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BUSINESS MEETING
BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of: }
)21-BUSMTG-01
Business Meeting )

REMOTE ACCESS ONLY

The California Energy Commission’s (CEC) March 17, 2021 Business Meeting will be held remotely, consistent with Executive Orders N-25-20 and N-29-20 and the recommendations from the California Department of Public Health to encourage physical distancing to slow the spread of COVID-19. The public may participate consistent with the direction in these Executive Orders.

Pursuant to California Code of Regulations Title 20 section 1104(e), any person may make 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 general public comment portion of the meeting and have three minutes or less to address all remaining comments.

WEDNESDAY, MARCH 17, 2021
10:00 A.M.

Reported by:
Marth Nelson
APPEARANCES

Commissioners (Via Remote)

David Hochschild, Chair
Karen Douglas
Andrew McAllister
Patricia Monahan
Siva Gunda

Staff Present: (Via Remote)

Drew Bohan, Executive Director
Linda Barrera, Chief Counsel
Lisa DeCarlo, Staff Counsel
Aleecia Gutierrez, Assistant Deputy Director
Noemi Gallardo, Public Advisor
Cody Goldthrite, Secretariat

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Heather Raitt 12, 13
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   a. Pursuant to Government Code Section 11126(e), the CEC may adjourn to closed session with its legal counsel to discuss any of the following matters to which the CEC is a party:
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b. Pursuant to Government Code sections 11126 (a) and (e), the CEC may also discuss any judicial or administrative proceeding that was formally initiated after this agenda was published; or determine whether facts and circumstances exist that warrant the initiation of litigation, or that constitute a significant exposure to litigation against the CEC, which might include personnel matters.
CHAIR HOCHSCHILD: Welcome, good morning. And everyone, MS. GALLARDO: Chair, we’re going to play the video first. Apologies.

CHAIR HOCHSCHILD: Sure, yeah. Go ahead.

(Start of Introductory Video)

MS. MURIMI: The California Energy Commission's Business Meeting will begin shortly. Thank you for your patience.

Today's Business Meeting is being held remotely.
To make public comments please call the Verizon line at 888-823-5065. Again, that's 888-823-5065. The pass code is “Business Meeting.” Provide the operator your name, the organization you are affiliated with, if any, and the item number or numbers on which you seek to make a comment. Also tell the operator if you represent the federal or state legislature, a tribal nation or a California tribal government, state agency or county or city government.

The lines for each person seeking to make a comment will be opened one at a time. After the meeting facilitator calls your name your line will be opened. Please restate your first and last name and spell your names. Also indicate your affiliation, if any.

Finally, to help ensure you’re heard clearly do
not use the speakerphone feature when talking. Talk closely into the phone. And to avoid an echo or feedback loop leave Zoom or mute Zoom while making your public comment.

Welcome to the California Energy Commission’s Business Meeting. The meeting will now begin.

(End of Introductory Video)

CHAIR HOCHSCHILD: Thank you, Dorothy. I feel like our introductory video has gotten flashier and flashier. Thank you for that.

And good morning to everybody. Welcome to our March Business Meeting and happy St. Patrick’s Day. My thanks to our Public Advisor Noemi Gallardo who reminded me of that, so I ran down and quickly got my one green tie on.

Commissioner Monahan will be a little late in joining us this morning. She's presenting to the Legislature, but should be on soon. I think Commissioner Douglas, I’m hoping is on now, she was having a technical issue. But we'll go ahead and get underway with the Pledge of Allegiance, led by Commissioner McCallister.

(Whereupon the Pledge of Allegiance is recited.)

CHAIR HOCHSCHILD: Thank you, Commissioner. Again, with COVID obviously vaccinations are rolling out at a good healthy clip now, about 2 million a day. But we are not through this thing yet so please
everyone continue to exercise diligence, wear a mask, wash your hands, keep your distance and visit covid19.ca.gov for more information.

Another development in helping our community overcome this pandemic is a website created by the Governor's Office called “My Turn,” where you can sign up to be notified when you're eligible to get vaccinated. And to schedule vaccination appointments you can go to MyTurn.ca.gov.

Today’s Business Meeting being is being held remotely without a physical location for any participant consistent with Executive Orders N-25-20 and N-29-20 and the recommendations from the California Department of Public Health to encourage social distancing in order to slow the spread of COVID-19.

The public may participate and/or observe the meeting consistent with the direction of these executive orders. Instructions for remote participation can be found in the notice for this meeting, and as set forth on the agenda posted on the Commission’s website link for the Business Meeting.

We're using a combination of Zoom and Verizon for remote access. If Zoom shuts down today we'll continue our meeting on our Verizon phone line. Call Verizon at 888-823-5065. The pass code is “Business Meeting.”
The Commission values public participation and stakeholder engagement pursuant to California Code of Regulations Title 20, Section 1104(e). Any person may make oral comments on any agenda item. And to ensure the orderly conduct of business such comments will be limited to three minutes or less per person as to each item listed on the agenda that is 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 agenda and shall have three minutes or less total to state all remaining comments. Again, to provide public comment please call our Verizon phone line at 888-823-5065.

Now before turning to the agenda items I'd like to share with everyone today Commissioner Monahan is presenting at the Assembly Budget Committee Subcommittee, and will join as that concludes.

And I'm also happy to share, which we're going to do with every meeting going forward, the total amount of money that if everything's voted out today will be that's $83 million from today's meeting. All of which is going to help with California's economic recovery and advance our innovation sector.

So moving on to Item 1 the Consent Calendar, Madam Public Advisor, do we have any public comments on
Item 1?

MS. GALLARDO: This is Noemi Gallardo the Public Advisor. There are no public comments for Item 1.

CHAIR HOCHSCHILD: Okay, unless there's any Commissioner discussion can we have a motion? Commissioner Gunda, would you be willing to move Item 1?

BOARD MEMBER GUNDA: Good morning, Chair. Yes, I would like to move Item 1.

CHAIR HOCHSCHILD: Good. Commissioner McAllister, would you be willing to second?

BOARD MEMBER MCALLISTER: I'll second Item 1.

CHAIR HOCHSCHILD: Okay. All in favor say aye. Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well. Commissioner Monahan is absent.

Let's move now to Item 2, SB 100 Joint Agency Report. Let's welcome Terra Weeks.

MS. WEEKS: Good morning Chair and Commissioners.

I'm Tara Weeks, Senior Advisor to Chair Hochschild and Project Manager for the 2021 SB 100 Joint Agency Report.
And I'm very excited to announce that the final report, along with a 12-page summary document were released earlier this week. And today we’ll provide a quick overview of the report. And I encourage everyone to review the full documents on the Energy Commission's website. Next slide, please.

So first a refresher that SB 100 establishes a policy that eligible, renewable and zero-carbon resources to buy 100 percent of all retail sales and electricity procured to serve state loads by 2045.

It also expands the RPS to 60 percent by 2030 and requires the Energy Commission, Public Utilities Commission and Air Resources Board to use existing programs to achieve a policy and issue a joint SB 100 report every four years. Next slide, please.

SB 100 is central to achieving the state’s goal of an economy-wide carbon neutrality, using clean electricity to increasingly power transportation, buildings and industrial operations, helps decarbonize these sectors which, along with electricity generation account for 92 percent of the state's total carbon emissions. Next slide, please.

In addition to serving as a key pillar in the state's efforts to mitigate climate change SB 100 can benefit residents across the state by improving public
health, primarily through reductions in criteria air pollution as clean resources to replace fossil fuel in generating electricity, advancing energy equity by moving towards the 100 percent target in ways that help ensure equitable outcomes such as alleviating the public health burden in disadvantaged communities where a disproportionate number of the state's fossil gas plants are located. And it can support a clean energy economy by helping to restore thousands of clean energy jobs lost during the pandemic and create many more high-quality jobs and career pathways.

And in a moment we'll talk about the magnitude of resources that we're projecting that we’ll need. And while it will certainly be a challenge to meet this goal it also presents a huge economic and workforce opportunity. Next slide, please.

So now on to the report itself. As mentioned, this report is the first step to evaluate the challenges and opportunities in achieving 100 percent clean electricity by 2045. It includes an initial assessment of the additional energy resources and the resource building rates needed to achieve the goal, along with an initial assessment of associated costs. So I want to point out that the estimates in this report are intended to serve as a foundation for future work and will change over time as
additional factors such as system reliability, land use, energy equity and workforce needs are more closely examined. Next slide, please.

This report was informed by a diverse array of interests through over a year of public workshops, including scoping workshops held across the state.

The agencies also consulted with the California Balancing Authorities as required by the statute, and the Disadvantaged Communities Advisory Group, which advises the CEC and CPUC on energy equity issues. And so we really appreciate the engagement from both of these groups, as well as the public and other stakeholders throughout the process. Next slide, please.

And so now I'll hand it over to Dr. Liz Gill, who served as the Technical Lead for this report, and will run through our initial findings.

MS. GILL: All right, thank you, Terra.

So getting into the technical work we modeled renewable and zero-carbon resources to meet our clean electricity needs. In order to qualify these resources must be either RPS eligible or have zero on-site greenhouse gas emissions.

For our core scenarios we only included commercialized technologies with publicly available and vetted cost and performance data. Specifically, these
resources included new and existing solar photovoltaic, existing solar thermal, new and existing onshore wind and new offshore wind, new and existing geothermal, new and existing bioenergy, new green hydrogen fuel cells, existing small and large hydro facilities, and existing nuclear power plants. And then this list will continue to be updated in the future as emerging technologies mature and come to market. Next slide, please.

So what our modeling results told us was that in order to meet our SB 100 goals while electrifying large portions of the rest of the economy, California will need to roughly triple its current electric grid capacity.

On this slide we see the projected new clean energy resources in comparison to the clean energy resources already on the California grid today. So looking at 2045 the SB 100 modeling projected that we’ll need nearly 70 gigawatts of new utility scale solar, nearly 30 gigawatts of new customer solar, nearly 50 gigawatts of battery storage, 4 gigawatts of long-duration storage, 12.6 gigawatts of onshore wind, 10 gigawatts of offshore wind, and about 100 megawatts of geothermal.

All of this in order to meet our 100 percent renewable and zero-carbon electricity target in 2045. And then these resources are projected to increase annual costs by about 6 percent over the 60 percent RPS baseline.
scenario in 2045. Next slide, please.

So in order to achieve this massive build-out of renewable energy and storage resources, this will require sustained record-setting build rates through 2045, including a tripling of solar and wind build rates from our ten-year historic average, and an eight-fold increase in battery build rates from 2020. Next slide, please.

In addition to modeling meeting our core SB 100 scenario, the joint agencies explored sensitivities, as well as several scenarios outside the scope of SB 100. One of these sensitivities was a high-demand flexibility scenario that included six gigawatts of load flexibility. This additional flexibility resulted in less batteries, increased gas plant retirements, and lower overall costs compared to the SB 100 core scenario.

The joint agencies also modeled several study scenarios outside the scope of SB 100 that are intended to inform broader state planning efforts on energy, climate and public health. So these included a no-combustion scenario where all combustion resources, including gas-fired power plants, will retire by 2045. The initial results indicated that this scenario would increase annual costs by about 12 percent in 2045 compared to that SB 100 core scenario.

Next, zero-carbon firm resource scenarios were
included and have the option of a generic zero-carbon firm resource that represented the commercialization of emerging technologies such as green hydrogen combustion or natural gas with 100 percent carbon capture, or a reduction in the costs of existing firm resources such as geothermal. When these resources were included it decreased annual electricity costs by about $2 billion, or about 3 percent in 2045.

And then finally the joint agencies also modeled several scenarios that accelerated the SB 100 target to 2040, 2035 and 2030. These results indicated that while these targets may be achievable they may also increase overall costs.

And again, all these findings are preliminary and do require further analysis. Next slide, please.

So here are the key takeaways from the SB 100 modeling. First, this initial analysis suggests that SB 100 is technically achievable through multiple pathways.

Second, in order to meet SB 100 construction of clean electricity generation and storage facilities must be sustained at record-setting rates.

Third, modeling showed that diversity in energy resources and technologies lowers overall costs, but also showed that retaining some natural gas power capacity may minimize costs while ensuring uninterrupted power supply.
during the transition to 100 percent clean energy.

However, increased energy storage and advancements in zero-carbon technologies may reduce those natural gas capacity needs.

And finally, further analysis is needed as this is just the initial assessment of the 2045 SB 100 policy.

Next slide, please.

So specifically the recommended future analysis includes first verifying that scenario results satisfy the grid’s electric reliability requirements across a range of conditions.

Second, continuing to evaluate the potential effects of cost-saving emerging resources such as offshore wind, long-duration storage, green hydrogen technologies, and demand flexibility.

Third, assessing environmental, social and economic costs and benefits of the additional clean electricity generation and storage needed to implement SB 100.

And finally holding annual workshops to support alignment among the joint agencies and continuity between SB 100 reports.

And with that I will hand it back to Terra.

MS. WEEKS: Thanks, Liz.
ongoing coordination between all three agencies, so I just want to take a couple minutes to recognize the team behind it. And you can go to the next slide, please. Thanks.

So first, of course, I'd like to thank our joint agency principals Chair Hochschild, Chair Randolph, Chair Nichols and Commissioner McAllister for your leadership moving us to a 100 percent clean energy future. And prior to his appointment, Commissioner Gunda was also down in the trenches with us on this report. So thank you, Commissioner, for really getting this effort started, working out the initial scope and roles for each of the agencies and for all your tireless cat herding to keep us all aligned.

And I won't list everyone due to time, but I thank you to our counterparts at the CPUC and CARB, including Simon Baker and Rajinder Sahota, who initiated the scoping process, coordinated between related efforts, including IRP and the Scoping Plan and provided support throughout the process. It's been really great getting to know our colleagues across the agencies a little bit better. And we look forward to replicating this type of coordination on other efforts.

And, of course, a big thank you to our terrific core SB 100 team at the Energy Commission. And again I won't be able to list everyone who had a hand in this
report, but I want to recognize a couple people in particular.

First, Judy Grau and Jim Bartridge who were the first ones to really put pen to paper, fleshing out the outline, providing the early foundation for the report, and then supporting report development throughout. And congratulations to Judy, who also just retired.

And to Mark Kootstra for overseeing the scope and execution of the analysis. And for teaching me capacity expansion modeling 101, which was very much appreciated when I was first getting started on this project.

And a thank you to Noemi Gallardo and Dorothy Murimi for all their help capturing equity considerations in their report and coordinating with DACAG and other stakeholders.

And to the media team, of course, for making the report look like it wasn't just made by a bunch of energy wonks. And again, they really had a hand in the summary documents. So I encourage folks to check that out on our website.

And I just want to close with a particular recognition of Aleecia Gutierrez and Liz Gill. Aleecia really just has an amazing ability to fill gaps and do whatever is needed. She wrote large sections of the report over much of our engagement with stakeholders, and just
always kept a really positive kind of can-do attitude. So it's really just a pleasure working with her.

And to Liz, I remember on what I think was Liz’s first day at the Energy Commission, a little over a year-and-a-half ago. And she joined us first thing for a 9:00 a.m. SB 100 meeting and just really jumped right in. And she's been such an asset to the team. She really has the ability to understand technical analyses, and then parse out key findings and communicate them clearly. So I’m just really grateful to have had her on the team.

And with that I will close out and pass it back to you Chair Hochschild for any comments or discussion.

CHAIR HOCHSCHILD: Well, thank you so much for your incredible dedication and leadership, and Liz as well. I know I speak for all my colleagues, not just at the Energy Commission but at the PUC and CARB as well, in thanking the whole team.

You know, the analogy of a report like this it's somewhere between a massive construction project and childbirth or something like that, just the amount of work that goes into it and all of the team effort. And I want to say it's hard enough to do something like this just within one agency, but coordinating across multiple agencies and doing all the public outreach as well. Eight workshops all over the state, taking input from all kinds

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229 Napa Street, Rodeo, California 94572 (510) 224-4476
of stakeholders really contributed to this. I'm really, really proud of you guys and the results in this report.

And I know at the risk of repeating myself, I think we're in a moment where what was previously considered mythology, the vision of getting to 100 percent clean energy just a couple years ago, I was in a lot of those meetings where it was just being widely dismissed. It’s now law in 17 states and it’s President Biden's energy goal for the United States. And I think California can take great credit for being a part of driving that vision forward. And this report, I think, will be a really important milestone as well that I hope gets a lot of attention. It certainly deserves it.

I wanted to also thank my colleagues, starting with Commission McAllister, who’s really provided substantial input and attention to detail and just throughout the whole process has been a terrific partner. Commissioner Gunda, you were involved in this in your previous role overseeing the EAD, and just phenomenal. And Commissioner Douglas, who continues to do incredible work around renewable energy planning. And so much of your early work on the DRCP has proven so prescient, getting ahead of this whole process. And I just want to thank all of you and then all the staff.

And so with that I open it up to any comments or
questions or discussion from my colleagues.

BOARD MEMBER MCALLISTER: Did we want to take
public comment on this at all?

CHAIR HOCHSCHILD: No, we’re not taking public
comments on (indiscernible).

BOARD MEMBER MCALLISTER: Okay. Okay, great.
I'm happy to start, I guess at risk of repeating a little
bit, but hopefully not too much. Really, thanks to the
whole team. I mean Terra and Aleecia, Liz and the former
Siva. Really, just the amount of teamwork and collaboration
and communication, I mean just the density of the
communication sustained over the whole period of the
development of this report was just impressive. And I
think the collateral benefits of that are just going to
become more and more apparent over time in all sorts of
arenas, not just in the follow-up to SB 100, but really
across the agencies as we collaborate on more and more
things.

So I think that is kind of the model that this
presents for inter-agency collaboration I think is really
kind of a meta-benefit of this report. And so I think just
watching that evolve has been really, really terrific to
see. And I think you know we've created a really good
relationship across the agencies.

And we do have big challenges. We have other
large infrastructure conversations that we need to have going forward, as in the transition. So I think it bodes well for those conversations, which there aren’t easy solutions. And this report really lays out kind of different pathways that the state could take.

So I really see this report as foundational. You know, the cleaning up of the electricity grid is foundational for our whole energy transition to zero carbon. And we see that up and down, all the way down to individual electrification, individual loads, and the way that we plan our distribution sub-transmission, transmission grid. And so this really is a backbone of an overall strategy for the state, and certainly the energy sector, it's central. So really I think it's hard to overstate that the support really puts a great marker in the ground.

And just a couple of other things. I think the way we approached it with the scenarios, and the way we sort of determined which scenarios we were going to put as core scenarios and which were study scenarios, how we ended up kind of defining the different buckets of resources, the sort of generic zero carbon. It really does lay a nice platform or good foundation for having those individual, those specific conversations going forward. There’s a lot of discussion about hydrogen these days, so we have this
path forward. We can have a specific hydrogen conversation that's all into that piece of the market with those stakeholders. But then has a really clear way to loop back to the update of SB 100. And so the foundational -- just the platform is there for us all to dwell in over a fairly long period of time, which is what it's going to take to get there.

I particularly appreciate -- this won't be a surprise to anyone, but I really appreciate the load flexibility scenario. I think we have a lot of work to do to enable load flexibility as a core strategy, both -- well really for three things. And then they're confirmed by the report sort of preliminarily, but I think they will be proved out. To lower costs overall for the grid, which obviously for us today is a key need in California as we're seeing rates start to go up over time.

And decarbonization in the near term, load flexibility does enable us to utilize decarbonized energy when it's available and avoid using more carbon-intensive energy when that's all there is on the grid.

And then, reliability. And I think maybe that's the most important of the three. Load flexibility really does enhance our reliability. And I think that the scenario really starts to lay out the value proposition for that in a way that's relevant to the whole grid. And that
really has been a challenge for distributed energy
resources as to really get that macro view of what they
mean when you roll it all out.

And so having this report sort of lay out that
case really puts some wind in our sails to be able to
develop the various flavors of load flexibility going
forward. So with that we can put our Load Management
Standards and our Building Code and our SB 49 appliance
flexibility, all of that stuff really helps develop that
resource and contributes to this greater whole.

So with that I think I'll relinquish the mic, but
I just wanted to say again just thanks to the whole
collaborative effort. And certainly to the Chair as well
for your leadership and vision on this and really kind of
understanding early on how foundational this work could be.
It's not all legislation that sort of gets really taken up
and done in a complete and serious way. And this was just
such a central effort, and I think that's a large measure
due to the way you framed it initially. So thanks to you
and the rest of my Commission colleagues.

CHAIR HOCHSCHILD: Well thank you, Commissioner.
And I would just second your last point on the role of
buildings, and all of this. And another way to say it is
that for SB 100 to be successful, I mean everything that
touches the electric grid needs to be a good citizen of the
grid. And the Load Management Standards in particular, I think, are going to really help accelerate that. So thank you for that and for everything else you're doing on the Building Code and so much else.

Let's move on. Commissioner Gunda, did you want to share a few thoughts?

BOARD MEMBER GUNDA: Sure, Chair. I don't know if Commissioner Douglas wanted to go first. Commissioner?

BOARD MEMBER DOUGLAS: It's up to you. I was wondering the same thing, why don’t you go ahead.

BOARD MEMBER GUNDA: Okay, thank you Chair. I think I'm going to use up all my minutes for today on this item as I'm going to take a couple of minutes here. I think I just want to begin with just saying a big congratulations to the entire team of what a tremendous effort.

And ideally over the last 18 months I was tracking this closely, at times not so closely at times, but just looking, just watching the team grow into this project. And kind of landing this humongous plane safely was just a tremendous effort. And it just goes to the fortitude, clarity, the collaborative spirit, and the passion that this team has.

And I think it's a -- I cannot overstate this -- the incredible champion that Terra has been on this from
the front, leading it from the front. Being able to coordinate between the Agency, outside the Agency, bringing everybody together.

I think most of all, I think, a couple of things that Terra was able to bring into this, into the spirit, is kind of first in connecting the Chair’s Office to the team which was incredible. But also developing this relationship across the Agency principals and the trust that she built with the Agency principals was tremendously helpful for this work. So Terra congratulations. And I'm so glad that you thanked every one of the team members, so I'm not going to repeat it. I had a long list of people, so thank you for doing that.

But I do want to call out a couple of people, because moments like this, just reports like this, opportunities like this just allow for some of the experienced staff to kind of have an opportunity to mentor some staff that are kind of going into it. So I just want to thank Alvarado, who also retired. Judy Grau, as Terra mentioned, and Jim Bartridge. And the three of you have been incredible mentoring kind of what I think of as the new crop of -- a new wave of leadership at the CEC. And that includes Liz, Chris McLean, Mark Kootstra, Angela, everybody. I mean there’s so many people behind the curtains. But you guys all kind of showed how much of a
leadership role you can take, so thank you so much for your efforts.

A special callout for Noemi for making sure equity was not lost in the conversation or diluted. So Noemi thank you for your courage inserting the conversation, no matter how uncomfortable it was sometimes to just get through the process. So really, thank you to you.

And as Terra mentioned a big thanks to Aleecia for just the ability to bring people together and move us all forward.

It's as Commissioner McAllister mentioned, it is one of those projects that really provided an opportunity and a blueprint for future collaborations between the agencies. Again, it wouldn't happen without the likes of Rajinder Sahota, Simon Baker and the middle-level management that are really trying to bring the collaborative spirit together. So thanks to them for bringing that spirit and the openness to the conversation.

Also, I just want to note a few more people from CPUC and CARB, which were essential for the completion of this project. So James McGarry and Jason Ortego and Stephanie Kato, Carrie Biolin,(phonetic) and Mary Jane Coombs. All of them have been meeting on a weekly basis to ensure this all happened.
Terra said thanks to me to like kind of being at the beginning of this, but I really want to give a note of thanks to the role Drew, Courtney and Eli Harland played in this. Very early on just as the bill passed in September of 2018, Drew, Courtney Smith the Chief Deputy back then, and Eli kind of pulled together a team to really think through how this could be a foundational policy that could bring CEC together and the rest of the agencies together. And so I just want to note that there.

And as we now move forward, between we have four years to write the next report again, but it is a lot of work that that got teed up in this report. And I want to just acknowledge that two top leaders. Commissioner Douglas your leadership in land use and transmission planning will be essential. You're thinking through a multitude of very complex issues and stakeholders on how to make this happen. And I just want to commend your leadership and thank you for everything that you're doing to make this happen.

And Commissioner McAllister, your leadership on load flexibility and data. I don't think we can make this happen without the load demand side management and the opportunities with the DR. So again, thank you to your leadership in kind of keeping us moving forward and you're kind of calm demeanor no matter what happens to kind of
move this incrementally. So thank you to both of your leadership.

Thanks to all the principals, starting with Chair Hochschild, who really saw the need for making this a joint project very early on. Ensuring that the other principals had kind of a safe space to voice their concerns and as CEC was taking the pen on this. So I just want to -- just some of those things are not visible, so I want to just thank Chair -- Commissioner Randolph, now Chair Randolph -- and President Batjer for really making this happen, and Chair Nichols, so thank you all.

Finally, I think as a closing of this, a big thank you to all the core team, inter-agency core team, the comms teams, the writing teams and the admin team. Without the collaborative spirit, professionalism, inclusiveness and a spirit of intellectual rigor that you all brought to the table this would not have been possible.

There are a lot of things we need to improve moving forward on this, especially how we think of reliability, how we ensure that this comes to fruition. But I think this is an incredible start and a real feather in our quiver (phonetic), so thank you everybody for all your work. Thank you so much.

BOARD MEMBER DOUGLAS: Well thank you, Commissioner Gunda. And I will try to not repeat
everything that's just been said by all of you. But I do, I think, want to emphasize some of it. Because I think this report was a significant achievement and I think it's going to be really important to us as we chart our course forward from here.

So I do want to thank Terra, again for your hard work and leadership on this team and on this project. And as has been said before, the inter-agency staff and principals, to Chair Hochschild, Commissioner McAllister and, of course, Commissioner Gunda.

I did not have the hands-on role that everyone else on this virtual dais here did, but I did pay close attention to this report and this issue as it moved forward. And I attended many of the workshops, closely followed the process, closely looked at the drafts. And I'm really excited about the work that's been done. And I was super happy to see the level of participation in this work by stakeholders, as well by the DACAG, by many other voices that helps contribute to it.

And I am really excited about the prospect now of just all of us kind of rolling up our sleeves and working with partner agencies. Including the ones who helped put the report together with us, and many that didn't, but that are going to be instrumental to our achieving these goals to really make this happen on the, as you said, on the
land-use side, on the transmission side, on the permitting. Just understanding options, understanding technology options, understanding what needs to happen when to really operationalize and manage. And adaptively manage our move forward towards meeting these zero-carbon goals.

So it's a really exciting opportunity that we have before us, and that has been framed up. And I think the SB 100 report by giving us this long-term vision, it gives us an opportunity to really take the next steps in how we move forward to meet this vision. And to step up at this particular moment in time. And so I'm really pleased with the report and again want to thank all the people from the Energy Commission and our partner agencies, who put so much time and effort into it.

CHAIR HOCHSCHILD: Thank you so much, Commissioner.

And let me just add as well as we're meeting here I've been texting with the author of SB 100, Kevin de Leon, who extends his personal gratitude to all of you and the staff. And he wants to relay his thanks.

And let me just say I really do hope that all the staff who were involved in the crafting of this report really soak it in that this is done incredibly well. We're really proud of you. I think our pace of work is extremely fast here. We're doing so many things and spinning so many
plates I sometimes worry we don't pause and actually take
in the significance of a big project like this getting done
really well. So I just want to ask every member of staff,
if we were in person we'd be meeting to click glasses after
work somewhere. But since we can't do that just please
know we're all incredibly proud of you, grateful to you and
really thank you for a job well done.

So with that let's --

MS. GALLARDO: Chair before we move forward --

CHAIR HOCHSCHILD: Yes?

MS. GUTIERREZ: Sorry, I apologize for going out
of turn, I just wanted to pile on the gratitude fest at the
end and thank our Commission leadership, also CPUC and CARB
leadership and the inter-agency teams.

A few times it's been mentioned that this is a
roadmap for collaboration, and Commissioner Gunda you have
paved the road, I think, early on. You really seized the
opportunity to bring the SB 100 report leadership into the
Energy Commission when it could have landed anywhere, so
thank you for your leadership.

Also Terra and Liz especially, I want to
recognize both of you. Terra, you have been an exceptional
leader throughout this process. I think, then Siva started
it off and really forged those relationships with our
inter-agency teams, but you really took the reins about
mid-term in the process. And really led and shaped the report, made sure key discussion items were kept front and center. And you never let it slide, so thank you for your leadership.

Liz, you have also been a huge, huge -- you played this huge role in making sure that the technical information and the modeling stood firm and that we really ended up with a solid report, solid scenarios. I don't think people, unless they were involved in it, recognize or realize what an effort it was to just settle on the study scenarios. And all of the inputs and assumptions that went into those, so thank you very much.

And I just thank Steph, at CARB, and of course our team in EAD for really pulling this all together.

Thank you.

CHAIR HOCHSCHILD: Thank you, Aleecia. And let me also just offer again our congratulations to you on your new role. For those of you not aware, Aleecia was just appointed to succeed Commissioner Gunda in his former role as Deputy in Charge of the EAD Division, our Energy Assessments Division. And she's going to do a terrific job, so congratulations to you again.

MS. GUTIERREZ: Thank you, Chair.

CHAIR HOCHSCHILD: Yeah.

Okay, thank you everybody. Let's move on, if we
could, to Item 3, Antelope Valley Water Storage.

MR. SIT: Good morning Commissioners, my name is Joseph Sit and I'm from the R&D Division.

This is a long-duration project that came out of our solicitation where most of the projects were presented at our July 2020 Business Meeting. Just as a refresher the purpose of this solicitation was to demonstrate the value of non-lithium ion energy storage technologies that had durations of 10 hours or longer. Next slide, please.

Speaking of benefits this project from Antelope Valley and their aquifer pumped hydro-technology has a few key technological advantages over lithium-ion technologies. These include things like longer life cycles, thermal runaway and also no electronic waste.

Speaking to the long-duration storage solicitation and also just the technology more broadly, some of the key advantages is the ability to capture excess renewable energy generation and then use during high-priority times of the grid.

And then lastly, just thinking about the fires that we experienced in the heat wave last summer, and also the outages that we saw in Texas during the recent winter storm, we see this need for a grid resiliency. And by being able to support long-duration storage as a technology we’ll be able to pursue grid resiliency with cleaner -- and
that it's lower carbon emissions, and also do it with lower
costs. Next slide, please.

Speaking to technological innovations, this
aquifer pumped hydro technology is beneficial in that it’s
scalable and has rapid implementation. And this is because
it’s able to build off of existing infrastructure. And
this is what contrasted to large-scale hydro, which is very
capital and resource intensive.

Another unique feature about aquifer pumped hydro
is its seasonal storage. In other words, aquifer pumped
hydro is able to store energy on time periods of not just
hours, but we think weeks and months. Next slide, please.

Speaking to, or going over the actual agreement,
this project is partnering with Antelope Valley Water
Storage LLC, where they'll be receiving $6.4 million of CEC
funds. They'll be demonstrating their aquifer pumped hydro
technology, which retrofits existing wells and is able to
extract power from water flow. They'll be demonstrating at
least 10 hours of duration and be rated with at least 200
kilowatts of power.

Lastly, in terms of the purpose, this project
will be supplying power to critical facilities in low-
income communities. Next slide, please.

Just as an overview of briefly how the project
works, starting with the left side, the image to the right
side, water flows into or flows back through the piping back into the aquifer and that's what generates power out of the system. This power can work in conjunction with the grid or can be isolated from the grid. And then the idea is that this energy will be powering, again critical facilities such as disadvantaged and community hospitals, community centers and also emergency operations centers in these low-income communities. Next slide, please.

Lastly, in terms of staff recommendations, we recommend adoption of the CEQA findings and also approval of this grant agreement. And I'm ready for any questions the Commissioners might have, and also Mike Gravely from Research and Development and Bill Dietrich from CEC’s Legal are also available on the line as well.

CHAIR HOCHSCHILD: Well thank you so much, Joseph, for this. Obviously it builds beautifully on what we were just discussing with SB 100. As you’re seeing increasingly great progress on renewables including solar and wind, you know my own view is we will get to one-cent-to-kilowatt-hour solar and one-cent-to-kilowatt-hour wind just based on technology improvements and scale and so forth.

And we need to do, obviously a portfolio of other renewable projects. And we are doing that including offshore wind and biomass and geothermal and others. But
storage is a really, really key part of the equation. And I think we've now funded 58 different energy storage projects in California through the EPIC program. I’m incredibly proud of the team for supporting that fleet. And in fact Commissioner Gunda and I, during the August and September threats to the grid, worked very closely on pulling every possible lever. And Laurie and Mike Gravely and others were really helpful just making use of the fleet that we have, so this will add to that.

I did have one question, which is this is kind of to a unique feature, right? Like what is the potential universe of similar projects that you can see? And I don't know how replicable this is, I don’t know if you have any insight on that, Joseph.

MR. SIT: In terms of replication, this is the first time I’ve personally seen this this technology in demonstration. But there's I think that what I heard is that there’s roughly 100,000 existing wells throughout California that are kind of just sitting there. And so they're ripe for the being built off of and used, but in terms of replication trends in other companies that's something that is to be seen.

CHAIR HOCHSCHILD: Yeah, yeah. Well that's the purpose of this research.

So other comments or questions from my -- oh
I apologize. Madam Public Advisor, do we have any public comment on Item 3?

MS. GALLARDO: This is Noemi, the Public Advisor. There are no public comments on Item 3.

CHAIR HOCHSCHILD: Okay, thank you. Colleagues, any other comments or observations anyone would like to share on this?

BOARD MEMBER DOUGLAS: You know, I would just speak up and say I agree with your comments. Storage and long-duration storage is a really critical component of our future here. And I’m really excited to see these projects move forward.

CHAIR HOCHSCHILD: Okay, thank you.

BOARD MEMBER GUNDA: Yes --

CHAIR HOCHSCHILD: I’m sorry, Commissioner Gunda, were you going to say something?

BOARD MEMBER GUNDA: Yeah, Chair, thank you. Just thank you so much for the presentation, this is very exciting, same thing what Chair and Commissioner Douglas said. The specific question/comment, I guess, is kind of thinking through this universe question that the Chair asked and you just mentioned there are about 100,000 wells out there. And then this project is about 200 kilowatts, so we're looking at a potential of about 20 gigawatts,
right? And so that's an incredible amount of storage opportunity.

So just want to understand as a follow-up separately, the universe and possibly the challenges as to scaling this kind of technology. And also how big this could be. What is the range that we’re talking about from 200 megawatts to 500 megawatts -- or I meant 500 kilowatts, for example? So it'll be really great to follow up and I would love to keep track of this project. And thank you for the presentation.

CHAIR HOCHSCHILD: Thank you.

Commissioner McAllister would you be willing to make the motion?

BOARD MEMBER McALLISTER: Yes, I will move Item 3.

CHAIR HOCHSCHILD: Okay.

Commissioner Douglas, would you be willing to second?

BOARD MEMBER DOUGLAS: Second.

CHAIR HOCHSCHILD: Okay. All in favor say, “Aye.” Commissioner McAllister?

BOARD MEMBER McALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?
BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well.

This item passes 4-0.

Let's turn now to Item 4.

MR. MORI: Good morning, Commissioners. I am Kevin Mori from the Energy Efficiency Research Office in the Energy Research and Development Division.

In California, data centers consume over 2 percent of the state's electricity usage and is rapidly growing. It is expected to double in energy consumption within the next eight years. This is due to the significant amount of electrical cooling requirements and data processing inefficiencies. Data center cooling makes up for about 40 percent of data center electricity usage and is caused by the heat produced by electrical transistors. Next slide, please.

In the Internet world, fiberoptics and light signaling are becoming more commonplace and produce faster Internet speeds. However, the switchboard from end user to data center servers still use electrical transistors, and is the current bottleneck for data processing. Instead of using electrical transistor switches this project will use optical switches that use light to transmit data. The benefits of this technology include doubling data processing energy efficiency, reducing cooling requirements.
for data centers, and increased Internet speeds. Next
slide, please.

In a prior Department of Energy and CEC federal
cost share grant, UC San Diego developed a pilot scale
optical rotor switch that can achieve cooler temperatures
and faster data processing by directing server traffic with
light signaling. With the idea of light traveling 100
times faster than electricity, this switch has the
potential to double data processing speeds. Due to this
potential UC San Diego was recently awarded additional
funding to further test the light wave technology and
simulated real-world workloads. And to improve it for
scalability and commercialization. The simulation will use
Opera protocols to simulate the real-world web browser
traffic. Next slide, please.

As shown in the Phase 1 column, the Department of
Energy previously awarded $3.8 million to UC San Diego with
a CEC cost share of $475,000 to develop a proof-of-concept
model of the technology.

As shown in the Phase 2 column, the Department of
Energy has now awarded $5 million to test the technology in
real-world workloads and improve commercialization. As a
result, the project that I’m presenting today will be
providing UC San Diego with an additional $425,000 as cost
share to the latest federal grants. If this award is
approved the project would have leveraged Department of Energy investment of $8.8 million versus CEC investment of $900,000, thus leveraging the state funds by nearly 10 times. UC San Diego has summarized their activities to date in the article at the shown link. Next slide, please.

And with that I would like to finish up by recommending approval of this agreement with UC San Diego and staff’s determination that the project is exempt from CEQA.

I am available to answer any questions. And I believe George Papen might be on the line for comment.

Thank you.

CHAIR HOCHSCHILD: Thank you, Kevin, for that. And there’s so much to love about this. I love the leveraging of federal funds, love the partnership with UC San Diego and the area of focus. Data centers are one of the top loads in California.

I also want to just thank again the Siting Division and everyone else who collaborated on the workshop we had some weeks ago on cleaning up data center backup generation. But I think this is a really good project to help reduce the load. And I just wanted to thank everybody involved.

I wonder if Commissioner McAllister had anything to add on this? Oh sorry, let me just see if --
BOARD MEMBER MCALLISTER: Do we want to get public comment, yeah.

CHAIR HOCHSCHILD: Yeah, we might have public comment on this. Is there public comment, Noemi, for this item?

MS. GALLARDO: Yeah, this is Noemi Gallardo, Public Advisor. And I do not see any public comment on this Item Number 4.

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

BOARD MEMBER MCALLISTER: Okay yeah, I just would emphasize what you said already, Chair. Data centers, I mean they use a massive amount of energy. And we've been funding this, various generations of energy efficiency in data centers for a good long while now and it's paid off in spades. It is a big -- 2 percent Kevin said -- it would have been much bigger than that if we hadn't been working on this for the last 15 years or so.

And data centers have only grown. And as our lives more and more depend on it, it's just vital really that we move into it and construct new data centers. Constructing really cutting-edge, efficient data centers. Not generate heat in the first place, and then be very efficient about the cooling of the heat that is generated.

And then we really need to continue to work on
figuring out how to reduce the energy consumption of existing data centers of which there are many, many. So there's a lot of frontier, there are a lot of frontiers here to keep investing in.

I want to just express optimism that this Match Program that we have had periodically at the Commission, it's had a great impact. And just hopeful that as ARPA-E, as the sort of new federal landscape for investment in R&D ramps up and gets funding, we can have more opportunities to do this and partner with California entities that are getting federal funds and really, really leverage our own dollars that way. So I think this is a really great project.

CHAIR HOCHSCHILD: Thank you, Commissioner. Any other comments from my colleagues? Seeing none, Commissioner McAllister, would you be willing to make the motion?

BOARD MEMBER MCALLISTER: I will move Item 4.

CHAIR HOCHSCHILD: Okay.

Commissioner Gunda, would you be willing to second?

BOARD MEMBER GUNDA: I second the motion.

CHAIR HOCHSCHILD: Okay. All in favor say ayes.

Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.
CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well.

That item passes 4-0. Let's move on to Item 5.

MR. FERREIRA: Slide 1:

Hello, my name is Michael Ferreira and I work in the Energy, Research and Development Division. I’m here seeking approval for eight new grant agreements that resulted from our 2020 BRIDGE solicitation. Next slide, please.

One of our primary goals within the R&D Division is to support and enable clean energy start-ups across the state. And over the past couple years we have scaled some of these programs to support (indiscernible) from early-stage prototypes under CalSEED to lower emission production under RAMP. (phonetic). These stated agreements come from our BRIDGE Program, which (indiscernible) and to help clean energy startups avoid the funding gap between the time a successful project ends and funding for a new project is awarded. Next slide, please.

The first agreement from this BRIDGE is with Packetized Energy Technologies, which will demonstrate the potential of flexible electrical devices to provide
benefits to the electric grid.

Smart devices used for demand response have enormous potential to mitigate problems like the shortage of capacity, which leads to blackouts. However, existing demand response solutions are not flexible enough to respond to grid conditions and do not provide enough value to consumers needed for scale.

Packetized Energy’s platform aggregates smart devices such as thermostats, water heaters, and air conditioners into resources that respond in real time to changing grid conditions and enables expansion of demand response through customer friendly features that are easy to choose, install and operate. Next slide, please.

The next agreement is with Noon Energy, who will continue to advance their carbon-oxygen long-duration storage battery. With solar and wind power expanding rapidly, long duration storage is urgently needed to balance their intermittent supplies against demand, with existing storage technologies being too expensive or geographically limited to offer a viable solution.

Noon’s battery can match the energy efficiency of lithium-ion technology, while using low-cost storage media, which enables system level costs much lower than existing technologies.

This funding will enable scale-up, development
and field-testing demonstration of a storage system coupled to solar power, to provide dispatchable renewable electricity. Next slide.

The next agreement is with Next Energy Technologies, who will continue development of their transparent solar cells. Considerable progress has been made making commercial buildings more energy efficient, but there remains a lack of options for onsite energy generation as these buildings often don’t have enough rooftop space for conventional solar panels.

Next Energy is solving this problem by developing windows that generate energy, while maintaining customer expectations for aesthetics. Additionally, their windows also improve energy efficiency by converting infrared, which otherwise would contribute to building heat load, into electricity.

Their organic semiconductor coating can be directly integrated into dual-pane windows, eliminating encapsulation costs and allowing their technology to target a 1-year payback. Next slide, please.

Next is Sepion Technologies, who will continue R&D of their hybrid lithium-metal battery cell from a lab-scale validation to a pre-prototype.

Lithium metal batteries have great advantages
over state-of-the-art lithium ion batteries in terms of energy density and cost, which present huge opportunities for long-range and low-cost electric vehicles in the future. However, current lithium-metal technologies use lithium foil anodes, which are incredibly expensive and pose a significant safety risk.

To solve these challenges, Sepion is developing a safe, anode-free current collector, where all the lithium comes from the cathode, to achieve higher energy density at less than $100/kWh. The price point identified by the DOE where EV, electric vehicles, reach upfront cost parity with combustion engine vehicles.

This project will continue development of their "anode-free" current collector. And use machine learning to optimize the electrolyte formula to enable the battery to endure aggressive fast-charging conditions. Next slide, please.

Next is South8 Technologies, who has developed a novel and patented liquefied gas electrolyte chemistry for advanced Lithium ion batteries. Conventional Lithium-ion technology is limited by poor performance at temperatures below 20 Celsius and can be hazardous if they’re damaged. South8 is working to overcome these barriers with their liquid gas electrolyte, which has high conductivity at low temperatures, opening up opportunities for a wider range of
Their liquid gas electrolyte is also much safer, because if the cell structure is compromised, it can vent the non-toxic electrolyte and eliminate any possibility of explosion. Next slide, please.

The next agreement is with Treau, who will make improvements to their patented, low-cost, user-installable electric heat pump heater and air conditioning unit.

Currently, heat pumps and air conditioners must be installed through a wall by a professional HVAC technician, which is costly and time consuming. Treau’s room heat pump can be installed by two people with no tools in about 15 minutes and can be plugged directly into a typical 120 volt outlet.

In this project Treau proposes upgrades, which will expand the efficiency and thermal range of their product. These upgrades will provide energy savings of an estimated 33 percent for cooling and 70 percent for heating when compared to mini-splits. Next slide, please.

Next is Skyven Technologies, who is developing an innovative approach to industrial decarbonization. Industrial plant operators lack the resources, both in terms of time and finances, to hire energy experts to perform a detailed assessment, scope, and concept for greenhouse gas reducing projects.
Due to the large variety and uniqueness of plant types, decarbonization efforts require significant up-front analysis and consultant payments, with no guarantee of greenhouse gas or cost savings.

Sykven will develop an artificial intelligence platform that reduces front-end engineering costs by a factor of 10 and timeline by a factor of 4. It generates a customer-worthy engineering report justifying the selection and measuring and presenting costs, risks, and expected energy and carbon savings, ultimately making the process of decarbonizing easy, impactful, and lucrative. Next slide, please.

And the last agreement is with Feasible, who will demonstrate their platform’s capability to detect battery manufacturing issues earlier and with more sensitivity than state-of-the-art methods.

As battery cells have grown in size and density, standard electrical methods are limited in their ability to detect small inconsistencies that have a big impact on performance quality, and are a major source of cost and inefficiency in battery manufacturing. Feasible seeks to overcome these issues by commercializing an inspection method using ultrasound and data analytics to improve productivity and throughput in battery cell manufacturing.

This new process aims to accelerate yield ramps
by 2 times and adds 5 percent steady state yield by 5 percent yield. Next slide, please.

Staff recommends approval of these eight grant agreements and staff’s findings that these projects are exempt from CEQA. This concludes my presentation. I’m here to answer any questions and I believe Vince Romanin is also on the line to give his support. Thank you.

CHAIR HOCHSCHILD: Thank you so much.

Well, I feel at times I repeat myself in just saying how proud I am of the team, but this is an incredible, incredible portfolio. And some of these companies I have had the opportunity to visit. I love the focus on lithium-ion batteries from Sepion and others, but really every single one of these is timely and necessary.

And I would say this kind of funding is important in normal times, but especially important in a time like this where we're still in the middle of an economic recovery to help these companies make it to the next stage. I really think it can be the difference between succeeding or folding as a company, and so I’m so proud of this portfolio and very pleased to support it.

Let's see if we have any public comments on this item, Madam Public Advisor.

MS. GALLARDO: Yes, this is Noemi Gallardo, Public Advisor. We do have someone on the Verizon line,
Vince Romanin it looks like, from Treau. So if we could
open up his line. Vince, your line is open. Please spell
your name before speaking and indicate your affiliation.
You may begin.

MR. ROMANIN: Yes, hello. My name is Vince
Romanin, that's V-i-n-c-e R-o-m-a-n-i-n and I'm the CEO of
Treau. Good morning, Chair Hochschild and Commissioners.
As I said my name is Vince and I'm here to say that the
entire Treau team is thrilled to have the Energy Commission
continue to support us in this important work. We started
this company almost exactly four years ago now, with two
employees. And today we're at twenty.

Our mission was and continues to be to expand
access to comfortable buildings and homes in a way that
doesn't compromise our environment. And the CEC's support
up to now has been instrumental in us building our initial
manufacturing capacity of our first cooling and heating
product. And now your support of expanding the
capabilities of our future products to colder climates, and
as a standalone heating system, aligns directly with our
company mission.

Our easy-to-install electric heat pump with low
global-warming potential refrigerant helps remove two of
the largest sources of carbon emissions from buildings: one
being fossil fuels for heating and the other HFC
refrigerants. And, more importantly, our system is also designed to be a beautiful, sleek and efficient product that people will be excited to bring into their homes.

And so the CEC funding alone would have been transformational for our startup, but your support and endorsement has also been catalytic in bringing in other sources of capital from other agencies and private venture capital. And we're confident that this is going to continue to be the case for BRIDGE.

Also I’d like to express my gratitude to Laurie ten Hope and her staff for their dedication in their day-to-day administration of our current grant. And lastly, I just wanted to thank you again for your support and helping us bring compromise-free comfort to all Californians.

Thank you.

CHAIR HOCHSCHILD: Thank you so much.

Let's go to Commissioner discussion, maybe starting with Commissioner McAllister.

BOARD MEMBER MCALLISTER: Yeah, I wholeheartedly agree with your assessment that this is a great, really impressively diverse group of projects. I mean, everything industrial -- really happy to see some industrial efficiency in here -- storage and even small-scale generation.

And particularly buildings, obviously I think I
tend to focus on the innovation in buildings. And I want
to thank Vance from Treau for his presence and comments. I
mean cooling is one of the challenges of our time, cooling
and heating both, avoiding fossil fuels and the HFC issue.
We're really looking for ways to push the marketplace on
that and create solutions that are low-cost and accessible.
And we're talking about that actively in the
Building Code right now. And I think having the Energy
Commission really take the leadership role in developing
that marketplace can be transformational for our sake, but
actually globally. And cooling is not just a California
problem. It's cooling and heating both. But cooling, in
particular, is a global problem and demand is going up
tremendously across the globe on that. So I think I’m
obviously supportive of this portfolio and really happy to
see these technologies. And will be paying attention to
how they develop over time, and would reiterate the thanks
to Laurie and her team.

CHAIR HOCHSCHILD: Great, thank you. Any other
comments from Commissioners?

BOARD MEMBER GUNDA: Yeah, Chair, this is Siva. I
just wanted to just pile on the thanks and I just want to
thank Michael for taking the time to brief me on this. And
I’m really excited about the portfolio of generation and
the grid services in there. And it'll be very beneficial
with the focus on reliability and the long-term opportunities we go through.

I also want to recognize what Vince just said, Mr. Vince from Treau, is I think CEC has been doing a tremendous job in really filtering out and then thinking through and identifying opportunities for emerging technologies. And I think as CEC puts in the time to vet these RFPs and then highlight some of the technologies that really helps those technologies to get more funding. So I think that's a really important step that we serve.

I just want to thank Laurie for her leadership and the entire R&D team for their work on this. I'm very, very excited about this group of technologies.

CHAIR HOCHSCHILD: Thank you so much, Commissioner.

Unless there's other comments Commissioner McAllister, would you be willing to move the item?

BOARD MEMBER MCALLISTER: I will move Item 5.

CHAIR HOCHSCHILD: Commissioner Douglas, would you be willing to second?

BOARD MEMBER DOUGLAS: Yes, second.

CHAIR HOCHSCHILD: All in favor say aye. Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?
BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes 4-0. Let's turn now to Item 6.

MR. CHEN: Good morning, Chair and Commissioners, my name is Peter Chen. I work in the Energy, Research and Development Division. Today I am presenting three recommended awards from the hydrogen fuel cell demonstrations in rail and marine applications at ports or H2RAM solicitations. Next slide, please.

So this graph shows diesel particulate matter or DPM emissions at four major California ports categorized by emission source. The Air Resources Board identifies DPM as a toxic air contaminant linked to increased cancer risk and other adverse health impacts. As you can see in the segments outlined in red, diesel power locomotives and harbor crafts contribute to around 17 to 56 percent of DPM emissions at these ports, impacting under-resourced communities that are located nearby. Unlike on-road vehicles, locomotives and harbor crafts have few clean alternatives to diesel available today. Next slide, please.

So the objective of the H2RAM solicitation and the projects recommended today, is to reduce emissions from...
locomotives and harbor crafts by advancing the use of zero-emission hydrogen fuel cell technology. Introducing renewable hydrogen for these high fuel usage applications can also help realize economies of scale at the ports and reduce the cost of hydrogen for other applications.

The projects will inform future regulations and deployment strategies by providing data on fuel use, performance and cost-effectiveness. Next slide, please.

The first project with Gas Technology Institute would integrate a hydrogen fuel cell module, onboard hydrogen storage, and a battery module to collectively provide a zero-emission alternative to diesel switcher locomotives. Sierra Northern Railway, a short-line railroad that serves the Port of West Sacramento, will demonstrate the hydrogen locomotive in real-world operation. Their project will inform expanded hydrogen use in the rail sector by analyzing performance data and evaluating other suitable rail applications in California.

The hydrogen locomotive will enable Sierra Northern Railway to retire an older diesel locomotive, which will displace around 4,200 pounds of NOx, 150 pounds of PM and 100 metric tons of CO2 emissions annually. Next slide, please.

The second project with CALSTART will conduct a design and feasibility study of a hydrogen fuel cell
tugboat for implementation at the Port of Los Angeles. Due
to space constraints on tugboats and their high fuel usage
requirements liquid hydrogen may be a more feasible onboard
storage solution, compared to compressed gaseous hydrogen,
which is more typically used for on-road vehicles.

The project will address safety and technical
challenges related to using liquid hydrogen onboard a
marine vessel, including tank integration, production and
delivery to ports and refueling. Deploying a single
hydrogen tugboat in the future can result in around 2,200
metric tons of avoided CO2 emissions annually. Next slide.

The third project’s with Golden Gate Zero
Emission Marine will modify a small multi-use
passenger/patrol vessel to incorporate a compact hydrogen
fuel cell power train with 50 to 80 percent lower capital
costs compared to current industrial style marine fuel
cells.

The project will also develop a mobile refueling
system that can source hydrogen from existing retail
stations to refuel the vessel. This avoids relying on
shoreside hydrogen infrastructure, which may be more
difficult to site for the segment of the marine sector.
The technology will be validated through a demonstration
split between the Port of San Francisco and Port of Long
Beach. Converting a single commercial vessel of this type
can result in around 270 metric tons of CO2 emissions annually. Next slide, please.

Staff recommends approval of these three grants awards and adoption of staff's determination that the projects are exempt from CEQA. Thank you, and I’m available for any questions.

I also believe Ted Barnes from Gas Technology Institute, Fred Silver from CALSTART, and Ricky Elder from Golden Gate Zero Emission Marine are on the line to provide some comments. Thanks.

CHAIR HOCHSCHILD: Thank you. Let's go first to public comment.

MS. GALLARDO: This is Noemi Gallardo, the Public Advisor. We do have three people on the Verizon line. First will be William from California Hydrogen Business Council. William, I remind you to please spell your name before you begin speaking. After William will be Ricky, and then we will have Tim. So William, your line is open. Please feel free to begin. (Silence on the line.)

William, again your line is open if you'd like to make your public comment.

MR. ZOBEL: There we go. Can you hear me?

MS. GALLARDO: Yes, we can. Sorry, you have three minutes.

MR. ZOBEL: Thank you. William Zobel, I’m the
Executive Director of the California Hydrogen Business Council. Commissioners, staff and members of the public thank you for giving us the opportunity to comment today.

The California Hydrogen Business Council appreciates the Commission’s leadership on these off-road pilot hydrogen fuel cell demonstration programs. We believe these pilots establish a foundation for further commercialization of hydrogen and fuel cells in the off-road transportation market. And will inform future work done by the Commission on hydrogen and fuel cells across all segments of our economy.

As we know, and based on other work done at the Commission such as the SB 100 joint agency report that was presented earlier in the program, zero-carbon hydrogen is leveraged by scale. Peter even mentioned it in his overview of this particular item. Scales we know reduces costs, it will spur innovation and opens up other opportunities for this zero-carbon fuel across the economy, which include not only on the off-road segment, but also on-road transportation and the energy sector.

The Business Council is here to support the Commission's efforts in this area and other areas. We have a broad and diverse membership that has tremendous technical depth. Our members are willing, ready and able to assist this Commission in its efforts to meet the
state’s decarbonization goals in these areas. Thank you very much.

MS. GALLARDO: Thank you.

Next up we have Ricky from Golden Gate. Ricky, a reminder to please spell your name and state your affiliation. You may begin.

MR. ELDER: Thank you. Good morning, Commissioners. My name is Ricky Elder spelled, R-i-c-k-y E-l-d-e-r. I’m a Project Manager at Golden Gate Zero Emission Marine, a team committed to developing technological innovations leading to a future of clean, safe and accessible hydrogen across the globe.

As a brief review our project plans to design, build and demonstrate a fuel cell power train on a small, fast harbor craft as well as create technology that will improve the safety and cost effectiveness of hydrogen fueling. With over 98 percent of vessels in California being under 40-feet long it is Golden Gate Zero’s belief that developing the boundary-pushing technology of a powerful and compact system like this will be instrumental in the transition from traditional to a zero-emission hydrogen fuel cell power train.

The funds that CEC provides for developing hydrogen technology projects is the foundation, which enables companies like us to actualize a future of
accessible zero-emission power, including and especially in our low-income and disadvantaged communities. Golden Gate Zero Emission Marine is honored to be nominated for this award, which will enable the development and testing of novel technology we hope to use in making hydrogen accessible for all.

I'd like to complete my comments by saying thank you to the CEC for providing the platform for making zero-emission dreams a reality, thank you to Peter Chen for his constant communication and support, thank you to our project partners Ocean5, UC Irvine and SoCal Gas. And I would like to thank the Commissioners for their time today in crafting the future of hydrogen power in California. And, ultimately, our clients. Thank you.

MS. GALLARDO: Thank you. This is Noemi. Again, we have several other speakers who have joined. Let me give them a reminder too. So folks if you are on the Zoom platform you will need to call into our Verizon line to make a public comment. That phone number is 888-823-5065 and the pass code is “Business Meeting.” We've also shared that through the chat in Zoom.

All right, so next up we will have Tim Carmichael from SDG&E. If we could open up Tim’s line. Tim your line is open, please spell your name, please state your affiliation. And you may begin.
MR. CARMICHAEL: Good morning, can you hear me?

MS. GALLARDO: Yes, we can.

CHAIR HOCHSCHILD: Yes, we hear you.

MR. CARMICHAEL: Good morning, Commissioners, Tim Carmichael. Today I’m actually representing Southern California Gas Company though on other occasions I do represent SDG&E as well. It's Tim Carmichael, T-i-m C-a-r-m-i-c-h-a-e-l.

SoCalGas is bullish on hydrogen and we are very excited to support these important hydrogen technology projects. Projects like these have the potential to create more zero-emission transportation and reduce the cost of hydrogen fueling infrastructure consistent with California climate goals. SoCalGas remains committed to helping California reach these goals and supporting innovative clean fuel projects like these.

We commend the CEC for creating this unique grant funding opportunity from two different programs within the CEC. SoCalGas is also providing significant matching funds for these projects.

Finally, we would like to recognize Ray Gonzalez (phonetic) for his vision and hard work to make these types of projects a reality. And we urge your approval for funding for these important projects. Thank you.

MS. GALLARDO: Thank you.
All right, this is Noemi, Public Advisor again. So next up is Fred Silver from CALSTART. Fred, a reminder to please spell your name and state your affiliation again. Fred, your line is open, you may begin.

MR. SILVER: Okay this is Fred Silver, S-i-l-v-e-r. I am Vice President of CALSTART. And thank you to the Commissioners for allowing me to speak today, and thank you to Peter Chen and his staff for selecting our H2RAM proposal for consideration.

CALSTART put together an outstanding team that is able to take this project forward within future in the hopes of commercializing the technology. We have ABB, Ballard, SoCal Gas, DNV and the Port of Los Angeles. Our team is ready to go after this project towards an actual drive train and go to the next step. But the big takeaway from this project is should we succeed we are looking at reducing the use of diesel as much as 15,000 gallons per month per tugboat and that's a fairly significant amount of fuel consumption.

So thank you for consideration for our project today.

MS. GALLARDO: Thank you. Next up we have Ted Barnes it looks like, from the Gas Technology Institute. Ted, a reminder to spell your name, please state your affiliation. Your line is
open and you may begin.

MR. BARNES: Thank you very much. Good morning.

Can you hear me?

CHAIR HOCHSCHILD: Yes.

MR. BARNES: That’s fine, thank you. My name is Ted Barnes, B-a-r-n-e-s, and I’m the Director of the Transportation Group at GTI. I would like to very briefly just thank all of the Commissioners for selecting GTI on this project in allowing projects and programs such as this that fund the clean energy in especially difficult to decarbonize sectors.

These projects are very important to GTI’s mission, as well as to reaching California’s climate goals. We are very eager move forward with the technical project team, as well as (indiscernible) like SoCalGas support and the Energy Commission’s support.

We also thank the Commissioners for their funding of clean energy across some wide variety of sectors (indiscernible - audio cuts out.) So thank you very much for that. And we truly look forward to this exciting projects (indiscernible). Thank you.

MS. GALLARDO: Thank you.

This is Noemi the Public Advisor. It looks like, but we’re unclear, if there is one more speaker. So let me check with the Verizon line. So Les Mood from SineWatts,
if we could open up his line and see if Les wants to speak
on this item. Les, your line is open. If you would like
to speak on this item please feel free to begin. Restate
your name, please spell your name and indicate your
affiliation.

MR. MOOD: Yes, so my name is Les Mood, L-e-s M-
o-o-d. I’m an advisor to a power electronics firm,
SineWatts, Incorporated based out of North Carolina.
And yeah, the reason I want to speak today is to
thank the CPUC and the CEC for encouraging innovation in
the State of California. I believe leadership of
California tends to result in great progress for the
nation.
And in the context of companies that are moving
out of California like I believe Tesla and some others, and
in the context of the incentives from states like Arizona
for Lucid, and the incentives that are provided. And for
instance, Arrival announced that the headquarter location
of SineWatts in Charlotte, North Carolina, would be
incentivizing Arrival to open up a micromanufacturing
facility.
So I’m curious what -- and I hope this is
appropriate to ask here today -- but I’m curious what this
state can do to incentivize much like Nevada and Arizona
and cities, the relocation of companies who aim to achieve
the goals, the grand goals of California, namely.

And I would like to add that there's a quote from one of the Commissioners at the CPUC that was on the VGI Workshop meeting yesterday, which was that, “We have big, bold goals centrally in California. And in order to achieve them we're going to need innovation and new ideas.” So I’m very thankful for the leadership of the CPUC and the CEC to provide the kind of environment necessary to nurture innovation.

And I guess my question would be if there's any resources or where it would be recommended if a company is considering to move to California or Nevada or Arizona, or to seek city funding, what kind of options are out there to encourage businesses to move to California and to help with the problem? Thank you very much.

MS. GALLARDO: Thank you. And, Les, we usually do not do dialogue and during public comment periods, I just want to clarify that. Unless the one of the Commissioners wants to respond. Otherwise, that was the last comment and Chair, we could move forward.

CHAIR HOCHSCHILD: Thank you so much to all the stakeholders and the members of public who commented there. I would just observe that obviously pollution from ports remains a big issue in our state impacting disadvantaged communities the most. And this will help us address that
as well as push innovation in this sector, so I’m really pleased to see all these projects and happy to support this. Are there any other Commissioners wishing to comment? Commissioner Douglas.

BOARD MEMBER DOUGLAS: Yeah, I just wanted to say that I think this is an area where we definitely want to kind of push the envelope a bit, and encourage some innovation and deployment. So I’m excited to see these and support these as well.

CHAIR HOCHSCHILD: Okay, thank you.

Commissioner McAllister?

BOARD MEMBER MCALLISTER: Yeah, I want to just thank Peter for the briefing I got. I think this is hugely important actually. I mean, ports and the shipping lanes that connect them are just a massive source of all sorts of different pollutants, sulfur and particulates and all the rest of it. and so that's a sector I agree with Commissioner Douglas, we need to do much more work on it I think.

And this is really creative, just the way -- I want to give kudos to Peter and Laurie and Virginia and the whole crew in the RDD for this. Because the way they went out and sort of gathered ideas and came up with the idea to target this solicitation in the first place, I think, was really demonstrative of their creativity. And their sort
of can-do mentality and approach on this in targeting these particular sectors in ports. And really getting pragmatic and really ground-truthing our investments, really focusing on where the best bang for buck is. So I want to thank them for that. I'm very supportive of these.

CHAIR HOCHSCHILD: Thank you. Unless there's other Commissioner comments --

BOARD MEMBER GUNDA: Yeah Chair, I just wanted to note really quick again I think everything said, thanks to Peter for the excellent presentation. I think the emphasis that Peter kind of mentioned in terms of air quality implications and the equity implications of this work is something that I want to highlight. And that's something that we ought to be doing. And taking every opportunity that we have to advance equity and the clean energy and clean air quality and then clean California opportunities for the entire state. So thank you, Peter, for your presentation.

CHAIR HOCHSCHILD: Great. Thank you everybody.

Commissioner McAllister, would you be willing to move the item?

BOARD MEMBER MCALLISTER: Yes. I will move Item 6.

CHAIR HOCHSCHILD: Commissioner Gunda, would you be willing to second?
CHAIR HOCHSCHILD: Absolutely. I second the item.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Okay, what I'd like to do now is actually skip ahead and let's knock out Items 14 through 18 and then we'll come back to the agenda. Commissioner Monahan should be joining us shortly. So with that if we can move ahead, Madam Public Advisor, to Item 14 which is approval of the business meeting minutes.

Are there any public comments on Item 14?

MS. GALLARDO: This is Noemi Gallardo, Public Advisor. There are no public comments on Item 14, the minutes.

CHAIR HOCHSCHILD: Commissioner McAllister, would you be willing to move Item 14?

BOARD MEMBER MCALLISTER: Yes, I will move this item.

CHAIR HOCHSCHILD: Commissioner Douglas, would you mind seconding?
BOARD MEMBER DOUGLAS: Second.

CHAIR HOCHSCHILD: All in favor say aye,

Commissioner McAllister?

BOARD MEMBER McALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes 4-0.

Item 15, Lead Commissioner, Presiding Member Reports. Commissioner Gunda?

BOARD MEMBER GUNDA: Yeah, thank you, Chair. I just wanted to start off with some kind of thank yous at the top. It's been exactly a month and a little bit since the appointment. My first Business Meeting was on the day I swore in thanks to you, Chair, for pulling me into that meeting.

And as I start kind of getting into this role I just want to really thank my colleagues, each one of you, for your kindness and mentorship and guidance as I took on this role. So thank you for helping me understand the various aspects of this role, the nuances and developing the necessary partnership to move the conversation forward.

And there are a few elements that I’ve been doing
over the last month I just wanted to note, one is trying to meet one-on-one with all the DACAG members and trying to understand some of their priorities. And I want to thank our Public Advisor, Noemi Gallardo, for joining me on all those calls and helping me set up those meetings.

There have been some incredible conversations. And I’m hoping to do some community informational visits later in the year when the COVID impacts reduce as well as some site visits, to really kind of develop a tangible action plan on some key priorities on what we can do to ensure the SB 100 transition, as well as other major goals, clean energy goals, that the state has.

I also want to thank the EAD staff for the work that they have been doing to prepare for summer 2021. There has been a number of analyses that have been conducted to look at a variety of scenarios for reliability under circumstances that we have seen last year. Last year in August and September, we have experienced an extreme heat wave situation. Kind of for those of you who were following it was the August month we had the temperatures that are 1-in-30 weather events. And September was a 1-in-70. And it was also regional, complete west-wide, so we are looking at a variety of analyses.

I want to call out specifically Lana Wong from EAD for developing a simple but elegant hourly tool, stack
analysis tool, that helps us look at a variety of scenarios. And we are looking through under what scenarios there might be shortages, what hours, and how do we mitigate them and contingencies.

I want to thank Commissioner Douglas for her leadership on and working together on the contingencies for this summer, as well as the future if some extreme situations were to present.

Also, in vain of trying to figure out the contingencies we have developed some conversations with DWR. I want to thank the leadership from the CNRA, Matt Baker; Carla from DWR, really working on at how best DWR can support reliability. And then in the future with the grid of California.

Also want to call out Reiko Kerr from LADWP for some of the work that Reiko has been doing from neighboring balancing authorities to support CAISO and then the product system and emergency needs. So I just want to thank a lot of work that has been happening between CAISO and CPUC.

Oftentimes this is not visible, but there is a lot of personnel hours trying to work out the kinks. And then making sure we have a clear plan going into this summer.

So those are the main activities that I have been up to with Commissioner McAllister working on some data issues and thinking about the future of data. And NDR,
(phonetic) there's another element. I think Commissioner McAllister will cover that in his report, so I will leave it to Commissioner McAllister.

And finally, as I build the office, I have my job postings for the advisors. And really, for those of you who are on the call who would love to join the CEC it would be great to have talented, committed people join CEC and help us move the mission and the vision of CEC as well as the state forward.

And Chair, thank you for your leadership and reliability. And so with that I’ll close my comments.

CHAIR HOCHSCHLD: Thank you. Let's move on to Commission McAllister.

BOARD MEMBER McALLISTER: Okay, well great. I’ll keep it brief, but I wanted to welcome Commissioner Gunda I think for the first full month. Congratulations on surviving. And it sounds like you’re set up well to thrive. I didn't have any doubt. But it's actually as our arrangements and committees and the key relationships kind of evolve, it's actually a little bit bittersweet for me, because there's some really great topics that I won't be working on directly with Commissioner Gunda now.

But there also is a sort of an upside to that in that I think my portfolio is readjusting kind of at a good time, to focus on the Building Standards and some big
issues that are really now upon us. Like the IEPR, which
I’ll be leading this year, and the building decarbonization
discussion within that alongside the standards and Load
Management Standards and some very complimentary sort of
universal things related to buildings and flexibility. So
I’m excited to be able to sort of focus on that and still
have bridges over into the demand response and data worlds
as Commissioner Gunda said.

So I’ll just highlight kind of a little bit of an
update on data, I guess. And I want to give some kudos
here to Jason Harville and to Drew in the Executive Office
for keeping the trains running on that.

As you all know we, more than a couple of years
ago now we updated our data regulations to get more
complete information about consumption and other types of
data from the utilities and begin to integrate those into
sort of a central platform. And that has really moved
forward and it's getting -- I think not quite mature, but
it's really moved forward in a way that sets us up for just
structurally having a huge impact going forward into the
next year.

CHAIR HOCHSCHILD: Commissioner McAllister, would
you mind saying a little bit more on that? Like where are
we now in terms of what we have in-house and what is still
outstanding, and from a data perspective?
BOARD MEMBER MCALLISTER: Yeah. So as any of you who've worked absolutely -- thanks for the question, Chair. As anybody who has worked in this sector knows, sort of data sharing and access in a sort of regulated environment like this, can be pretty complicated. And there are historical practices and there are hardware and software kind of legacies that have to be overcome. There are certainly legal and procedural issues with utilities sort of within that regulated environment. So lots of layers to that onion. And Jason has been really dogged in peeling back those layers and working, establishing collaborative relationships at the PUC and at the utilities.

And as you know, the big IOUs have smart meters, the electricity IOUs have smart meters. And so getting much of the consumption data from them has started. And we've tested and sort of gotten the infrastructure ready to bring that or the infrastructure up and running to bring that data in, to clean it up and get it settled in a repository. And so in beginning to get automated data tools so that we can start to analyze that data and get load-shaping and trending, and all that is the eventual goal.

So what we're doing, what the team is doing is that we've got the data from some of the utilities, not all of them. So it's sort of a step-wise process to start to
do that. And obviously there's we treat the data with care and we want to just make sure we get all those bases covered as we move forward. So I'll sort of leave it at that high level for now, but I think the infrastructure is in place, which is really a huge milestone.

And as the data starts flowing and gets automated that will really start to present staff with the ability to, through Tableau and other tools, to do really heavy-hitting analysis in a much more facile way than the Commission and staff generally at the Commission is used to having. So I think that it really will be a game changer to be able to access large data sets, integrate them, and ask creative questions. And not take months to do an analysis, but take an afternoon potentially, right? So I think that’s going to be a transformational resource.

I’m really looking forward to applying that in many, many different realms certainly on the building side. That'll be on those management standards, on even impact assessment for different initiatives and programs, working with local governments to roll up information for them in ways that makes sense for their climate and energy planning.

I think there are many, many applications including the demand response work that Commissioner Gunda and I will be working on. You know, trying to see what the
Commission's role can be in terms of more rigorous analysis about what actually happens in demand response events. And then helping with the baseline issue that we've been discussing and kind of understanding really what demand response as a reliability resource can actually look like. And certainly the role of buildings and customer behavior and automation in that can be and how big that resource really can be.

So I think our collective efforts to really create the information landscape that we need to do that work is coming along nicely. So I just wanted to highlight that and give kudos to staff on that.

The last thing I’ll say is the Title 24, Part 6 Building Standards are a big enterprise, a huge ship and we're steaming ahead. Maybe steam is not the right energy metaphor here. But it's where as I had a talk with you about, and you said the other day I think in the all-hands meeting, the proposal that we've got is a solid proposal. It helps move us toward decarbonizing our buildings in a really muscular way. But also leaves flexibility to help the marketplace move along in a way that's cost-effective for customers. And that all the trade (indiscernible) can actually do, the builders and everyone else can actually do.

So the trajectory really is just one that's
extremely positive for our buildings, so a lot to do there.

We’re anticipating we have to go through the formal regulatory process and 45-day language, 15-day language, lots of administrative processes to go through with that and lots of stakeholder feedback. I can't emphasize enough we've gotten hundreds of comments with very meaty content. And that's the lifeblood of the process.

So to get to really the Environment and the Building Code, that it’s doable and enforceable and also helps us meet our climate and carbon goals. I think we're on a good track there. So anyway, I wanted to just thank all the staff, Will and well really the Building Standards Office and the Compliance Office, there are pieces that are theirs as well, for the whole regulatory package.

And certainly Linda Barrera and her team that really stepped up and helped along the way. And lots of big, big team effort, really literally dozens of people that are working hard every day to make that happen. So I want to just thank all of them. And Mike and Christine, Will, Lorraine and their teams, I want to just say thanks.

And I’m looking forward to chugging ahead and getting this across the finish line hopefully in mid-year July or so.

So presumably, Chair, you'll probably talk about the rates en banc that we had?

CHAIR HOCHSCHILD: Yeah.
BOARD MEMBER MCALLISTER: But I think all of us were there, so that's a really helpful resource. The CEC staff to get a great report, and to take all of our different policies and project them forward and try to gauge impacts. I think that’s a vision of the likely coming rates environment, or at least some idea of where that's likely to go is really helpful.

It's very helpful, and in not only in the context of the building code, but really in lots of things we do across the Commission, so I really appreciated that. And with that I think I'll wrap up.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Let’s give a welcome to Commissioner Monahan back from your hearing. Commissioner Monahan, what we're doing is I think knock at this point Items 15 through 17. And then we'll go back and pick up where we were on Item 7.

Commissioner Douglas, do you want to go next?

BOARD MEMBER DOUGLAS: Yes, and I just have a few brief updates. I also participated in the CPUC en Banc on rates and costs, so I won't speak more about that now.

We kicked off the Lithium Valley Commission on February 25th. And so that was really exciting, yes. And the Chair and I were there. We, the Lithium Valley Commission met. It was just a great introductory session. We covered a lot of ground. They elected a Chair and
they're really prepared to move forward and hit the ground running. I think we've got such great opportunities there. And I just --

CHAIR HOCHSCHILD: Maybe just share who the Chair is for the benefit.

BOARD MEMBER DOUGLAS: Yeah so Silvia Paz, who's the Governor's Office appointee on to the Commission. And we've already been talking to her about how to move forward and frame up the next meeting. They'd like to meet monthly, which I think is a great, great trajectory given how quickly this item can be moving.

And the last thing I’ll raise is that yesterday one of our international partners, Denmark, made a really great presentation to the Marine Working Group, which is a group that the Energy Commission has stepped up to help convene. It involves a number of agencies active and working together in the marine space, particularly at this point on offshore wind, although the group touches on other topics as well.

The presentation from Denmark was extremely helpful. And despite the different physical environment in the North Sea compared to California the experience that they've had and some of the ways that they've overcome challenges and framed and scoped environmental documents, for example, is pretty instructive to us. So that was very
helpful. And I think I'll stop there.

CHAIR HOCHSCHILD: Thank you.

Commissioner Monahan, any updates on your end?

BOARD MEMBER MONAHAN: Well, it's centered a lot
around the Governor's Budget proposal. There's been a lot
of activities just trying to support the proposal.

Testifying up there, I'm sure you all heard, that's why I
was late today. Sorry about that. So testifying in the
Assembly Budget Subcommittee, already testified at the
Senate Budget Subcommittee. And I'm broadly representing
both ARB and the CEC’s perspective on this although thank
God we had a hand there with answering questions today. So
it was Sydney Vergis from the Air Resources Board and
different folks from the Department of Finance. It really
takes a village to respond to the questions that come up
and the learning process for me about how to communicate
more effectively with our legislative partners in this.

So yeah, I also want to acknowledge Anna Ferrera
who has just stepped in and is wonderful to work with and
really amazing. So she, together with Hannon (phonetic)
and the Chair, lots of folks have all been in this, trying
to support the Governor's proposal and get to the finish
line with the billion dollars on ZEV infrastructure and
reauthorization of the Clean Transportation Program.

So just quickly on the EV Charging Infrastructure
Strike Force, I’m just going to keep getting short updates on that because I do think it's a really important forum, especially given the reauthorization and the focus on ZEVs. This EV Charging Infrastructure Strike Force is, I think, that it'll be just helpful partners. And I mentioned before we have moved away from -- I was the Co-Chair. Now I’m the Chair of the Public Policy Advisory Committee.

Angelo Logan, who is a longtime advocate on reducing (indiscernible) pollution comes from East Yard Communities for Environmental Justice. Like he just has a lot of years of experience and I really admire him as a person. So he's going to be co-chairing it together with Cathy Zoi from EVgo.

And you might recall we wanted equity to be part of this from the get-go, not an add-on, but actually like a part of it. And we thought overall the work groups would just include equity. But what we found is that we need to have a more focused discussion on equity and we formed an equity work group that Larry Rillera is going to be co-chairing or co-facilitating. I think we're doing Chair language for that.

And really trying to see if we can come up with language, specific language on what it means to be equitable when it comes to EV charging infrastructure. And I’m hopeful. I know that even the conversation is
important, that we will reach consensus? I hope so. That's as far as I can go.

But these are complicated issues. They're worth wrestling with, and we are going to get dirty in that process.

So the membership is growing. It's going to go more public. It's going to be for the first time we're going to hold a near BK-compliant (phonetic) meeting at the end of this month, so it will be public. And you can access it if you want. The public can make comments, there’s going to be a website. It's just kind of professionalizing, I would say.

And I think as we see the federal government get invested more and more in this and the potential for a big infrastructure bond, there's I think a lot of opportunities for us to share lessons learned with the federal government. And maybe even for them to join at some point as part of the Public Policy Advisory Committee.

A staffing update, it may be in the email, but Mona Badie, who was part of Vice-Chair Scott’s office, has joined my office as Second Advisor. And we're also happy to announce that Scott Cox who works with Laurie ten Hope’s team and ERDD, and helped a lot with the reauthorization of the EPIC program is going to be helping us 50 percent time for the next couple of months on some communications-
related pieces related to the reauthorization.

I’ve been on the number of speaking panels. I feel like actually with Chair Randolph, she and I are like -- I don’t know why, but we're on a lot of panels together and it's been wonderful. She seems just wonderful, really great, really collaborative, really smart. So I’m just very much looking forward to working more with her.

We were just on this Women Leading California Climate -- or something like that -- Panel. And it was super-fun. So yeah, great to have. You know, we’ll miss Mary Nichols, but really great to have Liane in that role. I think that's about it.

CHAIR HOCHSCHILD: Great update. Thank you, Commissioner, and so grateful. Yeah, I just have to say our team is incredible. I just love hearing from all my colleagues, just the breadth and depth and expertise every time.

On my side just a few highlights I wanted to share. I met yesterday with the military. I want to thank my Military Advisor Mike Gravely, who has continued to do extraordinary work.

We have now funded almost $50 million in R&D projects on military bases in California. And that bears a lot of fruit, not only because many of these projects assisted us during this stress to the grid in August and
September, but because when we get things to scale,
including EV charging at L.A. Air Force Base and elsewhere,
these become models for bases around the country.

I thank Admiral Bolivar and General Connolly
(phonetic) for their service. They’re both moving on in
June. We got some new talent coming in there. And we're
continuing to push out new projects, so it was a terrific
meeting.

Also I met with the new CEO of PG&E, Patti Poppe,
who I was very impressed by. She actually comes from the
Midwest, worked at GM for 15 years. And, I think is very,
very focused on climate solutions, particularly
transportation electrification. I think we'll be able to
work on a bunch of solutions with her in her new capacity.

We did have, as Commissioner McAllister
mentioned, an en banc with PUC on rates. That's obviously
something we're all mindful of. I think a lot of this is
being driven by climate, the wildfire liability costs and
other grid hardening that we have to do. And we have to be
very, very mindful of that, because we've got to keep
electric rates low.

I am very, very excited about the chance for
electrification to reduce electric rates when you look at
the fact that almost a billion dollars has been contributed
by electric vehicle owners in California today, to the rate
base for charging and more on the way. But that was a very
fruitful discussion.

And then just a little bit about Texas. I think
some of you saw that there was a report came out from the
International Energy Agency showing the blackout in Texas
was 500 times worse in terms of the impact than the
blackout we had in California. That should be a cautionary
tale for all of us. And I really want to thank
Commissioner Gunda especially for leaning in so heavily on
the reliability and resiliency work; Commission McAllister,
on a lot of the seed planting and the load management
standards. You know, we all need to own that and ensure
that we do everything possible to strengthen and build up
our resiliency as a state as we approach August and
September months again.

I will stop there, I think. And what I’d like to
do now is just let’s see if we can quickly get through
items 16 and 17. Then we’ll go back to the regular agenda.
So does the Executive Director have a report, Item 16?
(Silence on the line.) Drew are you on mute? There we go.

MR. BOHAN: Can you hear me?

CHAIR HOCHSCHILD: Yeah, I can hear you. Do you
have a report?

MR. BOHAN: Yeah, I do. I’m having trouble
getting auto-muted by mistake here. But anyway, yeah I
just wanted to acknowledge a few of our colleagues. Yesterday at our town hall we acknowledged Linda Spiegel who will be the Energy Commission’s new Chief Deputy. She measures her tenure with our organization in decades not years. She's been with us for quite some time, highly regarded by everybody she interacts with. She's humble. She works with people really well at all levels of the organization and she's just super-smart and great to get along with. So I’m so excited to have her as a new partner.

Greiana Williams, who we’re calling our Change Agent in Chief, and she will be leading our move to the new CNRA building. Many in the organization know her and many others got an introduction to her yesterday during her presentation at the town hall. But she's been with us for a couple years in our Training Office.

I also just want to call out Rob Cook who's been helping with the larger move effort, the pack and purge, a lot of little details it takes to move an organization from one place to the next. It's not trivial.

And then, finally, this is Cody our Secretariat, and it’s his last Business Meeting. He's moving on to another -- he got a promotion and will be moving on in state service. But he's been behind the scenes and has just done a very fine job for us as Secretariat.
Thank you, Chair.

CHAIR HOCHSCHILD: Thank you. All right let's move on to Public Advisor’s Report.

MS. GALLARDO: Hello, this is Noemi, Public Advisor. I do have a couple of items. I’ll try to go through these quickly. And I also want to say I’m not turning on my video, because I’m battling allergies as of this morning and not winning. So I’m keeping my video off to spare you. So if we could go to the next slide, please.

The first item I wanted to give you an update about is the IDEA Initiative. So again, IDEA stands for Inclusion, Diversity, Equity and Access. Carousel Gore and I are still moving this forward even though we've lost half of our team with Courtney Smith and Darcie Houck leaving.

We have a task force meeting coming up March 24th, so this is a group of CEC employees who are getting together to help advance all these principles for the benefit of our workforce. At that meeting we're going to discuss allyship, becoming better allies to each other at the Commission and elsewhere. We’ll review staff recommendations as well that they're doing to improve workforce-related policies, practices, etcetera.

And then we will also be uplifting some employee-led activities. And I wanted to mention this, because our employees have been fantastic. Even though we've been in
virtual mode they are still finding ways to engage and be socially active and creative about it. So one of those ways is through employee resource or affinity groups. I wanted to share that Renee Webster-Hopkins, for example, is starting a rainbow affinity group or LGBTQ-plus community. We also have the Disability Advisory Committee and a few others that are starting to form.

And then I'll add that employees are also doing a lot on celebrations. So if we can go to the next slide I want to show you quickly Black History Month celebration went really well. This is a photo showing how fun it was. We had great speakers and this was led by Dorothy Murimi from the Public Advisor’s Office, so big thank you to her.

CHAIR HOCHSCHILD: Noemi, I thought I asked you to airbrush out the gray hairs I see. (Laughter.)

MS. GALLARDO: You look fantastic here.

So we'll move forward. I have another great picture to show you. So this is from our International Women's Day celebration, which it took a team of us to do, but really spearheaded by Sylvia Palma-Rojas from the Renewables Energy Division, so appreciate her doing that.

And I also wanted to say thank you to Commissioners Douglas and Monahan for making remarks and just telling us about their personal journeys and specific experiences that they've had. Several staff reached out
and told me that that meant a lot to them. So again, thank you Commissioners Douglas and Monahan.

And then the second item that I wanted to talk to you about was -- next slide -- we did a survey related to business meetings in order to help improve our participation and engagement. We had about 78 participants. And I want to also inform the audience that we still have that survey available if they want to participate. And really quickly wanted to show some results. So next slide.

We asked the question about attendance, and we found out that most people are rather new or infrequent participants. It's either their first or have only joined two to four. Next slide.

We asked about their reasons for joining. Most attend for work, you know 63 percent there. But there are also others who indicated they also feel passionate and see the direct impacts of those, 42 percent who marked all of the above. Next slide.

We asked about their preferences on how to join. And I want to highlight this one, because Zoom stood out as one that they really appreciate, even more so over in-person. And a good majority also indicated that they prefer multiple options to join us, so I think going into our new building we will have really good AV and different
ways for people to join. Next slide.

And then we also asked about their ease to participate. And I was really happy that most people indicate that it is easy to participate in our business meetings. And a few indicated there might be some improvement needed in terms of getting material and whatnot. Next slide.

So here are some just key takeaways. We should continue in enabling various ways to join as mentioned, including Zoom. Potentially when we're back in person and it's all safe, maybe we can do some of our meetings in the communities too, as another way to bring the meetings closer to the community. And then we should also determine additional ways for the public to access meeting material. That was one of the indicators there, which I'll be thinking about.

And then also we should share additional ways attendees can participate in general CEC efforts, so I’m also thinking about that one.

And that concludes my report, Chair. Thank you so much.

CHAIR HOCHSCHILD: Thank you so much, Noemi. You know, you do such an amazing job just keeping all the trains running. And also, I know I speak for all my colleagues when I say just our culture has really been
enhanced by all of the energy you put into these wonderful staff events. And not to mention the Clean Energy Hall of Fame, and so thank you for all you do.

I think actually what I’d like to do with my colleagues’ permission is just actually power through these last two items and then take a break for lunch. And we'll reconvene and take up Items 7 through 14 after lunch.

So Item 18, do we have any public comment? This is just the general public comment, not on any item. Madam Public Advisor, is there any comments for Item 18?

MS. GALLARDO: So I'll go through the instructions first. Well, actually you know what? I think we're supposed to do general public comment at the end. Let me just check with our -- (Overlapping colloquy.)

CHAIR HOCHSCHILD: I’ve been in dialogue with the Chief Counselor who said it's actually fine either way. My thought was just before lunch.

MS. GALLARDO: Okay.

CHAIR HOCHSCHILD: We’re going to lose some people at lunch, so do you have anyone wishing to make public comment not on one of the other items we're going to hear?

MS. GALLARDO: Understood, so on Item 18 we do not have any public comment.

CHAIR HOCHSCHILD: Okay let's move on to Item 19,
Chief Counsel’s Report.

MS. BARRERA: Hi, Chair. Hi, Commissioners. I do not have a report for the Chief Counsel today.

CHAIR HOCHSCHILD: Okay, thank you.

So what I suggest we do is adjourn until 1:00 o'clock. And then we'll take up Items 7 through 14 at that time. Does that sound okay to everybody? All right, let's reconvene at 1:00.

(Off the record at 12:05 p.m.)

(On the record at 1:00 p.m.)

MS. GALLARDO: Hello, this is Noemi Gallardo, the Public Advisor, wanting to speak to attendees if you're on the line to let you know, we are in a break. Again, the California Energy Commission is taking a break during its March 17 Business Meeting. We will resume out 1:00 p.m. Thank you so much for your patience.

[The break message repeats several times.]

CHAIR HOCHSCHILD: All right. Madam Public Advisor, are we back up and running?

MS. GALLARDO: Yes, we are. You may begin, Chair.

CHAIR HOCHSCHILD: Okay. Well, first of all Commissioner Monahan, we missed you in the beginning meeting because you were in the legislative hearing. But Happy St. Patrick’s Day to you. It’s nice to have a
holiday named after you and I wanted to wish you a Happy St. Patty's Day.

In addition, we did get one more request for public comment under Item 18. We’ll just take that at the conclusion of Item 7, so with that, if we could return to where we had left off, which was Item 7 Cerritos Community College District. And then pick up there.

MR. RILLERA: Good morning Chair and Commissioners. My name is Larry Rillera, staff with the Fuels and Transportation Division. I am here to present Item Number 7.

This is a proposed $1.5 million augmentation agreement with Cerritos Community College District. The Clean Transportation Program targets investment in the development, deployment, and scaling of zero-emission vehicles or ZEVs and ZEV infrastructure. To date, the Clean Transportation Program has invested over $35 million in the workforce portfolio. Next slide, please.

The benefits of the project includes building on investments for career transportation pathways, preparing and developing the next generation of ZEV workers, and enhancing automotive and truck skills. Next slide, please.

The proposed item before you today builds on an existing and successful investment and partnership with high school career technical education automotive programs.
Specifically, this proposed agreement would add $1.5 million to this existing investment and extend the term of the agreement by 24 months.

Cerritos College would modify a training program to support additional high schools. The new schools would include light-duty maintenance, automotive classes and new ZEV truck curriculum and classes as well. The agreement also requires an evaluation of high schools that have received buses from the Energy Commission’s School Bus Replacement Program. In this way, the high school programs can learn from their fleet technicians on the electric school bus service and maintenance that will also lead to good jobs within their communities. Next slide, please.

The response and results of the program to date have been tremendous. Twenty-eight high schools have been funded to date; 19 of the 28 schools have reported over 1,800 students have been enrolled in this class. The project is a triple bottom line winner in that the investment is targeted to frontline and equity communities where these schools exist. Automotive programs offer good job prospects as dealerships are partners. And lastly, the location of nearby community colleges increases the likelihood of securing a degree and attainment of a livable and sustainable wage. Next slide, please.

In closing, staff recommends approval of this
agreement with Cerritos Community College District for $1.5 million and approval of staff’s determination that the project is exempt from CEQA.

This concludes my presentation. Thank you for your consideration of this item.

CHAIR HOCHSCHILD: Thank you, Larry.

Madam Public Advisor, any public comments on Item 7?

MS. GALLARDO: This is Noemi Gallardo, Public Advisor, and yes, we do have a comment for Item 7. So this is Pablo, and Pablo we are going to open up your line. A reminder to please spell your name and also indicate your affiliation. You have three minutes. Your line is open, please begin.

MR. GORRICETA: Thank you very much. Hi, good afternoon, Commissioners. Can you hear me?

CHAIR HOCHSCHILD: We can hear you, yes.

MS. GALLARDO: Yes, we can.

Okay, thank you very much. My name is Pablo Gorriceta. It’s P-a-b-l-o G-o-r-r-i-c-e-t-a. And I work as an intern for Acterra. (phonetic)

We know that the CEC is doing a great job to take the initiative to grow and increase clean transportation to (indiscernible) in the advanced transportation and logistics sector of California Community Colleges,
particularly with the Cerritos Community College.

We understand this Community college is qualified to increase workforce interest for clean transportation through hands-on training, with its advanced vehicle technologies. But we wonder if the CEC has already established a system where the relevant business sector and the workforce development training providers can come together on a regular basis to discuss comprehensive gap analyses when it comes to clean transportation workforce training.

We think this is necessary to keep the zero emission vehicle workforce development program relevant. We would like to see if there is a formal process already in place to facilitate the continuing critical dialogue between industry players and the workforce developers.

A marketplace and workforce training program will definitely promote the state’s transition to clean energy and transportation and provide more opportunities for our underrepresented communities. Thank you very much.

MS. GALLARDO: Thank you.

Chair, that is the final comments on Item 7.

CHAIR HOCHSCHILD: Okay, thank you for that comment. Let’s move on to Commissioner discussion, Commissioner Monahan?

BOARD MEMBER MONAHAN: I actually am curious,
Larry, the question that came up around is there a forum for workforce, for having a conversation between the technology providers and the workforce. I mean we do -- just to respond quickly, we do have through the Clean Transportation Program Advisory Committee, we have discussions about workforce and there is representation from the manufacturing community. But I’m curious, is there any other forum for that that you know of, Larry?

MR. RILLERA: Yes. Thank you, Commissioner.

There are regional apparatus’s and institutions such as LACI (phonetic) in Southern California, others in the Central Valley and some in the Bay Area. Where they have a little more focused industry discussions with workforce partners and their transportation career pathway, whether it's high schools or colleges or even non-high schools. And certainly partnerships with a state agencies as well that are facilitating these conversations.

Pablo’s comment is (indiscernible) when you start to look at the various segments. He mentioned manufacturing with Acterra, but certainly there's others all along the product development continuum including service and replacement where these conversations are taking place.

BOARD MEMBER MONAHAN: Thank you. Well, I strongly support this grant and I really want to commend
Larry for his leadership in this space. And I think he's really trying to connect all the dots. I love that it connects to the school bus program as well, one of our personal favorites.

And we want to make sure that we have a workforce trained up and that we support economic development and disadvantaged communities. And this program really does connect the dots, so I strongly support it and hope all of you do as well.

CHAIR HOCHSCHILD: Thank you. Unless there's other comments from our colleagues, Commissioner Monahan, would you be willing to make the motion?

BOARD MEMBER MONAHAN: I move approval of Item -- I don’t even know what number we are on?

CHAIR HOCHSCHILD: Seven.

BOARD MEMBER MONAHAN: Item 7, thank you. I move approval of Item 7.

CHAIR HOCHSCHILD: Commissioner Gunda, would you be willing to second?

BOARD MEMBER GUNDA: Yes, I second that.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

BOARD MEMBER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.
CHAIR HOCHSCHILD: Commissioner McAllister?
Commissioner McAllister, you’re on mute.
BOARD MEMBER MCALLISTER: Sorry, I was double muted, aye.
CHAIR HOCHSCHILD: Commissioner Douglas?
BOARD MEMBER DOUGLAS: Aye.
CHAIR HOCHSCHILD: And I vote “aye” as well.
That item passes unanimously.
Let’s move on to Item 8, California -- oh sorry, Item 8 was removed. Let’s move on to Item 9, CALSTART.
MS. GALLARDO: Chair, did we want to take a
general public comments that we missed earlier?
CHAIR HOCHSCHILD: Oh, I apologize. Yes, I did say we were going to do that after, so you had someone from Acterra? We had one public comment.
MS. GALLARDO: Yeah, we have two people wanting
to make public comment. Let me just make sure they're on.
CHAIR HOCHSCHILD: Sure.
MS. GALLARDO: Let’s see, we'll start with Abdel
from Acterra. Abdel, your line is open. Please spell your
name and indicate your affiliation. You may begin.
ABDEL: Hello, can you hear me?
CHAIR HOCHSCHILD: We can hear you.
MS. GALLARDO: Yes.
ABDEL: My name is Abdel, Alpha-bravo-delta-echo-
lima. So I’m a Bay Area Resident and a student at Cañada College. On behalf of my community. We urge the CEC to mandate all new buildings to be electric. Many cities have already taken action and it's time for the CEC to take a step further (indiscernible) an all-electric baseline for new construction in the 2022 Building Code.

To start, people living at home with gas appliances are more at risk to numerous health concerns. A study by UCLA researchers found that nearly 70 percent of Californians use gas for cooking, yet less than 35 percent have range hoods, which are needed for proper ventilation. Inhaling gases such as NO2 is extremely dangerous, especially for the elderly who are more susceptible to lung disease.

It can also be dangerous to children who when exposed to elevated levels of NO2 are more susceptible to lung disease and allergies.

Finally low-income families, especially ones living in small apartment buildings with slow ventilation are especially at risk.

Similarly, my community and others around California need to transition to zero emission buildings ensures the state needs its current climate goals. All-electric buildings are not only better for the environment, they are often cheaper. Based on research done by Rocky
Mountain Institute for the City of Oakland it is estimated to cost between 2,400 and 2,700 more per home to install two separate systems than it would just to install a single heat pump.

Further, the CEC presented information indicating that the 2022 Code that the baseline would require one electric appliance per residential building depending on the climate zone. While this is a push in the right direction, we need further action to incentivize homeowners towards all-electric appliances.

Although electric appliances are often more efficient many home owners choose gas appliances, because they have been around for over 100 years and will get the job done. Thus the CEC should require heat pumps in all homes, regardless of their climate zones.

And finally, according to the 2017 American housing survey 40 percent of new homes in the nation are built with electric heat pump installs. And California is lagging behind at only 8 percent. Other countries have also taken action. France released that it will require all-electric space heating in single-family homes starting in 2021. Also 39 cities in California have updated their Building Code to become greenhouse gas free.

Now, the CEC needs to take it a step further and set an all-electric baseline for new construction in the
CHAIR HOCHSCHILD: Thank you. We have one additional comment?

MS. GALLARDO: Yes, that's correct. So Shrayas will be joining us through the Zoom. I believe he's going to turn on his video if he hasn't already. There he is.

MR. JAKTAR: Hi there.

MS. GALLARDO: I’ll spotlight him.

MR. JAKTAR: Great, can you hear me now?

CHAIR HOCHSCHILD: We can hear you fine, sir.

MS. GALLARDO: Yes, we can.

MR. JAKTAR: Thank you. Yeah, good afternoon.

Thanks so much for letting me offer a few comments. My name is Shrayas Jaktar with the California Workforce Development Board. And I apologize I didn’t call it in time before the lunch break to offer these comments.

You know, on behalf of the State Workforce Board we just want to have our support and appreciation for the SB 100 Report. Of course, as you saw there's a lot of work that needs to be done to get to 100 percent clean energy and with that comes a lot of job opportunities.

And at the Workforce Board we’re are all about quality: quality jobs, quality training opportunities. And so it was really excellent to see an emphasis in the report on high-quality job creation, and of course workforce
development tied to good jobs.

I just want to say that you know only when we pay attention to job quality, can we have a real shot at meaningfully advancing economic equity, which I think is our shared interest. We were glad to have been involved in sort of reviewing some drafts and offering input, speaking on a panel during the SB 100 workshop last fall thanks to Jim Bartridge’s very collaborative spirit and bringing us in. And we really look forward to more collaboration with the Energy Commission.

And as you may know, we received GGRF funding a couple years ago for two things. One to build on the multi-craft pre-apprenticeship work that we piloted with your help, with Prop 39 dollars. So we're now scaling that up to all parts of California, to help develop a skilled and diverse cohort of candidates for state registered apprenticeship in the trades that would be dispatched to any of these clean energy projects, possibly.

And then, what I think is probably a little less known is our High-Road Training Partnership Program, which is the same model of workforce development, but in sectors outside of construction. And the lines are starting to get a little blurred, but I just want to mention that we are awarding funding to projects that are addressing offshore wind, building decarbonization, energy storage and micro
grids and more.

So again, we look forward to being able to share the results of those training partnership projects and I think continued collaboration as those projects get going. So again, just offering our appreciation for the work that's been done. And the staff who really brought us in and made us a part of the effort.

And maybe in closing I'll just say that I'm also working with the Governor's Office of Planning and Research to co-lead the Just Transition Roadmap for the state that will come out this fall. And so as there's more real conversation around phasing out our fossil fuel electricity generation units in the state. We hope that that roadmap will be useful, as we all think together about how to prepare for the transition to carbon neutrality. Thanks so much.

CHAIR HOCHSCHILD: Thank you.

Madam Public Advisor, any further public comments?

MS. GALLARDO: This is Noemi, the Public Advisor, no additional comments.

CHAIR HOCHSCHILD: Okay. Thank you. Let's resume with Item 9, CALSTART.

MR. KOZUCH: Good Afternoon Chair and Commissioners. My name is Matthew Kozuch, staff with the
Fuels & Transportation Division’s Freight & Transit Unit.

We are seeking approval today for an agreement with CALSTART, Inc., for a $50 million block grant to design, implement, and fund, with CEC oversight, various medium- and heavy-duty zero-emission vehicle infrastructure incentive projects throughout California. And to adopt staff’s determination that this action is exempt from CEQA. $17 million in funds is currently available to design and implement this medium- and heavy-duty block grant project. With additional funds up to a total of $50 million to be added at future dates for similar activities, subject to future appropriations and Clean Transportation Program Investment Plan funding allocations. The CEC may add funds in the future beyond the $50 million to conduct additional similar activities. Next slide, please.

The goal of this Agreement is to develop and implement one or more medium- and heavy-duty infrastructure incentive projects to address the critical barriers and gaps to the deployment of medium- and heavy-duty zero-emission vehicle infrastructure in California. The infrastructure incentive projects will respond to industry demand and community needs, as well as be flexible and easily scalable as available funds increase.

The agreement is designed to speed up the deployment and installations of medium- and heavy-duty
zero-emission vehicle infrastructure in order to provide more accessible and reliable electric charging and hydrogen refueling options, which are critical for accommodating future medium- and heavy-duty zero-emission fleets. This will help achieve the ambitious goals set by Executive Order N-79-20, which requires that 100 percent of medium- and heavy-duty vehicles in the state to be zero-emission by 2045.

In addition, this agreement will enable targeted infrastructure incentive deployment to disadvantaged communities per CalEnviroScreen 3.0, low-income communities per AB 1550, California Native American tribes, and other underserved communities. These groups have been disproportionately and negatively burdened by medium- and heavy-duty vehicle emissions and their corresponding health impacts, making focused zero-emission incentives of vital equity importance. Next slide, please.

CALSTART will develop and implement targeted medium- and heavy-duty infrastructure incentive projects through this block grant. They will design the internal controls, processes, and procedures necessary to process block grant funding, evaluate incentive requests, effect payment for valid incentive requests, and produce accurate monthly fiscal accounting and reporting.

CALSTART will also design and implement a robust,
user-friendly website to report on incentive project status, advertise the availability of incentives, provide instructions and forms, and enable submission and tracking of incentive applications. Furthermore, CALSTART will create an equity strategy that includes focused outreach to ensure maximum project benefit to underserved communities. Next slide, please.

In addition, this block grant project will complement and leverage best practices from other medium- and heavy-duty vehicle funding programs such as the California Air Resources Board’s Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project or HVIP, the Clean Off-Road Equipment Voucher Incentive Project or CORE, and Carl Moyer programs by providing zero-emission infrastructure incentives.

CALSTART will additionally work to synchronize block grant infrastructure incentives with these programs to enhance the ability of applicants to fund their medium- and heavy-duty zero emission projects. Next slide, please.

In summary, we would like to recommend approval of this $50 million block grant, with $17 million of funding currently available at this time. In addition, we would like to recommend adoption of staff’s determination that this action is exempt from CEQA.

We would like to thank you for your time and
consideration of these items. Bill Van Amburg, the Executive Vice President of CALSTART, is here to provide public comment. And we are available for any questions you may have. Thank you very much and this concludes my presentation.

CHAIR HOCHSCHILD: Thank you, and this is a very significant item. I will say it's not often we dole out funds in this amount, so this is a really exciting milestone.

Let's go first to public comment, Madam Public Advisor.

MS. GALLARDO: This is Noemi, the Public Advisor. I actually do not -- oh actually, I do have someone on for this item. Sorry about that, so that’s Bill from CALSTART. We will open up his line and Bill, I’ll remind you to please spell your name and indicate your affiliation.

All right, so if we could please open up Bill’s line on Verizon, Bill Van Amburg of CALSTART. Bill, your line is open, you may begin.

MR. VAN AMBURG: I feel like saying, can you hear me now since it’s a Verizon line. (Laughter.)

CHAIR HOCHSCHILD: We can hear you.

MR. VAN AMBURG: Thank you very much. I am Bill Van Amburg, V-a-n A-m-b-u-r-g, Executive Vice President here at CALSTART. And Chair Hochschild and Lead
Commissioner Monahan, Commissioners and staff we really first want to deeply thank you for the trust that you've shown in selecting CALSTART for this critically important project and the responsibility that goes with it.

We do take that trust most seriously as we have on all the programs that we've been managing for the State of California, for the last more than a decade.

And this is a vital block grant for commercial zero emission vehicle infrastructure, because it can really set the state up for success and by leadership example frankly, the nation and the world as well.

We know from our work with industry and fleets, utilities and equipment providers, air districts, communities, that streamlining process and increasing the pace of deployment and scale and the penetration of zero emission medium- and heavy-duty vehicles is critical for the state’s climate and air goals. And that it's become the really the long pole in the tent. The vehicles of becoming available, and now we really need to move the infrastructure.

Working together with CEC staff we really relish the opportunity to create what will become the nation and the world's first fast track, easy to use, and focused infrastructure incentive program targeting funds to drive faster deployments. And also support communities that need
to help them most.

We would like to add that the Energy Commission is one of the key and early signatories to the global commercial vehicle drive to zero programming. One of the key tenants of that global program is to set in place the necessary policies, incentives and investments to support commercial zero emission vehicles moving the scale.

This project does that aggressively. We’re proud of what the state is doing, and it really does set a framework and leadership we hope for the world to follow on infrastructure deployment.

So we’re excited to get started. We hope to share additional information on the project, perhaps at a public event as soon as April. And thank you again for your confidence and support.

CHAIR HOCHSCHILD: Thank you. Any other comments?

MS. GALLARDO: No other comments on Item 9.

CHAIR HOCHSCHILD: Let’s go to Commissioner discussion, Commissioner Monahan?

BOARD MEMBER MONAHAN: Yeah, well I think Matthew and the team for this proposal. And also give a congratulations to Bill and the team at CALSTART for winning the solicitation.

And you know that really builds on the flagship
CALeVIP program for light-duty charging infrastructure.
Now we’re turning our sights to heavy-duty infrastructure.
And as we all know heavy-duty vehicles are major polluters,
especially when it comes to toxic diesel exhaust and smog
forming nitrogen oxide. So it really tackles a critical
public health issue.

I’m excited also because you know CALSTART is
administering the Truck Rebate Program that CARB funds.
It’s called HVIP. And the fact that they are also going to
be the administrators for this program gives me like a lot
of -- I just think that it reflects what we're trying to
do, which is really create a seamless experience for the
grantees. And to really connect the dots between the
agencies, so that we are all like you know, working
together in a really deeply collaborative environment to
make it easy for the outside world to get our grants and to
accelerate zero-emission transportation.

So this really -- I’m very excited to see how
this project launches and I strongly support it.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Any other comments from Commissioners? Seeing
none, Commission Monahan, are you willing to move the item?

BOARD MEMBER MONAHAN: Yes, I move this item

okay.

CHAIR HOCHSCHILD: Okay. Is there a second?
Commissioner McAllister, would you be willing to second?

BOARD MEMBER MCALLISTER: I’ll second.

(Sound interrupts meeting briefly).

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

BOARD MEMBER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: And I say “aye” as well. That item passes unanimously. Let’s move on to Item 10, Electric Vehicle Ready Communities Phase II.

BOARD MEMBER MONAHAN: And I have to recuse myself from Item a.

CHAIR HOCHSCHILD: Okay, why don’t you stand up. And then Noemi will notify --

BOARD MEMBER MONAHAN: Can I say why I have to recuse myself?

CHAIR HOCHSCHILD: Good, yes.

BOARD MEMBER MONAHAN: I’m recusing myself on the proposed award to the City of Sacramento, which includes a sub-award to the University of California Davis for
transportation studies. I’m on the Board of Advisors for
the ITS, UC DAVIS ITS Program. In that role I do not make
governance decisions on behalf of the institute. We are
there to provide guidance and oversight for the program and
it’s four branches.

I don’t get any compensation in any form
including reimbursements or per diem for expenses. So
there’s no financial interests in which there would be a
conflict of interest under the Public Reform Act or
Government Code Section 1090. But just in an abundance of
cautions I am recusing myself to avoid any perception of a
conflict of interest.

So I will step away, thank you.

CHAIR HOCHSCHILD: Yes, so we’ll have Noemi
contact you (indiscernible) so staff presentation?

MS. PUREWAL: Good afternoon, Commissioners. My
name is Sharon Purewal and I am a staff member in the Fuels
& Transportation Division’s Advanced Vehicle &
Infrastructure Office.

Today staff is seeking approval of two agreements
awarded under the Electric Vehicle, or EV, Ready
Communities Challenge Phase II – Blueprint Implementation.
The purpose of this solicitation was to fund projects
developed and identified in Phase I, which was to develop
EV Blueprints. Funding is provided through the Clean
Transportation Program. Next slide, please.

The benefits to California are to improve accessibility to charging infrastructure, to accelerate the goals to increase California’s zero-emission vehicle infrastructure, to reduce barriers to those living in disadvantaged communities as defined by CalEnviroScreen 3.0 including in the cities of Richmond, Concord, and Pittsburg under the Contra Costa Transportation Authority; and in disadvantaged communities in the City of Sacramento.

EV workforce training components in both of these proposed agreements will support green job creation and green job accessibility in the regions mentioned above. Next slide, please.

Our first proposed agreement is with the City of Sacramento. Their project objectives include installing EV chargers across public libraries and community centers, with at least two thirds of those connectors located in disadvantaged communities. They also seek to procure e-bikes for a pilot lending program operated by the local library. And will be offering incentives through the Sacramento Air Quality Management District for car sharing members in project neighborhoods.

Through this project, the City of Sacramento will be engaging with the California Conservation Corps for EV job training and to further electric vehicle charging...
installation support. And will also focus on establishing more meaningful relationships with the community members to increase EV education, awareness, to involve more community input and to advancing the electric vehicle charging infrastructure goals in this region. Next slide, please.

Next we have Contra Costa Transportation Authority. Their project objectives include installing electric vehicle charging stations at sites in the cities of Richmond, Concord, and Pittsburg. Contra Costa Transportation Authority also plans to create workforce development programs to support those who live, work, and play in the surrounding area.

To further support green workforce development opportunities the Contra Costa Transportation Authority will coordinate training for local residents, mainly in areas considered disadvantaged communities, to repair and maintain electric vehicle charging infrastructure. They also aim to establish an EV car share program. Next slide, please.

Staff recommends approval of the proposed agreements with Contra Costa Transportation Authority, for just under $2.5 million, and the City of Sacramento, for just under $1.9 million. Staff also recommends adoption of staff’s determination that these projects are exempt from CEQA.
And with that, I would like to thank you for your time and consideration of these items. I am available for any questions you may have. I also believe Peter Engel, from Contra Costa Transportation Authority and Cory Irish, California Energy Commission attorney consulting in these agreement developments are also available for comments or to answer any questions that you may have.

And that concludes my presentation. Thank you.

CHAIR HOCHSCHILD: Thank you, Sharon. Good work.

Any public comment on Item 10?

MS. GALLARDO: This is Noemi Gallardo, the Public Advisor. Yes, we do have someone on the Verizon line, Peter from the Energy Authority. Peter, a reminder to please spell your name and indicate your affiliation.

Peter, your line is open, you may begin.

MR. ENGEL: Great, thank you. My name is Peter Engel, E-n-g-e-l. I’m with the Contra Costa Transportation Authority or CCTA. I want to thank the Commission and Commissioners for providing this grant opportunity to us.

Our Phase I project of doing our countywide blueprint really helped us kick off our EV program in Contra Costa County. Our Board, has this year taken an approach to highly prioritize one of our top three projects over the next few years is to advance the adoption of zero emission vehicles, both light and heavy-duty in our county.
And this will take a major bite for us out of light-duty infrastructure needs.

Also, focused on as Sharon mentioned, disadvantaged communities within our county, both in West County in Richmond and Central County in Concord and in East County in the City of Pittsburgh, to provide some workforce training through nonprofit vocational schools that are highly supported by the cities that they work within.

The Phase I Blueprint Project allowed us to develop some great partnerships within our county and we're using those partnerships in this implementation phase. Both with the cities and with MCE, which is our Community Choice Aggregation to help to the installation of EVSE in the county.

So, again I want to thank you. I want to thank the CEC staff for both the Phase I and starting off Phase II and look forward to working with you all on this.

MS. GALLARDO: Thank you.

Chair, we have one additional comment that was submitted via email, which I will read now. This is from Jennifer Venema, that's spelled V as in Victor-e-n as Nancy-e-m as in Mary-a. She’s the Interim Climate Action Lead at the City of Sacramento.

“Thank you for your leadership and commitment to
advancing electrification. We wish to commend the
Commission and your staff for advancing the state's clean
mobility vision. And thank you for the second award for
Sacramento's EV efforts.

“First, I want to emphasize that continued state
funding and incentives are both critical to equip local
agencies as partners for delivering our shared and
ambitious zero emission transportation goals. Sacramento's
Phase I Blueprint Award was an important step for
accelerating our work. We are very excited to launch Phase
II and provide lessons and models that your agency can
scale across the state.

“Lastly, I want to applaud and acknowledge the
hard work by your staff to continue improving the
Commission's grants and loans processes. I must note that
even we, at the City of Sacramento have found these to be
challenging and time intensive. I say this, even with our
agency’s extensive grant experience in transportation
funding, in which we average about $42 million in grants
per year.

“I encourage you to continue prioritizing your
staff efforts to simplify processes and better engage
applicants and awardees. This is important not just for
cities like Sacramento, but also for the broader range of
stakeholders not yet participating in these programs.
Procedures should address the needs of those with the biggest barriers to participate. In this way, all of us can benefit.”

CHAIR HOCHSCHILD: Okay. We’ll take these up in two separate votes. Any discussion among Commissioners on Item 10a?

(No audible response.)

CHAIR HOCHSCHILD: Hearing none, Commissioner Gunda, would you be willing to move Item 10a?

BOARD MEMBER GUNDA: Yes, Chair, I would like to move Item 10a.

CHAIR HOCHSCHILD: And Commissioner Douglas, would you be willing to second?

BOARD MEMBER DOUGLAS: Second.

CHAIR HOCHSCHILD: All in favor say aye, Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well. That item passes 4-0 with Commissioner Monahan abstaining.

Let’s welcome Commission Monahan back and take up discussion of Item 10b, Contra Costa Transportation
Authority. Commissioner Monahan, do you have any comments you'd like to offer on that item?

  We are not hearing you even though it doesn’t show you’re being muted?

  BOARD MEMBER MONAHAN: Sorry, it was a double mute. What would any of these meetings be without it?

  So I just wanted to comment that I appreciated the comments from the City of Sacramento around the need to make these processes simpler for folks to apply. So I know the team at the Energy Commission is thinking hard about that, and we want to continue to make progress. So I just appreciate that feedback.

  I will also say, you know, this is a continuation. So this is to implement blueprints and we've heard loud and clear from our Clean Transportation Program Advisory Committee that it's really important to engage the community in plans. Not just fund willy nilly, but fund according to what the mobility needs are of the city. So I really look forward to seeing how these grants play out in terms of increased mobility, especially for lower-income families.

  So yes, I support these series of projects and really look forward to making progress in helping communities be more mobile while we gear up solutions.

  CHAIR HOCHSCHILD: Well, there’s agreement to
that. Unless there's other Commissioner comments,
Commissioner Monahan, are you willing to move Item 10b?

BOARD MEMBER MONAHAN: Yes, I move Item 10b.
CHAIR HOCHSCHILD: Commissioner McAllister, would you be willing to second?

BOARD MEMBER MCALLISTER: I’ll second 10b.
CHAIR HOCHSCHILD: All in favor say aye,
Commissioner Monahan?

BOARD MEMBER MONAHAN: Aye.
CHAIR HOCHSCHILD: Commissioner McAllister?
BOARD MEMBER MCALLISTER: Aye.
CHAIR HOCHSCHILD: Commissioner Douglas?
BOARD MEMBER DOUGLAS: Aye.
CHAIR HOCHSCHILD: Commissioner Gunda?
BOARD MEMBER GUNDA: Aye.
CHAIR HOCHSCHILD: And I vote “aye” as well.


MR. ORTA: Good afternoon, Chair Hochschild and Commissioners. My name is Jason Orta and I’m the Energy Commission’s Lead Hydraulic Modeler for Gas Infrastructure. Today, staff is seeking adoption of the Natural Gas Demand and Rate Forecasting Forms and Instructions. Next slide, please.

The information requested on these forms and the
subsequent analysis will increase the CEC’s knowledge of the gas system—particularly trends and drivers of demand and rates. This enhanced knowledge will improve the quality of the CEC staff’s gas demand forecasts. Next slide, please.

We developed these forms in consultation with the gas utilities, and that the collaboration on this front will continue during and after submittal of these forms. In developing them, we avoided “reinventing the wheel” by modeling them after the CEC’s electricity demand forms and instructions while leveraging current utility analysis that goes into the California Gas Report. Next slide, please.

Information requested on these forms includes utility demand forecasts out to 2035, forecasting inputs and instructions, demand impacts of building electrification, projected injections of renewable gas and hydrogen, demand response, and other measures. Other things that we request are projected revenue needs and infrastructure information. Next slide, please.

The breadth and depth of information requested in these forms will inform the CEC’s work in the years to come as staff develops a greater understanding of gas use in California. Staff will continue to support the gas utilities as they complete and submit these filings while using this insight to improve the quality of our work.
Before I conclude this presentation, I’d like to thank the California gas utilities PG&E, SoCalGas and SDG&E. We've had two webinars and accepted some written comments during this process, and they have been very helpful.

Staff recommends adoption of the Natural Gas Demand and Rate Forecasting Forms and Instructions. This concludes my presentation. However, my colleagues and I will be able to answer any questions regarding this item.

CHAIR HOCHSCHILD: Thank you.

Any public comment on Item 11?

MS. GALLARDO: This is Noemi, the Public Advisor. There are no public comments on Item 11.

CHAIR HOCHSCHILD: Okay, let's go Commissioner discussion starting with Commissioner McAllister.

BOARD MEMBER MCALLISTER: Yeah. So thanks, Jason, for that presentation. I’m really looking forward to sort of being a little more rigorous on this front as we go forward with this IEPR Update and full forecast right, this is odd year. Odd in the number sense. And so we're doing a full forecast and we really are taking advantage of the opportunity to build capacity and information or informational base going forward. You know, long term we're going to need that during the transition to zero carbon resources. And the interplay between electricity
and gas is really becoming something that's supremely important, so we really want to have balance across those two major fuels.

So I really appreciate all the collaboration that Jason expressed in, and these resources will help us get the information right form and in a systematic and consistent way. So with that, I think I'll pass the mic to Commissioner Gunda, who I’ll be working with on this over the IEPR Forecast period.

BOARD MEMBER GUNDA: Actually, thank you Commissioner McAllister. I apologize again for the tree-cutting in the background, as it comes and goes. But Jason, thank you so much for your leadership on this. And the entire team, yourself, Melissa Jones, Jennifer and our support from Aspen in terms of Katie. And the working group work that you're all going into in terms of developing the necessary relationships to put this forward and gather this information to really improve the rigor of our natural gas forecast.

And the demand scenarios and different hydraulic modeling that you're doing, is extremely beneficial, as we think through the long-term clean energy future of the state.

And Commissioner McAllister noted, this year’s IEPR will have a little bit more sharpening of our
analytical tools. And figuring out how best to think
through gas demand and scenarios. And I really appreciate
the entire team's work and particularly Jason, in your
approach, which is always respectful and rigorous. And I
appreciate your collaboration with the gas utilities, as we
all are in this together and need to go to a common point
in the future. Thank you.

CHAIR HOCHSCHILD: Thank you.

Unless there’s other Commissioner comments,
Commissioner McAllister, would you be willing to move Item
11?

BOARD MEMBER MCALLISTER: I move Item 11.

CHAIR HOCHSCHILD: Commissioner Gunda, would you
be willing to second?

BOARD MEMBER GUNDA: I second that.

CHAIR HOCHSCHILD: All in favor say aye,
Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

BOARD MEMBER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well.
That item passes unanimously. Let’s turn now to Item 12.


The staff is asking for the Commission’s approval of an order instituting informational proceeding to gather and assess information needed to develop the 2021 IEPR. The Commission is required to prepare an IEPR every two years that provides an overview of major energy issues and trends facing California, with an update in the intervening year. Adoption of this order will allow the designated Commissioners to hold hearings and workshops and to collect information that is needed to complete the 2021 IEPR, but is not identified in the Commission’s data collection regulations. Next slide, please.

Commissioner Andrew McAllister is the lead Commissioner for the 2021 IEPR. He issued the scoping order for the report yesterday, identifying the topics and general schedule for this proceeding. The 2021 IEPR will address four major topics. The first, energy reliability over the next five years. Second, natural gas outlook and assessments. Three, building decarbonization and energy efficiency and fourth, the energy demand.
Commissioner McAllister also will lead the analysis of building decarbonization and energy efficiency. Commissioner Siva Gunda will lead the analysis of energy reliability, natural gas, and the demand forecast in the 2021 IEPR.

Commissioner Patty Monahan will lead the analysis of the benefits of transitioning to a clean transportation system. Next slide, please.

So to recap, I’d like to request your approval of this order instituting informational proceeding for the 2021 IEPR. Lisa DeCarlo from the Legal Office is available to help answer any questions. Thank you for your consideration, that concludes my presentation.

CHAIR HOCHSCHILD: Thanks so much, Heather.

Madam Public Advisor, is there any public comment on Item 12?

MS. GALLARDO: This Noemi, the Public Advisor, there is no public comment on Item 12.

CHAIR HOCHSCHILD: Thank you.

All right, let’s go to discussion. Commissioner McAllister?

BOARD MEMBER McALLISTER: Yeah, this is a real changing of the guard, I think, on the IEPR front. It was where there's some -- well the previous item, and this item, and the next item are all about IEPR topics. So I’m
happy to take the baton from a Commission Monahan, who led it led the IEPR Update last year, so.

I think I'll be brief here. The IEPR, we all know it's a really seminal set of activities that culminates in a document. But really it's a process and a collaboration I’d say above all to level set of the various policy questions of the day. So the forecast is a key resource we all know it. It informs the others, the PUS and ISO on the various planning work they do. It underpins the reliability conversation increasingly. And it really does provide direction for our energy policy across the state.

And so as we incorporate in the forecast lots of other elements behind the meter elements and transportation and the various transitions that are upon us, and coming and including response to climate change buyers, etcetera, it really becomes an integrated conversation in ways that I think just are pretty unprecedented in fact.

And so I want to thank -- so the development of this scope has really I think required us all to put our thinking caps on in terms of what topics are appropriately in it this year, how we bound those topics. And how the various topics interrelate. So I want to thank Heather first of all for your persistence and lots of iterations of this scope as we get it right and get public comment. And
your whole team, you have been invaluable in shepherding this process.

    And then I wanted to also call out the advisors who worked on this. My Advisor, Brian, my Chief of Staff Brian, has really been dogged and incredibly effective, and I think persistent and patient as we work through some of these issues.

    And during the course of this, we have a new Commissioner and we’ll be sharing this with Commissioner Gunda, who will be sharing a lot of these topics and conversations around the forecast and around really all the topics.

    But I wanted to Le-Quyen as well from the Chair’s who’s been a conduct over to Commissioner Gunda’s office. And working out and running ground on some of these topics as well. And all of my colleagues on the dais, certainly you have parts of this as well.

    And so I think the high-level message is given this integration that's happening across all sectors of our economy really, certainly all set of our energy economy including transportation, including you know bulk power and wholesale issues, load flexibility, demand response. The underpinnings of reliability in the forecasts will be going out 15 years instead of 10 years this year to kind of align with the 2035 goals that we have in the state.
All of those conversations that really have crosscurrents, I think it's going to be important to have as many of us in each workshop as possible. And then also reach out to our sister agencies to give them every opportunity to sit on the dais with us depending on the topic, obviously. But I think the more we can have, the more we can sort of jump over those BK walls in a public conversation. And appropriately have those conversations together, which in a public forum facilitates that I think it'll help us move forward on IEPR and beyond really on these topics as they spin out over time, as they develop over time.

So that's just an invitation to attend all the workshops you possibly can. I know the IEPR has a reputation as being sort of workshop purgatory, so it does have a lot of workshops and topics. But I think in this day and age where everything is so interrelated -- and it is a little bit easier to get on meeting, because of the tools that we have -- hopefully we’ll be able to be all present together and having conversations to help develop our common understanding. So that's a kind of a call to arms a little bit on this IEPR.

And yeah, so I guess I won't get into the particular topics, but certainly I’ll just say briefly on the building decarb piece of this that we envision that
topic as being relatively broad and forward thinking around building decarb. As opposed to the specific Title 24 Update that we’re involved in now.

And then there will be a Building Decarbonization Report that will inform the IEPR conversation. That's the AB 3232 Building Decarb Report that’ll be out and in the public, while we're having this conversation.

And then yeah with that I guess I'll wrap up.

I'm really looking forward to the IEPR. I find it to be kind of a nice playing field, a nice place to really make sure we're you know we're up to date on the various issues, even if they're not our primary issue of responsibility within the Commission. And so I always look forward to sharpening up our knowledge, and my knowledge about the various topics by sitting in on the conversations. And really seeing the skills that staff bring to the IEPR, because it's a big lift. Everybody puts on their Sunday best when they participate and contribute to the IEPR.

So I really want to show my appreciation beforehand. And I’m sure we'll have a lot of interesting conversations on the topics of the day, as we go forward this year. So thanks a lot everyone and I’ll pass the baton back to the Chair.

CHAIR HOCHSCHILD: Well, let’s go to Commissioner Gunda for any other comments on this.
BOARD MEMBER GUNDA: Yeah, thank you Chair and thank you Commissioner McAllister, for kind of sharing that broad kind of perspective.

I want to begin with (indiscernible) separate repeated for just an incredible thanks to Heather and her team. I think you know the saying goes differently, but there is no rest for the dedicated and passionate. So Heather, to you and your team, thank you for jumping from one IEPR to the next and getting us all kind of set on this.

Also kudos to Brian as your Advisor, Commissioner, as well as the advisors of the Chair, Le-Quyen, Tara, Ken, I know all of all of you have put an effort in shaping this. And also Darcie, now Commissioner Houck, before she left had some incredible ideas on how we can bolster the way we do IEPR to enhance the integrated nature of everything that's going to coming together.

So I do want to do high-level tee up the importance of this particular IEPR as Commissioner McAllister noted, I think we added the current inflection point of the transition towards the clean energy future as we think through the three key elements of clean, reliable and I know we say affordable but more equitable. And affordable is an element of the equity, so as we think through those three lenses I think it's incredibly
important that the analysis we do is comprehensive,
inclusive of different points of view.

And there is no better forum than the IEPR in
terms of convening a public process that's robust and
inclusive and respectful. And I really hope that this year
on all topics, we have a broad stakeholder engagement to
really pull forward conversations that are essential for
the long-term policy at the state.

As we all note the reliability is a central theme
for CEC’s Commission as well as the Demand Forecast and
scenarios. So I’m really glad that the staff will be
looking at forecasting 2035 this year, as well as
developing scenarios on reliability. I’m just appreciative
of Mark Kootstra and his team on already setting up the
necessary modeling resources needed for doing stochastic
production cost modeling through 2026 timeframe, but also
long term.

Just an incredible amount of work being done
there and as well as kind of the conversation of DR and
load flexibility that Commission McAllister is leading.
And how it weaves into the broader reliability
conversation.

As Commissioner McAllister noted, this is going
to be very integrated with all the Commissioners here.
Commissioner Douglas has been working on developing the
contingencies, and the future of the thermal fleet and how to improve upon that. So there's a conversation there. And I’m really thankful to Commissioner Monahan’s leadership on the load shapes, the future of kind of grid—how does transportation really fit within the electric grid. So thank you for Commission Monahan’s work on that. So yeah, I’m looking forward to it.

And I’m also looking forward to the natural gas team, which we are calling action to. Just like make sharpening our pencils on how we do the analysis and really think through developing the necessary analysis for really helping the state think through all the scenarios. And really ask for collaboration from the utilities and encourage collaboration, from all the stakeholders to really advance this conversation in a respectful and robust way. Thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner, unless there's other comments from my colleagues, one thing I just wanted to say --

BOARD MEMBER DOUGLAS: (Overlapping) You know, sorry Chair Hochschild, I just wanted to say briefly -- I don't mean to repeat, but I just wanted to agree that I think this is a huge opportunity for all of us to take part in these workshops. And to have a public conversation about these really important issues. And I’m looking
forward to it and prioritizing it this you know this, this coming year as well.

CHAIR HOCHSCHILD: Thank you so much, Commissioner.

I did want to say one thing to Heather. You know, you do not seek the limelight at all, but I really want to just appreciate your kind of quiet attention to detail. I mean, the IEPR is just it's a beast every year. There's a lot of “i’s” to dot and “t’s” to cross and I just really am grateful for your kind of relentless attention to detail and keeping the trains running. And I know I speak for all my colleagues when I say thank you for all your hard work over years on this. So thanks for getting us to this point.

With that I would entertain a motion from Commissioner McAllister.

BOARD MEMBER MCALLISTER: I move -- let’s see, we are on Item 12, I move Item 12.

CHAIR HOCHSCHILD: Yeah, Commissioner Gunda, would you be willing to second Item 12?

BOARD MEMBER GUNDA: Absolutely Chair, I second the item.

CHAIR HOCHSCHILD: Okay. All in favor say aye, Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.
CHAIR HOCHSCHILD: Commissioner Gunda?
BOARD MEMBER GUNDA: Aye.
CHAIR HOCHSCHILD: Commissioner Monahan?
BOARD MEMBER MONAHAN: Aye.
CHAIR HOCHSCHILD: Commissioner Douglas?
BOARD MEMBER DOUGLAS: Aye.
CHAIR HOCHSCHILD: And I vote “aye” as well.

That item passes unanimously. Let’s move on to Item 13, the 2020 IEPR Update.

MS. RAITT: Great, so good afternoon again. I am now requesting your approval of two volumes of the 2020 Integrated Energy Policy Report Update, or the 2020 IEPR Update for short. Again, I’m Heather Raitt, the Assistant Executive Director for Policy Development and the IEPR Program Manager.

I’m joined today by two of the lead authors for the 2020 IPER Update, Quentin Gee and Nick Fugate. Next slide, please.

The Energy Commission prepares an IEPR every two years with updates in alternate years to provide energy analysis and policy recommendations to the Governor and Legislature. The IEPR is an important part of the state’s efforts to ensure an equitable, clean, affordable, and reliable energy system.

Under the leadership of Commissioner Patty
Monahan, the 2020 IEPR Update is comprised of three volumes.

Volume I puts forward recommendations to advance California’s clean transportation future, with benefits for all Californians. It is the focus of the 2020 IEPR Update. Volume II is on microgrids, and is not being presented today. It is on a separate schedule for a later business meeting.

Volume III is on energy demand and an update to the 10-year electricity forecast. Commissioner McAllister led its development. Next slide, please.

The draft of Volume I and Volume III were posted January 6 and March 4, respectively, with opportunities for public comment on each. After carefully considering public comments, a proposed final version were posted of each on February 25, with another opportunity for public comment.

An errata to make clarifications and to make edits in response to comments was posted yesterday. Commissioners, you have a copy of the errata and it is available on the Energy Commission’s website.

The 2020 IEPR Update draws upon the technical expertise and creative thinking of dozens of experts who participated in workshops to gather information. We held nine workshops on transportation and two on the forecast. Under Commissioner Monahan’s direction, the workshops
emphasized equity and opportunities for public engagement.

And now it’s my pleasure to introduce Quentin Gee, the lead staff for the transportation volume, titled, “Blue Skies, Clean Transportation.” Next slide, please.

Go ahead, Quentin.

MR. GEE: Hi, my name is Quentin Gee and I’m the Lead Author of Volume I of the 2020 IEPR Update. The main topic for the 2020 IEPR Update is transportation, so I’ll cover some of the major issues that we addressed on that.

In this chart, we can see the disproportionate impacts of transportation pollution on communities of color. For example, 36 percent of California’s black residents live in communities with high diesel particulate matter exposure, compared to only 15 percent of white residents. We chose diesel PM as the major indicator because 90 percent-plus of diesel PM comes from transportation. Next slide.

Here we can see that residents in lower income communities as well, face high transportation pollution impacts. Air pollution does spread around a bit, but here you can see that transportation pollution impacts tend to be felt more by those with less of a voice. With these equity factors in mind, one of the key recommendations of the IEPR Update is that California must do more to engage and understand the local mobility and clean air needs of
low-income and disadvantaged communities throughout the state. And tailor state programs appropriately to meet those needs. Next slide.

There’s another interesting trend in transportation. Californians are buying larger, heavier vehicles. One important thing to consider about this is that while of course heavier cars on average have higher greenhouse gas emissions per mile driven, the emissions associated with powering battery electric vehicles just are not as sensitive to the vehicle’s weight. On average, a heavier combustion vehicle has an additional 115 grams of CO2 per mile, while a heavier battery electric vehicle only has about 27 grams more CO2 per mile, and gets cleaner as the grid does.

So one of the key takeaways here is that to achieve the target of 100 percent zero emission passenger vehicle sales by 2035, the state needs to ensure that there is a full range of zero emission vehicle or ZEV models to meet consumer preferences especially for SUVs, minivans, and pickups.

Now, someone with a keen eye might point out that the percentage gain in emissions per mile is greater for battery electric vehicles. This has more to do with the small number of battery electric vehicles in the weight ranges presented here. But looking at all the vehicle data,
combustion vehicles increase their emissions as their weight goes up at a rate that is six times greater than battery electric vehicles. To think about it another way, a 6,000-pound Cadillac Escalade SUV is going to have more tailpipe emissions per mile than the driving emissions from a 30,000-pound battery electric bus powered by CA’s electricity grid. Next slide.

Here we have a chart showing the vehicle miles traveled or VMT, of the Southern California region from January to August. Here you can see during the early months of the COVID-19 crisis, VMT declined dramatically. However, it bounced back within a few months to about 85 percent of what it was.

There was a valuable lesson to be learned here though. One of the recommendations is that the state should invest in additional research to thoroughly understand the potential for enduring changes in travel behavior from the COVID-19 pandemic. We also recommend that state agencies, local jurisdictions, and, where possible private businesses evaluate and consider instituting telecommuting options for their workforces to help reduce VMT. Next slide.

The three revolutions in transportation: electrification, automation, and shared mobility services, these are poised to dramatically change the way we think about mobility. But we want to make sure this is done in a
way that aligns with our climate and equity goals.

And here you can see how there’s potential for
dirty skies if we don’t have a broad and bold
transportation vision. One potential danger would be empty
robocars with combustion engines clogging up the streets,
which is obviously not a pretty picture. So we want to
make sure policies stay ahead by keeping track of the
trends in these three different spaces. Next slide.

Plug in vehicles, or PEVs, are the most common
Zero Emission Vehicle out there. California’s climate
leadership here shines as well. You can see that we’ve had
a large increase in market penetration from 2017 to 2019.
However, you can also see here that China and Europe are
attempting to play catch up. California’s light-duty ZEV
market penetration needs to go from 7.7 percent in 2019 to
100 percent in 2035, so we’ve got a lot of work ahead of
us. Next slide.

The increasing market penetration we’ve seen with
PEVs is occurring mostly due to the large declines in
battery costs. Economies of scale and new battery
technologies are leading to fierce competition and
declining prices. Around 2023 or shortly after, analysts
expect the purchase price of PEVs to be competitive with
combustion vehicles. Combined with the fact that a PEV can
save drivers more than a thousand dollars per year in lower
fuel and maintenance costs compared to a combustion
vehicle, PEVs’ lower costs will put billions more back into
the state’s economy rather than spending it on foreign
oil.” Next slide.

Although there’s a lot of good news on PEV
prices, consumers are reluctant to shift to a new
technology unless it makes their lives better on many
fronts. So charging needs to be widespread and simple, if
not easier than fueling at gas stations. And that means a
lot of chargers.

On the first bar from the top we have 67,000
chargers currently installed, and below that another
121,000 additional planned through 2025. That leaves us
with a gap of about 62,000 chargers for our 2025 goal shown
on the middle bar. And five years out from there in 2030,
there’s uncertainty about how many more chargers we need.
But in a vehicle scenario that smoothly gets us to 100
percent new ZEV sales by 2035, we would need to have about
8 million ZEVs and growing by the year 2030. So that will
require a lot of chargers, 1.5 million.

We can’t do this only with public funding, so one
of the key IEPR recommendations here calls for the
evaluation of new regulatory and funding mechanisms to
further encourage private sector investments in the
charging infrastructure, the infrastructure we need to meet
demand. And we need to do this while ensuring low costs for all Californians. Next slide.

On top of getting the chargers we need, we also need to make sure that they work well with the grid. Here we can see that time-of-use as currently structured. This might not maximize charging vehicles with solar, potentially causing a large demand spike at 12:00 a.m. if people use timers.

But if we can get charging aligned with renewables, there’s great potential for reducing electricity costs for all Californians. So we recommend that the CEC collect data and do the analysis needed to support charging infrastructure development that minimizes costs and maximizes benefits to the grid. Next slide.

During the large-scale public safety power shutoff events of 2019, Google search trends spiked for search terms such as “backup generator” or “backup battery.” People were trying to find ways to make sure they could keep the power on. And with ZEVs, there are large amounts of energy available in a vehicle’s battery or hydrogen tanks in a fuel cell vehicle. And with the right setup that energy can turn into electric power for backup.

Here we can see a CEC-funded school buses, electric school buses, which are capable of integrating with the grid and supplying auxiliary power to buildings.
We can also see power capacity being put on Ford’s well-known F-150, which was set to release an electric vehicle, an electric version of the F-150 next year. ZEVs are essentially distributed energy resources, and the IEPR Update recommends working with the appropriate agencies to support ZEVs in contributing to energy resiliency. Next slide.

Finally, there’s some good signals on the hydrogen front. In particular, China, Japan, and Korea have set aggressive targets for more fuel cell vehicles in the next decade, with China aiming for 1 million fuel cell EVs by 2030. Seeing additional leadership outside of California suggests that economies of scale may allow fuel cell costs to decline, and potentially electrolyzers that can produce hydrogen fuel by using renewable energy. Next slide.

A recent survey shows that three-quarters of American drivers believe that electric vehicles are the future of transportation. California has committed itself to this zero-emissions vision, along with the benefits of cleaner air, lower greenhouse gas emissions, and lower transportation costs for the state’s residents. And the California Energy Commission will play a vital role in setting the stage to make that happen.

So with that, I’ll hand over to Nick Fugate to
discuss the Energy Demand Forecast.

MR. FUGATE: Thank you, Quinten. Can we have the next slide, please? So Volume III focuses on the Energy Commission’s Electricity Demand Forecast Update. The forecast is a critical planning tool, which lays the foundation for electricity system planning efforts, including transmission and distribution planning, integrated resource planning, and resource adequacy. The CEC’s forecast ensures that these studies begin with reasonable and commonly understood assumptions. Next slide, please.

In January of 2020, the Energy Commission adopted the IEPR 2019 Demand Forecast. And two months later, in response to the COVID-19 pandemic, the California economy took a sudden and unexpected downturn. These conditions fell outside any of the scenarios considered in the adopted forecast. The situation highlights the importance of updating the Demand Forecast annually—so that when economic conditions take an unexpected turn, planners are not working with unrealistic projections.

The update described in Volume III is actually our most ambitious to date. In addition to refreshed economic outlooks, staff updated rate projections as well as forecasts of PV, storage, and electric vehicle adoption. It’s worth noting that the adopted forecast is not a single
number, but a collection of projections with different assumptions around economic outlook, efficiency uptake, and weather conditions. Studies conducted by the CPUC and California ISO each used a particular combination of projections that suits the needs of that study.

Volume III contains an updated agreement between staff at the CEC and CPUC as well as the California ISO’s leadership. This agreement, which we call the single forecast set specifies a number of important forecast use cases. And memorializes our common understanding around which components of the forecast are used in each. Next slide, please.

Our updated mid-baseline forecast of electricity consumption, which is the total amount of electricity used by customers declines in 2020 -- a response to the economic downturn -- followed by a period of strong economic recovery through 2024. And then settling into a long-term annual growth of 1.1 percent annually.

Electric vehicle charging contributes significantly to that growth, with on-road vehicle charging representing a 4.5 percent of overall electricity consumption in 2030

Our mid baseline sales forecast, which is the amount of energy customers are expected to purchase from a utility or other service provider, grows at a slower rate,
only half a percent. This is due to the significant penetration of behind-the-meter resources, particularly PV over the forecast period. By 2030, PV self-generation is projected to meet 13 percent of total consumption.

And when paired with an appropriate additional achievable energy efficiency scenario, which was adopted as part of the 2019 IEPR, we have a managed sales forecast commonly used for planning that is relatively flat over the forecast horizon. Next slide, please.

Volume III also contains three exploratory scenarios around electric vehicle charging and travel patterns. The first studied the potential impacts of charging the estimated number of medium and heavy-duty zero-emission vehicles required to meet the South Coast Air Basin’s 2031 Ozone Standard. Staff found that this could amount to an additional 1,700 GWh of consumption.

The second scenario examined the potential for shifting EV charging patterns as a GHG reduction strategy. This analysis found that moving flexible vehicle charging to mid-day when grid emissions are lowest could save 0.4 million metric tons of CO2, but would also increase system peak load by nearly 700 MW. Also these results highlight the importance of considering both grid conditions and GHG emission intensity factors when using load shifting as a carbon reduction strategy.
And the third scenario looked at the implications of increased telework opportunities that may persist beyond California’s COVID-19 experience. Staff found that GHG emissions tied to commuting may be reduced by just over 4 percent per day of remote work. These scenarios were developed to provide additional information to stakeholders and policymakers beyond the specific planning targets described by the Demand Forecast.

And with that, I will turn it back to Heather.

MS. RAITT: Thank you, Nick. Next slide, please.

Before I close, I would like to just take a moment to express my gratitude to some of the many talented and dedicated staff who contributed to the report. On the transportation volume, Quentin did an amazing job leading the effort. And many others in FTD contributed including Jane Berner, Michael Comiter, Jim McKinney, Tim Olson, Noel Crisostomo, Tami Haas, Charles Smith and Hannon Rasool.

And on the forecast volume, Nick and his team always do a great job. And thanks also to Heidi Javanbakht and her team for their work on the transportation demand scenarios, and to Matt Coldwell who manages that office.

Last summer we transitioned to remote workshops. Thank you to Noemi and the IT staff for their support in doing so. And to Harrison Reynolds who was really instrumental in our transition to remote workshops.
Harrison was our student assistant at the time, and
although we miss him I’m happy to report that he’s now
staff with the R&D Division.

And a very big thank you to the core IEPR team:
Stephanie Bailey, Denise Costa, and Raquel Kravitz, who so
skillfully keep everything going from behind the scenes.
And who I rely on every day.

Finally, thank you, Commissioner Monahan and
Commissioner McAllister, for your leadership and support,
and also to your staff who helped us throughout.

So that concludes our presentation. Lisa DeCarlo
who has been a terrific support from the Legal Office is on
the line to help answer any questions. And again, staff
requests that you adopt Volumes I and III of the 2020 IEPR
Update, incorporating the changes detailed in the errata.
Thank you.

CHAIR HOCHSCHILD: Thank you so much, Heather and
team.

Let's go to public comment on Item 13.

MS. GALLARDO: This is Noemi, the Public Advisor.
We do have someone on the Verizon line to make comment.
Kristian, we will open up your lines shortly. A
reminder to please spell your name and indicate your
affiliation. You have three minutes to speak your line is
open, please begin.
MR. CORBY: Good afternoon, Commissioners and
staff, my name is Kristian Corby and that's spelled K-r-i-
s-t-i-a-n and Corby is C-o-r-b-y. And I am the Deputy
Executive Director at the California Electric
Transportation Coalition and just have a few comments
today.

We'd like to really say we really support the
reports’ focus on equity and the need to address soft costs
and public charging. And we appreciate the addition of the
RMI study into the section addressing soft costs and
charging.

The reports’ discussion on equity is very
enlightening and important for how we can truly bring about
the benefits of zero emission transportation to all
Californians and especially the most vulnerable. The
impacts of COVID-19 have been devastating and exposes how
low income in minority communities are more vulnerable,
because of their exposure to air pollution from
transportation emissions. So again great focus on equity
and the need to address costs.

We support the recommendations made at the end of
Chapter 6, especially the recommendation to continue to
collaborate with the CPUC and California ISO. All of these
agencies are doing very important work on DGI. And to the
extent your efforts can be coordinated, there will be some
very great opportunities to take advantage of lessons learned.

We have a couple of concerns, just two. We had hoped that the VGI section on pages 107 and 112 would be removed, so that VGI could be addressed through a deeper dive in the VGI Roadmap Update and complimentary public process. And while this didn't happen, we still recommend completing the VGI Roadmap Update. And there's great opportunity for planning, because of the dramatic progress on VGI. And the work continues to ramp up on a variety of topics. So we also recommend continuing to coordinate with the CPUC and IOUs on their work on the recently adopted VGI decisions D-2012-07 and or sorry 027 and 029.

Finally, CalETC appreciates the amendments made to the section describing the avoided cost of charging concept, previously known as the Transportation Electrification Regulatory Policies Act or TERPA. While these amendments to the section help explain the concept, we still do not understand how this concept will effectively create access to affordable charging and infrastructure. And believe that the complexity of the concept could create barriers to access and increased costs.

So thank you again, very much for your time today and consideration of my comments.
CHAIR HOCHSCHILD: Thank you.

Any further public comment, Madam Public Advisor?

MS. GALLARDO: That was the last comment for Item 13.

CHAIR HOCHSCHILD: Okay. Let’s move on to Commissioner discussion, Commissioner Monahan?

BOARD MEMBER MONAHAN: Well, I want to thank Heather. You thanked her, Chair, and I think everybody was like during the nod when you were talking. And so to give first-hand experience, Heather with all you do and how you do it so well, and you're so calm and you're so thorough with all the details, is just like really impressive. And you're very fun to work with, so I just want to thank you and your excellent team: Denise, Raquel, Stephanie. Like just really super professional and hit the ball out of the ballpark from my perspective.

So I’m going to focus on Volume I and Commissioner McAllister, I’m sure is going to have some great comments on Volume III. And I will also just want to acknowledge Quentin’s leadership on this. Quentin stepped into the CEC, this is his first big project. He managed the whole thing so ably, so thoughtfully. And all the team members: Jim, Tim, James, Michael, Charles, Noel, (phonetic) so many people that were involved in this IEPR. But I have said to them, at the very beginning I
said I don't want a panel of all men. I don't want a panel
of all white people. I want us to look like California and
they did. And I mean and it's like every single workshop I
was like, “Okay, they did it.” So I just want to commend
them and just say that that's something we should look
forward, I think, for all of our panels, we should be
thinking about that. Diversity matters and we are
attentive to equity. And we want to always get better and
that's just one step towards that the end goal.

And I thought the transportation -- I hope
everybody read it, because I thought it was beautifully
written. And I also thought it dealt with a lot of really
important topics. And as we are speaking to support the
Governor’s proposed budget, reauthorize AB 8, (phonetic) I
mean this is one tool in our toolbox for communicating how
zero emission mobility is taking off globally and
California can be part of that transition.

So Mindy and her team have put together a really
great handout that we can give. It’s the Executive Summary
with beautiful graphics. And it really I think tell a
short and sweet story about the opportunity for California
to be a leader globally on zero emission transportation.

And that's all I have to say. I was really happy
with the whole document. I can read again and again, let
me tell you. And I will.
CHAIR HOCHSCHILD: All right. Thank you, Commissioner.

Unless there’s other Commissioner comments I'm looking at my--oh yes, Commissioner Douglas?

BOARD MEMBER DOUGLAS: You know, I’d just like to briefly say I want to recognize Commissioner Monahan for her leadership on these IEPR volumes. I know she and her advisors and Heather Raitt and her team, and CEC staff put a lot of effort into it and it really shows.

And I liked how the transportation volume highlights the synergies and opportunities between transportation electrification and Lithium Valley and the Salton Sea region, which is something that is huge opportunity, I think, for the state.

And I really have enjoyed watching how Commissioner Monahan has worked hard to think about and reimagine how we can use Zoom meetings to maximize engagement. It's not just about you know, finding another way to do something, but really finding a way to make these workshops better. And so we got great participation. I think people really liked the format and will probably continue using that format even when we don't have to, at least for some of the IEPR workshops.

So anyway great job, and I look forward to supporting this.
CHAIR HOCHSCHILD: Thank you.

Commissioner McAllister, were you going to make a remark?

BOARD MEMBER MCALLISTER: Yeah, I think I just wanted to briefly comment on mostly on the forecast, but first I wanted to just commend Commissioner, Monahan, on a job incredibly well done. And as well as the IEPR, Heather and the whole crew, Stephanie and Raquel.

I guess I wanted to also just call out your thoughtfulness on the equity front and just really putting that I mean over and over in this. This is one example of that, but I think you do that consistently trying to figure out ways to do that substantively. You know, not just as window dressing, but actually put it at the core of what we do. And I think that's just huge. I hope to emulate some of that in the IEPR this year, and find ways to really be inclusive use our Zoom platform to gain public comment that maybe we wouldn't otherwise get in a more structured format.

So on the forecast, I think well, just Nick and Cary and the whole team, they do a great job. It’s very detailed work. And the assumptions really matter. They sweat the details. They sweat the assumptions. They vet everything. The workshops really reflect their incredible due diligence.
And this year, the scenarios in particular I think were valuable, because we had so much uncertainty, right. And we think of what happened during the year of this forecast.

And the, you know, we had COVID. We had incredible weather events. We had incredible behavior change that is reflected in loads in the electric sector and gas consumption. And so really getting information together and trying to pick that apart and running scenarios on it, is really no mean feat. I mean it's difficult and they did a really great job.

And I really appreciated the load flexibility, the load flex scenario. That's again really important going forward to understand what we can do with load. And how we need to be intentional if we're going to use it as a decarbonization strategy. And also apply it to the hourly forecast as a way to manipulate or change peak loads. So I'm really happy with the direction that that skill set is going.

And I think it's an opportunity to include -- which, you know, Commissioner Monahan you and I always talk about okay transportation buildings, you know how can we sort of see them, both as a resource on the grid. And I think this is a manifestation of that process. We're starting to be able to do that, so I really want to in this
year’s IEPR, in the 2021 IEPR, try to deepen that. And work together on it as we consider sort of more flexibility resources coming on or being accessible.

So, I guess I will stop there. I want to certainly pass the mic to Commissioner Gunda. I mean he has been invaluable in this as the Deputy over the Forecast. And I think really provided great direction to staff and lots of creativity in how the forecast proceeds and also coordination across the agencies. So I certainly want to want to pass the baton to you, Commissioner Gunda.

BOARD MEMBER GUNDA: Thank you, Commissioner McAllister. I mean, I knew I couldn't like really follow you on this, because I mean you’re very thoughtful in how you talked about the Demand Forecast. But there is a pause in the background, so I hope to fit in a couple of words.

I do want to call out a thanks to Nick Fugate, Matt, Cary, Alan Marshall. What an amazing effort this year when we had some big shoes to fill in after the retirement of Chris Kavalec, the Chief Forecaster. Nick really had to jump in with Cary and Lynn and just create the necessary intellectual brainpower and thoughtfulness. And I think they've done it beautifully. Especially over the last year in the development of the Demand Forecast.

As you noted, Commissioner McAllister, there were certain issues. But there were also issues that they had
to bake in as we went through with the root cause analysis
and calling for a more extreme forecast and how we do it,
you know, think about the uncertainties in climate as we
move forward.

And I think one of the things that the
leadership, the demand forecasting leadership were able to
do, is really listen and take the ideas in, vet them and be
able to bring back solutions. So I just want to thank the
team. I think it's extremely important that the
relationships that we are continuing to build at staff
level across the agencies, continue to mature, because that
really as the foundation for the statewide planning.

Commissioner Monahan, I did read through Volume
I, and I think it was great. I specifically enjoyed the
recommendation on the integration of transportation in the
grid. And I would like to thank Heidi Javanbakht for her
cross divisional work with Hannon and the team to really
connecting through transportation scenarios.

And I just can’t be more thankful that I now get
to sit with you all. But working for you all prior, it's
just a such a wonderful feeling to have Commissioners that
are just about collective thinking and bringing things
together and making sure things happen. So thank you all
for your guidance as we went through.

And I would be remiss if I didn't thank Heather
and her team. Heather, again I don't know, I think we'll just call you a rock star champion or whatever you like. Thank you so much for being the IEPR champion you are. Thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Unless there's any other additional comments I would entertain a motion from Commissioner McAllister on Item 13.

BOARD MEMBER MCALLISTER: Patty, do you want to move this one and I'll second?

BOARD MEMBER MONAHAN: Sure, I’ll make a motion to approve Item 13.

BOARD MEMBER MCALLISTER: I’ll second Item 13.

CHAIR HOCHSCHILD: All in favor say aye, Commissioner Monahan?

BOARD MEMBER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

BOARD MEMBER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

BOARD MEMBER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

BOARD MEMBER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote “aye” as well.

That item passes unanimously. And I'm happy to report we are done. We knocked out all the other items earlier in
the meeting

So I think -- Noemi, unless I'm missing anything?

MS. GALLARDO: I believe that's correct, Chair.

We've gone through everything.

CHAIR HOCHSCHILD: We're adjourned, thank you, everybody. Have a good day.

(The Business Meeting adjourned at 2:33 p.m.)
REPORTER’S CERTIFICATE

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 13th day of April, 2021.

[Signature]

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Notary Public
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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 13th day of April, 2021.

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Myra Severtson
Certified Transcriber
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