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BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)
	)22-BUSMTG-01
Business Meeting	)
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MONDAY, OCTOBER 24, 2022

10:00 A.M. – 12:00 P.M.

Remote Access Only via Zoom

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Please note that the California Energy Commission (CEC) aims to begin the business meeting promptly at the start time and the end time is an estimate based on the agenda proposed. The meeting may end sooner or later than the time indicated depending on various factors.

Pursuant to the California Code of Regulations (CCR), title 20, section 1104(e), any person may make an oral comment on any agenda item. To ensure the orderly conduct of business, such comments will be limited to three minutes or less per person. Any person wishing to comment on information items or reports (non-voting items) shall speak during the public comment portion of the meeting and have three minutes or less to comment.

Reported by:
M. Nelson

APPEARANCES (*Present via Zoom)

Commissioners

*David Hochschild, Chair
*Siva Gunda, Vice Chair
*Andrew McAllister
*Patty Monahan
*Kourtney Vaccaro

Staff Present:

*Drew Bohan, Executive Director
*Linda Barrera, Chief Counsel
*Mona Badie, Newly Appointed Public Advisor
*Katerina Robinson, Chief Policy Advisor
*Dorothy Murimi, Public Advisor's Office

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I N D E X

P R O C E D I N G S

OCTOBER 24, 2022 10:01 a.m.

(Start of Introductory Video.)

MS. MURIMI: Welcome to the California Energy Commission Business Meeting. Zoom's closed-captioning feature has been enabled to make Energy Commission business meetings more accessible. Attendees can use this feature by clicking on the "Live Transcript" icon and then selecting either "Show Subtitle" or "View Full Transcript." Closed captioning can be stopped by closing out of the Live Transcript or selecting "Hide Subtitle." Those participating solely by phone do not have the option for closed captioning.

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The public can participate in the business meeting consistent with the instructions for remote participation found in the notice for this meeting, and as set forth on the agenda posted to the Energy Commission's

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To ensure the orderly and fair conduct of business, public comments will be limited to three minutes or less per person for each agenda item voted on today.

Any person wishing to comment on information items or reports which are non-voting items shall reserve their comment for the general public comment portion of the meeting and shall have a total of three minutes or less to state all remaining comments. After the Public Advisor calls on you to speak, spell your name and state your affiliation, if any.

Welcome to the California Energy Commission's business meeting. The meeting will now begin.

(End of Introductory Video.)

CHAIR HOCHSCHILD: Well, good morning friends. I'm David Hochschild, Chair of the Energy Commission.

Today is Monday, October 24th. I call this meeting to order. Joining me are Vice Chair Gunda, Commissioner Vaccaro, Commissioner McAllister and Commissioner Monahan. We have a quorum.

Let's begin with the Pledge of Allegiance led by Vice Chair Gunda.

(Whereupon the Pledge of Allegiance was recited.)

CHAIR HOCHSCHILD: Thank you, Vice Chair.

And before we get into the agenda, I wanted to begin with some good news, which is that last Friday Governor Newsom names Mona Badie as the new Public Advisor for the Energy Commission where she will lead the Office of Public Advisor Energy, Equity, and Tribal Affairs. I want to say, Mona, we are all thrilled for you in this new role. You've had a distinguished career at the Energy Commission having served actually, I believe working with Commissioner Vaccaro in the Chief Counsel's Office, Vice Chair Scott, and most recently, Commissioner Monahan. I've been really impressed with your diligence, your professionalism, and the heart that you bring to the work.

I want to remind everybody the moment we're in, this is an all-time high for our agency and nearly half a century to be able to have over $10 billion in money to push out the door for the benefit of our state, our clean energy future, our climate. And public engagement is

essential and that we do that well, with integrity, with great vigor and energy. And you have big shoes to fill, because you're following Noemi Gallardo. Who, I also want to just extend my thanks again to Noemi, for really just reinvigorating that office. And we know you will fill those shoes in, and more.

And so I wanted to begin, if we could, just a quick round of congratulations and any comments from my colleagues, maybe starting with Commissioner Vaccaro if you'd like, for Mona. And we'll go around everybody and we'll have them just say a few words.

COMMISSIONER VACCARO: Good morning, Chair, and thank you so much. I echo the words that you just shared about Mona, I'm very thrilled about this appointment.

I'm just going to take this quick moment to mention that Allan Ward and I conducted Mona's interview together when joined us as an attorney in the Chief Counsel's Office. And we knew there was a special person there. In addition to the obvious intelligence, skillset, experience, that there was something just about her personality and her spirit as well that we felt. And we knew there were great things to come for Mona. And the Governor's appointment of her to this Public Advisor position I think is just a testament to that.

So congratulations, Mona. And I think

congratulations to the CEC and the people of the State of California for this appointment.

CHAIR HOCHSCHILD: Really well said. Commissioner Monahan.

COMMISSIONER MONAHAN: Well thanks, Chair.

And I want to just say congratulations to Mona, congratulations to all of us at the CEC. Mona has been my advisor and companion and thought partner for the last year, year-and-a-half or so. And so I do have a little bit of mixed feelings about her leaving my office, I cannot deny that. But I know that Mona is going to thrive and really continue in the tradition of our former Public Advisor Noemi Gallardo, in terms of really bringing in communities but also coming at it with just empathy and a big heart, in addition to her big brain and deep attention to detail. So I just feel joy in terms of our ability to continue to engage communities at a deep level, and really try to every day pay attention to how our actions and our research impact people on the ground. And especially people who are struggling to pay their bills or who face undue burden of air pollution.

So congratulations, Mona, congratulations to all of us. And I think it's a wonderful appointment.

CHAIR HOCHSCHILD: Thank you. Let's go to Commissioner McAllister.

COMMISSIONER MCALLISTER: Well just piling on Mona, congratulations. I totally agree with all the comments, just dealing, working with you, and having you facilitate conversations about a wide range of items. And just your combo of sort of intelligence and organizational skills, but also just your people skills. You're just going to do a great job bringing people into the Commission and making sure that we have an open door that people know is open and really willing and able to walk through. So that's our lifeblood is getting people into our process and then that kind of participation, like that's what gets us our broad-based support for the things that we do as we try to move this big needle. So I'm really excited to have you on board in your new role, so thanks. I'm looking forward to working with you.

CHAIR HOCHSCHILD: Thank you.

And Vice Chair Gunda?

VICE CHAIR GUNDA: Thank you, Chair. You all already said wonderful things. I want to just reiterate congratulations to Mona. And I can't really state how well articulated the comments from all of you are.

I do want to extend a sincere thanks to Noemi, who became a big sister to me personally in this. And like I really got engaged into the public engagement under her. And, Noemi, thank you for your leadership and commitment.

And the little I interacted with Mona over the last several months I also see Commissioner Vaccaro's comment on how special she is, really smart, thoughtful, and a deep commitment. And it's a very special combination. And I look forward to working with you learning from you, and congratulations and all the very best on this important role.

CHAIR HOCHSCHILD: Yeah, so thank you.

Mona, we'd welcome a few words if you like.

MS. BADIE: Thank you very much. I want to thank the Chair for this opportunity. And Commissioners Monahan and Vaccaro, Drew, and Noemi, for supporting my career growth here the Commission. I love working at the Commission, because of the people and because every day we get to make a difference on climate change.

My parents immigrated to California from Iran in the late 70s. And although I was born and raised in California, I'm acutely aware of the importance of having an open, accessible, and democratic government. And I've dedicated my career to public service. So I'm excited to continue giving back by serving as the Energy Commission's Public Advisor. Thank you.

CHAIR HOCHSCHILD: Thank you, Mona.

Mona, I just want to say again we've talked a lot about the incredible role that immigrants play in our state

and in this administration. And here at the Energy Commission we're so enriched by families moving to California from all over the world and bringing their talents and heart. And this is yet the next milestone in that journey. And we really want to welcome you to the leadership team Mona, and excited to get to know you better, to partner with you.

You've already passed the first test, which is you did a long road trip with Commissioner Monahan and I. If you can put up with me in the car for that many hours that's strength of character. So looking forward to many more.

And before we move on I also just wanted to extend, I know I'm joined by all my colleagues in this, our thanks to Dorothy Murimi again for running such a tight ship. These meetings, particularly the ones online, are not always easy. And Dorothy you've just been magnificent in the Public Advisor's Office, keeping the trains running so our gratitude to you as well.

And I will in a minute announce the winners of the 2022 Clean Energy Hall of Fame awards. But before we do, I have one other announcement I'd like to make which is joining, as of today, is my new Chief Policy Advisor Katerina Robinson who is also a superstar. Coming to us from the Legislature where she was instrumental in the

Climate Budget we had this year and last year, in her capacity as Budget and Capital Director for Senator Nancy Skinner. And, Kat, if you're on we'd welcome just a few words from you, and just anything you'd like to share about your background. Great to have you on the team.

MS. ROBINSON: Hi. Thank you, Chair, for the introduction. Sure, I can say a couple of quick words. I'm in the office today for my first day. Really lovely to see you all and I'm very excited to be joining the CEC team.

My background is in the state Legislature. I worked in the Legislature for ten years for various legislators. And my very first experience in energy was my very first year working for a state assemblymember from Los Angeles at the time, where he wanted to work on a grant for a piezoelectric energy program when I first started in the Legislature. And from then it's been ten years of energy and climate and housing and natural resources experience, and it's all led me to today.

And last year, as the Chair indicated, in this last legislative session we've done a lot of work to bring a lot of great programs to the Energy Commission that I'm very excited to help continue to get up and running on the implementation side. And I look forward to meeting you all as I start coming on tours and attending meetings. Thank

you so much.

CHAIR HOCHSCHILD: Absolutely. Well, welcome to the team. And with that let's turn now to the winners of the --

COMMISSIONER MONAHAN: Chair?

CHAIR HOCHSCHILD: Yes?

COMMISSIONER MONAHAN: Chair, I'm sorry to interrupt, can I?

CHAIR HOCHSCHILD: Please, yes.

COMMISSIONER MONAHAN: So one of the things that I've appreciated about you, Chair, is that you bring sort of what's happening in the world to the Energy Commission and give us a moment to think about it. And I just want to acknowledge something. Our new Public Advisor, her family comes from Iran. And I know she's been very worried and excited and trepidatious, but also really hopeful about what's happening in Iran right now, led mostly by girls in terms of trying to bring a more democratic and safer environment. And I'd just like to, kind of in acknowledgement of our new Public Advisor, take a moment of silence for those girls that are helping lead a revolution in Iran and --

CHAIR HOCHSCHILD: Wonderful idea.

COMMISSIONER MONAHAN: -- just for a moment.

CHAIR HOCHSCHILD: Thank you.

(A moment of silence was observed.)

COMMISSIONER MONAHAN: Thank you.

CHAIR HOCHSCHILD: Thank you so much. That was a wonderful idea, Commissioner.

With that, we do have some good news to share around the 2022 Clean Energy Hall of Fame awards. This is the third annual ceremony we've done for this. And I want to just acknowledge six incredible winners beginning with Dr. Carol Zabin, Founder of the UC Berkeley Labor Green Economy Program. And she is the winner of our Lifetime Achievement Award.

Followed by Kelly Tung, President and Executive Director of Youth Environmental Power Initiative, which is the Youth Game Changer Award.

Followed by Tishmall Turner, Vice Chairwoman of the Rincon Tribal Council of the Rincon Band of Luiseno Indians. And she is the Tribal Champion Award winner.

Followed by Sean Armstrong, Managing Principal of Redwood Energy, Clean Energy Champion Award winner.

Nalleli Cobo, Cofounder of People Not Pozos and South Central Youth Leadership Coalition, and she is also a Clean Energy Champion Award.

And then Dr. -- I hope I'm saying this right -- Martinrex Kedziora, Superintendent of Schools at the Moreno Valley Unified School District, and who's also a Clean

Energy Champion Award winner.

So congratulations to all of you. These winners were chosen out of a pool of 240 applicants, and they're doing really pathbreaking work. As we always say, the selection committee, which is an incredible committee that sifts through these applications, they don't make mistakes. All of these winners deserve these awards and are really being lifted up, because they've distinguished themselves. And so it's really our honor to celebrate these incredible leaders on the frontlines, and we'll be having a ceremony in-person December 8th, from 2:00 to 4:00 p.m. That will be in our beautiful, new auditorium at the Natural Resources Agency and I look forward to all of you joining.

So we'll turn now with that to Item 1, Information Item on Getting California on Track for 2030 and 2045 Climate Targets. I welcome Anand Gopal to present.

MR. GOPAL: Thank you, Chair Hochschild. Thank you all for having me and I am the Executive Director of Policy Research at Energy Innovation. Energy Innovation is a climate policy analysis think tank. We're the largest office in San Francisco, a lot of our staff is in the Bay Area. But we also have Washington, D.C. office, and folks scattered around the country in the post-COVID era.

I just wanted to also add a word that I'm a

Californian for half my life and from the country of India for the other half of my life, so happy Diwali to everybody.

And with that, I'll show you and share a little bit about the modeling work that our team has done using an open-source model called the "California Energy Policy Simulator," to try to see the best pathway we can to achieve California 2030 and 2045 climate targets. And with that I'll try to share the screen and make this work. One second. Okay, is everyone seeing full screen? Yes, great.

MS. MURIMI: Yes, we are.

MR. GOPAL: Wonderful.

So once again, so thank you so much. And it's an honor to be to be invited to present here on the work that our team has done where we did modeling to see how to achieve California's 2030 and 2045 climate targets. And for that, we released this study in June. And the model that is used here is the California Energy Policy Simulator. And the Energy Policy Simulator is an open source, peer-reviewed, system dynamics model that characterizes energy transitions and is sort of rooted in modeling the most common climate policies that are actually enacted and discussed in most jurisdictions around the world. So unlike the more common models you'll see with integrated assessment models, which usually have a carbon

price as a core policy and is set on achieving specific targets, we can achieve those targets but we sort of build them up using policies that are commonly seen by jurisdictions that have enacted climate policies. And leading amongst those is California.

The model that we use is calibrated on a lot of authoritative sources. We prioritize data from official sources, including the current inventory. And you'll see on the right the graph showing the two lines for the Draft 2022 Scoping Plan, business as usual in terms of emissions and our models.

And the main difference really comes from sort of a bottom up, we try to match the CARB inventory. And actually their scoping plan has a slight mismatch with the inventory for 2019. And that's what causes the sort of model discrepancies that you see, but the trend lines are what we should pay attention to here.

And also, one important thing is that we have all of these scenarios available online at california.energypolicy.solutions. So once I'm done talking about this I urge you all to go to that website. And you can actually construct a lot more graphs than what I'm going to show using that web tool. And everything that I'm speaking of will be available there.

So what we did is we modeled three policy

scenarios. Just to be clear the scope of the study is very similar to what is covered under the ARB Scoping Plan.

And the other thing that I want to iterate is we will go through certain scenarios. And our goal here is to try to identify the best ways in which California can try to get to a 260 MMT, CO2-equivalent target in 2030 according to SB 32, which is a 40 percent reduction relative to 1990 levels.

And our goal, again, is to try to do this focusing on cost-effectiveness of the policy. So to be clear we actually include a wide suite of technologies, and we'll get into some of the technologies. But I wanted to emphasize that we are not pro or against any specific technology, we just try to look at what are sort of the trends and cost-effectiveness that we foresee using our expertise in forecasting technology trends.

And the Business-as-Usual in our scenario captures all the settled policies. Chief among those that have been passed recently include the Advanced Clean Trucks Rule and the ACC II.

And then we have a second scenario that's Committed Policies. The main difference between the BAU and Committed Policies is a fairly ambitious, sustainable, community strategies scenario that involve VMT reduction.

And then (indiscernible) --

CHAIR HOCHSCHILD: Hey, Anand?

MR. GOPAL: Yes?

I was just going to say also, Commissioners, if anyone has questions I think it's best to just interject those as we go through this. Were you can ask a question Vice Chair or were you just stretching your hand?

VICE CHAIR GUNDA: Oh sorry, I was just touching my hand. Sorry.

CHAIR HOCHSCHILD: Okay.

VICE CHAIR GUNDA: I was just excited about Diwali. (Laughter.)

CHAIR HOCHSCHILD: Hand-waving is welcome too. So all right, please continue now.

MR. GOPAL: There you go. Diwali, the day an Indian became the British Prime Minister.

So the other one I think that's important is what we try to do with a deeper -- and by the way, yes, I would be happy to take questions in between now, please feel free to interrupt. The Deeper Decarbonization scenario that we look at is to try to then get at getting the 2030 target and then the 2045 carbon neutrality target. And we choose it based on what our assessment is on cost-effectiveness.

So if we then add in the graph for the Deeper Decarbonization scenario that we modeled, essentially what we're looking at is a 2030 emission of about 223 million

metric tons, which is below the target. It doesn't get to 55 percent. That may be a question that is on many of your minds, given the attempt in August to have a more stringent target. It does get to 48 percent below 1990 levels.

And here, just for the sake of the presentation, the most effective policies that we find -- and the next slide I'll show you the cost -- industrial fuel switching, a combination of electrification and hydrogen. The electrification that we do is pretty deep. It's focused on industrial heating and it doesn't restrict itself to low temperature heat. We choose hydrogen where we are a little bit unsure about whether electrification can meet certain thresholds for heat, but it goes pretty high and it also penetrates well into higher temperatures. Hydrogen is primarily used in our scenarios for chemical feedstocks and a switch to electrolysis for existing uses, including ammonia production.

Building electrification is a pretty aggressive target here, that by 2030 electrification of 100 percent of building energy components sold for new construction and existing buildings.

Zero emission vehicles, again it's 100 percent ZEV sales target by -- not target -- that we need to achieve 100 percent new sales of passenger vehicles by 2030. And 100 percent zero-emission vehicles in the heavy-

duty tractor-trailer segment by 2035.

And the clean electricity standard is essentially needs to be about 94 percent clean by 2030.

Again, all of these are not -- like we point out is what is needed in order to get to the 1990 target and then continue on to 2045. We realize that these are all pushing the envelope a little bit more than what federal policy is at the moment, and we'll be happy to talk about that.

Just to be clear on electricity, the PUC asked for 38 MMT in 2030 if I'm not mistaken. And our scenario comes up with the power sector at 30.5 million metric tons in 2030.

And, again, what we see here is if you average out the annual emissions reductions between 2024 and 2050, industrial is actually the one that has the biggest on average. You will see later that a lot of those emissions reductions are made from the industry sector comes after 2030. And it's also actually the more expensive one.

Every one of the others are actually negative costs. And we can talk a little bit about learning rates and how we modeled technology prices in here, but what we find actually is zero emission vehicles is extremely cost-effective. And some of this does include the benefits that have now come through from the IRA. But not all of them

have not been updated since the June release of the model that was pre-IRA, or should I say, Irah (phonetic). That might be better than calling it I-R-A.

So that's the sort of summary of the of the policy suite that are the most influential in our scenario. If you then take a look at it in terms of greenhouse gas wedges what you'll see here is essentially by 2030 we want to see significant progress on -- we need to see significant progress on the power sector. And then all of the other ones that we highlighted cause or result in the bulk of the emissions reductions by 2045. But it also includes other things that we're not highlighting here, just to be clear, including some in ag as well as low carbon, cement, CCS and industry. All of those are necessary to get to the 2045 target.

COMMISSIONER MCALLISTER: Anand, can I jump in really quick with a question?

MR. GOPAL: Yeah.

COMMISSIONER MCALLISTER: So on the previous slide, just very notable, the benefits from the EV space. Could you tell us sort of what categories of benefits you're including there? I mean, that air quality and health, or like what's the sort of range of benefits that add up to that big negative number?

MR. GOPAL: So actually I'm also happy my

colleague, Chris Busch is online. The way we do these cost-effectiveness calculations is we don't actually try to account for a bunch of externalities and put dollar values on those. This is purely based on cash flow, essentially, that we get that much. So essentially the price of vehicles starts going down and at some point we're reaching basically a benefit-benefit scenario, and then lifetime savings essentially.

COMMISSIONER MCALLISTER: Oh, okay.

MR. GOPAL: All right. And, Chris, jump in if I misstated that.

Okay. So the other thing that we wanted to focus on here it's also an important thing that some of these numbers are going to look even better post-IRA.

COMMISSIONER MONAHAN: Anand?

MR. GOPAL: Yeah, go ahead.

COMMISSIONER MONAHAN: I'm sorry. Sorry to interrupt, are you going to walk through the wedges? Or can I ask questions about the wedges or should we --

MR. GOPAL: Please go ahead.

COMMISSIONER MONAHAN: Can you tell us more about the electrification plus hydrogen wedge, which is the biggest?

MR. GOPAL: Ah, yes. In fact, if you don't mind holding on I will show you where we have hydrogen in our

scenarios versus what we see in the CARB scoping plan.

Just to highlight a high level right now is that electrification kind of dominates that essentially, including for industrial heat. And we deploy hydrogen where you kind of need chemicals as a feedstock, and then some heating processes where we're not sure about the cost and possibilities of electric heating. So essentially doing combustion substitution for industry only, so we do not have a lot of hydrogen. In fact, we don't have any hydrogen in transportation. And I'll talk about that in a few slides.

COMMISSIONER MONAHAN: And then one last question?

MR. GOPAL: Yes.

COMMISSIONER MONAHAN: So the zero emission vehicles, I'm surprised the wedge is so small. Actually, I thought it would be bigger, because they're currently -- I mean, it's about 40 percent tailpipe, 50 percent if you count the full lifecycle of transportation, but the wedge is so small. Can you tell me more about that?

MR. GOPAL: Yeah, it's a good question. So one thing to keep in mind is that the fleet turnover happens a little bit later. But yeah you're right, that even in the 2045 scenario we're looking at the wedge being smaller than what we see for electrification plus hydrogen. And that's

also because I think what we see here is a switch-over with a clean power essentially is a little bit lower essentially in the first decade, and that'll be 2030. And then after that what we have is all of the switch from gasoline over to electric.

I'm going to ask Chris if there's anything that's showing the wedge in terms of California's share of transportation that looks abnormal here, essentially to build this.

MR. BUSCH: No, I'd say you've got it exactly right. So what's going on is that this includes advanced clean cars too. And so if you went back pre-advanced clean cars too, it's about twice as big. It was closer to 30 on average, so on par with the industry wedge. So a lot of what's going on is related to the baseline. And I'm just waiting for the power sector people to get mad that the orange slice isn't any bigger. But just to complete the dynamics, so that's essentially reflecting the -- just joking of course -- reflecting the pretty aggressive BAU assumptions on reaching 100 percent in power.

MR. GOPAL: Good point. Sorry, that was the main thing about it. ACC too is in this baseline, that's why the wedge is not as big.

So for the other thing that's really important, one of the things that we find actually post-IRA is that

the jobs and GDP in the modeling that we've done is all net positive directly from the very beginning. So and what we don't actually account for is the full jobs benefits of IRA. Because IRA's provisions, almost all of them have a lot of requirements of onshoring and domestic manufacturing. That's not captured here. This is essentially capturing the sort of fact that we have jobs benefits from the fact that everything else is a lot cheaper, from when you switch over to clean. We're taking into account the fact that renewables are a lot cheaper, and batteries are a lot cheaper. That puts a lot of money back in the pocket of consumers and you see a significant increase in that.

Our guess is if you took into account the full effect of IRA and California really takes advantage of say concepts like having more production of lithium or batteries within the state, the manufacturing jobs are also going to go significantly higher. Then --

COMMSSIONER VACCARO: So, Anand, I have a real quick question.

MR. GOPAL: Yeah.

COMMSSIONER VACCARO: Hi, Commissioner Vaccaro here. I just wanted to pull the thread a little bit when you were mentioning that you said renewables are cheaper. I'm wondering like what your set of renewables is that

you're speaking of when you say that? Because I feel like it's some are cheaper, but I don't know that generally speaking, we can say that across the board. So would you mind just sort of letting us know what you're thinking?

MR. GOPAL: Yeah, absolutely. So our grid mix in our scenarios includes a substantial amount of utility-scale solar PV, distributed solar PV, offshore wind that now meets the 2030 target, essentially. And that is again taking into account with global pricing drops that we have programmed in there with updates including the latest from the UK, and onshore wind, geothermal. Diablo Canyon stays open in this scenario out to 2030. And anything else I'm missing, Chris?

MR. BUSCH: I would just add that the savings we're looking at are the net present value through 2050. So for the example of clean energy standard, the other metric that the web app provides is 2030. And because the investments haven't -- we don't see the benefits paying off over time. In that case you'd see $188, a positive cost for a clean energy standard. So that'll help people understand what's going on with that metric, I think.

MR. GOPAL: So yeah, I think the cheaper ones in our scenario relative to gas including peaker and -- peaker is not a problem, but including baseload -- is definitely the renewables, including offshore wind. Existing

geothermal is basically what we keep online. Nuclear is not cheaper, but I don't know if you've meant to include that in Renewables or Clean, but I really just wanted to highlight that. Thank you. Great question.

I'll talk about health benefits really quickly. And I'll talk a little bit about hydrogen and CCS and then conclude there, so that I don't take up too much more time. What we do, what we are able to do in the Energy Policy Simulator is also characterize the health benefits, broken up by race. And what we find here is more beneficial impacts on public health benefits for communities of color in California.

This scenario that we looked at in Deeper Decarbonization avoids approximately 1,300 premature deaths due to air pollution in 2030, and 3,900 in 2045. But the more important thing is all the sort of comorbidities and other benefits that come in the form of avoided asthma attacks and a few others. I'm happy to share some of those details. And lost workdays due to morbidity, and things like that are all substantially better than just looking at the avoided death metric.

We wanted to show a quick graph on sort of comparing the role of hydrogen in the scenarios that we model relative to the Draft Scoping Plan from June 2022. So we actually have a little bit of higher hydrogen in the

earlier stages. And essentially that is driven by what we are doing as much as possible to decarbonize the industry in the first decade, as opposed to managing industrial emissions just with CCS. So we try to get at the source and that's why we have a little bit of hydrogen earlier on.

And then later on we have less, because we actually don't have hydrogen in the road transportation sector at all. And that is kind of the drivers behind it. Just quickly showing the hydrogen for transport in the proposed scoping plan, there's some hydrogen in light-duty vehicles, medium-duty vehicles, and a lot in heavy-duty vehicles. Ours does not have that.

And also, hydrogen blending is included in the proposed scoping plan scenario for natural gas pipelines. That sort of linearly starts ramping up from 2030. We have hydrogen in industry. And that's essentially it, so that's also something just to keep in mind here.

The other thing that we do have also is carbon dioxide removal. Essentially, the graph on the left shows the difference between our deeper decarbonization scenario and what is in the proposed scoping plan. We have CCS. We don't have DAC. And I'll get DAC a little bit, which is again, not a comment on whether we need DAC. We might need it, but we just wanted to sort of account for the electricity required for it. And we'll talk about that in

the next slide.

The scoping plan has sort of this linear increase in DAC from about mid-2032, out to 2045. We have CCS in industry, and towards the end a little bit in the power sector for 2045 carbon neutrality.

The total amount we're seeing in terms of carbon, carbon negative, is about a little bit over 10 million metric tons when compared to over 80 is what we see in the scoping plan.

As many of you probably know this, we looked at the Alt 3 2045 scenarios, about 80 million metric tons of direct air capture. The estimated electricity to sequester that much carbon using DAC is -- unless the technology will improve I'm sure by 2045 -- based on what we know so far is about 9 percent of total electricity demand. This is what's in the pathways model from E3. And the reason we go more aggressively on actually tackling emissions at source in the first decade to get to the 2030 targets is because then we can use a lot of that new clean electricity to serve end users in vehicles and homes.

And the other thing I should note is that our electrolyzers are grid-connected, so that we essentially are trying to make the clean grid serve as many end users as possible. And also then be able to see if we can take advantage of the IRA incentives to get those cleaner

appliances and electric vehicles into poorer communities of color across the state.

And that is what I have. I've also got other materials to support some of these things that we've presented, but I'll pause there and take questions.

COMMISSIONER MONAHAN: Anand, can you give us more information about why your analysis indicates that hydrogen would not go for transportation?

MR. GOPAL: Yeah, it's basically the way we are doing learning curves within our model. So we look at empirical data from batteries, essentially over the last decade, and energy density improvements. And so we see those servicing Class 8 long haul and also being able to do that quite a lot cheaper. In fact, even a UC Davis study that came out recently that looked at battery-electric long-haul Class 8s found that to be cheaper on a lifecycle basis than hydrogen fuel cells. And so we picked that essentially to service that sector. And we don't find it to be anywhere near cost-effective in any of the other end uses for transportation.

COMMISSIONER MONAHAN: And just one quick follow-up question, then what are you assuming in terms of battery density or battery chemistry changes that would facilitate that?

MR. GOPAL: So I'm definitely going to have Chris

help me with this question here.

So one of the things that we want to make sure that we convey is that we don't assume fundamental battery chemistry changes between now and 2045. So they're all lithium-ion based chemistry, they just have sort of different segues. I don't think we even have any assumptions around switch to solid state, for example, they're just using different chemistries within lithium-ion LFP, NMC and those.

And when it comes to energy density, again, that has been the main driver essentially across that. I don't have the exact number off the top of my head. Today we're looking at light-duty packs at around 260- or 270-watt hours per kilogram. And we have some improvement I'm sure, but I'm not at -- those rea not at the tip of my tongue here. Chris, do you want to say anything on this?

MR. BUSCH: I would agree with everything you said. I would just point out I think the standard in learning curves is not to be technology, or some -- a lot of learning curves are technology-specific. You might just look at say the levelized cost of energy from solar. And you can have embedded in that different introduction of new technologies.

And so I think when you look at a range of innovations sort of in the near term -- and then Anand had

mentioned solid state -- and if you look at the historical tendency to underpredict innovation and you look at the number of factories coming online, compared to where we are now, we're going to be seeing multiples that point to major economies of scale continuing. So to the extent we see any price pressures currently we see those as, I'm not going to say transient, but temporary.

COMMISSIONER MONAHAN: Thank you. That's very helpful.

COMMISSIONER MCALLISTER: If nobody else has a question, I just wanted to ask about the industrial sector. I noticed you sort of put that at the top of your list in terms of reduction potential. And Commissioner Monahan and I are working on the industrial piece. And I'm just wondering kind of where you're identifying those savings? I mean, cement is an obvious place and kind of setting that to one side is pretty unique process that -- a lot of emissions from the process itself, as well as the heating piece of it. Where else? Like chemicals it's pretty diverse, not really monolithic, kind of huge, individual process-based reductions as far as we can tell. And our staff has been looking into this. A lot of a lot of industrial emissions are adjunct to oil and gas. Where are you seeing those potentials?

MR. GOPAL: Great question. I'm going to start

off and definitely have -- by the way, I did not introduce Chris Busch. Chris Busch is our Transportation Initiative Program Director as well as our Senior Economist at Energy Innovation.

So one area we identified -- that is not the largest wedge, I'll have Chris weigh in on that -- which is what is being quite neglected is sort of switching food processing heating over to industrial heat pumps, and that's sort of in there. Chris, do you want to weigh in?

I think the only other thing we'll also add here is that we actually let refineries reduce overall production in California. As California gasoline demand goes down we don't actually plan to continue to use the refineries, because a lot of refineries produce California-specific sort of CARB off-duty (phonetic) you know, boutique fuels essentially.

So Chris, do you want to add more on which other industrial sectors are key here?

MR. BUSCH: Well, one other thought would be that there's an interesting potential in food and beverage processing. And when we added up the food and beverage, and food and beverage processing industries' segments in the pathways data, those were actually the largest single industry sector user of natural gas after extraction and refinery. So I think cement outweighs food and beverage

processing, because of the coal and the pet coke and the like.

And I'm sure Anand could talk about some interesting work our colleague and he have been doing in terms of industrial heat pump availability for low-temperature heat applications.

MR. GOPAL: Yeah, that. I think just one thing to round out on this is the reason also the industrial wedge is so large is right now there's no proposed policies. Or settled as part of BAU as opposed to, say ACC II being really --substantially capturing a lot of the tons. So that's why you're seeing that so much more is needed, essentially, in terms of action in that sector. Yeah.

COMMISSIONER MCALLISTER: Oh okay, that helps a lot. Thanks for all those clarifications, appreciate that.

MR. GOPAL: Yeah, of course.

COMMISSIONER VACCARO: I had a quick question if I may? I'm just wondering if your modeling or any of your cost calculations, whether or how they're taking transmission infrastructure into account?

MR. GOPAL: Yes, we are.

Actually Chris, do you mind weighing in on this? Because you and I just looked at those numbers this morning, but you helped me with them.

MR. BUSCH: Well the thought that came to my mind, I'm not sure if this is exactly what you're getting at, is just we do roll in several reliability investments into the clean energy standard policy. So I think I would have to double-check and so I'm hesitant, a bit hesitant to cite specific numbers. But I know, for example, we have a big increase in battery storage and I --

MR. GOPAL: So 5,900 megawatts of added battery storage and certain, fairly high levels of investment in transmission, which I'll be happy to share with you right after. It's in the report. Sorry to interrupt, Chris.

Just one important point, because it's a really important question here. Our team, the electricity team on Energy Innovation, worked I think with Commissioner Gunda earlier in the year, and also came up with an 85 percent clean scenario that's highly reliable for California. So we incorporate those findings in this essentially. So that's why we need sort of a more diverse mix of clean power like I alluded to earlier. We incorporate substantial amounts of battery storage, I think, at least 6 gigawatt hours if I'm not wrong. And also making sure that we have enough transmission buildout to accommodate the clean that's in our scenarios, essentially.

So that does not solve for the barriers for that transmission build. That's important to note, yeah.

COMMISSIONER VACCARO: Okay. Yeah, thank you. And what readily comes to mind for me is I think about offshore wind. So you built offshore wind into your model. You have certain projections about cost. But as we're looking at offshore wind here in California we're approaching the first ever offshore wind lease sale this December we still are solving for some of the transmission questions and issues. And so as you are giving numbers about offshore wind I was also wondering, for instance how broadly you're looking at that, because transmission is really an important piece in the north coast. Needs and opportunities are different in central, as you are aware.

MR. GOPAL: Actually I lived for my first four years of California up in Humboldt County. So I know that the maximum capacity out of there is 140 megawatts at the moment, which is fairly way short of taking advantage of the lease sales up in Humboldt Bay. Yes, we're aware of that. What we do is in our scenarios they need to be solved. I need to be clear about that, for the deployment rate that we're seeing, to have it correct.

VICE CHAIR GUNDA: Yeah, and this is Siva. I just wanted to -- first of all thank you for the discussion, you and Chris. I just wanted to ask one foundational question on the tool itself. How is it taking into account the different -- for example, on the

electricity system the resource build -- what types of assumptions does the tool take in? And what is kind of programmed in for a potential optimization of the pathways that you've done here?

MR. GOPAL: Yeah, so this is a great question. So the Energy Policy Simulator, the reason it runs really fast is that it does not do optimization. So the electricity sector modeling is not the same as say, using ReEDS as a capacity expansion model, or even PLEXOS for dispatch, and the sort of 87-60 (phonetic) 15-minute increments that they make sure that load matching happens.

What we do is ensure that we are able, the way we build it out is we do energy matching essentially and then we sort of build the loading order based on costs going forward. And we are able to program in retirements, and then factor in incentives and bringing on new capacity on online.

The way we address some of the shortcomings within the simulator to characterize the electricity systems, is we work with the electricity team that usually contract with other colleagues and friends of ours to run ReEDS or other models. And we then import in some of the capacity mixes in from there into how we model the power sector for key years, going forward. That is simply how we will probably do it.

We are doing some improvements in characterizing the electricity sector within the Energy Policy Simulator. That should be done early next year. So it'll be even better than just making sure that there's energy matching and sort of cost going forward.

So those are definitely limitations. And the way we always do that is make sure that we take input from better capacity expansion model.

VICE CHAIR GUNDA: Thank you, Anand. I know we have a more in-depth kind of one-on-one on this, so I look forward to that. It's really helpful. I look forward to learn how it could be used and learn from this tool. Thank you so much for your time.

CHAIR HOCHSCHILD: Anand, thank you so much. We've got to move on to other items here. But I just hope everyone can see why I wanted Anand to present. And I have to say it's very validating for me, at least to see this, because it's so highly aligned with our strategy. So just really want to appreciate you, Chris and the team for all the diligence to produce this and look forward to continuing to engage as we go forward. So thank you all.

Unless there's other questions we will let you go. Thank you.

MR. BUSCH: Thank you.

MR. GOPAL: Thank you, Chair Hochschild. All

right. Let me unshare. There we go. All right, thanks.

CHAIR HOCHSCHILD: Okay, so let's move now to Item 2, Overview of Budget Augmentations for the 2022-2023 Budget. And, Anand, you're welcome to stay on and listen, it's actually exciting stuff. But let's welcome Damien Mimnaugh.

And Damien, let me just begin with a thank-you to you as well. You have been just a tremendous addition. You're sort of something of a budget superhero arriving at just the right time for what is without question the most consequential Energy Commission budget in our agency's history, and you've been instrumental. And so I want to thank you on behalf of all of us for all your hard work getting through this process. And with that, I'll turn it over to you.

MR. MIMNAUGH: Great, thank you. And a good morning, Chair and Commissioners. My name is Damien Mimnaugh, the Chief Financial Officer for the Energy Commission. Today I will present an overview of the budget augmentations that the CEC received in Fiscal Year 2022-23, including both state and federal funding. Next slide, please.

The 2022 budget agreement provided a historic amount of new funding to the Energy Commission. The various programs that will receive funding will benefit

Californians by improving energy reliability, combating the climate crisis, and supporting California's economy. In combined state and federal funding, the Commission is tracking a total of nearly $10.5 billion in new funding that will be provided over a period of multiple years. This presentation will provide a brief overview of the new state funds available to the Commission. And then following this presentation Jennifer Martin-Gallardo will present detailed information about the opportunities for new federal funds that Commission staff are tracking. Next slide, please.

New state funding for incentive programs includes nearly $2.3 billion over the upcoming five-year period. This funding includes $380 million for the Incentives for the Long-Duration Energy Storage Program; $100 million for the Hydrogen Program; $100 million for the Industrial Grid Support and Decarbonization Program; $75 million for the Food Production Investment Program; $922 million for the Equitable Building Decarbonization Program; $525 million for the Climate Innovation Program; $100 million for the Carbon Removal Innovation Program; $45 million for the Offshore Wind Infrastructure Investment Program; and then $20 million for the CalSHAPE Ventilation program.

And I'll note here that the ZEV infrastructure programs also received additional funding, and I'll be

discussing those funds in a later slide. Next slide, please.

The 2022 Budget Agreement also provided nearly $2 billion for the Commission to support energy reliability in California. And this amount includes $700 million for the Distributed Electricity Backup Assets Program; $295 million for the Demand Side Grid Support Program; and $1 billion for the Clean Energy Reliability Investment Plan.

And I'll note here that the Commission is developing the plan for inclusion in the 2023-24 budget, and the amount that will be proposed to be administered by CEC is not yet determined. Next slide, please.

The Budget Agreement also provided a historic investment to transition towards zero emission vehicles. The funding amounts I will discuss here pertain to CEC's funding for ZEV infrastructure. The Air Resources Board also received additional funding for vehicle incentives and support through this Budget Agreement.

The 2021 Budget Agreement provided $1.165 billion to the Commission over three years to help decarbonize California's most polluting sector and improve public health by accelerating the state's transition to zero emission vehicles.

The 2022 Budget Agreement provided an additional $2.4 billion to the Commission over five years, bringing

the total amount provided to the Commission to nearly $3.6 billion.

Additionally, the CEC is partnering with Caltrans to deploy additional funding from the federal government. That is not reflected in this table.

These funds will support Commission activities to expand ZEV infrastructure for light-, medium-, and heavy-duty vehicles, including infrastructure for personal vehicles, transit buses, school buses, drayage and port operations, as well as ZEV manufacturing activities.

And these amounts are part of the overall $10 billion amount that has been budgeted from both state and federal sources over a five-year period to support the state's transition to the zero emission vehicles, with funding provided to the Energy Commission, the Air Resources Board, the State Transportation Agency, and the Governor's Office of Business and Economic Development.

In addition to these ZEV-specific funds, the 2022 Budget Agreement also provided critical funding for ongoing Commission activities. And this funding includes $7 million to improve the Commission's energy modeling activities; $5 million to support the Commission's analysis of energy customer data; and $1.5 million for the Commission to develop the strategic plan for offshore wind energy off the coast of California.

So this has been an overview of the augmentation of state funds that the Commission received as part of the 2022 Budget Agreement. And as part of the next budget item, Jennifer Martin-Gallardo will review federal funding opportunities. And at this point I'll be available for questions if you have any. Thank you.

Thank you so much, Damien. Let's just open up to any Commissioner discussion or questions.

VICE CHAIR GUNDA: I just want to jump in and just second your kudos to Damien and team. And Damien, thank you so much for your incredible work this year. I know, to not only just fire on all the cylinders, but more (indiscernible) and so thank you for all the work.

I think it might be helpful if you could just expand on the billion-dollar reliability investment fund? Just kind of know how it's structured today and the next steps so that given that it could be very integrated across the Commission work and other agencies work, so it'll be helpful for other Commissioners to hear just how exactly we are planning to do that.

MR. MIMNAUGH: And this is the $1 Billion Clean Energy Reliability Plan?

VICE CHAIR GUNDA: Yeah, investment plan. Yep.

MR. MIMNAUGH: Got you. Yeah, so as part of SB 46, the Legislature approved a total of $1 billion to be

appropriated starting in the next fiscal year 23-24 for clean energy and reliability purposes. That plan will be developed and released as part of the 2023-24 budget development process. And so we can expect more public information to be available in the coming year as the budget documents are released.

VICE CHAIR GUNDA: Thank you, Damien. Just given that it's a discussion item to fellow colleagues on the dais here, I think one of the core elements that we are going to try and cover in the workshop next Friday was also going to touch on this. So hopefully, some of you or all of you are able to join that.

CHAIR HOCHSCHILD: Great.

COMMISSIONER VACCARO: I had a quick comment if I may?

CHAIR HOCHSCHILD: Yeah, please. Please.

COMMISSIONER VACCARO: Yeah. Thank you. So just, Damien, you've heard it from everyone I think before. Hearing it again today how appreciative we are that you joined us and you joined at just the right time. Unprecedented amount of dollars, incredible activity, heavy lift across the agency. But the clarity of communication, and the methodology that you employed, I think really enabled each Commissioner to understand what was happening.

So not all of this money touches my Lead

Commissioner areas; actually very, very little of it does. But I felt involved in the process and I felt that I was kept aware throughout this. And I can't help myself but to make a huge shout out for the $45 million. You mentioned it but that is offshore wind-related money. It's important money that's going to relate to ports and waterfront facilities, so very excited about that. I'm excited about all of the money.

And again, kudos to you for leading in this space and keeping all of the Commissioners, I think apprised and connected.

CHAIR HOCHSCHILD: Really well said. I'd like to associate myself with those comments. Thank you so much, Commissioner.

Commissioner Monahan?

COMMISSIONER MONAHAN: Yeah Damien, you were amazing. I feel like we need to do in this moment, and you really delivered in terms of just being a resource for questions. You had so much information that the rest of us really didn't have. And you were so generous with helping us through this process.

I mean, we got over 30 years of Clean Transportation Program funding in the span of two fiscal years in terms of the amount of money that we usually have to deal with. And you were just great through this whole

thing, so thank you.

CHAIR HOCHSCHILD: Any other Commissioners wishing to comment? If not, thank you again, Damien.

I also just want to say I really agree it's an iterative process, right? And when there are cuts to particular areas, I felt we could just have a really fruitful dialogue. But hey, this is actually the consequence of that and on some of these items we were able to really push back and make sure that we kept the direct carbon capture, the food production improvement, and other things. I think we made the case effectively and are going to bear a lot of fruit.

So for every other state in the country the kind of money we're getting here is unimaginable. And I just want to highlight again there's an article that came out actually today, that says we're now on track to pass Germany, okay? So we passed the economy of Brazil, which was number seven, and France, which was number six in 2015. And then 2017, we passed the UK, which was number five. And now it looks like 2022, we'll pass Germany to be the number four economy in the world. Out of 195 countries we will be the fourth largest in the world.

And for us to showcase that we can do this and have vibrant economic growth at the same time coexisting, and even in fact in part caused by bold decarbonization, is

an incredible narrative. It really shakes up the conventional thinking on this stuff. And so these investments in this budget are going to just add incredible momentum to the direction we're going on this.

And I couldn't be prouder of this budget and all the work and the team. And I know my colleagues join in thanking you, Damien, and the whole team, for getting this over the finish line, and incredible partnership with the Legislature and Governor's Office to get to this point. So thank you again.

Unless there are other questions on Item 2, let's turn now to Item 3, information item on the Infrastructure Investment and Jobs Act. Welcome, Jen Martin-Gallardo.

MS. MARTIN-GALLARDO: Good morning Chair, Vice Chair, and Commissioners. My name is Jennifer Martin-Gallardo and I'm here this morning to share an update on the status of the Energy Commission's activities related to both the Infrastructure Investment and Jobs Act and the Inflation Reduction Act.

As I last shared with you at the June business meeting, the IIJA was signed into law in November of last year, and it set aside about $75 billion for programs related to clean energy and power, and $7.5 billion for electric vehicle charging infrastructure. The CEC has been focusing its efforts on 11 important opportunities, 9 of

which we expect to receive funding for. I will share with you the status of those 11 important opportunities. The Inflation Reduction Act, or IRA, is more recent, signed this August. This legislation created a great number of financial incentives related to clean energy, many in the form of tax credits. The CEC will be focusing its efforts around two rebate programs and perhaps one program related to our energy code. Next slide.

Californians will receive many benefits from this federal funding. It will further California's efforts to meet clean energy goals, it prioritizes our impacted communities, and it reduces costs to Californians as we move forward to achieve our goals. Next slide.

Before I provide an update on each of these opportunities I want to note that each opportunity is designated as either "formula" or "competitive". Formula opportunities means the money comes to California and has been calculated using a specific formula. Once we submit a plan that meets the Act's requirements we will receive those funds.

For competitive opportunities, the state will have to submit a competitive application which will be scored against other applications, with no certainty that the funds will be awarded.

So this morning I am going to start with our two

grid-related opportunities. First, we have the Preventing Outages and Enhancing the Resilience of the Electric Grid. This is a formula opportunity for states, territories and tribes. And California is currently expected to receive $34 million per year over five years; however, Department of Energy's calculation on that formula may be revised over time.

The Energy Commission is leading this opportunity for the state and has been in close collaboration with the CPUC and has also engaged with CAISO. The team has made great progress on this opportunity, and had its first public workshop to share more information about what we are calling the Community Energy Resilience Investment program. We had that workshop in August. Staff has received helpful feedback from stakeholders, and is using all of that information received to create the CEC's application to DOE for these funds. We expect DOE to issue an updated Funding Opportunity Announcement, or FOA, with new information in the near future. So we are holding off on submitting our application until we are able to review the anticipated update. The deadline to submit our application is in March, but we expect to be ready to submit before that deadline. Next slide

The second grid-related opportunity is the program Upgrading Our Electric Grid and Ensuring

Reliability and Resiliency. This is a competitive opportunity, and the draft application requirements were released in September. We expect the formal release sometime later this year.

Based on our preliminary discussions with CPUC and CAISO we plan to focus our application on projects that will advance decarbonization and demonstrate innovative approaches to enhancing grid reliability and resilience in the face of climate change and new extremes. This could include strategic deployment and coordination of long duration energy storage, microgrids, and other technologies for supporting bulk system peak load reduction and local resilience to planned and unplanned outages associated with extreme weather.

We would like to target load reduction in high-impact areas and areas with high frequency of public safety power shutoffs or low reliability metrics. Staff is beginning its engagement with utilities, tribes and other stakeholders to identify potential projects that would fit these goals. Next slide.

I will next discuss the three opportunities related to electric vehicle infrastructure.

First, we have the National Electric Vehicle Infrastructure program. This is another formula funding opportunity, and California is expected to receive $384

million over five years. Caltrans will receive the funds, but will flow the money through the Energy Commission and we will distribute the funding through our solicitation process.

The first annual California Deployment Plan was approved by the Federal Highway Administration in September. That agency has also published draft regulations for the NEVI program. The CEC is planning to put out its first solicitation for the NEVI funding opportunity as early as January, depending on the timing of the final federal regulations. Staff anticipates releasing this solicitation about every six months for the next two years. Next slide.

The next two EV-related opportunities are for Charging and Fueling Infrastructure: one for Community Charging and the other for Corridor Charging. These are competitive opportunities, and the detailed application requirements have yet to be released. They are expected next spring. The CEC will again be working in coordination with California State Transportation Agency and Caltrans to bring more funding to California. Next slide.

Our next four opportunities relate generally to Energy Efficiency, and are being handled by both our Efficiency and Renewable Energy Divisions.

First is additional formula funding for the State

Energy Program, for which we currently receive annual funding from DOE. We expect to receive an additional $31 million that can be spent over five years. These IIJA funds will be an additional infusion to support Energy Commission operations that are currently supported through our annual SEP program. The formal application due date is in December, but our application is being finalized and should be submitted in the near future. Next slide.

Next, we have another formula funding opportunity for an Energy Efficiency Revolving Loan Fund Capitalization Grant Program. We expect to receive a capitalization grant next year for approximately $6.8 million. We anticipate these funds will be used to fund energy efficiency audits and upgrades based on those audits. We should have more information on this opportunity next spring. Next slide.

Next, we have another formula funding opportunity for an Energy Efficiency Conservation Block Grant. We expect to receive a block grant later this year or probably early next year for approximately $10 million. We anticipate these funds will be used together with another $6 million dollars in ARRA funding for Tribal and Local Government Planning and Deployment grants. We expect more information on this opportunity later this year. Next slide.

Finally, we have a competitive opportunity titled

Building Codes Implementation for Efficiency and Resilience. The purpose of this opportunity is to enable sustained, cost-effective implementation of updated building energy codes to save customers money on their energy bills. We anticipate putting forward an application that would request funding for local building department tech support, innovative compliance tools for local building departments, and innovation to compliance modeling. We expect this opportunity will be released at the end of this year.

Now those are all of the opportunities that the Energy Commission expects it will directly apply for or receive funding under the IIJA.

For the next two opportunities, Hydrogen Hubs and Direct Air Capture Hubs, the Energy Commission does not anticipate directly applying or receiving funds, but will be providing direct support for California-based applications. Next slide.

For the state's supported hydrogen hub Go-Biz is leading the effort with support from CEC, ARB, and the CPUC. The goal is for California to establish an environmentally and economically sustainable and expanding renewable hydrogen hub. The team is working with public and private stakeholders, including California's legislature and leading municipalities such as Los Angeles,

to submit one state co-funded application.

There has been broad outreach by Go-Biz and they have established the ARCHES team, supported in large part by UC and Berkeley Lab, labor, multiple California cities, and industry partners. You can go to the ARCHES website and see the incredible number of entities engaged throughout the state on this effort. The team, led by Tyson Eckerle, is working diligently to get the concept paper ready for submission in November. Next slide.

Finally, we have the Direct Air Capture Hub Opportunity. Another competitive opportunity, this one is to fund four regional DAC hubs to demonstrate durable CO2 removal.

CEC staff has been meeting with relevant stakeholders to get an understanding of the current California activities related to DAC projects and how the CEC can support the development of a DAC hub in California. The team is working on a federal cost share solicitation to provide match funding to this opportunity. We expect this opportunity to be released by DOE in the fourth quarter of this year.

Now those are all the IIJA funding opportunities that CEC staff are actively engaged on. Now I'll turn the discussion to our efforts under the Inflation Reduction Act. This legislation is much different than the IIJA,

which created many new grant opportunities. While the IRA created a great number of financial incentives related to clean energy, many are in the form of tax credits or other financial mechanisms.

The CEC will be focusing its efforts around two rebate programs and perhaps one program related to our energy code. I will note that DOE definitely has their hands full with IIJA implementation, so not much information outside of the legislative language itself is yet available. As this is the first time I'm presenting on the IRA and because there are few available summaries of the rebate programs these slides will be providing more detail than an ideal PowerPoint. I won't speak to the details, but these slides can be a reference for Commissioners and the public. Next slide

The HOPE for HOMES Rebate Program is a formula-funded opportunity. The IRA allocated $4.3 billion nationally, and the estimate for the Energy Commission to receive is approximately $282 million. CEC will develop a program based on forthcoming DOE guidance that will provide rebates to homeowners and aggregators for whole house energy-saving retrofits based on the percentage of energy savings.

The rebates are available to all income levels, but additional funding can be provided to low- and

moderate-income individuals who earn less than 80 percent of the area median income and bonuses are given to projects located in disadvantaged communities. Next slide.

This slide provides a summary of the rebate amounts which are based on the percentage of energy savings either modeled or measured for both single- and multi-family homes. As I mentioned, there's quite a bit of information on this slide. I won't go through it all, but it is here for reference. Next slide.

The High-Efficiency Electric Homes Rebate Program is also a formula funded program. The IRA allocated another $4.3 billion nationally, and the Energy Commission is expected to receive approximately $280 million. The program will provide rebates of up to $14,000 per household for electric appliances and necessary related upgrades. Again, the CEC will need to develop a plan based on forthcoming DOE guidance. The legislation caps the eligible recipients to those below 150 percent of area median income. Next slide

This slide provides a summary of the rebate amounts for specific items and upgrades listed in the legislation. Again, this is intended for reference and I won't go through each of these amounts. Next slide

The final opportunity our efficiency team is considering is a competitive opportunity related to energy

code updates. The IRA allocated $1 billion between two programs available nationwide to support state and local jurisdictions to update energy codes. Our Efficiency team is doing its preliminary investigation into whether this opportunity is worthwhile for the CEC to work towards. Next slide.

That's the summary of our efforts related to federal funding. While I'm helping to coordinate our efforts I want to acknowledge our many excellent teams working to successfully implement our goals for this funding. Our teams are available to provide more detailed briefings upon request. And I'm happy to answer any questions you have.

CHAIR HOCHSCHILD: Thank you so much, Jen. That was a terrific overview. And let me add my thanks as well to the whole team that worked on this, really terrific.

And I always like to remind folks, in hockey you get credited with an assist when you're two passes away. And I want to again just thank Commissioner Vaccaro, who was the one who recommended you for the role you're now in and how grateful I am to her for that. Because it's just borne so much fruit with all your incredible diligence, Jen. This is a once-in-a-career opportunity to have all these funds available. And just my hope for us as an agency is we absolutely turn over every stone to get every

dollar we can for the programs that make sense where we're aligned and can take full advantage of that opportunity. And I just want to express my gratitude again to you and all your colleagues for their diligence.

So let's go to Commissioner discussion. I see Commissioner McAllister has a hand up.

COMMISSIONER MCALLISTER: Yeah, thanks a lot. And I really just first want to thank you, Jen, for keeping a lot of tabs on that Excel spreadsheet with all these opportunities and keeping it up to date. And it's definitely a Sisyphean task.

And I just wanted to point out a couple of things. One, it's great to have all this federal money. But to your point, Chair, in the previous item just the size of our clean energy transition endeavor is actually larger than the participation that we'll get as a state from the federal injections of capital. So there's a great opportunity, really on all of these fronts, to do the programs that we want to do with the state funding we have and sort of the plans that we have and the goals that we have. And then take the federal money and layer it in efficiently into those existing state programs. And so it's not always totally straightforward to do that, because there are different requirements, but just any way we can sort of build the programs that we want in the near term.

And then when the federal money does come about and come to us, make sure that it's focused on our priorities.

So on the energy efficiency front, we're trying to do that by really getting together with other states and advising the Department of Energy on that guidance that Jen referred to. So as they develop, as the Department develops guidance, they're getting, they're making progress on the IIJA front.

And as they turn to the IRA front, the states will be encouraging, strongly, the Department to use best practices and try to align their guidance for these programs, these federal programs with state priorities. And so that's going to be an ongoing effort for the next year or so, largely coordinated by NASEO, but together with the folks who really can see that these federal bills, and have been working towards them for many, many years.

So the fruition and particularly the HOMES Act is a fruition of 12 years of effort by a whole bunch of folks in Washington and across the country. It's finally come to fruition.

The last thing I'll point out is that in some ways, on the efficiency front at least, we pay a penalty for being so efficient already. Because these formula funds, they have a minimum for each state, so there are three buckets here.

One is just a minimum allocation for each state. The next is based on the -- well there's an important component of about a third of these of the formula that's based on energy consumption per capita of the state, right? So we're much more efficient than Texas and so we take a pretty big haircut on that piece in terms of the federal allocation. So a pro rata of $9 billion would be almost a billion dollars. But we think probably that goes to about $600 million for the HOPE for HOMES and the All-Electric Homes Act, pieces of the IRA.

So still really grateful to have the between $550 and $600 million from that federal injection. But again, we're putting more than that in state funds toward buildings. And so the idea really would be to not increase the overhead, channel all those funds -- as many as possible -- through our existing state programs to get to the neediest communities that we're going to be focused on in the state.

So I just wanted to sort of thank Jen again for digging into all these details. And helping coach the various teams across the Commission who are going to be applying and administering these various funds.

CHAIR HOCHSCHILD: Thank you.

Commissioner Monahan?

COMMISSIONER MONAHAN: Jen, I just had a quick

question and if you don't have the data, perhaps later you could share it. But I'm curious about the range of funds that we could expect sort of like from the lowest amount from the formula funds, I would say, to the biggest amount that would flow through the Energy Commission? And similarly, sort of what's the range for what California could get writ large? I don't know if we collect that data for the broader California portfolio, but do we have it for the CEC?

MS. MARTIN-GALLARDO: As far as like just a grand total of all the opportunities that we're going for? Yes, I think that we have a spreadsheet that I can share that kind of totals up all of the money that we could possibly get, right? We have estimates on the competitive, because we have no idea even what the range of applications are going to be quite yet. Any funding opportunity new notice that has not yet come out right, those whole specifics aren't available. We're just doing some generalizations, maybe 10 percent, of whatever's available could come to California.

On the funding, on the formula funding, we do absolutely have those numbers. For like NEVI it's $384 million. For our CERI, for our one-grid related it's definitely, at least for this year, $34 million, but that could change over time per DOE. So I can give you

certainty on formula, less certainty on competitive but we do have it, a total table I can provide.

COMMISSIONER MONAHAN: That's great. Yeah, I'd love to see that. I'm guessing the other Commissioners would as well. Thanks, Jen.

CHAIR HOCHSCHILD: Let's go to Commissioner Vaccaro.

COMMISSIONER VACCARO: So thank you, Jen, for the presentation. For your leadership in this space. And for working so collaboratively with the teams across the agency. I don't have any questions for you, but really appreciate this briefing.

But I do wonder, Chair Hochschild, if this is an opportunity, or if we take on it at another meeting, to maybe give Drew Bohan who's also doing an exceptional job leading in this space just an opportunity to tell us how are our recruitment efforts are also aligned with all of this money that we're looking at from the state budget? And how that also will support some of the efforts should we receive the competitive funding right, instead of the non-formula funding. Because we're going to be supporting non-formula funding activities as well.

And so I'm just wondering about that because I know there's a good news story there. A lot of effort that Rob Cook and Drew were undertaking and their respective

teams in that space as well.

CHAIR HOCHSCHILD: That is a great question, Commissioner. I believe all in, the number is 222 new positions that we have to fill. And Drew, I don't know if could you respond to the Commissioner's question on how we're approaching that?

MR. BOHAN: Certainly. Yes, 222 was the number we came up with when we looked at what's needed immediately in the next couple of years. It's a very large number. It was in the 140s for this this year. These were kind of rough estimates that we came up with based on workload and based on existing staffing and that sort of thing. And we're going to be revising those as the numbers, as the responsibilities settle in.

And we're looking to shift some of the responsibilities between different units. The research stuff is going to continue to go to R&D, the transportation stuff is going to continue to go to FTD. But we've got a whole bunch of other pieces in play that don't neatly fit into one of those two buckets. So we're looking, and where things land has a significant impact on what the resource needs are then to support that kind of work. So I'd say it's still a work in progress.

We are beefing up our recruitment team. I just met two weeks ago, two of the newest members. We had zero

five years ago, zero people who woke up every day thinking about recruitment. We hired one person who's been excellent, Jessica Gee some of you know. She brought on a partner a couple of years ago, we just added two more, and I think a fifth. And it's starting to pay real dividends through a whole bunch of different tools that they're using. So definitely a very large workload though, increase. And we're moving quickly to try to manage it.

CHAIR HOCHSCHILD: Thank you, Drew, great update.

Let's go to Vice Chair Gunda.

VICE CHAIR GUNDA: Yeah, Chair, thank you.

I didn't have any questions. I just wanted to thank Jennifer for the work she's been doing. Thanks, Jen, for all the briefings we all get internally. And as Commissioner Vaccaro and Monahan noted you've been super-collaborative, helping everybody kind of come together on this, so thank you for your work. I look forward to continuing to see where this lands and the potential funding we might get. Thanks.

CHAIR HOCHSCHILD: Thank you, Jen. Yeah, well look, I don't mean to rain on the parade because I think our work on this been terrific with your leadership, Jen. But I do want to acknowledge I was really, really disappointed, profoundly disappointed last week by the DOE funding on the Battery Solicitation and Manufacturers

Solicitation.

While there were a couple California firms that did receive awards they're for activity out of state, so Applied Materials and Sola, and a few others that are doing operations in North Carolina, Nevada, Washington state, we don't have any awards that are going to be supporting in-state manufacturing. And I think it's a huge, missed opportunity. I will be in touch with DOE on this. And I think we got to do better, because obviously we want to partner and leverage our investments with federal investments.

And going forward, I think, we've got to realize collectively the value of creating an ecosystem together and the need to partner on that, so very much support directionally where the grants are going. But we have 40 million people in this state and we're doing a focus on the in-state manufacturing, so that was really disappointing to see that. I just wanted to say that publicly. There's nothing about that that's a secret from my perspective. It's something we've got to address, so I will be in touch on that. But Jen, thank you for your work on that.

And unless there are other comments, I don't think I see any, let me thank you.

And we'll turn now to Item 4 on Offshore Wind.

Before I ask Alana Sanchez to present I'm

wondering, Commissioner Vaccaro, if you could set the stage a little bit and kind of give us a snapshot on offshore wind. And let me just say, again my thanks to you for really an incredible letter that you quarterbacked earlier this summer, kind of bringing stakeholders together to articulate our priorities for how the bid process could best be designed. And it resulted in some, I think, certainly historic and pathbreaking new provisions of this lease sale.

And I'm wondering if you could kind of walk us through that success a little bit, give us some framing on the timing and next steps. And then we'll invite Alana to present on the offshore wind delegation.

COMMISSIONER VACCARO: Yeah, thank you so much, Chair Hochschild.

So first of all I just want to give credit where it's due, which is we had nine state agencies came together, spoke with one voice, and submitted a comment letter to the Bureau of Ocean Energy Management on its proposed sale notice for a lease sale here in California for waters, federal waters offshore California. And in that, in speaking with one voice, we made some recommendations to BOEM that we really did hope that BOEM would listen to. BOEM has been a tremendous partner to the State of California in just advancing offshore wind energy.

Our focus here of course in California is floating offshore wind.

And anyhow the letter, as you say, I think was particularly successful as it related to what are referenced as "bidding credits." So it's going to be what we know for sure because BOEM did put out a final sale notice, making clear that there will be the first-ever offshore wind energy lease sale on December 6th is when that lease sale takes place. And that's huge, that is huge. Because so many people, yourself included, Chair Hochschild, have been working in this offshore wind space for so many years, even predating 2016. And to be where we are today is exciting. And that letter that you referenced was really intended to help shape what that lease sale looks like to uplift and amplify California priorities and values. And so it will be a multifactor auction.

And I just want to comment on one thing, which is the element of bidding credits. BOEM came out and said, "Look, would-be lessees can make financial commitments or other commitments, and get a credit with respect to the bids that they put forward." The state agencies really pushed for a high amount percentage of bid credits. And BOEM didn't meet us exactly with what we were asking for, which was 50 percent. But they met us with 30 percent, which as you said is historic. And I think it's going to

go a long way towards making this a successful lease. So, again just in terms of dates, December 6th, BOEM lease sale.

The California Energy Commission is still working just very hard and fast on meeting the requirements of Assembly Bill 525. So we have two reports that are due to the Legislature at the end of this year. We're working hard and fast on those: offshore wind permitting roadmap, which is really very important. As well as a preliminary analysis of economic benefits of investments into ports and waterfront facilities as well, as looking at some workforce aspects.

We have two workshops coming up. One this week that again is very important. It's looking at identification of suitable sea space to meet those historic planning goals for 2030 and 2045 that were established by the Energy Commission in August.

We also have a very important workshop coming up on the 31st. We're cohosting with the State Lands Commission, and it's a workshop to talk about the studies and the efforts to date looking at port infrastructure needs and studies in that space. So it's been a busy time, and it will continue to be very busy for offshore wind.

So anyhow, I don't want to steal any of Alana's thunder, because I think she's going to touch on some of

that in her presentation. I really do appreciate Chair Hochschild the opportunity to like just sort of set that stage a bit.

CHAIR HOCHSCHILD: Yeah, super helpful. Thank you.

Let's go to Alana Sanchez now.

MS. SANCHEZ: Thank you. You could never steal my thunder. No, really, I appreciate your leadership on this. So let me go to my notes here, hold on. Thank you.

So good morning, Chair and Commissioners. My name is Alana Sanchez. I'm the International Relations Senior Advisor here at the California Energy Commission. I lead the Commission's international work with a lot of support from my fellow advisors, CEC staff and leadership, as well as our international partners, and our interagency international team. Next slide, please.

Offshore wind has been identified as an abundant domestic source of clean energy production for the United States because offshore winds tend to be strong, fast, and uniform. The wind energy developed in the federal ocean waters off California's coast is poised to play an important role in diversifying the state's portfolio of resources. And offshore wind can help California achieve its 100 percent renewable and zero-carbon energy goals as well as the electrification of other sectors such as

transportation.

Floating and fixed-bottom technologies have been deployed internationally, with the first commercial wind farm built by Denmark in 1991. Since then Europe has established itself as a leader in offshore wind. Our clean energy partners in Europe are working together regionally to expand offshore wind energy in the North Sea region. And we've seen this ramp up recently in global events.

As California embarks on a journey to be a global leader in floating offshore wind energy development we appreciate all the opportunities to learn from seasoned experts who are our international partners in fighting climate change. Global cooperation helps California accelerate its clean energy future with up close, firsthand exposure of successful, commercial scale, floating offshore wind projects as it ramps up for deployment of utility scale floating offshore wind.

California has focused on floating offshore wind, because the deep waters off of the Pacific outer continental shelf off of California's coasts, have steep drop-offs that will require offshore wind turbines installed on floating platforms to be anchored to the seabed.

Information exchanges with our European partners with their experience in offshore wind energy development

can enable California leaders to benefit from the lessons learned. As the Energy Commission together with state and federal agency partners, tribal governments, and stakeholders collaborate on the development of a strategic plan for offshore wind energy developments installed off the California coast in federal waters due to the California Natural Resources Agency and the Legislature by June 30th, 2022. And as the state prepares for its first-ever Bureau of Ocean Energy Management offshore wind lease sale on December 6th, 2022. And this will be for areas in federal waters off of our central and northern coasts. Next slide, please.

At Chair Hochschild's direction, I recently had the privilege to coordinate a team to develop a fact-finding study toward to help -- to Europe for about 20 participants. We had a lot of support from our international partners, without whom this study tour would not have been possible, and a lot of support from a team that helped pull together all aspects of the tour.

About half the study tour participants were from California state agencies and the other half included tribal, labor, nonprofit and environmental justice leaders, environmental and clean energy policy advocates. Next slide.

While it's true that nearly all the existing

offshore wind farms in Europe use fixed-bottom foundations, procurement and supply chain, port infrastructure and development, labor and workforce development, environmental monitoring, regional cooperation among other topics, these also apply to projects using floating technologies. So we were able to learn about many of these topics during our study tour.

In Scotland we toured what is currently the world's largest, fully operational floating offshore wind farm. It's about 15 kilometers or about 10 miles off the coast of Aberdeen. Its waters are ranging from about 60 to 80 meters deep, it's about 200 to 260 feet. And the Kincardine Offshore Wind Farm is made up of five 9.5 megawatt turbines. So this project is capable of powering 35,000 homes in Scotland. Next slide.

Once we were in Denmark we were joined by four staff from the Danish Energy Agency who joined us for the entirety of our time there and they added a lot of value to our visit. We're very grateful to them for their cooperation. They were our guides and they graciously provided additional information and insight throughout the duration of the visit.

And while we were in Denmark we met with government and industry representatives, we toured the Port of Esbjerg and we visited the Horns Rev wind farms in the

North Sea. The Port of Esbjerg plays a significant role in Europe regarding offshore wind and the offshore wind industry. It's a massive port and it's involved in the transport, preassembly, shipping, and servicing of offshore wind turbines.

The Horns Rev consists of three fixed-bottom farms built in three phases: in 2002, 2009, and 2019. Upon completion in 2002 the Horns Rev I was the first large-scale commercial project in the world with a capacity of 160 megawatts. Horns Rev II and Horns Rev III are 209 and 407 megawatts. All are in close proximity to each other and they're about 27 miles off the coast.

Seeing the Port of Esbjerg, Kincardine in Scotland, and the Horns Rev wind farms gave us all an appreciation for the multifaceted magnitude of scope and commercial scale of offshore wind infrastructure, and also gave us some insight into the need for a highly skilled and trained workforce. Next slide, please.

On our last official day in Denmark before traveling back to Copenhagen we had the pleasure of visiting the Siemens Gamesa factory, Stiesdal, Welcon and CIP, which is the Copenhagen Investment Plan, and Energinet, Denmark's Transmission System Operator. At Siemens Gamesa we got a firsthand look inside a nacelle, which is what houses all of the turbines and generating

parts. The nacelle sits on top of the tower behind the hub and it's kind of like the engine of the offshore wind turbine.

At Stiesdal, Welcon, and CIP we were able to see giant sheets of steel being transformed into turbine towers. And we met with their team to learn more about the floating offshore wind turbine foundations that they're famous for.

We received a presentation from the Copenhagen Investment Partners. I misspoke before, excuse me. They are a fund management company that specializes in offering tailor-made investments in global energy infrastructure needs and assets. And during their presentation they highlighted the work they are doing globally. We're waiting for that slide deck and I'd be happy to share it with you once we receive it. Next slide, please.

About half the study tour participants traveled back home once we returned to Copenhagen, Denmark at the end of the official study tour while a smaller group of us traveled to Hamburg, Germany for the Wind Energy Hamburg Conference, where Vice Chair Gunda had the opportunity to share the California perspectives. And the timing for that could not have been much better. While Europe has been a leader on offshore wind, all eyes are now on California to be the global leader in floating offshore wind. While Vice

Chair Gunda shared the California story in our state's commitment to be bold on floating offshore wind, he was also able to share some of California's values that are at the heart of the work we do. Values like environmental protection, sustainability, conservation, environmental justice, equity, and the will to achieve a clean energy future for all.

As we continue to move forward I expect we will continue to look toward the leadership that's gotten us this far, to the leadership of our administration, to the communities, and the stakeholders engaged in this progress of this process, to the staff here at the CEC who are dedicated to this work, and to our interagency and international partners for continued collaboration and partnership.

I'd like to thank you, Chair, and the Commissioners for the opportunity to be here to be part of this experience. This concludes my presentation. And I'm available for any questions, but I'd also like to note that we have several, or I expect we have several, of the participants from the study tour online today tuning in who would like to share their reflections and their lessons learned from the tour. And really, they're the experts.

And again, thank you to Commissioner Vaccaro for your leadership in this space.

CHAIR HOCHSCHILD: This is a nonvoting item. We don't typically take comment on this, but in this case I think it'd be helpful. Who is online who was on the tour?

MS. SANCHEZ: Well I think one of my planning partners, Dan Jacobson, may be on the line.

CHAIR HOCHSCHILD: Okay. I would welcome -- but maybe before we get to Commissioner discussion just, Dan, are you with us and able to chime in?

MS. MURIMI: Chair, this is Dorothy. There is an individual listed as Zoom User, going to allow to speak. Is that Dan Jacobson?

MR. JACOBSON: That's me. Thank you.

CHAIR HOCHSCHILD: Yeah. Please, Dan, go ahead.

MR. JACOBSON: First of all thank you, Alana. Thank you to the Commissioners for letting me have this opportunity. It's been great to join this particular Commission meeting with so much interesting stuff happening, and in particular with offshore wind. Not only about the budget information that you guys went over and about the report from energy innovation, but in particular Alana's report talking about what we learned going over to Europe and seeing what this looks like.

And what I wanted to do was just not talk about what we learned, but what I think are six key steps going forward. So what are really six things that you all and

that the other state agencies need to look for as we move forward on this? And I'll move through these very quickly because I know that time is short.

The first is continued cooperation amongst state agencies. To me from an outsider, this feels like it's going great, keep that up.

Second, is an educational exchange program needs to be set up so that we can not only learn from people who are doing this in other parts of the country and other parts of the world, but that California can set the gold standard for what it means to really put in offshore wind. That's environmental monitoring, that's labor programs and protections, and that's community benefits.

Third is there's research. One thing that we learned on this tour is there has been a lot of research that's been done, but we're still missing in many, many areas. And we've got to focus on that. And we need to find people who can look at what has been done, what needs to get done and then prioritize what needs to get done in a fashion that allows us to continue to move quickly on offshore winds.

Fourth is we need to set up programs with not just the western coastal states, but the western states in particular to help us figure out supply chain issues.

Fifth is continuing to work with local

communities. I particularly want to give a shout-out to the Commissioners and to Commissioner Vaccaro who I feel like is leading by example here and really getting into Morro Bay and up in Humboldt and meeting with these communities, figuring out what these folks need, and helping to drive that. And I think we've got to continue that.

And six, there is so much information that's coming in on offshore wind that I would encourage the CEC either to do this with themselves or if there's another way to figure it out, but we need a website or a portal as a place to house all this information. There's stuff that you guys have that we need. There's stuff from other places that are coming in. But it's really coming in almost too fast. We're drinking from a firehose here in terms of information and we need a website that's just dedicated to this where we can put it all into one place.

I'll just close by saying thank you. It was an honor to be able to go and to learn so much on this trip. And thanks again and happy to take any questions.

CHAIR HOCHSCHILD: Thank you so much, Dan.

Are there other panelists who were on the trip, wishing to just share?

MS. MURIMI: Yes, we have Jeff Hunerlach. Your line is unmuted.

CHAIR HOCHSCHILD: Okay. Jeff, are you there?

MR. HUNERLACH: Yeah. Hello, Commissioners, Chair, Vice Chair. Thank you for the opportunity to speak. Yeah. I just wanted to reiterate everything Dan Jacobson said. Those are some very, very key points.

CHAIR HOCHSCHILD: Sorry, Jeff, could you just introduce yourself again?

MR. HUNERLACH: Oh. Oh, my apologies. I'm Jeff Hunerlach with the Humboldt Del Norte Building and Construction Trades and the district representative for the Operating Engineers up here in Humboldt County. And I just wanted to share real quick look, I learned so much being a labor guy. I deal with big projects all the time. But this was quite unique to be able to see firsthand the size and the expertise of everything that we witnessed over there.

But I just would reiterate everything that Dan said on all of his key points. He couldn't have nailed it any more perfectly than he always does. So that's really all I had. It was a pleasure and it was so nice to be able to witness that firsthand, so and shout-out to you to, Alana. Thank you for your presentation.

CHAIR HOCHSCHILD: Thank you. Thank you so much. Anyone else?

MS. MURIMI: Yes, we have Jana Ganion.

CHAIR HOCHSCHILD: Hey, Jana.

MS. MURIMI: And Amisha Patel afterwards.

CHAIR HOCHSCHILD: Oh, great. Jana, can you hear us?

MS. GANION: Yes, quick soundcheck?

CHAIR HOCHSCHILD: Yeah, we can hear you. Good morning.

MS. GANION: Great. So listen, Chair, I just want to thank you for being the catalyst for this factfinding mission. It was an honor and a privilege to join it.

I want to thank Vice Chair Gunda for our team leadership throughout the journey, and really fostering an ecosystem of deep knowledge exchange, including the space and support for at times difficult and passionate discussions.

I want to thank Alana Sanchez, and Dan Jacobson and the related teams for their logistics and overall facilitation and graciousness.

And I want to thank Commissioner Vaccaro for her overall leadership on offshore floating wind. The letter from the California agencies, it was crucial. We didn't get everything we wanted from BOEM, but there may be other opportunities there to improve on that.

The top-line takeaways I think is that we saw

ports and assembly operations that are 15 years ahead of where we will be in in maybe less time. And the takeaway from the port infrastructure was that high and heavy is relatively easy. We know how to do that. But very long items are more difficult. And so heavy operations have specific implications for designing ports, with lowest carbon footprint is a crucial strategy.

I think the other main takeaway that we heard was about transmission upgrades. We know that we have to do this in California to port the electrons around from wind energy. And we heard this in all the countries that we visited, that it needs to happen in the ways that we're already thinking about it: big transmission for transporting the wind energy to load centers, and distribution upgrades near the wind farms and along the transmission route to ensure energy equity and reliability benefits for the host regions. This was an important early investment, they kind of "if you build it, they will come" sort of approach. And they're also using regionalism, so bilateral transmission systems that help increase energy reliability for multiple countries at one time.

And I think lastly, as Dan said and as Alana alluded to, that environmental research and monitoring, community benefits, these are happening but not maybe to the level that we envision these things happening in

California. So we have some work to do there, but that all of it is exciting. And I just really want to thank everybody for the opportunity to be there and see firsthand and bring that knowledge back into the region. Thank you so much.

CHAIR HOCHSCHILD: Thank you so much, Jana.

And we have Amisha Patel on as well, sounds like?

MS. MURIMI: Yes, we do.

MS. PATEL: Hi, can everyone hear me?

CHAIR HOCHSCHILD: Yeah. Good morning, Amisha.

MS. MURIMI: Yes.

MS. PATEL: Good morning. And thank-you to you all for allowing me to join. I'm Amisha Patel. I'm Global Head for Public Affairs and Policy at Mainstream Renewable Power. That last month I was very much (indiscernible) to the California Energy Commission for the purpose of this study tour. And just to really echo the experiences that have been shared by others that joined and that they've expressed today.

I think during the study tour one of the key end takeaways for us was that we were able to witness the benefits of offshore wind technology, and the differences that this has been making in coastal communities where the technology has been deployed.

But we were very candidly able to learn about

some of the challenges of deploying this at scale as well. Whilst floating winds current contribution to the total floating, low total offshore wind installations is small, there is no doubt now that globally it's a floating market. And that's where we're going to see a lot of deployment.

And Alana mentioned that was Europe, and now I would add Asia, races ahead on fixed offshore wind. California is recognized globally for the potential to become a leader here. So we were able to learn a lot from the hubs that we visited. That governance acted as a key catalyst for kickstarting some of the successful deployments, policy and regulatory action, which support ports infrastructure, supply chain development, grid access, and a route to markets as well. And a cohesive and collaborative approach is a key ingredient to success and we had that message iterated throughout our journey.

So whilst recognizing the significant challenge that this presents against the time that we have, I think as a group we were really able to come together to start thinking about how to approach this and the potential solutions to make this a reality and putting our learnings to use as well. So very much looking forward to continued engagement in California on ground and across the borders. Thank you very much.

CHAIR HOCHSCHILD: Thank you so much, Amisha.

Dorothy is that everyone?

MS. MURIMI: Yes Chair, that is everyone.

CHAIR HOCHSCHILD: Okay. Well, let me just extend my gratitude again to all the stakeholders who were able to join that. I'm really proud of the diversity of the trip having tribes and labor, environmental justice, environmental organizations, and this incredible diversity of state agencies, It's essential.

And I want to highlight something Commissioner Vaccaro said, which is when we did the letter that was a collective effort, and that I believe went out in August, unless I'm mistaken. And when we can speak with one voice, one clear, loud voice on California priorities for this upcoming lease sale, we're in a position to be successful. And yeah, we didn't get everything we asked for, but we got a lot. And those big credits are the highest they've ever been for any lease sale ever. And so that's very much to the benefit of California and our priorities as we go forward.

And secondly, we are often in the position of being the leader in industries like electric vehicles and utility skills, solar and wind, (indiscernible) energy storage and so on, energy efficiency. We're not a leader yet in offshore wind, we're behind. And we have real important material things we can learn from the countries

that are in the lead. And it's really important these exchanges go both ways. And we as a state don't want to reinvent the wheel.

And there's a lot of wisdom and learning to be found in visiting these places. And I think this is one of those things where there's just incredible value to going and seeing it in person. So I just want to thank everyone for making the time who was able to join and this is a relationship we're going to have and we're going to continue to build that relationship.

And I think about what it's analogous to, I mean I think about building the Golden Gate Bridge. You know, something like that was just a very complicated engineering feat that a lot of people questioned whether it could be done. And then once it's built it's just normal. People use it and it provides these benefits and we're grateful for it, but you don't think twice. I think that's how offshore wind will be. We will get it done. It will be hard. We want to get it done quickly, obviously, and there's a lot to work through. But it's going to be a feat of engineering and environmental progress I think we can all be proud of.

So thank you again to all. And let's just turn it to Commission discussion, maybe starting with Vice Chair Gunda. Go ahead.

VICE CHAIR GUNDA: Yeah. Thank you, Chair. Just it was so nice to hear from Alana just summarizing the entirety of that. That was just fabulous. Thanks, Alana, for doing that. And also Amisha, Jana, Jeff and Dan who were able to provide some remarks on their experiences.

So I want to just begin by thanking you Chair and Commissioner Vaccaro, who's the Lead on the offshore wind, for giving me the opportunity to lead the trip in your absence. So thank you so much. That was so meaningful for me in terms of learning from the perspective of SB 100, and equity, and how do we take the lessons from the tour into that?

Chair, as Jana already mentioned, she said you're the catalyst for this. I really want to thank you for your vision on the importance of these kinds of study tours. And I think one is definitely learning by experience. But also, as you mentioned, the composition of the group had a very diverse perspectives, so it was an incredible opportunity to really bond and learn from each other in the trip.

Also, I just wanted to say Commissioner Vaccaro, from your office standpoint I know you were not able to make it, but it selfishly really worked out for me in terms of these relationships for a very long time and just the sheer privilege of learning on this tour.

I want to acknowledge a few people on the delegation, Alana, who already presented, a number of people really helped organize this. So, Alana, thank you for your work on it and just being a champion and an ambassador for us along the trip. Amisha Patel, who just spoke. Amisha, thank you so much for -- (Audio cuts out.)

CHAIR HOCHSCHILD: Uh-oh, I think we -- you froze there Vice Chair. Everybody else I think --

MS. MURIMI: This is Dorothy. I'll try to connect with the Vice Chair again.

CHAIR HOCHSCHILD: Okay, yeah, tell him if he comes back on maybe to come back on without video. But maybe while we're waiting for him other Commissioner -- Commission Vaccaro, any feedback you wanted to offer or comments, having heard all that?

COMMISSION VACCARO: Yeah, thank you.

First of all, I just want to acknowledge Alana. Thank you for that. It's just the energy you bring, the perspective, your excitement, and the fact that you really gained something from that trip, it came out. And so thank you.

And Chair, it’s so important that you were able to facilitate and make this happen.

So many takeaways, even though I wasn't there. And I don't feel as if I was there, I feel as if I've had

the benefit though of hearing a lot of important, insightful communications. And I'm glad that the Vice Chair was able to go because even though, Chair Hochschild, you and I partner in this offshore wind work and we serve as the leads it's important for our fellow Commissioners to get a sense of what we're working on. To kind of understand it in a way as we do. I think that helps with informed decision making. And it also helps deepen relationships with key stakeholders, partners, it develops new relationships. And from what I've heard, from all accounts, that's what the vice Chair was able to do in his role on this trip as well as learn.

And so I'm sorry that I wasn't able to make it, but so grateful that others were and that I'm able to benefit from these perspectives that have been shared.

So Amisha, Jana, Jeff, Dan, thank you for that impact, the impactful statements. I'm listening, I have notes that I took, and I'll go back and look at the transcript as well and see how we can build those lessons learned into the technical staff work and our leadership. Thank you.

CHAIR HOCHSCHILD: Great, thank you.

Any other comments from Commissioner Monahan or Commissioner McAllister on this item? If not, did the Vice Chair punch back in or is he still maybe had an Internet

outage?

MS. MURIMI: Yes, a few more moments. Dealing with technical difficulties still.

CHAIR HOCHSCHILD: Okay, well that's par for the course.

And I will say again, Commissioner Vaccaro and I are noodling on a Implementation Symposium on offshore wind. I think one of the things that we are clear about is it doesn't make sense to do that until we have publicly announced and BOEM has publicly announced the winners of the lease sale, which may not now happen until the end of Q3.

The lease sale will be conducted, but there's a provision. They have to concurrently do an oil and gas lease, so we don't know exactly when that will all conclude. But I think once that does conclude we'll be in discussions with stakeholders about what that looks like and how we make that best aligned with our priorities. There's obviously a lot of issues to work through, including transmission and procurement and manufacturing and port upgrades and all the things that are attendant to a successful offshore wind implementation.

I tell you what, the Vice Chair is now back on. Are you back on now? Oh, great. Yeah, sir, please continue with your comments. Yep.

VICE CHAIR GUNDA: Yeah, I don't know where I got cut off. But I just want to start with Amisha, I think that's where it stopped.

CHAIR HOCHSCHILD: Yes. Okay.

VICE CHAIR GUNDA: So just I want to say thanks to Amisha for all the wonderful work and just kind of helping in making it a very smooth collaborative process with the introductions to all the people and getting it moving. I also want to acknowledge Rekha Rao from Climate Imperative, Eddie from Brightline Defense, and Dan Jacobson, obviously who spoke, for really organizing it.

And in terms of the participants we had a number of state agencies as well as the labor, Jeff who spoke today, but also Jana, the tribes. And also it was a wonderful experience in bringing all the perspectives together.

So just a couple of notes that have already been stated, but just mentioned it was really clear the magnitude of what we are embarking on, just the sheer magnitude of developing this industry so quickly in California it seemed -- as Chair you keep mentioning the great implementation, that really hit. It is a really big implementation. Just the investments that are needed for this incredible scale. The overarching strategy, whether it be workforce, port strategy, transmission planning and

permitting, just seemed extremely important to make sure we move forward in a really fast manner here.

One of the things that I specifically took away was the importance of early development of offshore wind projects, how much it's served Europe in terms of their learnings. Similarly, given the offshore wind technology is pretty new. And then we are set up to do that in the coast of California, how important it is for some early projects so that we can learn and refine as needed. And I think it'll be really important.

As you can also imagine, given the Europe strategy, in a way they are -- especially with the invasion of Ukraine and the required focus on EU -- have on energy security. At virtually every visit our presentation the topic of hydrogen and Power Flex was brought up. Our friends in Europe appear to be very serious about exploring alternatives to fossil gas, specifically thinking about how to use offshore wind electricity to produce gaseous fuels.

In relation to that they talked about energy islands a lot. How can you set up an island in the middle of the ocean to use the power there to then develop byproducts? But it all seemed very important to think through as we develop our industry.

Again, selfishly, for me as I learned, as I had this experience learning from the perspective of SB 100 and

the next report, it was an incredible opportunity for personal relationships. And As Jana mentioned, we had some incredible debates and conversations along the way in terms of reliability, and the clean energy transition. And I feel like this just provided me an opportunity to just develop those relationships for the work I specifically do at CEC. And since then we've already had a bunch of meetings working on the elements that I focus on.

Finally, I just want to thank Ben Finkelor the Chief of Staff, my chief of staff, who also went on the trip and his incredible work on keeping me up-to-date, and then also just developing the necessary relationships for our focus on equity, SB 100, and such.

So thank you again, Chair, for the opportunity for me to go. And Commissioner Vaccaro thank you for allowing me to go on this and helping me lead this trip. It was a great pleasure and privilege for me. Thank you.

CHAIR HOCHSCHILD: Thank you so much.

And I guess I would just close by saying I have sort of two hopes. One is that we continue in a collaborative spirit, not just between agencies and stakeholders here in California, but with other countries. And that secondly, we have a spirit of curiosity, because there's so much we can learn.

Denmark has been doing offshore wind for over 30

years, they are decommissioning and repowering turbines already. They're on the second generation of turbines. So we have a lot to learn from these guys. And I really want to see us take full advantage of that knowledge.

And I just will share again, so I did this trip last November. And I was just blown away by the knowledge base and also the generosity of spirit that I felt in Europe, helping us learn some of the lessons that are to be learned there. And really, my gratitude to all of the different parties that hosted different parts of this delegation.

So thank you to all again. I really appreciate and look forward to working together to make offshore wind happen here in California.

So with that, we will turn now to Item 5, Lead Commissioner Reports. Let's see, Commissioner Vaccaro would you be willing to start us off on that?

COMMISSIONER VACCARO: Thank you, I'll keep it brief. I've made all of my offshore wind updates already, so I'll just focus on two things.

The first of which is, so again pleased that Mona Badie is stepping up to serve as the Public Advisor, but wanted to make sure to recognize Noemi Gallardo. And I think the best way for me to sum up my thoughts and feelings about Noemi is that I think her work and her

leadership have been transformative for this agency. We've really had a long-standing commitment to equity and to just transition. But I believe Noemi brought something different, brought a different way of bringing us together as an agency, and really changed the way that we did outreach and connected meaningfully with communities. And so I just really want to recognize and appreciate the difference that she has made, I think, to the agency and to Californians.

And in that regard, I just wanted to mention that the Lithium Valley Commission, which is also known as the Blue Ribbon Commission on Lithium Extraction in California has centered community and tribal voices. In a lot of its work Noemi has been helpful in that respect. And their draft report has been out for public review. There have been community and tribal workshops around the report. And the public comment period closes this week on that report.

And there will be a Lithium Valley Commission meeting on the 31st to continue refinement on the draft report, which is expected to be submitted to the Legislature by December 1st. So thank you Noemi and thank you everyone who's working to support the Lithium Valley Commission.

CHAIR HOCHSCHILD: Really well said, Commissioner. Thank you.

How about Commissioner Monahan, would you be willing to go next?

COMMISSIONER MONAHAN: Well, I just want to start by saying quarterly ZEV sales are out, so a little bright spot in our day which is that sales are all 17 percent of the new vehicle market. That's the highest ever, an increase from last quarter. And what we're seeing in some counties like the one, actually, Chair Hochschild and I live in that ZEV sales are reaching 30 percent of the new vehicle market. And so that's spectacular. And that's despite all the supply chain issues. And I'm sure this very high price of gasoline is factoring into some of that consumer interest in electric vehicles. But we really have made remarkable progress in a short number of years.

And we're at 1.3 million zero emission vehicles sold. The target set by Governor Brown was to have 1.5 million zero emission vehicles on the road by 2025. And whether you count it as new vehicle sales or vehicles on the road, we should handily be able to make that target ahead of schedule as long as ZEV sales -- even if they just stayed the same as they are today -- we would reach that target probably next year.

And the Fuels and Transportation Division released the Clean Transportation Program Investment Plan Draft. That includes the $2 billion from the $2.4 billion

from the General Fund. And so that's on the streets.

We're doing outreach with Noemi Gallardo's help with the DACAG and she's convened an EJ roundtable that we've shared the draft and we're encouraging feedback. We'd like to bring it to the Commission for a business meeting by the end of this calendar year. So the team, especially Charles Smith and Patrick Brecht have been really working hard to do this. And it is kind of breathtaking to go from $100 million to a billion last year to $2.2-plus billion this year. The team has really, I think, done a great job of kind of stepping up and being able to build very robust plans. So we'll be making adjustments based on feedback. And then as I said, hopefully bring it to you by the end of this calendar year.

And in that same context I just want to acknowledge all the grantmaking that is happening in the Fuels and Transportation Division, also ERDD around vehicle grid integration. I mean, it's just kind of breathtaking how many grants are being moved out swiftly. You know, looking at both sort of rapid deployment with big block grants, but also all these what I would call "specialty grants" around transportation network companies, multifamily dwellings, corridor charging with the federal funds, zero emission vehicles manufacturing, which will hopefully be brought to you soon.

So it's just really an impressive array of grants. And they're staffing up, everybody's staffing up, but it's just really been remarkable to see the progress.

And together with Commissioner McAllister, we're working on both the new funding for hydrogen and for industrial decarbonization that is grid friendly. And so we'll need to, especially for that industrial decarbonization piece, coordinate with Vice Chair Gunda's office around the grid reliability piece, so I'm hoping we can have some joint workshops with Vice Chair Gunda so he can be part of that crafting of these new grants.

And ERDD has really been helpful thinking through all the new opportunities. And I'm really excited, hopefully, to bring something good forward with Commissioner McAllister this year.

I also want to acknowledge -- I just got back from a board meeting actually. I'm on the Institute for Transportation Studies at UC Davis, their board. And it includes the other UCs that have transportation programs like Riverside and UCLA.

And one of the things is that it also includes all the major, many major vehicle manufacturers. One of the things that really came through in this meeting, which relates to our work was just the attention on building out ZEV infrastructure for trucks. And this intersects with

what CARB is doing on advanced clean trucks and advanced clean fleets, their regulations.

But just the sense that the urgency is on the infrastructure side, and it really did make me feel like we at the CEC are at the center of this. And also that there are barriers. There are barriers to swift deployment of infrastructure. There's supply chain barriers, but there's also just interconnection with utilities and speeding that up. And so it kind of lit a fire.

And Chair, I hope you and I could follow up on just more thinking about how we can work collaboratively with the CPUC, and maybe GO-Biz and CARB. Just on how do we overcome barriers to deploying that infrastructure swiftly? And I think it is a challenge and an opportunity for us.

And then lastly, I just wanted to say there's been a number of international works with Baden-Wurttemberg, which is the biggest auto-producing, vehicle-producing region of Germany that we have an MOU with. And they're very interested in working together on electrification and the role of hydrogen.

Also, China, I just participated in a fuel cell technology meeting with China. And just trying to think through how do we make sure that we have strategies that scale globally, so what we do in California fits with what

other countries -- and especially I look to China in terms of the biggest vehicle market in the world -- where we can have a similar strategy that will help build scale and reduce prices.

So that's it for my summary. And I also want to heap on praise for our former Public Advisor Noemi Gallardo. You really did raise the bar for all of us. And her ability to just, I've got to say, I've never met somebody who could facilitate a group as well as Noemi and make everybody feel heard. I just feel like we should all take a training on community engagement from her because she really is deft. And she brought not just her big heart, but also smarts and just really emotional intelligence to this job.

And I know Mona is going to follow in her footsteps. Mona is awesome in her own right. But I just want to acknowledge our tremendous former Public Advisor.

CHAIR HOCHSCHILD: Well said, well said. Let's go to vice Chair Gunda.

VICE CHAIR GUNDA: Yeah, thank you Chair. I have a few things. First I wanted to start with SB 100. We, the interagency team including CPUC, CARB and CEC, have started informal scoping roundtables with the various stakeholders. We're thinking of this as a scoping of the scoping of SB 100, really kind of get some early start on

what some of the policy questions we should be thinking. And really kind of think about what the vision of the SB 100 report should be as we go into 2025. The next report will be due in 2025, which will be very pivotal in the transition of our system. As Commissioner Monahan mentioned, we have our ZEV goals. We have goals around retirements. All sorts of stuff, so I think it will be just a very important milestone for the state. And landing the report well would be really helpful.

We are on track to formally kick off the process for the SB 100 report early next year. And hopefully, we improve on our kind of robust participation that we saw last time, but really improve our community engagement. And I just want to thank Noemi helping us get on a good footing in the first report, but really enhancing that this time around.

As I've said before, the SB 100 report will be critical on a variety of issues. But I think one of the things I continue to learn in this job and keep hearing is some of the tradeoffs of different pathways, whether it be cost -- one of the things that I learned on the offshore wind trip was really getting sensitized to the land and coastal protection. Similarly, we have land use issues, or our equity implementation. So how do we think about developing scenarios that look at all these tradeoffs and

really learn about how best to move forward in the most reliable, affordable, and equitable manner in the future? So that's on the SB 100.

Just on the reliability there's continuing work going on. As I mentioned earlier, we have a workshop coming up next --- sorry, I'm just kind of blanking on it. Yeah, it's this Friday -- sorry, I shouldn't have said next Friday -- Friday, the 28th. It's the kickoff of the workshops, more broadly, under the requirements under 846 that we got. But also 205 and 209, a bunch of bills passed. All of them are kind of intersecting, so this is a way to one, promote situation awareness of exactly what we're asked to do. But how we can bring them to the extent possible into a kind of a comprehensive, coordinated fashion to make sure we check off on all the deliverables and integrate them into broader work.

Again, I want to just make sure I thank Deana for her work, Deana Carrillo. She's now working on launching the Distributed Electricity Backup Assets program pretty soon here. We call it DEBA. That's going to be big for our agency. It will be cost-cutting. There are opportunities for us to fund other programs through that and leverage the money, so let's kind of work through that in a public setting.

Similarly, on the demand side grid support, we've

done some early work on that. But there's a lot of opportunity. Commissioner McAllister, I'm thinking about you on how to integrate some of the funding from there into ideas you have. So hopefully we can have a discussion publicly on how best to do this.

I also again thank Noemi for her extraordinary work. Actually, she's family. And I look forward to her transitioning and then working with the Chair. But we'll continue to lean on her, on her wisdom and smarts, and moving forward.

And Mona, congratulations again for the work that you're going to do and you've already done.

I want to close on just an important thing, and important day for a lot of people from Indian heritage. It's Diwali today. It's the Festival of Lights. It's a very important holiday in India. And it's really about welcoming the light into your house, getting rid of your insecurities, fears, and welcoming goodness into your own personal life, your family and community. It's something very dear to a lot of Indians. And I just wanted to take this opportunity to say happy Diwali to everybody.

And I also wanted to take this moment to share with you all how I'm trying to bring light into my life. And I wanted to call on Patty. So much of bringing light into your life is getting rid of your own fears and

insecurities, annoyances. And without going too much I just want to say, "Thank you, Patty, for our recent interaction of you helping me see the light." I just want to say the four of you, I absolutely love you four. And I'm thinking of Drew and many of the colleagues at CEC, it's been a wonderful family. It's been the work we do here is meaningful. And it sets the way for me and shows the light. So thank you all and happy, happy Diwali.

CHAIR HOCHSCHILD: Thank you so much. That was wonderful. And we could all do well to invite more light into our lives. Thank you for bringing that into today's meeting.

We'll turn now to Commissioner McAllister.

COMMISSIONER MCALLISTER: Well gosh, I have to comment on that last wrap-up comment by Vice Chair Gunda. That was beautiful.

And actually I was going to start off, and I'll just link it to, with thanking Noemi for all of her service as Public Advisor. And I think part of the extraordinary job that you did Noemi, have done, and will continue to do from your new perch it has to do with helping people get over their preconceptions. And I think doing that in a caring and loving way, and that facilitation that Commissioner Monahan referred to, I think it's just a skill that requires an amazing amount of emotional maturity

because it's pulling in people at all different levels. And it's respecting people where they are kind of no matter what. And I think creating a space that people really do feel comfortable coming together and saying what's on their mind and getting that in to the public realm or getting that on the table to facilitate a discussion with others that may or may not agree with them is something that helps. It makes our process that much more effective.

I mean, we're helping people participate in a real way. And getting this incredible diversity of input that we have across our state, just language, of course, and cultural and just background. We've talked a lot about that this meeting. And I think it's entirely appropriate. I think our process is stronger, our outcomes are more robust for that kind of involvement in just bringing everyone in. And letting folks reflect themselves in the process and actually learn from that process not only gets a better outcome, but it makes people better along the way. And I just think that's a incredibly powerful approach.

And the Commission is indebted to you. And I think it's just long-term better off. It's helping our exercise the muscles that we really need to be successful long-term. So thank you, Noemi. And I'm really looking forward to working with Mona on this front as well, and continue to work with you, Noemi, along the way.

So I guess I have not given an update because I missed the previous meeting. We didn't do it last meeting, and so now I have sort of a backlog of three meetings. So you'll all be kind of comforted that I'm not going to go through everything I've done in the last three months. But I did want to just highlight a couple things.

I did make a 10-day trip to Australia recently, and I just wanted to kind of report high level on that. Super-interesting set of conditions there. They are parallel or very similar in some ways to California, but different in other ways. And I'll just kind of give a high-level overview here.

But their market structure is a little bit different there. They have a market regulator, which sort of is like our CAISO. They have a market -- or I'm sorry, market operator that's sort of like our CAISO -- an energy regulator that writes the rules under which the market operator and all the market participants function.

And then they have a retailer and a poles-and-wires layer. So the retailer, it's not integrated with the poles-and-wires company. So you have the poles-and-wires infrastructure owners and operators, which are a monopoly in each area. But then you have the retailers, which are just consumer choice. So you have lots of retailers operating over the same poles and wires. And so that's an

additional layer. It's sort of maybe there's an analogue with the CCAs here, but you have essentially four kinds of layers in the energy and the electricity market.

And so I met with representatives from all of those actors at the federal level. And then in New South Wales, and Victoria as well, made a day trip to Canberra to talk with the federal folks.

Part of the background here, although I've been planning this trip for a while, the Australian Energy Minister Bowen met with Governor Newsom at Clean Energy Week in New York a month, month-and-a-half or so ago. And they agreed in principle that they wanted to try to work together and find ways to collaborate. And so that was sort of the undercurrent of the visit.

And Australia is facing many of the same challenges we are. They're living climate change. They have the long-term droughts, just an incredible fire risk every year that they need to deal with and harden their systems. A relatively weakly interconnected large-area grid right, that’s even vastly more urbanized than we are, so long distances between large populations. And so a lot of the focus there has been on renewables and building transmission, which is appropriate.

They have rooftop solar penetration there is far greater than it is in California. We're the leader here

and have lots of rooftop solar, but there they have -- some areas they have more than 50 percent penetration of rooftop solar. And they have moments where they're having voltage excursions, high-voltage excursions due to just they don't have anywhere else to curtail. They have to reach behind the meters or curtail some of the rooftop solar, because they have too much solar being produced behind the meter for large chunks of like western Australia and some other areas.

So and their solar rooftop installations are incredibly inexpensive. Like less than $1.00 U.S.; like about .70 a $1.00 U.S. per watt, which is about a third of the cost that we have here typically. It's up to $2.5, $3.00 here, so different in that way.

I think where we can learn from each other is in a number of areas. I think they on the distributed energy side of things we would do well to kind of look at what they're doing. I'm not sure we would get to that low price they do. They basically don't permit and they let any electrician install solar, so I'm not sure we would get there. But I think that we can learn from their market development there.

They are also looking at efficiency and electrification of buildings. And I think we have a lot to teach them on that front. Load flexibility, they're super-

excited, they're actually doing some things already on load flexibility, but super-excited to work with us on that, particularly given the load management standards. And data sector governance, energy market reform, those are topics that certainly we can compare notes on and I think learn from one another on.

One final takeaway, lots of resilience challenges, as I said largely from climate change, long-term planning and sort of where to optimize investments.

I think where it became even more clear to me than it's been in the past on how unique California is in building in energy efficiency and the demand side from the beginning into our planning exercises. Our forecast just takes the gross forecast and then it has all these modifiers on it. And we end up with a managed forecast that integrally includes our buildings and appliances, our rooftop solar, and our transportation, whether they're plus or minus on the forecast, and we end up with a managed forecast. And so our long-term trajectory for energy consumption forms part of the basis of our long-term planning.

And most places including Australia just do not have that concept. The forecast in Australia is done by our equivalent of the CAISO and so of course they focus on the bulk power market. And of course they end up focusing

on large transmission investments. And so that's where investment tends to flow.

The building stock in Australia is quite inefficient. You know, many structures that are very leaky, almost no insulation, from decades ago. And there really haven't been functional building standards there. So they could actually, if they can find a path to be more integrated in their planning and channel resources to the demand side. They could really do a lot of good -- like we talk about every meeting -- in terms of just a better building stock and improved outcomes on the health front, and just lowering the overall demand. So that they're planning across the whole power system gets that much easier.

So I think a number of key topics to potentially collaborate on. So we're going to report back to the Governor's Office and see if there's interest in having an MOU and moving that conversation forward.

The last thing I wanted to do is just give folks or well really recognize the California Building Standards Commission and the State Architect. They've been working on a proposal to incorporate embodied carbon into the California Building Code and CALGreen. And so that's something that we talked about quite a bit in the last IEPR, had some workshops about that, and wrote it up as

sort of a path forward kind of idea.

And they, just the State Architect and the Building Standards Commission, Ida Clair and Mia Marvelli, have just taken it and run with it. And are going to make a proposal to have some requirements, and then a couple of voluntary tiers within CALGreen that really highlight this area of decreasing the embodied carbon in building materials and operations.

So that's a sea change in the Building Code to have that explicitly in there and builds on some of the work that DGS has done in Buy Clean California. But it's really great to see that progress and they're making incredibly rapid progress and even doing an intermediate code cycle here. So the first effort will be actually in the code, effective in the middle of 2024, so that's lightning speed by code standards.

So just kudos to our sister agencies that we work with on the building code for doing something that's really important.

So that's it for me at this time. Thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Let's go to Vice -- let’s see, Vice Chair, you went, correct?

VICE CHAIR GUNDA: Unless you want me to go again (indiscernible).

CHAIR HOCHSCHILD: I think you're it. (Indiscernible) okay.

VICE CHAIR GUNDA: Okay, Chair can I (indiscernible)?

CHAIR HOCHSCHILD: Yeah, please go ahead.

VICE CHAIR GUNDA: So just I know Commissioner Monahan had to step out when I was sharing the spirit of Diwali and just thanking her.

I think I didn't want to expand on it, but I will just for the moment is even in the best of times we lose sight of the words we use. And sometimes you lose the discipline of trusting your better judgment and knowing who your friends are and people who care about you. And she has helped me remind of that and so I just wanted to thank Commissioner Monahan, but more lovingly known as Patty, a friend, just thank you. Thank you for showing me that, it was extremely needed.

And I want to note in the spirit of Diwali I also want to welcome our staff to be mindful of the words we use. And not to lose the discipline of grace and love and respect for each other. That's the kind of foundation of having a good community and having a foundation of seeing us together, so I just want to appeal to everybody as you use your words choose them carefully. Thank you.

CHAIR HOCHSCHILD: Thank you so much, Vice Chair.

And everyone for bringing such humanity to the conversation today.

This meeting we had no voting items and that was deliberate. I really wanted us to have the space to kind of go deeper on a bunch of these informational presentations and have space for this dialogue. The cadence of our work sometimes is so fast and full that we don't get a chance for this kind of dialogue.

And I just want to, again acknowledge it's just beautiful to have a moment of silence for the young women of Iran. And to contemplate the significance of Diwali. And to have some dialogue, and we're doing it in greater depth. It really is wonderful.

And I will just pile on with my gratitude to Noemi. Although nobody has been wishing her the thing she needs most of all, which is great strength to deal with such a cantankerous boss that she has now. So I wish her that as well as sharing all my thanks.

And I will share two events I did and one interesting milestone. The interesting milestone, I think I'll start with that, was the Tesla factory. So I met with Tesla last week. They are now manufacturing 2,000 electric vehicles a day off the Fremont line.

So my old company when I worked in Silicon Valley was across the street from that factory when it was the

NUMMI Plant. This was the joint venture of GM and Toyota. That was the biggest car factory west of the Mississippi at that time. Tesla's producing more electric vehicles in that facility than NUMMI ever did, in fact twice as many. And so this is now the most productive car factory in North America. And it's happening here in California.

There's obviously a whole ecosystem of suppliers that's been built around that facility. And what I'd call a diaspora of Tesla talent that's gone on to start so many of the companies that we have funded and partnered with, from Form Energy to Proterra to countless others that are basically Tesla alumni.

And so I do want to pause on that because that's a really significant milestone. And they're not done, they're still scaling and growing and investing and employing over 40,000 Californians. And helping, along with many, many other kinds of companies, the state meet our goals for transportation electrification. So anyways I did want to highlight that, it's really of note, I think.

And then I had two visits that I wanted to share briefly. And one was last week, a company called Smartville, which we funded, which is down in San Diego. They are taking used electric vehicle batteries, so basically Tesla batteries and Nissan LEAF batteries. These are vehicles that have either -- let's say the vehicles

have been operating for eight years or so and may be down to 75-80 percent of its nameplate capacity, but still has a healthy second life. They're repurposing and repackaging these into metal shipping containers. And in some cases, the vehicle may have been in an accident, the battery wasn't damaged, but the vehicle is damaged. And so they can't use it, so they are repurposing these for a second life as backup building energy storage.

And it's a very inventive idea. I think it goes to a lot of the circular economy discussions we've had as an agency, along with many others. And it was great to dedicate that project.

This was at the library for UC San Diego which as an institution, as you all know, has absolutely distinguished themselves among the UC system, leading in so many different technology categories. They have over 300 EV chargers there on campus. And I think there is no more roof space left at UC San Diego that has not been covered in solar. So those guys have done a phenomenal job. That was a great dedication and good to see the partnership bear some fruit.

And then the second site visit I did was to give a talk at the dedication of the Advanced Energy Center at Sonoma Clean Power. This is a I want to say $9.8 million grant we did to support what is really the largest building

decarbonization, electrification, public-facing center that I'm aware of. And it's helping -- they're doing demonstration cooking classes on induction cooktops. And they offer 0 percent financing for all of these electric heat pump technologies, $3,000 rebates for the appliances, electric bicycles, and all sorts of other things. So that's a real tribute to Sonoma Clean Power and that team. And I want to thank the good folks on the EPIC team who helped support that grant.

And then next week I will be dedicating -- Lindsay is pulling together a ceremony working with the Viejas Tribe of Kumeyaay Indians around the long duration storage dedication. That is the largest grant we've ever given for a long duration storage project, $31 million, and the largest tribal grant we've ever given.

And it may be -- I'm getting this verified -- it may also be the largest tribal grant ever given by the state to a Native American tribe. So a real milestone, and I think it aligns really nicely with our efforts to support all these priorities, from tribal energy sovereignty, to climate, to the innovation economy, to grid reliability. So thanks again to Mike Gravely and the whole team for working on that.

And I will stop there. And I do want to just say thanks again to everybody for making time for this meeting.

I really wanted us to be able to go in depth on some of these discussions, and so thanks to all for that.

Let's turn now to Item 6, Executive Director's Report.

MR. BOHAN: Thank you, Chair.

No report, but I did want to also acknowledge Mona. And just say I met her not soon after she started some years ago, and she quickly distinguished herself as a fine lawyer, junior lawyer. She advanced to become a senior lawyer. And then she took a job in Patty's office and now she's appointed by the Governor, which makes three people on this dais former staff who have become Governor's appointees. And I think it really speaks to the organization that people have an opportunity here. And the opportunities are pretty much endless. So kudos to all three of you and especially Mona, given this is her day.

And again I also want to acknowledge the incredibly difficult task she has trying to fulfill the job in a way that Noemi has set the baseline for. So thank you for the opportunity.

CHAIR HOCHSCHILD: Thank you. We'll turn to Item 7, Public Advisor's Report.

MS. BADIE: This is Mona, I don't know if Dorothy has anything. There we go.

MS. MURIMI: Thank you. Apologies, I was double

muted there. Nothing but excitement from the Office of the Public Advisor, Energy, Equity and Tribal Affairs for Mona coming on to the team. And other than that, we're super-excited and that's it for our office.

CHAIR HOCHSCHILD: Thank you. We'll turn now to Item 8, Public Comment.

MS. MURIMI: Thank you Chair. So this is the period for any person wishing to comment on information items or reports of the meeting agenda, or any other item. Each person has up to three minutes to comment and comments are limited to one representative per organization. We may reduce the comment time depending on the number of commenters. After you're called on please re-state and spell your first and last name and state your affiliation if any.

For those calling in via Zoom use the raised-hand icon to indicate your interest in making a public comment. And if you're coming in by phone press *9 to raise your hand and *6 to unmute on your end. Do not use the speakerphone feature, it will make it difficult for us to hear you.

I'll begin with those on Zoom. There's an individual whose name is labeled K.S. Your line is unmuted. Please state your name and you may begin. (No audible response.) That's K.S. Giving that one moment.

You may want to unmute on your end, the little microphone icon on your screen.

(No audible response.)

CHAIR HOCHSCHILD: Let's move on, Dorothy.

MS. MURIMI: I'm seeing no other commenters, Chair, I'll hand the mic back to you.

CHAIR HOCHSCHILD: Thank you. We'll turn now to Item 9, Chief Counsel's Report.

MS. BARRERA: Good afternoon Chair and Commissioners. There is no report from the Chief Counsel's Office, but I do want to second and congratulate both Mona and Kat Robinson for (indiscernible) overall and wish them much success. And everybody in the Chief Counsel's Office, is really looking forward to working with them.

CHAIR HOCHSCHILD: Great.

MS. BARRERA: Thank you.

CHAIR HOCHSCHILD: All right. Thank you so much, everybody. We're adjourned.

(The Business Meeting adjourned at 12:42 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 4th day of October, 2022.

MARTHA L. NELSON, CERT**367

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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.

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IN WITNESS WHEREOF, I have hereunto set my hand this 4th day of October, 2022.

_____

Myra Severtson
Certified Transcriber
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