Salton Sea geothermal field. Our team consists of scientists and engineers from Berkeley Lab, from UC Riverside, UC Davis, MIT, the University of

Auckland, Yale University, and Geologica, and our project was funded by the DOE's Geothermal Technologies Office.

Next slide, please. So next slide.

So just to give you a quick overview of our presentation, I'd like to give you some background for our study, describe the lithium and geothermal resource characterization work that we conducted, provide a few selected details related to the identified environmental impacts, and talk about some of our community engagement efforts. I'll then try and answer any questions that you might have at the end of the presentation.

Next slide, please.

We've all heard how lithium is one of several critical elements needed for the energy transition. It's a key component of batteries needed for electric vehicles, for our cell phones, and for energy storage to help address the duck curve.

This here on the slide is showing a cartoon depicting geothermal production and injection wells in a geothermal power plant. Right now, we have hot fluids that come from a production well. They're flashed to create steam, which is used to drive a turbine and generate electricity. The remaining hot brine would normally be reinjected back into the geothermal reservoir. If the brine contains valuable components, such as lithium, these

could be directly recovered from the brine before it's reinjected back underground. This is the basic concept for extracting lithium from geothermal brines.

It is important to note that the lithium-bearing geothermal brines are coming from a reservoir deep underground, and it is not connected to the Salton Sea itself.

Next slide, please.

So the Imperial Valley is now being called Lithium Valley due to the high concentrations of lithium in the geothermal brines from the Salton Sea geothermal field. Commercial geothermal operations have been going on for about 40 years at the field, which is currently generating about 400 megawatts electricity.

While the presence of lithium has been known for decades, the increased demand for lithium has spurred companies to develop projects to recover the lithium from the geothermal brine. This slide gives you an update of where these activities are for the three main companies involved in developing commercial geothermal lithium recovery operations.

Berkshire Hathaway Energy Renewables, also known as CalEnergy, currently operates 10 of the 11 geothermal power plants at the Salton Sea geothermal field. And they've built a pilot-scale lithium chloride recovery

facility that began operations in 2022, which was partly funded by the California Energy Commission. BHER is planning to construct another pilot facility to convert the lithium chloride to lithium carbonate.

Energy Source Minerals, whose facilities are located at the John Featherstone, or Hudson Ranch, Power Plant has completed their pilot studies and plan to break ground on constructing a commercial-scale lithium recovery facility that would produce 19,000 tons of lithium hydroxide monohydrate every year.

Controlled Thermal Resources held their groundbreaking ceremonies on January 26th of this year for a 50-megawatt power plant and lithium recovery facility that is designed to produce 25,000 tons of lithium hydroxide monohydrate every year as well.

It is important to note that while direct lithium extraction technologies have been tested at the lab scale, they have not yet been proven at a commercial scale on these challenging hot and salty geothermal brines.

Next slide, please.

So our DOE-funded study focused on addressing these following research questions. How much lithium is present? Where does it come from? How much is recoverable? How long will it last? And what are the environmental impacts that potentially could occur from

recovering this lithium? And then finally, what are the priorities and concerns of local stakeholders in the community?

Our study did not look at the topics such as economic impact, the effectiveness of these different lithium recovery technologies, the issues of job creation and training and public health. Our study was limited to the Salton Sea geothermal field, but there is evidence that lithium rich geothermal brines are present at other parts of Imperial Valley.

Next slide, please.

So we'll now take a look at our work on the characterization of the lithium and geothermal resources of the Salton Sea geothermal field.

Next slide, please.

So how much lithium is present? We first addressed the question by determining the size of the geothermal reservoir, i.e., its aerial extent and its thickness, how much brine is contained in the reservoir, the pore space of the reservoir itself, and then to try and evaluate how much lithium is contained in the brine. What is the concentration of lithium in these geothermal brines?

We looked at three different cases using numerous published reports supplemented by data available from the California Geologic Energy Management Division here at

CalGEM. The first scenario was for the proven geothermal resource, and that's this area outlined on the right by the white dashed line, which is where we have extensive evidence from geothermal wells that there is a geothermal resource containing lithium present at that site. For this case, which corresponds to the footprint, as I mentioned by the white line, we came up with an estimate of 0.76 million tons of lithium, which is equivalent to 85 million EV batteries.

The second case is for the probable extent of the geothermal resource at the Salton Sea area using available geologic and geophysical data to estimate the full size of the reservoir, which corresponds to the area outlined in that red line. And for this case, the reservoir contained 3.4 million tons of lithium, equivalent to about 380 million EV batteries.

If the portion of the reservoir that lies below the surface of the Salton Sea is excluded from the probable case, we come up with the intermediate or what we call the accessible reservoir, and that would have a resource of 2.6 million tons of lithium.

Note that these estimates represent the lithium in place in the subsurface brines, and that the amount of lithium that would be commercially recoverable would be less than that value.

Next slide, please.

We can also look at the amount of lithium that's currently being produced and estimate how much lithium it contains, how much of the brine in that lithium is present. The present-day brine flow contains about 21 and a half thousand tons of lithium, which is equivalent to 114,000 tons of lithium carbonate equivalent. This lithium is currently being reinjected with the brine back into the geothermal reservoir.

So developers have announced plans to double the current geothermal output of the Salton Sea geothermal field from its current size of 400 megawatts to 800 megawatts. And that would result in the doubling of the lithium being brought to the surface. The global demand for lithium in 2024 is expected about 190,000 tons of lithium. Thus, even just recovering the lithium contained in the current brines being produced would account for more than ten percent of the world's current lithium demand, and that's the graph on the right-hand side.

Note that the demand for lithium will continue to grow as the transportation sector becomes electrified and that current lithium supplies are projected to not be able to meet this demand. Thus, the geothermal lithium from the Salton Sea geothermal field could play a very important role in addressing this issue.

Next slide, please.

It's important to note that the supply of lithium from the Salton Sea geothermal reservoir is not inexhaustible. Members of our research team from the University of Auckland in New Zealand have constructed a numerical model of the geothermal reservoir to predict the decline of lithium production from the geothermal brines over time as lithium-poor brine is reinjected back into the reservoir, serving to dilute it.

The figure on the right shows the simulated results of lithium production over time for three cases, one with the existing production injection well configuration, that's the lower solid line in that plot, and two cases where injection wells are located further away from the production wells. The initial modeling work illustrates that having reinjection occur further away delays the decline of lithium concentration in the produced brines. Thus, field operators will need to factor this into how both geothermal and lithium resources can be managed in a most sustainable fashion.

Next slide, please.

So I'm going to move on to potential environmental impacts associated with lithium recovery from geothermal brines.

Next slide, please.

So our team evaluated a wide range of potential impacts which are described in great detail in our report. We used a number of publicly accessible data sources from county, state, and federal government agencies for this review. We noted that current geothermal operations utilize a range of chemicals to manage the geothermal brines and that significant amounts of acids and bases would likely be needed for the lithium recovery process.

Geothermal operations at the Salton Sea geothermal field currently generate about 84,000 tons of solid waste per year. These wastes are tested onsite before being sent either to non-hazardous or hazardous waste landfills for disposal. We anticipate that additional pretreatment of the geothermal brines will be needed prior to lift and recovery, which will generate additional solid wastes. It may be possible to put some of these materials to positive use, which would provide additional revenue and reduce the need for additional landfill capacity.

We also looked at air emissions associated with the existing geothermal facilities and saw that the power plants have relatively low emissions of particulate matter, hydrogen sulfide, ammonia, and benzene compared with the overall emissions observed in Imperial County. The non-condensable gases present in geothermal mines also contain

carbon dioxide, which is released to the atmosphere. These emissions are much lower than those associated with comparable amounts of fossil fuel power generation.

One of the critical impacts that we identified involves the use of water for both geothermal operations and the planned lithium recovery facilities. All the water used in Imperial County comes from the Colorado River, and the long-term drought in the Western U.S. will likely result in lower allocations of water to the county in the future. Currently, over 95 percent of the water use in Imperial County is for irrigation, but the fraction allocated by the Imperial Irrigation District for geothermal and lithium recovery operations is expected to grow, which would reduce the amount of water available for agriculture.

Finally, our team did also an extensive evaluation of the impact of geothermal operations on seismicity in and around the Salton Sea geothermal field. This region is tectonically active, that is to say, it has lots of natural earthquakes, and one concern is that increased geothermal development spurred on by interest in lithium and recovery could lead to more seismicity. However, our initial findings do not indicate that lithium operations will have an appreciable impact on future seismicity. Our team will continue to examine these

environmental impacts as part of our ongoing research efforts.

Next slide, please.

So just taking a closer look at the water demand for both geothermal and lithium recovery operations, on the left we list the needs for water for geothermal power operations. The main uses for geothermal power plants is for the cooling towers and for diluting concentrated brines before they're reinjected back into the reservoir. Some of the water use currently is met by steam condensate.

We anticipate that the main uses of water for the direct lithium extraction process will be to help remove the lithium from the sorbent material and to clean the sorbent once the lithium is on there. The recycling efforts could help lower the amount of water needed for these operations.

Next slide.

And then finally, we want to switch to our community engagement efforts.

Next slide.

Our community engagement was intended to help convey the findings of our study to frontline communities and other stakeholders to help them make informed decisions and to receive input from the community on what their concerns and questions are regarding geothermal lithium.

In response to these queries, we developed a document with frequently asked questions and answers, which is posted on our Berkeley Lab website, and we created a story map that presents our research in a more accessible manner. And we've held a series of outreach events with community stakeholders. We plan to continue our community engagement activities and we'll be participating in the Lithium Valley Symposium that CEC will be hosting later this month down in Imperial Valley College.

Next slide, please.

So some of the recommendations from the community include an analysis of the impact of the proposed projects on public health, this is outside the area of our expertise but should be addressed by someone, and should also expand environmental monitoring in the area. It would be helpful to have a website where residents could obtain updates on the projects and be able to access relevant information.

Going forward, our team plans to continue interacting with local community organizations and support their outreach efforts.

Next slide.

So to wrap up, the geothermal brines associated with the Salton Sea geothermal field represent a significant lithium resource containing up to 3.4 million tons of lithium, equivalent to 18 million tons of lithium

carbonate equivalent. Our initial environmental assessment didn't raise any red flags, but ongoing monitoring and a baseline assessment of conditions near the development area is needed. Future projects should consider water availability and landfill capacity.

It is important to empower the local community with information so that people can make informed decisions as projects are undergoing review by local and state agencies. Our future work will build upon this phase of the project, and we will have continued community engagement.

And then the final slide here.

I just want to thank the U.S. Department of Energy for their support of this project, and also thanks to all the different people and the different stakeholders who have supported and provided our team with feedback and input.

And then the final slide.

Just if you have any questions, I'm happy to answer them. Note, the copy of our full report and the story map that we've created can be obtained by going to these links provided at the bottom of the slide.

Thanks very much.

CHAIR HOCHSCHILD: Well, thank you so much. That was terrific. I really appreciate the work and you coming

in.

Let me begin by going to Commissioner Gallardo.

COMMISSIONER GALLARDO: Thank you, Chair.

Wonderful presentation. I was really excited to see the study come through. And I'm glad that you are also considering presenting at the Lithium Valley Symposium we're having on March 29th out in the Imperial area. We actually had a request from the community to include the study, so I think the community is grateful for the information that came through the study, as am I.

And I was just curious if, you know, the questions that you were answering in this study, were those questions that the Department of Energy asked you to look into, or how did those, you know, the scope of your study come about?

MR. GENTRY: So the origin of our study came about when we were asked to do a retrospective analysis of DOE-funded projects looking at mineral recovery from geothermal brines. And in doing that analysis, we noticed that, you know, there's been a lot of focus on the Salton Sea geothermal resource as a source of these critical materials, but there hadn't been a very comprehensive evaluation of what that resource really was. And so we proposed to DOE that we do a characterization of the resource.

In talking with DOE, our study expanded its scope to include looking at the environmental impacts. And then when we had a visit from the Secretary of Energy to our lab and presented her the project, she said, "We really need to make sure that there's a community outreach effort."

And so our study sort of expanded based on those additional inputs. And so we've really been fortunate to be able to interact with the community. That's not normally -- as a scientist we focus on doing the science. I think that's really useful to have a community component to this type of research effort.

COMMISSIONER GALLARDO: Absolutely. I agree on that. I have a couple more questions if that's okay.

One of your key takeaways mentioned doing a baseline assessment or that a baseline assessment is needed. Could you talk a little bit more about what that would look like?

MR. GENTRY: So I think in talking to people like Luis Olmedo from the Comité Civico del Valle and those different groups, they want to be able to understand how these developments might impact their community. And understanding where we are now allows you to determine whether or not these new activities have changed or impacted for the better or for the worse the local, you know, community. And so having that baseline type of

study, it's not something that we're in our current works, but we think that somebody ought to be doing this.

And so the other thing is having more extensive monitoring systems that are located near where these different types of plants and facilities are going to be located will also be important to allay community fears about what's really happening at these facilities. They see smoke is showing up and really it's just water vapor --

COMMISSIONER GALLARDO: Right.

MR. GENTRY: -- but they don't know that. And so that's really important to provide a way of determining what's being emitted from these different facilities.

COMMISSIONER GALLARDO: Okay. And then one more question I have for you. If you were able to do a follow-up study, what would you focus on?

MR. GENTRY: So we are doing a follow-up study.

COMMISSIONER GALLARDO: Okay.

MR. GENTRY: And so some of our different activities are as follows.

One is we're doing a more detailed reservoir model. Some of the results were just presented at the Stanford Geothermal Workshop back in last month.

COMMISSIONER GALLARDO: Oh.

MR. GENTRY: And the idea is looking at the sensitivity of where you do reinjection of the lithium-poor

brines and how that impacts the sustainability of the resource.

And what that's really pointing out is we're going to have multiple operators at the facility. And so it's going to be important to see what governmental group will help regulate and make sure that the impacts of what's happening in one company's lease block is not adversely affecting another company's area so that the resources is monitored and managed in a more sustainable manner. In the past, we've only been worrying about energy in terms of thermal energy that we're recovering from the resource. Now we're going to be looking at two different components. So the lithium component and the energy component.

And so it's going to be important that there is some sort of regulatory body that oversees how the resource is managed in an appropriate fashion.

COMMISSIONER GALLARDO: I agree. That one's important.

MR. GENTRY: So another thing we're going to be looking at is following up on the water.

And then the third thing is we're working, I just got on a call this morning, with the US Geological Survey. They're doing a project called GeoFlight, which is looking at evaluating the mineral and geothermal resources for the Imperial Valley area. And this study, we're collaborating

with them on that, looking at other potential lithium resources within Imperial Valley besides what's underlying within the Salton Sea geothermal field itself.

MR. GENTRY: That's excellent. Thank you.

And just so you know, I think the study was successful as well because I keep hearing the numbers quoted --

MR. GENTRY: Yeah.

COMMISSIONER GALLARDO: -- from the study, so it was really nice to have that. But again, thank you so much. I really appreciate it.

MR. GENTRY: Sure. Thanks for your questions.

CHAIR HOCHSCHILD: So a couple of questions for you.

One is, can you locate for us where Lithium Valley sort of stacks up versus other lithium reserves around the world? Is it the largest brine reserve in the world? And how big is it relative to the resources in Australia, China, Chile, Argentina?

MR. GENTRY: So as I mentioned, just if we could even tap into what are the brines that are being currently produced today from the existing wells, which is an underdeveloped field, would constitute ten percent of the world's annual consumption of lithium, which is pretty remarkable.

It's a world-class resource, so it's probably the world's largest geothermal brine resource. It's comparable to some of the biggest Salar resources in South America. There are other big resources here in the U.S. that are currently being evaluated up in northwestern Nevada, which is a different type of resource. It's a lithium clay resource associated with the McDermitt Caldera. And then there's another fairly significant lithium resource in southern Arkansas associated with oilfield brines, and so it's from a formation called the Smackover Formation.

So we're working together with the USGS to sort of do an assessment of the lithium resources of all different types within the United States. And so this is going to be part of that effort is sort of how does this fit into the overall resource base for lithium and other critical materials in the U.S.?

CHAIR HOCHSCHILD: Got it. And then, you know, it's called lithium value, but of course there's also zinc and manganese and so forth.

MR. GENTRY: Yeah, so we're --

CHAIR HOCHSCHILD: Did you look at the other resources and how rich are those compared to other reserves?

MR. GENTRY: So part of our follow-up set, we have a postdoc at UC Riverside. And when she used her

analytical equipment to analyze, we're looking not only at the brines, we're looking at the host rocks as well, so she'd be looking at the mineral phases in the geothermal reservoir, when she zaps these rocks with a laser, it basically vaporizes the rock and she can analyze basically almost all the elements of the elemental table. So she's been focusing on lithium for the first part of the study.

Now she's going to turn her attention to other critical materials and basically get an idea of what the distribution of those elements are within the different mineral phases and the different parts of the reservoir. We're also looking at the brines themselves and seeing what sort of resource potential they have.

In talking to the companies, they're also looking at, you know, following up, as economics determine and the technology determines, the feasibility of extracting zinc and manganese and other critical materials from these same brines.

CHAIR HOCHSCHILD: Great.

COMMISSIONER GALLARDO: To clarify real quick, who did you say is looking into that? Is that --

MR. GENTRY: UC Riverside.

COMMISSIONER GALLARDO: Oh, UC Riverside.

MR. GENTRY: They're one of our research partners.

COMMISSIONER GALLARDO: Thank you so much.

Sorry, Commissioner Monahan. Go ahead.

COMMISSIONER MONAHAN: This is a fascinating study.

Just to follow up to the Chair's question about sort of comparing this resource in the Salton Sea to other parts, particularly in the United States, where we're trying new extraction processes for lithium that are less environmentally invasive, I would say, than what we currently have in terms of lithium extraction. And I'm curious about your sense of the feasibility of the extraction of lithium from the Salton Sea region compared to what you're seeing in other parts of the country.

MR. GENTRY: So we know that there's sort of the tried and true technologies of, like, you mine hard rock pegmatites. There's just a project in North Carolina that's being started up for old pegmatite mines for mining lithium. That's something that people know how to do. But as you mentioned, there's a lot of environmental impacts of digging up a mountain and using lots of chemicals and lose lots of energy to crush the rocks and process the minerals.

The beauty of geothermal lithium is it's the lithium is already in the solution. The challenge is extracting the lithium at a commercial scale, and that's something that's still yet to be demonstrated. That's

outside the scope of our study and my expertise as a geologist, but we're really looking forward to seeing how these processes are going to move forward. And we think there's -- it's not like it's only being done in the U.S. There's a lot of effort in the Rheingold (phonetic) (indiscernible) in Germany and France to also tap into geothermal lithium using a direct lithium extraction process. And a number of companies have sprung up. So there's a lot of new tech companies are focusing their efforts on improving the ability of extracting it at a commercial scale.

We're producing -- the current well production rate is on the order of like 50,000 gallons a minute, so you have to be able to process that volume of fluid that quickly. And that's the biggest challenge that I see going on right now is we can do it at a bench scale, the question is, can we do it at this big scale, and is it going to compete with the other types of processes?

In terms of the other question you asked, in terms of the other types of technologies, we're looking at impacts such as water use in terms of land use, and in terms of the amount of energy that's needed to do this, and the amount of chemicals that are needed for these different processes.

And so these sort of lifecycle analysis processes

have been done, and this is one of the least impactful ways of getting lithium from different resources around the world. And so I think that's a really important component to take into consideration. It's not just, is it there, but can you get it out without creating more harm than you're creating by using renewable energy sources? I think this is a really important component of this product.

CHAIR HOCHSCHILD: Yeah.

COMMISSIONER MONAHAN: Thank you.

CHAIR HOCHSCHILD: So my favorite statistic about Lithium Valley is that to produce 20,000 tons of lithium, if you do it from evaporation ponds in South America, you impact 30,000 acres, hard rock mining, 3,000 acres, Lithium Valley, 30 acres, so a very small footprint. Of course, it's all powered by geothermals.

We would love to have you back. This is a key priority for us at the Energy Commission. Commissioner Gallardo has been leading us incredibly effectively, so effectively, they turned the lights off the other night, heard your name.

But anyway, we want to thank you and look forward to having you back. Thank you so much.

MR. GENTRY: For sure.

CHAIR HOCHSCHILD: All right, we will turn now -- actually, what I'd like to do, if we could, I have a tribal

consultation I have to do at 2:00. And if we could just knock through a few of the ones that are really fast that we need to -- well, item 15 is against you. Okay. Okay, so why don't we do that?

Sorry, let's then turn to item 15, which is updated battery price forecast to improve economic benefits of heavy-duty vehicle electrification. Welcome Chris Bush.

Chris, good to see you again.

MR. BUSCH: Pleasure to be here, Chair. Thanks for the invitation. I'm Chris Busch, Director of Transportation and Senior Economist with Energy Innovation. We're a nonpartisan climate policy think tank doing objective research based on scientific assessments to identify the most effective climate policies. And today I'm happy to come and share some good news about climate policy.

The origin of this work was a discovery several months ago of a heavy-duty vehicle battery pack forecast from Bloomberg New Energy Finance. And they're well known for their lithium battery industry expertise, but to our knowledge, this is the first time they've put out a heavy-duty vehicle forecast. And battery cost expectations are particularly important for heavy-duty vehicles because they require big batteries.

And so I guess to get to the takeaway from our

study -- and if you could advance to the next slide, please? -- the takeaway is that when you look at the most current information, we see fast acceleration towards electric heavy-duty vehicles costing less than equivalent of diesel several years earlier, or in some cases, a decade or more earlier.

So next slide, please.

I'd just like to start by walking you through, you know, what we did with the study. And the image at left shows the title page of the foundation of the work that we did. It's an International Council on Clean Transportation report. And they looked at five representative types of heavy-duty vehicles from Class 4-5 to long-haul heavy-duty Class 8. And you can see that those five types of vehicles represented for the five tables there.

And for each type of vehicle, they broke down cost into five categories. And basically, what we did is looked at how this new forecast had affected the fourth row, the battery cost. And you'll notice the last row in each table is indirect cost. They also accounted for marketing, research and development, profit margin, and those indirect costs are predicated on the direct cost. So we also then, in our study, accounted for that secondary effect on indirect cost.

Next slide, please.

So the heart of the matter is battery cost. And here we see what the ICCT had found earlier for expected future heavy-duty costs. We see these data points represent their gathering of the best studies in the literature at the time they were doing this work. And their estimate is shown with a dashed line there labeled ICCT estimate. We're going to call this the prior forecast you'll see in some slides I'm going to show after this. And I also mentioned that this was the basis for battery costs in the EPA's draft regulatory impact assessment for the phase three rules that they're doing now.

I'll mention, as well, just ICCT was a reviewer of our study and this isn't meant as a criticism of their work but more of an indication of how fast the market and technology landscape can change sometimes.

So next slide, please.

Here we see in green shade, the green shaded curve is the updated Bloomberg New Energy Finance Forecast that we identified several months ago. It was published in the 2023 Bloomberg New Energy Outlook. And then the blue curve is the ICCT future projected costs. And so you can see there's a pretty big difference between the two curves.

I'll also mention, we extended the Bloomberg New Energy Finance forecast to 2040 in order to align with

what ICCT had done. Their forecast only went out to 2035, but it's pretty easy to use the same assumptions of 17 percent learning rate to push that forward to be able to use it for -- as we did.

But just to boil it down, the difference in the battery forecast is around 31 percent lower in the updated forecast in 2030 and 39 percent lower in the 2040 -- in 2040 for the updated forecast.

And next, we're going to look at how this affects future expected heavy-duty vehicle purchase cost.

Next slide, please.

We're looking here at, for the five types of vehicles studied, again at the top, Class 4 or 5 rigid truck down to long-haul tractor truck at the bottom, we're looking at the difference between the battery electric vehicle cost and a diesel cost measured as battery electric cost minus diesel. So negative numbers here means that the diesel costs more, the battery electric costs less.

The updated forecast results are shown with the green shaded bars and the blue are the prior forecasts at ICCT's estimated forecast. What we see is that the newer numbers bring four of five cases for battery electric to a place of saving money compared to diesel versus three of the types previously.

I should mention, too, these are unsubsidized

prices for electric vehicles. This isn't counting any available consumer incentives. And again, these are 2030 results.

So the next slide is going to be formatted the same, but we're going to look at the 2040s. So moving a decade forward, battery prices are reliably falling as deployment moves forward. Economies of scale grow, and also learning by doing grow, so battery prices fall.

And next slide, please.

By 2040, in every case, we see the diesel vehicle costing less than the battery electric. Yes, sorry, that's right. I was confusing myself for a minute.

Even in the case of the long-haul tractor truck, there's a savings of around $9,000 in our estimation in 2040, and of course, the battery electrics also offer fuel savings, maintenance savings, and so the advantages are even greater from a total cost of ownership perspective. So we're just looking at purchase cost sort of the least favorable ground for battery electrics in these results.

Next slide please.

This just shows some of the underlying dynamics of what's going on in the in the example of a short-haul tractor truck. And the three bars at left are 2030 results. The three bars at right are 2040 results. The gray shaded bars are diesel trucks. And then for the two

battery electric bars, the updated value, the lower value is shown at the left, and we see that most of the savings from the new battery costs come directly in battery costs, somewhat unsurprisingly.

But there's also a small secondary effect in these indirect changes in indirect cost. And so instead of costing $14,000 more in 2030, at the prior cost of the forecast, according to the updated forecast, the battery electric is saving $21,000. And a similar amount is saved over the prior -- I'm sorry, $7,000 is saved -- at the updated forecast, the battery electric saved $7,000 compared to the diesel, and that's shown in the bottom row of the table there. And then that savings increases to $30,000 in 2040.

So let's go to the next slide, please.

Just a few concluding slides I'd like to show explain why there's reason to believe our study underestimates the economic benefits of electrification.

Next slide, please.

And this shows an industry-weighted average, sales-weighted average for the industry for battery packs, so this isn't only heavy-duty that vehicle battery packs, but it shows that prices fell 14 percent last year. And that's important because the forecast we were working with came from the middle of the year and so it didn't really

fully account for these trends. And a big reason is, is that the speed with which battery mineral prices were going to decline was not yet understood.

And go to the next slide, if you would, please?

And we see those trends in these -- in this graphic, just looking at two important battery mineral prices over time. And we see that by the end of 2023, lithium prices had dropped about 70 percent from their peaks, and cobalt prices had reverted to pre-pandemic levels. And those played out over the course of the year.

So the last slide I would like to show you next is a more recent Goldman Sachs forecast. Go to the next slide, please.

This was just, this is an open source article we just came across a couple weeks ago, published June -- I'm sorry, February 29th. And this shows Goldman expects battery prices is to fall 40 percent approximately between 2023 and 2025. And they also say, quote, "Battery prices are falling -- now falling rapidly." And Goldman's forecast sees industry average prices falling to $69.00 in 2030. The industry average in the updated forecast we were working with is $77.00. So this just shows how the BNEF forecast didn't even really fully account for some of the trends in the battery minerals market -- battery minerals market.

Next slide, please.

So that wraps it up for me. I did want to conclude with a policy point worth emphasizing that accelerated economic competitiveness does not mean that the invisible hand of the market can be trusted to manage the transition. And, of course, the CEC has for decades been a leader in recognizing this and pioneering policies to achieve clean and efficient energy use. And so, thank you for that leadership, and I look forward to your comments and questions.

CHAIR HOCHSCHILD: Thank you so much. I did have a quick question.

Just the chart you showed, we're talking about upfront cost; correct?

MR. BUSCH: Correct. Yeah.

CHAIR HOCHSCHILD: When you look at the cost to operate, the reduced maintenance costs and so on, you get, you know, just a cost of ownership. I imagine the delta between electric and diesel would be even wider; is that correct?

MR. BUSCH: Oh, definitely, most definitely.

CHAIR HOCHSCHILD: Yeah.

MR. BUSCH: I mean --

CHAIR HOCHSCHILD: Do you have a chart to that effect?

MR. BUSCH: -- I know at the old battery costs that --

CHAIR HOCHSCHILD: Yeah.

MR. BUSCH: -- every, every category except for long haul was total cost of -- unsubsidized total cost of ownership, saving for electric by 2027, and 2030 for long haul. So that's -- so this would move those numbers significantly forward. So we're talking about including consumer incentives, total cost of ownership, reaching parity in the next few years is my impressionistic interpretation, but we are going to move on and someone needs to calculate those in the specific now.

CHAIR HOCHSCHILD: Yeah, that'd be super helpful.

All right, let's go to Commissioner Monahan.

COMMISSIONER MONAHAN: Thanks, Chris. That was a great presentation, great study. And also just affirms, I think, what we're doing in California in terms of, really, we want to save truckers money while we clean the air. And so we need to get to this point where -- I mean, because truckers often look at like a three-year payback, the TCO doesn't work for them as well. And financing doesn't work for them as well.

I'm curious, and I feel like I should know this, but I do not, does the dollars per kilowatt hour or a truck battery, is it different than light-duty or are they the

same? Is that like the cost of --

MR. BUSCH: Well, the cost is higher.

COMMISSIONER MONAHAN: -- is the battery cost?

MR. BUSCH: So, I think in 2020, ICCT was estimating around $250 per kilowatt hour versus around $150 for light-duty.

COMMISSIONER MONAHAN: Ah, so it is different, so because of the durability and the duty cycle, they just cost a lot more to produce?

MR. BUSCH: Also, just earlier deployment, fewer economies of scale in the manufacturing process, less opportunity for learning by doing on some of the unique aspects around thermal management for bigger batteries. And also, I think just in a nascent market you get some accidental really high profit margins because it's higher -- harder for buyers to know what the right price is.

COMMISSIONER MONAHAN: Oh, that makes sense. Thank you.

CHAIR HOCHSCHILD: Any other questions?

Okay, if not, thank you so much, Chris, really appreciate it. And great work. Keep us posted. It's always great to have these kind of updates on pricing, so much I appreciate it.

Okay, so I, as I mentioned, have a tribal

consultation I have to leave for at 2:00. If we could just knock through a couple of really quick voting items, maybe the minutes, so let's do item 16.

Are there any public comments on item 16?

MS. BADIE: Thank you.

This is Mona Badie, the Public Advisor. The Commission now welcomes public comment on item 16. Those are the minutes from the February 14, 2024 24 business meeting.

If you're joining us in the room, we'll ask that you use the QR code or visit the Public Advisor table in the room. And if you're joining us by Zoom, please use the raise-hand feature on your screen or star nine if joining by phone.

I'm not seeing anyone in the queue in the room or on Zoom, so back to you, Chair.

CHAIR HOCHSCHILD: Okay, is there a motion on item 16 from Commissioner Monahan?

COMMISSIONER MONAHAN: I move to approve item 16.

CHAIR HOCHSCHILD: Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: I vote aye as well. Item 16 passes unanimously.

Now should we do between item nine and item eight with the 20 minutes we have? We'll be able to get through item eight, you think, in 20 minutes?

MS. BARRERA: It's possible, but I don't know. (Indiscernible.)

CHAIR HOCHSCHILD: Okay. Which is the shortest of these two, item nine? Okay. Then we'll turn to item nine now.

Welcome Elizabeth Varkey to present.

MS. VARKEY: Hello Chair and Commissioner. My name is Elizabeth Varkey with the Fuels and Transportation Division. Today, staff is seeking approval for the County of Los Angeles project that was proposed for funding under the Convenient, High-Visibility, Low-Cost Level 2 Charging solicitation, otherwise known as CHill-2.

Next slide, please.

CHAIR HOCHSCHILD: So sorry. Hold the mic a little bit closer to you.

MS. VARKEY: Yeah. The proposed project will benefit Californians --

CHAIR HOCHSCHILD: Yeah.

MS. VARKEY: Okay. The proposed project will benefit Californians by providing increased access to reliable Level 2 charging by installing a large amount of charging ports in a small area and maintaining at least a 97 percent charger uptime. It will improve public awareness and confidence in Level 2 charging assets through high-density, high-visibility installations.

The proposed project will also reduce greenhouse gas emissions and criteria air pollutants, providing air quality benefits to local communities in the vicinity of the project area.

Next slide, please.

Before I present this project, I would like to provide a brief overview of the CHiLL-2 solicitation. GFO-22-610, otherwise known as CHiLL-2, was released on March 23, 2023. Staff proposed five projects with a total funding of around $25.8 million. The focus of the solicitation is to improve public awareness and confidence in Level 2 charging assets by providing grant funding for high-density, high-visibility Level 2 charge installations.

Applicants were asked to identify a 1.5 mile radius of the project area central point in which all charges would be installed. Proposed projects must also install at least 50 percent of the project's charges in disadvantaged or low-income communities.

The project that I will be presenting today accounts for $6 million out of the total $25.8 million proposed for awards under the CHiLL-2 solicitation. Two projects were presented during the business meeting on February 14, 2024, and the remaining two seeking funding through the CHiLL-2 solicitation will be presented in upcoming business meetings.

Next slide, please.

The proposed agreement is with the County of Los Angeles. County of Los Angeles is requesting $6 million and is contributing $2 million in match funds to install at least 300 Level 2 charging ports distributed across five different sites. The project area is focused on serving disadvantaged communities with particular emphasis on the Ramona Gardens public housing development in the Boyle Heights neighborhood of East Los Angeles.

CHiLL-2 defines priority communities for the California Air Resources Board, California Climate Investments Priority Populations 2022 map. One hundred percent of the project sites, as shown in lavender on the map, are in disadvantaged and low-income communities.

The charging ports will not require any site upgrades, decreasing the overall cost of the project, making charges affordable, and accelerating the deployment timeline to maximize the benefits to users.

The 300 L2 charging ports include features like advanced load management, dynamic response to real-time signals, user data analysis, and driver-facing charging session management. This deployment will reinforce grid reliability, further resiliency, and advance key objectives towards achieving greater sustainability within the region and state.

Public chargers will be installed in a variety of site types like parking lots, covered parking structures and curbside parking along both commercial streets and your local parks. Curbside charges will be integrated into existing LED lamp poles and all sites including the curbside locations are free parking.

Next slide please.

Staff's recommendation is to adopt staff's determination that these actions are exempt from CEQA and approve agreement ARV-23-006.

On the line, we have Alex Mena from County of Los Angeles to answer any questions.

Thank you for your consideration. This concludes my presentation and I'm happy to answer any questions.

CHAIR HOCHSCHILD: Great. Thank you so much.

Let's go to public comment on item nine.

MS. BADIE: Good afternoon. The Commission now welcomes public comment on item nine.

If you're joining us in the room, we're asking folks to use the QR code or visit the Public Advisor table in the back of the room. And if you're joining us on Zoom, you'll use the raise-hand feature on your screen or star nine if you're joining us by phone. And I'm just giving that a moment to refresh the cues. Not seeing any hands for item nine.

Back to you, Chair.

CHAIR HOCHSCHILD: Okay, we'll go to Commissioner discussion, starting with Commissioner Monahan.

COMMISSIONER MONAHAN: Well, this is one of the many grants that we're doing to try to make sure that we have equitable deployment of EV chargers. And even though the requirement was a minimum of 50, this far exceeds it in terms of targeting low-income and disadvantaged communities. And I think East L.A. in particular is an area that we want to make sure there are chargers.

And we recognize that we need to make sure that people who live in apartment buildings or multifamily dwellings have convenient access. If you're working in the middle of the day and can plug in your charge, you plug in your vehicle into Level 2, that's optimal. You really run your vehicle on sunshine and you get an affordable charge.

So I think this is a great example of the projects that FTD is shepherding. And I thank you and the

team for all the work you're doing to make sure that we're really focusing on equity as we move forward with charger deployment.

CHAIR HOCHSCHILD: Well, I just want to say, I love the charger in the lamppost model. I first learned about that in Europe and I think it's brilliant. You have the structure, you have the power, and it is a great thing. I love to see it put here. So thank you for your work.

And with that, I entertain a motion on item nine from Commissioner Monahan.

COMMISSIONER MONAHAN: I move, I make a motion to move item nine.

CHAIR HOCHSCHILD: Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item nine passes three to zero.

Item ten, do you think we can do in 15 minutes? Okay. Why don't we, if that's -- let me do a couple of super good ones.

Item 18, Executive Director's Report.

Drew, do you have anything to report?

EXECUTIVE DIRECTOR BOHAN: No report. My apologies.

CHAIR HOCHSCHILD: No? No report.

Item 19, Public Advisor's Report.

MS. BADIE: No report.

CHAIR HOCHSCHILD: No report there.

And anything else from Chief Counsel? Do we have to --

MS. DECARLO: I was hoping to introduce our new attorneys.

CHAIR HOCHSCHILD: Yeah, let's do that.

MS. DECARLO: Oh, right now?

CHAIR HOCHSCHILD: Yeah.

MS. DECARLO: Okay. Who's here? All right, great. Thank you.

So we have had a slate of new attorneys and new support staff join in the last few months and so I just wanted to take this opportunity to introduce them to you all.

First from Regulatory and Advisory Unit, we have Devin Black.

Devin, do you want to stand up? Thank you.

Since joining the Commission in January, Devin

has been tasked with providing legal counsel on complex issues involving tribal land, nuclear energy and load management standards. His work has provided support to the CCO's efforts on Part 11 CALGreen, HERS, and other appliance efficiency rulemakings.

And then we have Albert Kim, also with the Regulatory and Advisory Unit. And Albert has been mainly focused on providing legal counsel for the RPS, BUILD, CalEHP, LRC, and SEL programs. He has also been providing support for CCO's work with the Energy Code and Appliance Efficiency rulemakings.

CHAIR HOCHSCHILD: Great. Welcome to you both. Fantastic.

MS. DECARLO: And then with the Transactions Unit, I don't know if Joshua Michael Sorich (phonetic) is here. Oh yeah, there he is. Joshua Sorich, who goes by his middle name, Michael, will be a co-lead on the EPIC Program. He is supporting CPUC proceedings and is currently working on the EPIC Annual Report. He's also supporting Cal EHP and ERDD solicitations.

CHAIR HOCHSCHILD: Fantastic. Welcome. Great.

MS. DECARLO: And then from the Hearing and Advisory Unit, we have Rachel Shuen. Since joining the Commission in October, Rachel has been providing legal support to the various Fuels and Transportation Division

rulemakings, helping modernize the way we handle conflicts of interest questions, and helping stand up several of the informational proceedings.

And then we have Gina Tomaselli. She's still upstairs. Gina is our newest addition to the office, having just started this past Monday. She will be providing much needed support to our petroleum work and other Energy Assessments Division work, including the AB 1373 POU capacity payment rulemaking, which you'll be hearing about shortly, and the non-energy benefits informational proceeding.

And then I also wanted to note two other attorneys who aren't present today, Alex Mayer and Brianna Ziff in the Advocacy and Compliance Unit. They're both supporting the new Opt-In Certification Program, as well as assisting with other power plant permitting and enforcement matters, appliance efficiency, and data management issues.

And then lastly, we have two additional support staff who have joined our team recently. Wendi DuBose is helping the Hearing and advisory Unit and all of our support needs, including the orders and needed for the AFC proceedings.

And then we also have Eunice Lemos-Adair who came over from the Contracts, Grants and Loans Office in January. And she's helping with our hiring and recruiting,

our court reporting and translation services, and our business meeting support.

CHAIR HOCHSCHILD: Well, welcome to you all. And thank you for bringing your talents to the Energy Commission. We're really happy to have you. And you're arriving at a great time. We've got a lot of exciting work moving.

Lisa, was there anything else from Chief Counsel's Report on your side to offer or is that --

MS. DECARLO: Nothing further. Thank you so much.

CHAIR HOCHSCHILD: Okay, why don't we try to do -- but that's a non-voting item; right? Oh, it was a voting item? That's okay.

Let's turn to item 11, which is --

COMMISSIONER MONAHAN: we're keeping everybody on their toes today.

CHAIR HOCHSCHILD: Jana, yeah, sorry.

COMMISSIONER MONAHAN: Be ready at any minute.

CHAIR HOCHSCHILD: Jana McKinny to present.

Hi Jana.

MS. MCKINNY: Hello Chair, Commissioners. My name is Jana McKinney. I'm a staff member with the Fuels and Transportation Division.

Staff is seeking your approval of an interagency

agreement with the California employment training panel to increase the number of electricians certified to install state funded electric vehicle charging equipment. The proposed interagency agreement will be funded by the Clean Transportation Program.

Next slide.

Assembly Bill 841 requires that all electric vehicle charging equipment that is funded by state agencies and installed on the customer side of the electric meter must have at least one electrician who holds Electric Vehicle Infrastructure Training Program certification on the job site. For charging ports over 25 kilowatts, 25 percent of the total electricians working on the project must be certified. I'd also like to note that some federally funded projects, such as NEVI, also require EVITP certification.

So the EV Infrastructure Training Program is a nonprofit organization that provides training and certification to C-10 licensed electricians to install the infrastructure and equipment. Certification needs to be after three years, and it costs $275. The curriculum includes training on site assessments, load calculations, the National Electric Code, job site safety, maintenance best practices, and also the installation of DC fast chargers, inductive charging, and vehicle-to-grid

applications.

There are approximately 264 contractors in California right now.

CHAIR HOCHSCHILD: And sorry, Jana, when you mentioned someone paying $275 to get re-certified, that goes to the California Employment Training Panel?

MS. MCKINNY: Yeah.

CHAIR HOCHSCHILD: Okay. Sorry.

MS. MCKINNY: So this map shows the 264 contractors in California who employ EVITP certified electricians. This map and a find-a-contractor tool is available on EVITP's website.

Next slide.

So increasing the number of certified electricians will ensure a geographic availability of certified electricians. This would protect against attrition. It would also recruit a diverse workforce that can support the charging infrastructure system that's necessary to meet California's 2030 and 2035 clean energy targets. Additional certified electricians would improve the reliability and uptime of California's charging network.

And this interagency agreement also invests in rural disadvantaged and low-income communities.

Next slide.

So the interagency agreement is with the Employment Training Panel, which is a department under the California Labor Workforce Development Agency that oversees the state's comprehensive workforce investment system. It's a $3 million agreement to train and certify a minimum of 3,000 electricians through the EV Infrastructure Training Program. Training will be delivered through subcontractors. And 50 percent of that training is going to be targeted at rural or disadvantaged communities.

The Employment Training Panel will also establish ongoing partnerships with electrical workers unions, community colleges, electrical apprenticeship programs, employers, and electric vehicle charger manufacturing companies.

Next slide.

Staff is seeking your approval for this interagency agreement, as well as adoption of staff's determination that the partnership agreement is not a project under CEQA.

And this concludes my presentation.

I have Robert Meyer, the Director of Economic Development from the Employment Training Panel here with me today. He'd like to share some additional information about the Employment Training Panel and also the program.

CHAIR HOCHSCHILD: Great. Welcome.

MR. MEYER: Good afternoon, everybody. I was prepared for the two-minute clock, so I'll try and keep it brief and appreciate everybody's time and support for the program. My name is Robert Meyer, M-E-Y-E-R. I'm the Director of Economic Development with the California Employment Training Panel.

The ETP is a business- and labor-supported state agency within the Labor and Workforce Development Agency. We provide funding to help employers to assist them in upgrading the skills of their existing and new workers, ultimately leading to competitive wages and long-term jobs and career pathways.

ETP is funded through employer contributions for its core program, not tied to the general fund of the state budget. ETP contracting capacities typically range between $90 million and $105 million annually, a healthy economy. In the most recent five fiscal years, we've also supported an additional $120 million in alternatively funded programs ranging from entrepreneurship for immigrant communities to focus programs on job creation reemerging from COVID, as well as small business support in high in-demand agency -- or industry sectors.

Through this interagency agreement, we are going to work with EVITP, a training provider, a number of our subcontracting entities, subcontracting in the IA

agreement, to provide access or training for state certified general electric contractors statewide. Our goal will be to increase the number of those certified and to prioritize the effort to increase the number of certified that reside in rural and non-urban regions, as well as disadvantaged communities in the low-income regions of California.

Additionally, these certifieds will also look at it as an opportunity to engage employers in tribal impact communities, tribal-related areas of the state that align with the ongoing efforts of the California Energy Commission, the Employment Training Panel, and LWDA.

As part of this IA, we're going to use a standard ETP pay per performance contract model to ensure that all training provided is documented and that there is a pay -- the post-employment retention period is met so that workers are working after the training is provided.

We'll also gain information on the certification, the demographic information of the employers participating in the program, and that will be reported in an ongoing fashion to the Energy Commission through quarterly reports.

We'll also be able to monitor effectively progress on the IA using, again, our standard in-place contracting system. It's a Salesforce system and it's actually quite robust.

We've engaged stakeholders. And we'd like to thank the Energy Commission for its partnership and continued work in this area to advance the skill sets of workers working in both infrastructure, but also manufacturing and electrification.

I'd like to thank Peter Cooper, Assistant Director for ETP, for his continued support of our partnership. Also, Elise Candelaria, our Climate Lead in Engagement, Deputy Director Rasool (phonetic), Charles Smith, and Jana McKinny for their support of this interagency agreement. We've been working on it for a while.

Also, I'd like to acknowledge Larry Rillera, who's now at CARB, so a trader but he's still a partner, who initiated this project many, many years. We've been a long-time participant on the Advisory Committee and champion your efforts across the economy.

Thanks.

CHAIR HOCHSCHILD: Thank you.

So any public comment?

MS. BADIE: Thank you, Chair.

Now's the time for public comment on item 11, which is the California Employment Training Panel.

If you're in the room with us, we ask that you use the QR code or visit the Public Advisor table. And if

you're online, please use the raise-hand feature on your screen or press star 9 if you're joining by phone to comment on this item. And so just giving a quick refresh.

K. Barber, I'm going to open your line. If you could please state and spell your name for the record? We're asking for comments to be two minutes or less. Kay Barber, your line is open. You'd have to unmute on your end to make your comment.

MS. BARBER: I think I'm unmuted.

MS. BADIE: We can hear you now.

MS. BARBER: Okay. Thank you. My name is Kathleen Barber, B-A-R-B-E-R. I am a retired training director for the IBEW, which is the International Brotherhood of Electrical Workers. And I have firsthand knowledge of how ETP has been used effectively for training apprentices, as well as journeymen upgrade classes. And with this program for the EVITP funding, it will help bring back in our current state certified electricians to the classroom so that they will get the additional 20 hours of training in EVITP installations.

We currently, I can say for a fact, we currently have the support of the statewide IBEW Apprenticeship Committee on reaching out to all of our training centers, which are 18 across the state, to put into effect the EVITP training, which is already being administered to our fifth-

year apprentices so that when they graduate, they have the EV ITP certification.

So I want to thank ETP for their continued efforts to increase training across all lines of employers and employees, and particularly the CEC for thinking about and implementing this joint effort.

Thank you.

MS. BADIE: Thank you.

And that was the only hand, so that concludes public comment.

Back to you, Chair.

CHAIR HOCHSCHILD: Thank you.

With that, I would open to any Commissioner discussion. And if there's not, then welcome a motion.

COMMISSIONER MONAHAN: I'll just be really fast.

I want to thank Robert for your leadership on being part of the advisory committee and Jana for your work on this. Really great to hear IBEW support for it. You know, we want to make sure that we have a lot of certified contractors since we have to ramp up from a 100,000 charges to 1 million over the next seven years. So we got a job to do, and this is part of it, so thank you.

CHAIR HOCHSCHILD: Great.

With that, I welcome a motion on item 11 from Commissioner Monahan.

COMMISSIONER MONAHAN: I move to approve item 11.

CHAIR HOCHSCHILD: Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 11 passes three to zero.

We'll turn now to item 7.

And I need to exit to do this tribal consultation. So my suggestion, Commissioner Gallardo will run the meeting, do item 7 and then 17, which are non-voting items, and then go ahead and recess. Thank you.

COMMISSIONER GALLARDO: All right, so for item seven, Kristi Villareal. Thanks.

MS. VILLAREAL: Thanks. Okay, good afternoon, Commissioner Gallardo, Commissioner Monahan. My name is Kristi Villarreal, staff in the Fuels and Transportation Division, and today I'll be presenting an overview of the 2023 Final Staff Report on Senate Bill 643. The report covers multiple topics related to hydrogen, but at its core, it is an assessment of the infrastructure

requirements to support refueling of medium- and heavy-duty fuel cell electric vehicles and off-road mobile sources in order to meet statewide goals.

The first draft of the SB 643 Staff Report was published in September 2023 for stakeholder feedback with staff presenting the results at a public workshop in October. A revised version of the report that incorporated feedback received was published and delivered to the legislature this January.

Next slide, please.

SB 643 was signed into law in 2021 and is a triennial reporting requirement for the CEC through 2030, with a total of three reports. The next one is due by December of 2026. The assessment will be an ongoing effort though by staff during non-reporting years as well. Related reports include the AB 2127 Final Staff Report, which is the biennial reporting requirement that focuses on the needs of light-duty and medium- and heavy-duty battery electric vehicles, which was presented by my colleague, Adam Davis at the last business meeting. The AB 8, which will now be the AB 126 Report with CARB, is an annual reporting requirement that assesses the status of the refueling network for light-duty fuel cell electric vehicles.

Next slide, please. Let's see. Sorry.

In September, 2020, Governor Newsom issued Executive Order N-79-20, setting the requirements listed on this slide, expanding sales and operation targets, and directly addressing the effect that medium- and heavy-duty vehicles and off-road mobile sources have on public health and the environment, especially in disadvantaged and low-income communities.

The goals set forth in the executive order have influenced policies, regulations, and investments for numerous California agencies and municipalities. These include, among others, CARB's Advanced Clean Trucks Regulation, adopted in 2021, which requires an increasing fraction of truck sales to be ZEVs through 2035 with specific targets for each vehicle class. The Advanced Clean Fleets regulation, adopted just last year in 2023, which requires fleet operators in certain segments to reach 100 percent ZEVs by 2035 or 2040, and off-road regulations as well.

Next slide please.

The inaugural SB 643 assessment presents four medium- and heavy-duty fuel cell electric vehicle infrastructure scenarios. It highlights the success of fuel cell electric buses, which have been successfully operating in transit fleets for several years now, and discusses a future demand scenario for fuel cell electric

buses. In-state clean hydrogen production, while currently almost non-existent, is discussed as our developments in hydrogen applications in the off-road/non-road sectors, which include maritime, aviation, and rail. The report also covers synergies between the sectors and looks at how clean hydrogen and could potentially support the grid.

Next slide, please.

The SB 643 assessment provided three infrastructure scenarios that used a similar approach with CEC staff using scenarios of hydrogen fuel cell electric vehicle stock to produce infrastructure scenarios from assumptions regarding station capacity and number of vehicles filled per day.

So the first one was CARB's 2022 Scoping Plan, which included scenarios of MD/HC fuel cell electric vehicle stock through 2045, so we used that vehicle stock for the first scenario.

We also had a scenario where we used ARCHES, which is a public-private partnership created to promote and oversee the design and development and deployment of hydrogen infrastructure projects in California and was awarded up to 1.2 billion dollars by the U.S. Department of Energy in October of 2023. The ARCHES scenario uses a project-specific vehicle stock, thus yielding lower infrastructure results, which I will discuss momentarily.

The Additional Achievable Transportation Electrification 3, or AATE 3, is a framework from the CEC's IEPR that uses economic and demographic inputs to determine total vehicle stock and energy demand. AATE 3 vehicle stock was used to produce that scenario.

Then finally, the fourth scenario is taken directly from the CTC's SB 671 Clean Freight Corridor Assessment, which identifies freight corridors and the infrastructure needed to support the deployment of zero-emission MD/HDs of both technology types, fuel cell electric and battery electric.

Fuel cell electric buses, while discussed and highlighted in the SB 643 report, were covered in a separate chapter and are not included in any of these infrastructure scenarios. However, they are likely to be incorporated into our modeling and future assessments.

Next slide, please.

The preliminary results from the four scenarios indicate the level of uncertainty of what infrastructure needs will be in the future. The scenarios indicate that anywhere from 1 to about 600 stations will be needed statewide by 2030, and by 2035, anywhere from 11 to over 2,000 stations would be needed.

The scoping plan and SB 671 scenarios yielded the most similar results of the four being compared. The

ARCHES scenario yielded lower results because this project is specific and not really statewide.

The AATE 3 resulted in the lowest infrastructure results and is important to note that future versions of the AATE 3 will consider inputs in addition to the price of hydrogen which produced the low infrastructure results. And we've been working closely with EAD currently and plan to in the future on that.

The heavy-load model which was developed by the CEC staff with Lawrence Berkeley National Lab for MD/HD battery electric truck charging station requirements is incorporating hydrogen to produce future scenarios for the next SB 643 assessment. Since the AB 2127 report uses heavy load for its MD/HD scenarios, this will help harmonize two reports in the future. The simulations produced by the model will determine optimal locations for hydrogen refueling infrastructure and quantify the refueling demand over the identified locations and road segments.

Next slide, please.

This slide shows completed or planned publicly-available MD/HD hydrogen refueling stations throughout California, most of which recently received public awards from agencies including the CEC, the CTC, and others. There are three completed stations in Southern California

indicated by the red dots. There are 32 refueling stations that have been awarded funding and are in various stages of development, which are represented by the blue dots.

I'd also like to note that there is an innovative modular refueling station, I guess you could say it has an address, in Ontario, which it is currently operating, too, and refueling the Nikola fuel cell electric trucks.

Let's see.

Some of the stations on the map are planned as multi-use, meaning that they will have fueling dispensers available for of both light-duty and heavy-duty FCEBs. And the CEC is developing a dashboard of MD/HD projects, both charging and hydrogen, throughout the state which will help show the anticipated future build out of stations along major transportation corridors.

Next slide, please.

Fuel cell electric buses, or FCEBs, are really a proven application of heavy-duty fuel cell electric technology, successfully demonstrated more than 13 years ago by AC Transit and integrated into California's transit agencies fleets. Over 100 FCEBs are currently operating in California with many more on order. In fact, the largest orders of fuel cell electric buses were placed last year by Santa Cruz Transit and San Mateo Transit. I don't know the numbers offhand, but they were over 100, so that's pretty

exciting.

So transit agencies, though, have different business models with hydrogen supply contracts based on predictable demand and onsite maintenance technicians. In contrast, MD/HD public refueling stations face the greater challenges inherent to unpredictable supply and demand and availability of trained technicians to maintain the stations.

Just wanted to note that Appendix B of the report includes data reported by transit agencies to CARB in 2023. And the current and potential future FSEB purchases add up to 5,678. This number may change in the future, of course, depending on many factors, including the price and availability of hydrogen.

Next slide, please.

Clean hydrogen production in California is nearly nonexistent at this time. The CEC's Clean Transportation Program has awarded $22 million to six clean hydrogen fuel projects that will increase production by nearly 40,000 kilograms per day. Four of the projects will use electrolysis, while two will produce hydrogen through biogasification.

In 2023, CEC-awarded project developer H2B2 began commercial production at its site in Fresno, which is shown on this slide here. The project is supplying clean

hydrogen to the California mobility market by using onsite solar and electrolysis. The project during its initial startup phase is shown on this slide.

The CEC's Energy Research and Development Division's $100 million Clean Hydrogen Program has and will continue to provide financial incentives to eligible in-state clean energy production projects as well.

Next slide, please.

The SB 643 assessment considered demand requirements in current and future hydrogen production. The scoping plan and SB 671 scenarios yielded an estimated annual demand of about 180 million kilograms in 2030 and over 600 million kilograms in 2035. The ARCHES scenario resulted in an annual demand of about 75 million kilograms in 2030 and 121 million kilograms in 2035. The AATE 3 scenario yielded under 50,000 kilograms in 2030 and slightly under 700,000 kilograms in 2035.

When the current CTP-funded clean hydrogen products have been completed, they will produce just over 14.5 million kilograms of hydrogen annually. That makes private investments and successful public-private partnerships even more important to reach an anticipated demand for most of these scenarios.

Next slide, please.

SB 643 also asked us to touch on off-road and

non-road applications. But currently in the United States, with the exception of fuel cell electric forklifts, most off-road/non-road applications are still in demonstrations.

The picture towards the top of the slide shows, to the left, it shows a fuel cell electric forklift. Very interestingly, at this time, over 70,000 hydrogen-powered forklifts are currently operating in the United States.

Recently, the first electrolyzer system was completed at an Amazon site in Colorado. The hydrogen, clean hydrogen produced by the one-megawatt proton exchange membrane electrolyzer can support 400 hydrogen fuel cell-powered forklifts. This model of onsite production, storage, and utilization avoids emissions generated from transporting the fuel from one location to another.

The picture on the lower right -- actually that got changed. Yeah, no, that's right. Pardon me.

On the lower right of the slide is a hydrogen fuel cell and battery-powered mining haul truck, which stands three stories tall and weighs 500 metric tons fully loaded, which is operating in South Africa, and they're developing more.

Next slide, please.

Just wanted to provide some visuals of demonstrations using hydrogen, such as for aviation, maritime, and rail applications.

On the lower left is a picture of a hydrogen-fueled plane. The upper right is a hydrogen-powered ferry that has operated in the San Francisco Bay. Also the San Bernardino County Transportation Authority will be piloting zero-emission rail technology for passenger rail service, with plans to debut North America's first battery and hydrogen-powered train this year. The zero-emission multiple-unit rail vehicle will replace one diesel multiple unit and provide service along a nine-mile rail corridor. Pardon me.

Next slide, please, and final slide.

I just wanted to provide some kind of key takeaways from this inaugural assessment.

The variance between the infrastructure scenarios demonstrates the current level of uncertainty. Fuel cell electric buses are successfully operating and have been part of California's transit agency fleets and more are on order. Off-road/non-road fuel cell electric applications are predominantly demonstrations, but developments in sectors such as aviation and rail will be closely tracked and assessed for potential future hydrogen demand scenarios. Clean hydrogen production needs to ramp up to meet anticipated demand. ARCHES projects are anticipated to help in the longer term, but in the shorter term, supply shortages and disruptions are an issue that the light-duty

sector is currently experiencing.

Thank you for your time today. And I'm happy to answer any questions and receive feedback for this in future assessments.

COMMISSIONER GALLARDO: Thank you so much, Kristi.

So this is an informational item, so we will not have public comment.

Commissioner Monahan?

COMMISSIONER MONAHAN: Yeah, well, I just want to compliment Kristi, who basically did this whole study, and I'm sure had managerial support but really just an amazing job considering, especially considering, this is the first ever. We have very few fuel cell vehicles in the medium- and heavy-duty space on the road. And so that makes this assessment particularly challenging. And we're also facing a time when hydrogen prices have more than doubled. And so there's, you know, there's just a lot of variance in what modelers are anticipating going forward.

We are seeing, as Kristi highlighted, a lot of interest in -- through our energized commercial vehicles grant program in hydrogen infrastructure. I just met with ports this week and they're all really interested in hydrogen as a port strategy, port decarbonization strategy. And together with ARCHES, like there's -- we have a lot of

reason for optimism that prices of truly clean hydrogen are going to fall, and we're going to have a bigger scale of hydrogen and to be able to use for these hard to decarbonize purposes. So I think in two years, we'll know a lot more. In probably six years, we'll know what's happening, but at this point, it's very early.

And so I think this report just highlighted that we don't have all the answers. We're trying to do the best analysis we can. There's a lot of places where there could be a good role for hydrogen to fit as long as we can get truly clean hydrogen and bring the price down.

MS. VILLAREAL: Thank you.

COMMISSIONER MONAHAN: Yeah.

COMMISSIONER GALLARDO: I too want to thank you for the great presentation, Kristi. And it does look like it was very thoughtful, very diligent. And I want to highlight that you had some really good visuals in there, which is helpful, you know, for those of us who aren't, you know, reading about that or are in that space often, so I thank you for that.

And I also wanted to thank Elizabeth, who's still here in the room on item nine, also had a great visual with the map. And Jana did too, I don't see her here, but on item 11. And so just noting that those are really helpful. So I know how much work you do, and then to also have to do

these presentations is an extra burden, however, it's very beneficial for us.

And on that note, there was a picture in there. I think it's the slide number 84, if you could go back to that, our Zoom crew in the back.

I think you mentioned something about the -- it was a mining equipment and it was three stories high.

MS. VILLAREAL: Yes.

COMMISSIONER GALLARDO: Did you mean three stories, like three stories of like of a building?

MS. VILLAREAL: Yeah.

COMMISSIONER GALLARDO: Because it doesn't look that big in the picture, but that just sounds incredible to me that we could power something like that's that big. So --

MS. VILLAREAL: Yeah. There's a battery involved, as well, so there's a battery.

COMMISSIONER GALLARDO: Ah, okay. Okay.

MS. VILLAREAL: But it's really, you know, it's a hydrogen fuel cell mining truck is how it's defined by the manufacturer. And I think it's operating well and it's providing, you know, zero emission, hopefully, depending on the source of hydrogen.

You know, mining is such a polluting kind of sector anyway, so it's really important to get that kind of

off three story high for this.

COMMISSIONER GALLARDO: That one on the right; correct?

MS. VILLAREAL: Yeah. Supposedly three-story high. Those are some big tires though. And so that is a highly polluting sector.

So, yeah, a lot going on internationally. I touched on it briefly. I would have loved to touch on it more, and we'll do that, hope to do that, in future assessments.

COMMISSIONER GALLARDO: Well, that's exciting.

And then this slide has a picture of, you know, the electric forklift, which reminded me of the visit we did, Commissioner Monahan, during the 2022 IEPR out to Oxnard to drive one of those. And they're so easy to drive, surprisingly, and fun. So anyways, I'm always just impressed with the technology, how much we're innovating and really glad that we're doing the analyses this way on that.

And then I did have one final comment. I think on the next slide, slide 85, you mentioned the maritime opportunities as well. There is a tribe called the Chemehuevi over near Needles, and they operate a ferry throughout the day, and it's, I think, it's diesel-based. And they were hoping for some opportunities to do something

clean. So just reminded me of that potential opportunity as well. And I know that, you know, tribes in general are really seeking to be leaders in clean energy, so that could be a possibility to down the road. Something to consider.

All right, I don't have any other comments or questions.

Do you?

COMMISSIONER MONAHAN: Just one quick comment, which I was hoping the vice Chair would be here considering the connection with EAD. So I just would recommend reaching out to the Vice Chair's Office and see if he wants a briefing on this.

MS. VILLAREAL: Okay. Excellent.

COMMISSIONER MONAHAN: Yeah.

MS. VILLAREAL: All right. Thank you both.

COMMISSIONER GALLARDO: Thank you so much.

All right, so let's move over to item number 17, which are the Lead Commissioner or Presiding Member reports.

Commissioner Monahan, do you have a report that you want to deliver?

COMMISSIONER MONAHAN: I wonder if we should skip this, given it's just the two of us, and then hold it for next month when we have everybody and then we could do it all. I mean --

COMMISSIONER GALLARDO: I'm feeling you.
COMMISSIONER MONAHAN: Yeah. It just seems a little silly, but --
COMMISSIONER GALLARDO: Which would mean we would take a break so that we can enable the Chair to return to proceed with the other items, which are voting items.
So let's see.
COMMISSIONER MONAHAN: All right. What time is the Chair -- is it an hour?
COMMISSIONER GALLARDO: It's a consultation. I don't know if it was still --
COMMISSIONER MONAHAN: So should we reconvene at 3:00?
COMMISSIONER GALLARDO: Okay. It looks like he's returning at 3:00, potentially.
COMMISSIONER MONAHAN: Okay.
COMMISSIONER GALLARDO: All right, so why don't we take a break now and let's say we'll return at 3:15 to stay on the safe side. Okay. All right. So we'll do that. 3:15 will be our return time.
Thank you everybody and apologies for the breaks here.
(Off the record at 2:23 p.m.)
(On the record at 3:19 p.m.)
CHAIR HOCHSCHILD: Welcome back everybody. Let

me thank Commissioner Gallardo and Commissioner Monahan.

We're going to turn now to item eight, which is Orders to do Rulemaking on AB 1373 POU Capacity Payment Implementation.

And I welcome Liz Gill.

MS. GILL: All right. Good afternoon, Chair and Commissioners. My name is Liz Gill and I'm the Branch Manager for the Reliability Analysis Branch in the Energy Assessments Division. And today we are bringing an order to open a rulemaking on Assembly Bill 1373, Publicly Owned Utility Capacity Payment Implementation.

So this rulemaking will allow the CEC to implement our AB 1373 requirements to determine whether publicly owned utilities in the CAISO balancing area are meeting their planning reserve margin requirements during the time that the Department of Water Resources triggers the Strategic reliability reserve and for the CEC to issue capacity payments as appropriate.

Next slide, please.

All right, so this will benefit Californians through supporting electric reliability during extreme events, which is essential to protecting the health and safety of Californians during episodes of, for example, extreme heat. These capacity payments will also provide an additional incentive to utilities to meet their established

planning standards and funding the reserve when leaned on.

Next slide, please.

In brief summary, the state has identified the need for contingency resources to protect electric reliability during climate-driven extreme events, such as extreme heat, wildfires, and drought. This figure illustrates how we think about the various elements driving the need for contingency resources. The standard for load serving entities and POUs is a plan to a one event in ten year loss of load expectation.

The need for contingency resources occur when one or more of several things happen. First, project delays that prevent resources from being interconnected when they're needed, the state experiences widespread, intense, and extended extreme heat, similar to what we experienced in 2020 and 2022, or the state experiences catastrophic wildfires that impact transmission capacity and to and within the state.

Next slide.

So in order to address the reliability challenges, the state is taking action across our planning and implementation processes. First, through improving our planning processes, ensuring timely and sufficient procurement, and improving processes associated with interconnection and permitting. Second, through scaling

resources, both on the demand side and the supply side. And then finally, through developing contingency resources to support reliability during extreme events. The state's approach is to deploy the Strategic Reliability Reserve, which is what today's item relates to.

Next slide, please.

So the Strategic Reliability Reserve was established in 2022 through Assembly Bill 205. There are three components of the reserve. DWR's Electric Supply Strategic Reliability Reserve Program, the CEC's Demand-Side Grid Support Program, and the CEC's Distributed Electricity Backup Assistance Program.

In 2023, Assembly Bill 1373 then established capacity payments for both CPUC jurisdictional load serving entities, and publicly owned utilities in the CAISO balancing area that lean on DWR's strategic reliability reserve, or in other words, don't procure to meet their reliability needs even within the planning standard at the same time that DWR strategic reliability reserve is triggered to serve load during an emergency event.

So 1373 requires the CPUC to establish payments for LSEs and the CEC to establish payments for POUs. The CEC will coordinate with the CPUC to ensure equitable implementation of the program.

Next slide, please.

At a high level, AB 1373 specifically requires the following. First, DWR will determine whether resources were procured for the reserve, and if they were used to meet an identified reliability need during a given month. The CEC will then determine whether POUs in the CAISO balancing area are meeting their planning reserve margin for that given month, and those that fail to meet their PRM will be subject to a capacity payment. The CEC must assess capacity payments annually and deposit those payments into the DWR's Strategic Reliability Reserve Fund. And so this rulemaking will establish regulations for assessing and collecting those capacity payments.

Next slide.

In conclusion, staff recommends that the Commission approves the order to start the rulemaking process to develop CEC regulations associated with the new capacity payment and depositing the monies into the ESSRRP fund.

And next slide.

So next steps include the pre-rulemaking process, draft proposed regulations, seeking and incorporating feedback on the proposed regulations, draft staff report, and then eventually coming back here to present proposed regulations at a future business meeting.

I'll just say that we look forward to engagement

throughout the process with the POUs, the ISO, the CPUC, and DWR, as we work through how to implement this.

Before I conclude, I'd also like to thank our CCO team that have been great support in getting this OIR ready, and Kristin Whiddifield in the Energy Assessments Division.

Thank you.

CHAIR HOCHSCHILD: Any public comment on item eight?

MS. BADIE: Thank you.

The Commission now welcomes public comment on item eight. If you're joining us in the room, we've asked folks to use the QR code or visit the Public Advisors table in the back of the room. You can also wave your hand and let me know. And if you're joining us by Zoom, please use the raise-hand feature on your screen. And if you're joining by phone, please press star nine to let us know you'd like to make a comment. Great.

We don't have anyone in the room, so I'm going to move on to Zoom.

Tony Braun, I'm going to open your line. Could you please spell your name for the record? We're also asking for comments to be two minutes or less.

MR. BRAUN: This should be far less than that. This is Tony Braun, T-O-N-Y B-R-A-U-N.

A quick question. Is it expected that an Administrative Procedure Act process is going to be followed for this? Just trying to, you know, assess the length of the proceeding and similar matters.

MS. GILL: Yes, this will follow the standard EPA process.

MR. BRAUN: Thank you, Liz. Appreciate it.

MS. BADIE: All right, does that conclude your comment, Tony?

MR. BRAUN: Yes, ma'am.

MS. BADIE: Okay. Thank you.

And that was the only comment we had, Chair. Back to you.

CHAIR HOCHSCHILD: Okay, unless there's Commissioner discussion -- yes, go ahead.

COMMISSIONER MONAHAN: Not a discussion, but just a quick question, Liz, which I'm sure you can answer. So, and maybe building off of the commenter's question, just what's the timeline to get to the finish line? And is there --

MS. GILL: As quickly as possible.

But, Lisa, do you have a better sense of (indiscernible)?

MS. DECARLO: I think it all depends on the initial engagement and how quickly we can develop

regulations, express terms that seem viable and meet everyone's expectations for the program.

MS. BADIE: Yeah. And staff believe that it should be pretty soon to approve the questions.

CHAIR HOCHSCHILD: Unless there's other discussion, I'd welcome a motion from Commissioner Monahan on item eight.

COMMISSIONER MONAHAN: I move to approve item eight.

CHAIR HOCHSCHILD: Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item eight passes three to zero.

We'll turn now to item ten, Responsive, Easy Charging Products with Dynamic Signals.

Welcome Jeffrey Lu to present.

MR. LU: Yeah. Good afternoon, Commissioners. My name is Jeffrey Lu. I'm staff in the Fuels and Transportation Division. I'm very happy to be here and I'm

excited to present item ten of today's agenda to you which includes two agreements from our recent REDWDS solicitation.

Next slide, please.

The agreements that I'm presenting today are projects that were submitted to our solicitation titled Responsive Easy Charging Products with Dynamic Signals, or what we affectionately call REDWDS. REDWDS provides funding for the development of intelligent and easy-to-use charging products which help customers manage their EV charging in response to electricity prices and other similar grid signals.

Such products can come in many different kinds of forms. They can be smart one-way chargers. They can be bidirectional chargers. They can also be cloud-based optimization software. In other words, REDWDS will help accomplish load flexibility with electric vehicles, which will help customers save money on charging and also support a more reliable grid.

REDWDS also provides fundings for these projects to deploy these developed products with customers throughout California. One thing I want to highlight is that in our agreement terms, we've included provisions for possible additional funding to help further scale up deployments if projects demonstrate that they meet certain

performance metrics early on in the project. This additional funding would be subject to the availability of CEC funds in the future and also the approval of the CEC Executive Director. For today funding for REDWDS projects comes from the State General Fund as well as the Clean Transportation Program.

Late last year we announced about ten -- we announced ten proposed awards for REDWDS and today we're bringing you the first two agreements for your consideration, one with Bidirectional Energy, LLC, and one sorry -- Bidirectional Energy, Incorporated, and one with Evenergi, LLC. The remaining eight agreements are being finalized and will be presented at future business meetings for your consideration.

Next slide, please.

A bit about the benefits of these projects. We expect that all of the projects awarded through REDWDS will benefit Californians by advancing load flexibility, supporting the CEC's load management standards, and by extension supporting a cleaner and more reliable energy grid.

For today's item specifically, Evenergi's project will help reduce fleet operator costs and the emissions from electricity used to charge fleet vehicles. In addition to supporting more reliable grid operations, the

project will streamline fleet management by using inputs such as the fleet's schedules, live vehicle information, and also grid signals. In the first phase of the project, Evenergi will deploy 54 new chargers.

On the other hand, Bidirectional Energy will develop a residential bidirectional charging product that will help customers reduce the electricity costs and emissions associated with the electricity used to charge their EVs. The product will also support reliable grid operations and will give some customers greater confidence if they choose to activate the product's backup power capability. In the first phase of that project, Bidirectional Energy will install 120 new bidirectional chargers.

Next slide, please.

We'd like to offer a bit more detail on each of these projects.

For Evenergi, they will deploy managed charging with fleets using off-the-shelf charters paired with a software platform that's developed by a project partner called BetterFleet. This project will help fleet managers more easily manage and prioritize charging for their fleet vehicles based on things like electricity costs, their scheduling needs, and also the current status of each vehicle. Project sites will be at fleet yards throughout

California, including in Oakland, Rancho Cordova, San Diego, San Jose, San Simeon, and Thousand Oaks. For phase one, the CEC is providing $1.8 million and Evenergi is providing $995,000 in match.

Next slide, please.

The second and final agreement for today is with Bidirectional Energy. Bidirectional Energy will build a residential charging offering that includes a software platform developed in-house, paired with a bidirectional charger developed in partnership with a company called Wallbox. The software platform will include a customer-facing app that enables folks to automate their vehicles charging and discharging in response to electricity prices and similar signals.

For example, a customer could choose to offset their home's electricity usage at peak hours using their car's battery, and this will help save them money. As another example, they can choose to discharge to the grid during an emergency event, which will also help save them money and support grid reliability.

As part of the project, Bidirectional Energy will install 120 new bidirectional chargers at single-family and small multifamily residences throughout California. For phase one, CEC is providing 2.2 million and bidirectional energy is providing $990,000 in match.

Next slide, please.

CHAIR HOCHSCHILD: Jeffrey, sorry. How quickly will those bidirectional charters be installed?

MR. LU: They'll be launching this year. So I think as soon as we hopefully approve these agreements, I know at least Bidirectional Energy is ready to start deploying --

CHAIR HOCHSCHILD: Okay.

MR. LU: -- or at least looking for customers.

All right, so this is the last slide. I'm really thrilled to bring you these projects today. Staff is seeking your approval of these grant agreements, as well as adoption of our determination that these actions are exempt from CEQA.

I think we do have folks or we may have folks from Evenergi and Bidirectional Energy on the phone, and they can help with questions if you want. Thanks for your time.

Thanks to the teams in FTD and CCO for making this possible. And I'm happy to answer any questions.

CHAIR HOCHSCHILD: Thank you so much.

Let's go to public comment on item ten.

MS. BADIE: Good afternoon again. This is Mona Badie, the Public Advisor. The Commission now welcomes public comment on item ten.

If you're joining us in the room, we're asking folks to use the QR code, or you can also wave your hand. And if you're joining by Zoom, please use the raise-hand feature that's on your screen. It looks like an open palm. You can do that now. And if you're joining by phone, please press star nine to let us know you'd like to comment.

First, we'll hear from James Frey.

James, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. FREY: Yeah. Thank you very much everyone for including the public on these exciting progress inflection points for California. And in this case, my name is James Frey, F-R-E-Y, and I work for 2050 Partners, and we frequently consult with the California IOU Codes and Standards Group, and we comment regularly on the CALGreen EV language from BSE and HCD. And it's very exciting to see some bidirectional futures in front of us. Thank you, Jeffrey.

And what I'd like to do is ask just one question about the nature of the bidirectional functionality. Will this be via home or via grid or both?

Thank you.

MR. LU: Yeah, I believe it's both. I know we

have -- Frances has her hand up, too, and she may be able to address that question directly as well. She's on the Bidirectional Energy Team.

MS. BADIE: Thank you.

Next, we'll hear from Stephen Rosenblum.

Stephen, I'm going to open your line. If you could please state and spell your name for the record? We're asking for comments to be two minutes or less.

MR. ROSENBLUM: Hi. My name is Stephen Rosenblum, S-T-E-P-H-E-N R-O-S-E-N-B-L-U-M. I'm a member of Climate Action California. And I really applaud this effort by the CEC to encourage a development of bidirectional charging.

We all know that there are over a million EVs in California with a corresponding huge amount of battery storage capability on site in local communities ready to be connected to the grid as virtual power plants. And it just needs proper regulations and permitting procedures structures to allow this facility to be brought into practice. It's particularly important in times that were just alluded to in the previous presentation about emergency situations where the grid is under stress, that these are localized power storage facilities that can easily help the grid be stabilized without concerns about long-distance power distribution lines.

So we, as an organization, we strongly support this use of bidirectional vehicle charging to support the grid and to stabilize the grid.

Thank you very much for your efforts in this area and I hope that you'll continue to push forward with this program. Thank you.

MS. BADIE: Thank you.

Next, we'll hear from Frances Bell.

Frances, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

If we could restart the timer, please?

MS. BELL: Hi. This is Frances Bell. I am one of the founders of Bidirectional Energy and the recipient of the REDWDS Grant. Bidirectional Energy is a virtual power plant for bidirectional electric vehicle chargers and EVs.

To answer James Frey's question, we're confirming that the bidirectional chargers will provide both V2H and V2G capabilities.

I'd like to thank the CEC for providing funding to support development and deployment of electric vehicle charging, especially bidirectional EV charging. With these funds, we are excited to deploy some of the first residential bidirectional EV chargers in California

starting this May 2024. These bidirectional chargers will unlock the ability for ratepayers to both charge as well as discharge their vehicle to supply power to their home into the grid.

The project team includes Wallbox as the charger provider, as well as COIL as the electrician and installer. Together we are pleased to provide EV owners both V2H and V2G capabilities so that they can manage their electric vehicle charging and discharging, minimize utility bill costs, and earn additional revenue through participation in grid programs such as DSGS, ELRP, and dynamic rates.

By enabling these capabilities, bidirectional EV charging will also offer broader benefits to California ratepayers and utilities. Shifting residential demand, as well as supplying power during grid events, extends the existing capacity of the grid, thus avoiding expensive grid upgrades while increasing the utilization of the present infrastructure we have today.

We believe that this project is just a start to demonstrating how EVs through bidirectional charging can be a benefit to the grid by reducing and shifting growing capacity demands. We thank the CEC and our CAM, Jeffrey Lu, for the opportunity to demonstrate the positive impact in residential bidirectional EV chargers can make.

Many thanks.

MS. BADIE: Thank you.

That concludes public comment. Back to you, Chair.

CHAIR HOCHSCHILD: Okay. I had a question if that's okay.

So typically in California, I would guess the average amount of kilowatt hours in an electric vehicle is about 70, okay? And, you know, you think about like a Powerwall, which is a, you know, most common battery backup. That's 13 and a half kilowatts, so about 5 Powerwalls equivalent in every electric vehicle, so a lot of power in those. But like a Powerwall will dispatch at 5kW when they're called. What is the -- how many kilowatts of dispatch are we talking for EVs with these charters?

MR. LU: Yeah, it will depend on the charter that's being designed. In this case, with Wallbox, I think it's about 11 kilowatts.

CHAIR HOCHSCHILD: Eleven. Okay. Okay. That's helpful. That's really good to know.

Commissioner Monahan?

COMMISSIONER MONAHAN: Well, I'm so excited about these series of, A, REDWDS, what a great name, who doesn't love a Redwood, but also just that we've, you know, we've rolled out programs for school buses, but we've never done anything in the light-duty space. And, you know, that's

where most of these big batteries on wheels are right now. And so unlocking that or trying to unlock that value stream is something that I think is really going to be important for California meeting our clean energy goals. And it remains theoretical. And these grants are putting this theory into practice. And I think we're going to learn a lot about what works and what doesn't work and what's cost effective and what isn't.

But, you know, to be able to provide energy back to the grid at peak times when the grid is stressed and, ideally, save EV drivers money is the future that we're trying to get to. And, you know, we've seen utilities do some pilot programs in this space. But I just am excited for the CEC to be a player in really unlocking this market.

And I want to thank you, Jeffrey and Kyle Pratt, who both have been real thought leaders. And I'm always pinging Jeffrey with questions and he always answers in a way that you can understand. So congratulations on being an engineer who can communicate.

So, yeah, I just think these grants really are both combining transportation and our clean energy goals into one, so they're just a perfect fit for us.

CHAIR HOCHSCHILD: Are you enthusiastic enough to move the item?

COMMISSIONER MONAHAN: I move this item.

CHAIR HOCHSCHILD: All right. A motion for item ten from Commissioner Monahan.

Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item ten passes three to zero.

Congratulations, Jeffrey and team. Really, really exciting project and keep us posted how it goes.

All right, with that, we'll turn to item 12, Regents of the University of California, on behalf of the San Diego Campus.

MS. KEDZIE: Good afternoon, Chair and Commissioners. My name is Elyse Kedzie and I'm a Utilities Engineer in the Energy Research and Development Division. I am presenting a proposed EPIC award with the University of California at San Diego for the Cost Share for Federal Clean Energy Funding Opportunities solicitation.

Next slide, please.

As California accelerates into a decarbonized and electrified future, batteries have become a ubiquitous

tool. On the grid there is over six gigawatts of installed energy storage, the majority of which is lithium ion batteries. In addition, battery electric vehicles made up 25 percent of the new car market in 2023.

As the demand for lithium batteries has increased, the technology supply chain has become more strained, driving up costs and lead times for new products. Furthermore, there are growing concerns about the humanitarian impacts, environmental sustainability, and geopolitical tensions involved in sourcing battery materials overseas.

At the federal and state levels, funding opportunities to build domestic battery supply chain and manufacturing capabilities have spurred new innovations in battery recycling.

While some lithium-ion battery recycling operations exist, these processes use high-cost, high-energy intensity, and low-efficiency methods to recover few valuable metals, like cobalt and nickel, from battery cathodes. The rest of the battery materials, like the lithium, organic solvents, and other metals found in the cathode are typically discarded.

Addressing this issue of low material recovery, the proposed project with UCSD plans to develop and scale up a more efficient process for lithium ion battery

recycling. UCSD estimates that if 75 percent of the used EV batteries entering the recycling stream -- enter the recycling stream, sorry, this process could result in electricity savings of up to 1200 gigawatt hours annually by 2030. By reducing the energy intensity of battery recycling, this process has an estimated 80 percent lower greenhouse gas emissions than conventional methods.

This proposed project is a federal cost share award leveraging $10 million of bipartisan infrastructure law funding from the U.S. Department of Energy, along with an additional $1.3 million of other cost share, for a total of over $11 million in cost share funding. UCSD was previously awarded an Applied Research and Development Grant through CEC's EPIC Program that enabled them to develop this direct battery recycling process.

Next slide, please.

This proposed project will build off of UCSD's previous award, scaling their direct recycling process for lithium batteries with an initial increase from 1 kilogram to 10 kilogram, then to near market level of 100 kilogram of cathode material produced per day.

Their direct recycling process features three key steps, as shown on this slide, electrolyte extraction and recycling, cathode and anode separation, and their proprietary prime process in which they regenerate the

cathode material. Because of the lower heat inputs, fewer process steps, and higher recovery rate, this direct recycling process has the potential to lower the emissions and energy intensity of lithium battery recycling compared to conventional methods.

In order to move from the lab scale to a pilot production scale, the team will upgrade to larger industrial equipment to enable higher throughput of recycled material. UCSD will partner with Expos Technology (phonetic) who will serve as the demonstration site host at their facility in San Diego. The recipient will develop operating procedures to process three commonly used EV battery cathode types, each requiring specific parameters.

Once the cathode material has been recovered, the recipient will build battery cells to test the cycling performance. Project partners, Argonne National Lab and General Motors will also test and characterize the recovered cathode material to identify any improvements needed for the recycling process.

The successful completion of this project will support the development of a high yield, low emission pilot-scale lithium battery recycling process.

Next slide, please.

Staff recommends adoption of staff's determination that this action is exempt from CEQA and the

approval of this grant agreement with the University of California at San Diego.

That concludes my presentation and I am now happy to take any questions.

CHAIR HOCHSCHILD: Thank you so much.

Let's go to public comment on item 12.

MS. BADIE: Hello. Mona Badie here again. The Commission welcomes public comment on item 12.

If you're joining us in the room, we ask that you let us know you'd like to comment by using the QR code or visiting the Public Advisor table. And if you're joining us by Zoom, please use the raise-hand feature on your screen. And if joining by phone, press star nine at this time.

And I'm not seeing any hands for this item, so back to you, Chair.

CHAIR HOCHSCHILD: Okay, well, first of all, this is music to my ears. Correct me if I'm wrong, but is this one of the first grants we've done on lithium recycling?

MS. KEDZIE: We've done previous R&D-style awards through EPIC and we have a battery repurposing agreement.

CHAIR HOCHSCHILD: Yeah, but I'm talking about for recycling, definitely, to my memory, it's the most significant.

But I think just to be clear, like the vision is

first, reuse, which is what our investments in Smartville -- what's the one out of Davis, RePurpose, Smartville and RePurpose, which are great. And they're taking used EV batteries that are down to whatever, 75 percent of the nameplate, put a nameplate in the metal shipping container doing stationary energy storage, and then at the end of that life, then recycle. And then of course, you know, we're trying to produce lithium upstream sustainably.

So this is just a really important piece. So thank you and congratulations for the good work to get this project to this point. I'm thrilled to support it.

Any other comments?

COMMISSIONER GALLARDO: I'm excited about this one, too, because we are thinking about with Lithium Valley, you know, that full cycle. And so this, like the Chair is saying, this is part of that puzzle that would be really helpful to have, so I'm eager about this.

COMMISSIONER MONAHAN: Yeah, just a quick, me too. I got to visit the pilot Phase 1, I guess, of the project, and so it's great to see that this next level. So excited for it.

CHAIR HOCHSCHILD: Keep us posted how this progresses. I'm really interested in what are the -- what barrier busting do we need to really make lithium recycling

go? I'm going to be meeting with J.B. Straubel, the CEO of Redwood Materials, which is the largest lithium recycler, who used to be a Tesla and now he's got this thing going. I'm really curious. I don't feel I have my hands around the lithium recycling opportunity fully yet. We got to get that figured out.

So anyway, thrilled to see this progress, and I'd welcome a motion from Commissioner Gallardo on item 12.

COMMISSIONER GALLARDO: I move to approve item 12.

CHAIR HOCHSCHILD: Is there a second from Commissioner Monahan?

COMMISSIONER MONAHAN: I second.

CHAIR HOCHSCHILD: All in favor say aye. Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 12 passes three to zero.

We'll turn now to item 13, Eagle Rock Analytics, and I welcome Susan Wilhelm to present.

MS. WILHELM: Good afternoon. I'm Susan Wilhelm, Supervisor of the Sustainability and Health Unit within the Energy Research and Development Division. And today I'm

here to request your approval of an EPIC follow-on funding agreement for Cal-Adapt Analytics Engine.

Next slide, please.

The proposed agreement builds on prior EPIC-funded success to continue expanding the Cal-Adapt brand in some powerful ways that respond to electricity stakeholder concerns. The overarching goal of the Analytics Engine is to deliver next-generation climate data analytics to support our clean energy transition in a manner that is reliable, resilient, cost-effective, and equitable.

The Cal-Adapt Analytics Engine benefits Californians in two critical ways, first, by providing direct support for electricity sector adaptation. This involves partnering with our investor-owned utilities to support their vulnerability assessments and adaptation planning. It also involves supporting development and implementation of policy, such as the California Public Utility Commission's adaptation rulemaking.

The second main benefit is that the Analytics Engine directly supports state agency teams and other EPIC recipients who are working to refine critical planning processes, such as the Energy Commission's California Energy Demand Forecast and CPUC's Integrated Resource Planning. And I'll just point it out on the right-hand side here, you're looking at the landing page for the

Analytics Engine.

Next slide, please.

There are three key objectives to this agreement.

First, it brings scientific guidance, as well as digital innovation, to inform rigorous electricity sector applications of climate data. This guidance and innovation is critical because our pool of data has expanded by about a hundredfold in recent years. This proliferation of data reflects our response to electricity IOU and agency needs, which include WECC-wide perspective and very fine spatial and temporal granularity.

Secondly, this agreement will support an expansion of the power and accessibility of the data platform in a manner that is in keeping with open data, transparency, and best science practices.

And finally, this agreement allows the recipient to build on prior success and accelerate the delivery of data products to key energy sector stakeholders.

I'd like to point out that the recipient is a California-based microbusiness that has partnered with a national lab that is levering generous match contributions from Amazon Web Services Open Data Sponsorship Program, and that is also leveraging the products of several digital technology innovators.

Next slide, please.

So a moment ago, I mentioned that the size of data made available by the Analytics Engine has expanded more than a hundredfold from what was available to California's electricity stakeholders just a few years ago. These data are primarily of two types.

On the left-hand side, you see climate projections, which begin with state-of-the-art global climate model outputs and downscale them for improved resolution over the California domain. The Analytics Engine is hosting projections that are developed by other EPIC recipients at Scripps Institution of Oceanography, as well as at UCLA, and these projections are helping us understand what future climate may look like in ways that are fundamental to planning our rapidly evolving electricity system.

The other type of data we have represented on the right hand side is a stream of quality controlled historical observations at meteorological stations which is critical to help us inform and calibrate our use of projected climate data.

Next slide, please.

I'd like to point out that the Analytics Engine has picked up from what earlier versions of Cal-Adapt did. With the first version of the Cal-Adapt web application released in 2011, we took the unprecedented step of making

high-quality data available so that users could explore local climate impacts through interactive visualizations and download data for further analysis. But the middle dot is where we are now, and we have achieved this with prior EPIC funding through which the Analytics Engine has supported integration of projected climate data into prevailing policy and planning frameworks as we seek to rise to the challenges posed by climate change.

Moving forward, we look forward to continuing to advance California's ability to anticipate and address climate challenges to our decarbonizing energy system with data products that co-evolve alongside new or revamped frameworks for planning, modeling, and risk management.

Next slide, please.

In closing, I would like to thank you for your time. Staff recommends that Commissioners adopt staff's determination that the item is exempt from CEQA and approve the recommended agreement with Eagle Rock Analytics, Inc.

Thank you.

CHAIR HOCHSCHILD: Thank you, Susan.

We'll go to public comment.

MS. BADIE: Now is the time for public comment on item 13.

If you're joining us in the room, please use the QR code or raise your hand. And if you're joining us on

Zoom, please use raise-hand feature on your phone. And if you're joining us by -- excuse me, use the raise-hand feature on your screen. And if you're joining by phone, press star nine to let us know you'd like to make a comment.

And I'm not seeing any hands for this item, so back to you, Chair.

CHAIR HOCHSCHILD: All right. Well, you made a great case, Susan. I don't have much to add, fully support and happy to move it.

Is there a motion from Commissioner Gallardo?

COMMISSIONER GALLARDO: I move to approve item number 13.

CHAIR HOCHSCHILD: Can I have a second from Commissioner Monahan?

COMMISSIONER MONAHAN: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 13 passes three to zero.

Thank you, Susan. Keep up the good work.

And I think we are now at our last item. Correct

me if I'm wrong, Mona, item 14, which is --

MS. BADIE: Last voting item, yes.

CHAIR HOCHSCHILD: Last voting item. We have more non-voting? Okay. The Next EPIC Challenge: Reimagining Affordable Nixed-Use Development in a Carbon-Constrained Future.

MR. TAN: Good afternoon, Chair and Commissioners. My name is Jemar Roble-Tan. I'm an Energy Analyst with the Energy Research and Development Division. I'm here today to request approval for two awards totaling $17 million. These would be the first two of four build phase awards associated with The Next EPIC Challenge solicitation to be presented for approval.

Next slide, please.

Grant funding would benefit Californians through the construction of affordable, replicable, zero-emission multi-tenant mixed-use developments. These developments each showcase a suite of clean energy technologies, which includes load management equipment and onsite generation for energy resilience. These proof-of-concept developments would thereby lower electricity costs and increase the value proposition of many grid interactive technologies, ultimately demonstrating feasible and economical pathways to building even more mixed-use developments of their kind in California.

Next slide.

California citizens continue to face the significant challenges of climate change and housing affordability, which zero-emission developments that integrate with clean energy technologies can help counter. For example, the developments presented for awards today would provide energy efficient thermal controls and ensure uninterrupted power during grid outages and extreme weather events.

Also, these high-density multi-tenant mixed-use developments bring residential and commercial uses close together. This efficiently increases housing supply and job growth, which is especially impactful when built in or near disadvantaged and low-income communities.

Next slide.

In recognition of the difficulties associated with designing zero-emission buildings using current commercial technologies and standard building design and construction practices, our solicitation, The Next EPIC Challenge, was established to support multidisciplinary teams in designing and building zero-emission mixed-use developments that align with the item shown here.

Project teams were to adopt cutting-edge clean energy technologies into their designs, use innovative tools to plan, design, and ultimately construct these

buildings, ensure there would be a mix of market rate and affordable housing locally so new developments would not gentrify existing neighborhoods and displaced residents, and ensure the developments would be resistant to the impacts of climate change and extreme weather, including the potential for extended power outages.

Next slide.

For this solicitation, we also established minimum siting and design requirements to ensure that applicants would provide project proposals that met our objectives. For the siting requirements, the developments are to be mixed-use, that is they are to provide units and space for two or more significant revenue-producing uses, such as for retail, office, civic, cultural, or recreational uses. A substantial portion of the development is to be reserved for affordable and low-income housing, as shown here.

And lastly, there is a minimum unit density requirement of 30 residential units per acre.

Next slide.

For the design requirements, buildings are to have all-electric end uses with no gas connections, be able to prioritize different loads, and power critical loads indefinitely with available on-site resources. The buildings are to have the ability to island from the grid

and meet the residential load during peak hours entirely through onsite generation, storage, and load management resources.

The distributed energy resources, or DERs, must have the ability to integrate with aggregation platforms, such as virtual power plants. And at least 20 percent of all parking spaces must have EV charging stations that can respond to grid and building signals with the remaining wired to be EV ready.

Next slide.

The Next EPIC Challenge competition was conducted using a two-phase approach. During the design phase, three project teams from each of the regions across California, shown here, developed designs for mixed-use developments in line with the aforementioned requirements. One project team from each region was then competitively selected to build out their design, resulting in a total of four build-phase projects. Two of the four projects will be presented at future business meetings. A summary of the two projects under consideration for awards today will now be presented.

Next slide.

The first agreement is with Mutual Housing California to fund the construction of a new, all-electric, permanently affordable senior housing center in the historically underserved low-income community of South

Stockton. This four-story development will include 76 affordable residential units deed-restricted to low or very low income households, a community resiliency center that can provide shelter and power during grid outages that may occur during events such as severe storms and heat waves, and office space for the nonprofit community organization, STAND.

STAND is Stocktonians Taking Action to Neutralize Drugs, a grassroots organization dedicated to eliminating drug abuse in Stockton through outreach efforts and community program referrals. STAND also conducts food distribution events, host youth activities, and holds fundraisers for community betterment. STAND also improves neighborhoods of marginalized communities to make them safer and more desirable places to live through their Affordable Housing Program wherein they buy blighted houses, fully rehabilitate them, and sell them to moderate and low-income families.

The new development presented here will use Ephoca heat pumps, Icarus Quartet enhanced domestic water heaters, and refrigerators that all use refrigerants with low global warming potential.

The development will also incorporate technology and features, such as a microgrid with a 300-kilowatt solar PV system with pre-mounted inverters and a 600-kilowatt-

hour battery, dynamic window sheeting technology using thermal bimetals, all-electric appliances, vampire switches, and an automated building energy management system that balances energy consumption against energy pricing while considering occupant comfort. The energy assets and virtual net metering reduce tenant electricity bills by 85 percent compared to what would be incurred in a baseline Title 24 compliant building.

Next slide.

The second agreement is with the Electric Power Research Institute to fund the construction of a new multifamily community resiliency hub in Petaluma with 131 housing units, commercial use spaces, and on-site supportive services for residents. The development will also provide on-site charging outlets and a dedicated area for food truck operators. The project site is adjacent to a new train and electric bus terminal for additional clean transit options to and from the property.

By having a selective interconnection service agreement with PG&E, where an energy is not normally imported from the grid, this project will demonstrate how the construction of all-electric communities' integrated DERs can be accomplished while minimizing the need for considerable grid upgrades. Once completed, this proof-of-concept development can help quicken the electrification of

buildings and the transportation sector and make progress toward meeting California's climate goals.

The development presented here features a 120-kilowatt solar PV array and 2 megawatt hours of battery storage in a microgrid setup with enough capacity to power the community 95 percent of the year, with a minimal standby connection with the utility for emergencies. The development will incorporate Ephoca packaged terminal heat pumps, Rheem 120 volt heat pump water heaters and mass timber carports. The development will also include advanced technologies such as bidirectional EV charging from the microgrid and load flexibility and forecasting applications for effective load shedding and peak demand reduction.

The project team aims to reduce tenants' energy burdens by including all costs in the subsidized rent, ensuring tenants never spend more than 30 percent of their monthly income on utilities and rent.

The project team will continue to work with the Rahus Institute, a local community-based organization, to provide community education and in-person forums that will inform tenants and the local community about their personal energy use and total energy burdens, as well as clean energy technologies and other innovations incorporated in this development.

The project team will also conduct tenant surveys to obtain feedback to improve the community experience and energy management practices over time.

Next slide.

With that, staff recommends approval of these grant agreements and staff's findings that these projects are exempt from CEQA.

This concludes our presentation. Staff and representatives from Mutual Housing California and the Electric Power Research Institute are available for any questions you may have. And a representative from the Mutual Housing California project team should also be on the line to provide comment.

Thank you.

CHAIR HOCHSCHILD: Thank you.

With that, we'll go to public comment on item 14.

MS. BADIE: Thank you.

If you'd like to comment on item 14 and you're in the room with us, please use the QR code or wave your hand. And if you are on Zoom, please use the raise-hand feature. And if you're joining us by phone, press star nine.

Danny Kolosta, I'm going to open your line If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. KOLOSTA: Good afternoon. Hello,

Commissioners. My name is Danny Kolosta. That's D-A-N-N-Y K-O-L-O-S-T-A. I'm a project manager with Mutual Housing California, and I've been part of the Fairview Terrace team now for over two years.

And I just wanted to say, on behalf the Mutual Housing California, the recipient, and Architectural Nexus, we're extremely excited that the Mutual Housing at Fairview Terrace Project has been selected for build phase funding for the EPIC Challenge.

This is an endeavor that began more than five years ago when we were approached with the opportunity by ArchNexus at the program's inception to design the most innovative affordable multifamily housing development in the state of California. And that really isn't meant to be a hyperbole, that's really how we feel, and the EPIC Challenge has allowed us the opportunity to do just that. It's very rare to pair energy innovation through emerging microgrids, solar and battery technology with deeply affordable mission-driven housing and have this endeavor be invested in by the state, so we're very appreciative of that.

Even more important is that this partnership will serve the residents of South Stockton, an under-invested area with low financial resources, with a desperate need for quality affordable housing for seniors. Fairview

Terrace will ensure that residents and community members benefit from this innovation, first and foremost, through lowering of their energy costs, the provision of cooling during extreme heat events, and education of their community, which really dovetails with Mutual's core mission of resident empowerment.

So we know this will really move the needle in expanding perceptions of affordable housing as both catalysts for economic empowerment and innovation as Fairview Terrace will be the first of many projects that push the envelope in creating positive net-energy housing and cultivating community within the state.

So just wanted to say thank you again and we really appreciate this opportunity and look forward to working with the Energy Commission further with this build phase grant funding.

MS. BADIE: Thank you.

Next, we'll hear from Stephen Rosenblum.

Stephen, I'm going to open your line. If you could please spell your name for the record? We're asking for comments to be two minutes or less.

MR. ROSENBLUM: Yeah. Hello again. My name is Stephen Rosenblum, S-T-E-B-H-E-N R-O-S-E-N-B-L-U-M.

This is a really fantastic project. I'm so happy to see it. It not only does a great job of dealing with

the issues of climate change, but also helps our grid become more adaptable, and at the same time, providing housing to redress the effects of climate change on communities that have been overburdened by climate impacts.

So I just think this is outstanding. It's not only great climate engineering, but great social engineering, and I applaud the Energy Commission for taking this on.

Thank you.

MS. BADIE: Thank you.

And there are no more commenters for this item, so back to you, Chair.

CHAIR HOCHSCHILD: All right. Well, I'm thrilled to see these grants. And again, I want to just lift up our collaboration, especially with Electric Power Research Institute, who we worked with to co-host the first ever Build the Electrification Summit this past October, led by Commissioner McAllister. And that was a huge success and I think a lot of good things came out of that, including this new heat pump partnership we're now funding to the tune of $9 million to promote the adoption of heat pumps.

But, really, all these look terrific. I congratulate you and the rest of the team and happy to see these move forward.

Unless there's other questions or comments?

Yeah, Commissioner Gallardo?

COMMISSIONER GALLARDO: Jamar, you did an excellent job presenting.

And I also wanted to uplift my Chief of Staff, Erik Stokes, who also played a role in this program.

I'm really excited about this. I think it's a fantastic idea. And aside from the benefits that you all talked about, I also think, you know, it just enables people to be in a comfortable home, a modern home, and gives them an additional sense of dignity to and hopefully pride to be living in a space like this, so I love that.

And I also wanted to mention that I heard there were some videos of the projects or something like that, that maybe we could play one or two as an example at a future business meeting when it makes sense. So but I heard there's a really good video out.

CHAIR HOCHSCHILD: Like a video tour of the all-electric home, or what is it?

COMMISSIONER GALLARDO: Yeah.

Can you talk about that Jemar?

MR. TAN: The last closing, yeah, that I prepared, a (phonetic) around a bunch of videos, five minutes each. They're actually available on YouTube right here, and so I could direct that link to you so you can see it's the overview --

CHAIR HOCHSCHILD: Okay.

MR. TAN: -- of the highlights.

CHAIR HOCHSCHILD: Maybe send them to Commissioner Gallardo and you decide which ones you'd like us to see.

COMMISSIONER GALLARDO: Okay.

CHAIR HOCHSCHILD: Yeah. I would just would draw the link -- I'm sorry, were you finished? Yeah.

I just would draw the link back to the presentation we had earlier today from Stanford about the health impacts of gas cooking. And, you know, an all-electric home is also a healthier home, and especially for young people, so we have to keep that front of mind with all these decisions. So thank you for that.

Yeah, Commissioner Monahan?

COMMISSIONER MONAHAN: Well, just we're all going to be singing your praises, Jemar, and the praises of this project because, I mean, California is in a housing crisis. And we know that the lowest-income people are most vulnerable to being pushed out of their housing. And so to combine the benefits of clean energy with providing housing to people who need it at an affordable price, I just feel like this is -- this is like a perfect example, again, of the kinds of investments we want to make where when we talk about non-energy benefits, right, housing for your children

and having clean air in your home, I mean, there's just like a powerful project.

And so I just want to thank you and the team for working on it and making this come to fruition.

CHAIR HOCHSCHILD: Great.

All right, well, with that, I welcome the motion from Commissioner Monahan on item 14.

COMMISSIONER MONAHAN: I move to approve item 14.

CHAIR HOCHSCHILD: Is there a second from Commissioner Gallardo?

COMMISSIONER GALLARDO: I second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gallardo?

COMMISSIONER GALLARDO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes three to zero.

And as we're going to skip item 17, I think we are adjourned. Did I miss anything? All right.

Thank you, everybody. Long meeting. Thanks, guys.

(The meeting adjourned at 4:13 p.m.)

CERTIFICATE OF REPORTER

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of March, 2024.

MARTHA L. NELSON, CERT**367

CERTIFICATE OF TRANSCRIBER

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified transcriber and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

MARTHA L. NELSON, CERT**367

March 19, 2024