BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)
	)21-BUSMTG-01
Business Meeting	)
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REMOTE ACCESS ONLY

The California Energy Commission's (CEC) April 14, 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, APRIL 14, 2021

10:00 A.M.

Reported by:
Peter Petty

APPEARANCES

Commissioners (Via Remote)

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

Staff Present: (Via Remote)

Linda Spiegel, Chief Deputy Director
Linda Barrera, Chief Counsel
Noemi Gallardo, Public Advisor
Dorothy Murimi, Public Advisor's Office

APPEARANCES (Cont.)

Others Present (Via Remote)

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Stephen O'Kane, AES	4
Jeff Harris, Ellison, Schneider, Harris, Donlan for AES	4
Scott Galati, DayZen, LLC, for Amazon Data Services (ADS)	5
Steven Botic, ADS	5
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P R O C E E D I N G S

MARCH 17, 2021 10:02 a.m.

VIDEO NARRATOR: (Introductory video begins.)

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 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 the affiliation you represent, 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: Well, good morning everyone. Happy spring and welcome to the Energy Commission's April Business Meeting. If we could, let's start off with Commission Monahan leading us in the Pledge of Allegiance.

(Whereupon the Pledge of Allegiance is recited.)

CHAIR HOCHSCHILD: Thank you, Commissioner. So some good news on the horizon, California's set to open on June 15th. In the meantime, please continue wearing masks and get vaccinated when you can. I actually got vaccinated yesterday -- my first dose of Moderna -- no side effects, felt great. And I'm happy to see this finally rolling out, so encourage everyone to get on the list. You can register at "My Turn," the website created by the Governor's Office for notifications at myturn.ca.gov.

Today's Business Meeting 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 in these executive orders. Instructions for remote participation can be found

in the notice for this meeting 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 will continue this meeting on our Verizon phone line. Call Verizon at 888-823-5065. And the pass code is "Business Meeting."

The Commission values public participation and stakeholder engagement. Pursuant to California Code of Regulations Title 20, 1104(e) any person may make oral comment on any agenda item. To ensure that 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. To provide public comment please call Verizon phone line at 888-823-5065. The pass code is "Business Meeting."

All right, let me just begin with a little reflection. So it's, I think, almost exactly two years since I started as Chair. And I just wanted to share my incredible gratitude and satisfaction with where we are as

a group, starting with my peers Commissioner Douglas, Commissioner Monahan, Commissioner Gunda, Commission McAllister. They wake up every day and work their hearts out to make things better and make an impact. And I really have felt that so deeply the last few years, the things that we've been moving forward and across the board, the talent that we have, Drew and Linda on the Executive Office, Ferrera in Government Affairs and International Affairs, Lindsay Buckley at Communications, our amazing Public Advisor Noemi Gallardo, and all the deputies and all the advisors.

The team got a little bit stronger last week when we hired our new permanent Chief Counsel Linda Barrera. I wanted to just say, Linda, it's been a delight working with you these last weeks when you stepped up on very short notice to take over, as Commissioner Houck was appointed to the PUC. I've really appreciated your legal mind and your diligence and your passion for the Energy Commission's mission and your professionalism. It's really just been wonderful to see how you work and to see all the talent you bring in. I know you're going to continue to grow into the job, and so I just want to give a moment if we could just from any other Commissioners who'd like to say any congratulations or remarks about Linda.

Commissioner McAllister, do you want to start?

COMMISSIONER MCALLISTER: Oh, sure. Yeah, it's always been a pleasure to work with Linda when she was on Commissioner row (phonetic) as an advisor and then in the Chief Counsel Office. And yeah, just welcome Linda. In particular, one of our biggest lifts at the Energy Commission is the Building Standards. And as we work through that environmental impact report and all the corollary activities that have to move down parallel tracks that all carry a lot of payloads, Linda is on top of it. And really interacting with our sister agencies and all the steps and stages of that process, so I'm really grateful already for her impact which is already huge. So thank you, Linda.

CHAIR HOCHSCHILD: Good. Commissioner Douglas?

COMMISSIONER DOUGLAS: Yeah, I just wanted to add my congratulations to Linda, I'm really excited. I've enjoyed working with Linda quite a lot in particular roles at the energy Commission. And I think, Linda, you'll do great as Chief Counsel, so congratulations.

MS. BARRERA: Thank you.

CHAIR HOCHSCHILD: Great. Commissioner Monahan?

COMMISSIONER MONAHAN: Linda, I want to thank you for stepping up at this time when we so need you. And just really like the others I've really appreciated my interactions with you and look forward to working with you

more. And I just want to welcome you, together with Commissioner Douglas, in the world of women with children navigating a big job. And I just wanted to say that I appreciate it. I have struggled with that myself trying to figure out how to how to be a good mom and a good professional in the workplace. And just welcome you in this family of women leaders at the Energy Commission.

MS. BARRERA: Thank you so much.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Yes, thank you, Chair. Many congratulations, Linda. I mean, I literally could not have wished for a better person to be filling this role. And thinking, as I've kind of shared with you privately after you got your appointment, there is a list of like how smart and how capable you are, and the legal mind you bring to the table. Thank you always being very thoughtful. I really appreciate your spirit of collaboration and just your genuine spirit of kindness. And so I really hope that you make CEC a better place. I'm looking forward to your success and being a part of your success. Thanks.

MS. BARRERA: Thank you very much.

CHAIR HOCHSCHILD: Thank you, Commissioners.

Yeah, and Linda I think other than dealing with a difficult Chair I think you'll enjoy the job. We'd love to hear if you wanted to share any words or thoughts.

MS. BARRERA: Yes, I do. Thank you so much, Chair. Good morning, Commissioners. I am grateful and honored to be taking on the role of leading the Commission's Legal Office as we embark on what is truly transformative changes to meet our clean energy goals, while at the same time making sure that we're benefiting all of California. And it's just a true pleasure to be at the Commission at such an important and critical moment.

If I may just provide a really brief background about my path as an attorney. I mean, as you probably know and I've said this before, I'm an immigrant from Panama. I came to the United States when I was 18 years old. I had nothing. I had only a dream to work on clean, renewable energy. And after brief stints as a mechanical engineer and leader advocating for clean energy solutions for indigenous people in Latin America, I chose to come and get an education at the United States. And I focused on energy and environmental law.

Before joining the stellar team of attorneys at the Energy Commission in 2015, I worked as an attorney or practiced law at the California Public Utilities Commission, the Attorney General's Office and at the Department of Fish and Wildlife.

And I, as you probably know, we have a fantastic group of attorneys who are committed and passionate about

the work of the Commission. And as Chief Counsel I am committed to leading the team and supporting all of our attorneys to provide you outstanding legal advice and to support the staff at the Commission. And I look forward to working with all of you. And I just want to thank you so much from the bottom of my heart for this opportunity to be part of the Commission through really informative changes. Thank you so much.

CHAIR HOCHSCHILD: Thank you, Linda, and we're so excited to have you in this new role as part of leadership. Yes.

All right with that let's move on to the agenda. Today we are going to be approving, if we pass all these items, over $73 million in funding. We're helping to accelerate California's economic recovery. I've asked Noemi to continue to compile these totals. It's really important for us to just bear in mind the significance of the impact that the Energy Commission is having. I just want to thank again all the staff from every Division who work so hard every week to prepare these projects for approval. This is really exciting to be able to continue to move this is kind of volume of funds.

So with that let's move to the Consent Calendar, Item 1. Is there any public comment on Item 1?

MS. GALLARDO: Hello, Chair. Good morning

everybody, this is Noemi Gallardo, Public Advisor. There are no public comments for Item Number 1.

CHAIR HOCHSCHILD: Okay, unless there's any Commissioner discussion is there a motion? Commissioner Douglas would you be willing to move Item 1?

COMMISSIONER DOUGLAS: Yes, I move Item 1.

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

COMMISSIONER GUNDA: I'll second Item 1.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

Let's turn now to Item 2, Proposed Adoption of the 2020 Integrated Energy Policy Report, Volume II on Microgrids.

MS. RAITT: Thanks. Good morning, Commissioners. I'm requesting your approval of the second volume of the

2020 Integrated Energy Update, or the 2020 IEPR update for short. I'm Heather Raitt the Assistant Executive Director for Policy Development and the IEPR Program Manager. I'm joined today by the lead author for this volume, Mike Gravely from the Energy Research and Development Division. Next slide, please.

The Energy Commission prepares an IEPR every two years, with updates in alternate years, provide energy analysis and policy recommendations to the Governor and Legislature. 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. Volumes I and III were adopted last month in March. Volume I puts forward recommendations to advance California's clean transportation future. And Volume III is on energy demand. Volume II is on microgrids and is being considered for adoption today. Chair Hochschild and former Vice-Chair Scott led its development.

Microgrids are part of a suite of solutions as we work to ensure a clean and resilient energy grid for all Californians. In certain cases microgrids may provide a cost-effective solution to meet the individual needs from end users in the event that they cannot be served by the

grid. However, microgrids are not appropriate or cost-effective to address every problem; rather they must be deployed strategically. And Michael will go over the opportunities for strategic deployment in a moment. Next slide, please.

This volume of the 2020 IEPR Update draws upon the Energy Commission's decade of experience and research investments into microgrids. It also draws upon the technical expertise that experts who participated in a broadly attended two-day workshop on microgrids. And the volume benefits from thoughtful input from our sister agencies.

The draft of Volume II was posted on March 8th, 2021, with a request for public comments. After carefully considering the public comments received the proposed final was posted on March 29th.

And now I'll introduce Mike Gravely the lead staff for the microgrid volume. Next slide, please. Go ahead, Mike.

MR. GRAVELY: Good morning Chair Hochschild and Commissioners. In developing the IEPR volume on microgrids we wanted to leverage the extensive knowledge the CEC R&D Division has gained over the last decade from funding grants through different Energy Commission research programs. To date the Energy Commission has funded 58

microgrids and of those, 41 were installed in disadvantaged and low-income communities.

As this slide shows over the years we have funded microgrids in a broad range of end-use applications from critical facilities such as medical centers, fire stations, community response centers and water treatment facilities. We have also supported critical infrastructure organizations such as ports, military bases, industrial operations, college campuses, and regional communities.

One of our focus areas in developing this volume was to assess where microgrids provide critical service and where they provide the best value. And where microgrids do not provide enough value to warrant their installation. Next chart, please.

In addition to the key applications we have assessed the value of microgrids in key locations such as wildfire zones, areas that are predominantly receiving public safety and public shut-off, power shut-off activities, and under-resourced communities. These under-resourced communities typically suffer from poor air quality, resiliency issues, and historically do not attract the new infrastructure investments as rapidly as other areas.

By leveraging what the CEC has learned in these microgrid deployments we were able to identify critical

services and support structures that's needed to continue during these rare disturbances from these critical areas. Next chart, please.

As we assessed what we've learned over the years these next three examples illustrate the value microgrids can provide the range of microgrid operators. For example, the Borrego Springs Microgrid is owned and operated by a utility, San Diego Gas and Electric. This microgrid provided critical service to a community of approximately 3,000. And has increased the community's service, reliability and resiliency significantly.

The Blue Lake Rancheria Microgrid located in a Native-American tribe community illustrates what a customer-owned microgrid can provide its community. This microgrid has provided many key community services during wildfire and PSPS events over the last few years, including providing some of the residents a way to continue their critical lifesaving equipment by relocating to an easy-to-access area where the microgrid could provide their electrical needs.

In fact, the Blue Lake Rancheria was credited in saving four lives during one of the events when they were able to easily transfer critical patients from their current facility to their hotel. And they'll provide them continual service throughout the event.

The microgrid provided other services for their community like allowing them to fuel their cars when the other power was out in other locations, receive ice so they can protect their food from spoiling in their homes, and the ability to charge cell phones and other critical personal devices.

Then, finally the Fremont Fire Station illustrates how our community can use a third-party management organization to support their critical microgrid needs. For this microgrid a third party operates and manages the microgrid for the government, so the critical facilities can focus on performing their community service. Next chart, please.

When summarizing the lessons learned while preparing this volume we found the following areas were good applications for microgrids. Responding to PSPS events and other unplanned grid disturbances was one of the top reasons provided by community organizations and others when explaining their need for a microgrid. Supporting life-saving services that requires uninterrupted electricity service also allows microgrids to assist these high-risk patients locally with minimal disruptions.

Delivering community service such as fire, police, emergency response during times of grid outages continue to be identified as a critical need by local

communities in government organizations.

Supporting low-income, tribal, rural and disadvantaged communities are disproportionately impacted by grid outages continues to rise high to our list of applications.

Enabling critical military installations and state infrastructure operations such as ports, water delivery, water treatment, so these installations can continue to provide these services uninterrupted to the community during grid outages.

Serving other unique energy demands where energy reliability is key such as key industrial operations and commercial enterprises that are disproportionately impacted by grid outages has also been identified by many key customers. Next slide, please.

Then finally we just want to cover a few recommendations the IEPR has pointed out for future actions. One, continue the research about clean alternatives to diesel generation for backup power. Being a public institution the information learned can be shared with the public instead of being limited due to trade secrets or company proprietary information.

Also the continued implementation of CPUC SB 1339, which is usually referred to as a microgrid bill, Track Proceeding Number 3. The microgrid staff is

addressing many of the areas identified in this volume as they move forward implementing the different elements of SB 1339.

Continue to streamline distribution interconnection. While there's been a significant improvement in the interconnection process over the last few years, more work can be done to shorten the time and lower the costs.

The right-of-way issues. This is an area where both the industry and CPUC staff are addressing and continue to work. And the results would permit microgrids to be much more broadly deployed throughout the state.

And finally, developing and making available market information and financial tools to successfully deploy microgrids without the need or use of state funding.

And with that, I'll turn it back to Heather to continue the presentation.

MS. RAITT: Thank you, Mike.

Before I close I'd like to take a moment to express my gratitude to Mike for his work on this report. I'd also like to thank David Erne for his contributions before he took on his new role in the Energy Assessments Division and to many others in the Research and Development Division who contributed. I'd also like to recognize the IEPR team, Denise Costa, Raquel Kravitz and Stephanie

Bailey, whose work behind the scenes was critical to the development of the report.

Finally, thank you Commissioner Monahan for your leadership on the 2020 IEPR Update overall and to Chair Hochschild for your leadership on this volume. And thanks to Le-Quyen Nguyen for helping us get us to the finish line.

So that concludes my presentation. Again, staff request that you adopt Volume II of the 2020 IEPR Update. Thank you.

CHAIR HOCHSCHILD: Thank you so much, Heather and Mike and the whole team. So I had asked that we add this volume, just given the threats to grid reliability. I'm very pleased with the progress on microgrids. And I do want to just repeat this number again, it's 58 microgrids and we've funded 41 in disadvantaged communities. This really is keeping with the strategy and philosophy of bringing these solutions out to the state in a way that lifts up the communities that have been hardest hit and our most vulnerable. So I'm really, really proud of the work and this report.

Let's go now to public comment. Noemi, do we have any public comment on Item 2?

MS. GALLARDO: This is Noemi, the Public Advisor. Yes, we do have a couple of people on the line. So we will

start off with Evelyn Loya. And Evelyn, this is a reminder to please restate your name, spell it and indicate your affiliation. We will open your line in just a second. So Evelyn your line is open, you may begin.

MS. LOYA: Hi, I'm Evelyn Loya. And the spelling is E-v-e-l-y-n, and my last name is L-o-y-a. And I'm speaking on behalf of Southern California Gas Company. Am I okay to begin?

CHAIR HOCHSCHILD: Yeah, please.

MS. GALLARDO: Yes.

MS. LOYA: Okay. Okay, I appreciate the opportunity to provide public comments on the Energy Commission's adoption of the 2020 IEPR Update, Volume II, on microgrids. SoCal Gas supports expanding microgrids as a resiliency solution for the electric grid and to enable California's clean energy future.

In March we announced our sustainability strategy, ASPIRE 2045, our commitment to achieve net-zero GHG emissions in our operations and delivery of energy by 2045. We know clean decarbonized molecules have a role in the energy system of the future and can play a low-cost, flexible role in microgrids as well. Throughout California, wildfires and PSPS events are increasing the reliance on diesel backup generators for electrical power. For example, nearly 1 million people affected by a PSPS

event in 2019 utilized 125,000 diesel generators. While the CEC has seen an increase in small power plant exemption certifications for diesel projects up to 100 megawatts.

As stated by South Coast AQMD, diesel generators create NOx emissions 200 to 600 times greater per unit of electricity than new or controlled existing central power plants fired on conventional gas. And estimated that during a 2019 PSPS event in their jurisdiction fewer than 2,000 diesel generators admitted six tons of NOx per day. This is higher than average daily emissions from the largest refinery under their authority. These air pollution and GHG emission trends could be offset by choosing cleaner alternatives, such as microgrids, which offer critical loads' resiliency to operate independently of the electric grid during unforeseen outages.

To fulfill this role a microgrid must be supported by a reliable fuel source. Today the gas grid provides Californians with reliable energy when it matters most. In fact, both CARB and South Coast AQMD recognize that natural gas backup generators are vastly cleaner than diesel and gasoline, especially when powered by renewable gases. Today, some gas fuel generation technologies have proven capable of operating on R&G (phonetic) and zero-carbon fuels like hydrogen with minimal modifications to the existing generator.

I am happy to share that SoCal Gas is advancing hydrogen innovation to help mitigate diesel generator use and to provide energy reliability. Gas generators and fuel cells can provide a direct and inexpensive pathway to decarbonization, help clean the air and provide resiliency for microgrids. Thank you again for the opportunity to provide comments.

MS. GALLARDO: Thank you.

This is Noemi the Public Advisor. I want to remind the audience, all of our attendees that we accept public comment through our Verizon phone line, so please call 888-823-5065 if you would like to make a public comment. That information is also on the screen. Again, that's 888-823-5065, the pass code is "Business Meeting." We do not accept to comment through Zoom at the moment.

So our next speaker, Chair, is Claire Warshaw. Claire, we will open up your line. A reminder to please spell your name and indicate your affiliation if you have one. So let's open up Claire's line on the Verizon side. Claire your line is open, you may begin.

MS. WARSHAW: Hi, can you hear me?

MS. GALLARDO: Yes, we can.

MS. WARSHAW: Hi, can you hear me? My name is Claire Warshaw, that's C-l-a-i-r-e, and then W-a-r-s-h-a-w. I am a public listener, I have no special affiliation or I

don't own the microgrid or live in one. I am very encouraged by the microgrid evidence that the California Energy Commission has been evaluating. I think it's a very positive bunch of projects. I am, however, concerned about electric magnetic fields and the lack of attention to possible damages that electromagnetic fields can have. And so my concern and reason for calling is to keep encouraging people that are doing these kinds of projects with electricity, especially wireless and invisible electromagnetic fields, to encourage the people living near them to report when they have unusual pain.

As you know, for example, under solar panels if they have people that ever experienced stray electricity I think that's something that can easily be ignored because it's so impossible to prove practically. But there are -- if the people that are managing the microgrids would ask the people that are living in them to please report that stuff and not be shy or scared to, I think that would be good.

Also, if the people managing microgrids could do continuous evaluation of the heat and fire potential damage that some electromagnetic fields have and be careful how they direct them through biology to actually look at, you know, things that are in the way of electromagnetic fields. And be careful not to assume that small damages to biology,

are not going to be problems in the future. I'm talking about humans. You know, the example like when I was a kid we didn't want to be X-rayed over and over, similar kinds of things.

I do think that some of these fields have some potential to damage biology, including vegetation, which could be a problem for photosynthesis and Carbon-16 (phonetic). So if people managing these grids could please continuously kind of keep an eye out for that and to check things that they can, double-check things and make certain that they're not going to cause heat to vegetation and things that might damage it and fire potential.

And long-distance electromagnetic fields, I'm not sure how you manage that. You know, we want to do something from one microgrid to another or want to start something from far away, I hope there is a way of making sure it doesn't go through like from human in an airplane or something. Anyways, it would be nice to hear more about the safety aspects and make sure that those concerns are evaluated.

Thank you for allowing me to speak.

MS. GALLARDO: Thank you.

We have one more speaker, Robert Perry. A reminder to please restate your name, spell your name and indicate your affiliation, if any. Robert your line is

open, you may begin.

MR. PERRY: Yes, hi. My name is Robert, R-O-B-E-R-T," Perry, P as in Paul, e-r-r-y. My affiliation is with Synergistic Solutions consulting firm. And I'd like to congratulate the IEPR team on the study that they released, the three-parts study. I consider the IEPR process to be critical, because it utilizes multiple agencies and creates solutions that deal with, that can deal with multiple problems. And I was very happy to participate in the process and I think it's definitely a worthwhile effort going forward.

I have a few points to make going forward. One would be I would really like to see, and I know there's a big focus, but on vehicle grid integration technologies. This is a technology that bridges both transportation and the power sectors and offers the opportunity to create tremendous amounts of resiliency with it at a given site being able to take the energy capacity of vehicles during emergencies. So I know it's on the radar, I just want to encourage continued focus in that area.

The other thing I would encourage the Commission to continue to focus on would be to look at ways to engage and incorporate the commercial, industrial sector in microgrid development. A recent survey came out and commercial, industrial customers basically said that even

disruptions of under five minutes were equally damaging as longer disruptions, because it forced them to have to reset. So they're tremendously motivated to develop resiliency. And commercial, industrial sites are very highly capacity, and are typically located adjacent to disadvantaged communities. So there's an opportunity to lower, decarbonize commercial, industrial, which will benefit a disadvantaged community if you can create jobs for the disadvantaged communities in these areas. I mean there's this is lots of potential there.

So, and then also commercial, industrial sites often have fleet vehicles. And these open the door for vehicle grid integration and the ability to develop very high amounts of generation located close to disadvantaged communities.

So again, thanks again for a great report. I'm looking forward to participating in later iterations of the IEPR process. And I urge you to adopt the Volume II Microgrid session. Thank you very much.

MS. GALLARDO: Thank you.

Chair, this is Noemi the Public Advisor. That was the last comment on Item Number 2.

CHAIR HOCHSCHILD: Thank you members of the public for speaking. Let's go now to Commissioner discussion. Commissioner Douglas, you have worked really

closely with tribes, you've actually visited the Blue Lake Rancheria project. I haven't had a chance to do that. I did go to the Fremont, and dedicate the Fremont Fire Station one. But what if we could begin with you.

COMMISSIONER DOUGLAS: Sure. So I'm really pleased to have heard the report and to see the chapter move forward. As you mentioned, Chair, I visited the Blue Lake Rancheria site, both the project at the casino that was referenced. And also a much smaller project that allows them to run their filling station and a small store and kind of off-grid with a mini-microgrid that hopefully will be deployable in that kind of model in other kinds of convenience stores/gas station setups. It's a very kind of standardized and deployable, I think. And so those are both exciting projects.

I had a chance to visit a similar setup, not technically a microgrid, but something very similar at the Chemehuevi Reservation as well, that the EPIC program helped fund. As well as some of the military installations, the one by Port Hueneme, for example.

You know, these are exciting projects. And as it's been noted not everybody necessarily needs a microgrid, right? Microgrids are a specialized application. They do two things for us. For entities that really have the enhanced need for absolute resiliency and reliability,

they help provide that. And certainly when you look at the military, when you look at some of the tribal applications, when you look at the last speaker was mentioning at some commercial operations. You know, wineries. If they lose power at the wrong time they could lose a year's work. And so for certain applications microgrids make a whole lot of sense,

And in addition to that they help us develop and deploy and lower costs on a range of technologies that can be put in place in other contexts as well. And so I think the chapter's really solid, I'm excited about the technology and the applications that we have been able to help foster throughout California. And so those are my comments. Thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Any other Commissioners wishing to make a comment?

COMMISSIONER GUNDA: Yes, Chair. I would like to just add a couple of thoughts.

CHAIR HOCHSCHILD: Yeah.

COMMISSIONER GUNDA: I just want to begin with thanking that incredible IEPR team, Heather and her entire team, for pulling off this last year's IEPR and also kick starting the next year. So thank you, Heather, and your team.

I also want to note Commissioner Monahan for the entire IEPR in the three-volume structure and it was really good. And kind of the context was well set up, so thank you Commissioner Monahan for your leadership on delivering the IEPR.

But then I just want to call a few high-level thoughts here. One is just beginning with thanking staff in the R&D particularly and then staff across the Commission that are beginning to develop this deep understanding into microgrids, but DERs at large. And I think I appreciated the briefings. And I'm really beginning to understand how robust of knowledge and thought leadership that is hosted at CEC. So I really would like the CEC staff in an intellectual leadership to continue to foster ideas for the future.

I also want to thank the public members for your comments. I think there are incredibly important comments for us to consider as we move forward on this research broadly with the DERs.

So our sister agency, specifically CPUC, has been undertaking a lot of efforts. Heather kind of noted that in her comments. There's a lot of work going on, on microgrids. But also really thinking through what DERs can offer as we get into the context of SB 100. We kind of put out the SB 100 report earlier this year, and it asks for an

incredible amount of new generation on the grid. Obviously that doesn't take into account the opportunities from DERs and microgrids and such. So I'm really hoping to continue the discussion of how DERs, microgrids at large can really help with broader clean-energy transition while ensuring reliability, equity and resiliency.

And I think CEC has a very unique opportunity to offer. We have a robust public process to ID important aspects and support CEC and collaborate with CPUC and CARB and other state agencies to really figure out robust thinking. And the landscape of the DER ecosystem moving forward into the future. And thinking how best to support the state of California and the clean-energy goals of the government, state. So thanks to everybody and congratulations Heather and everybody.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Any other Commissioners wishing to make a comment, Commissioner Monahan?

COMMISSIONER MONAHAN: Yeah, just real briefly. I was inspired actually by Commissioner Gunda around -- well first thanks to Heather and the IEPR team, because they are top notch. And I think we cannot say enough good things about her and her team.

But I also wanted to acknowledge the Chair and his leadership in proposing to do this volume. I think, as

Commissioner Gunda said, this is important territory for the CEC to take a leadership role as it's a -- I don't know if a crowded space is the right way put it, but the CPUC is deeply involved in this as well. And so navigating the important leadership roles that the Energy Commission can place through broadly, of course, in energy issues and energy analysis across the state. But also in this specific issue around DERs and resilience and how do we ensure that we're doing all we can to make sure Californians have a resilient, affordable. safe and clean energy system.

So just acknowledging the Chair for his leadership on that.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Yeah. So I'll try not to repeat other points, because everybody's made incredibly good points. But I just remember back in the 1990s when I was in very remote places in developing countries doing standalone systems, right, which were sort of the precursors of the microgrids we're talking about today -- and this was back in the analogue era -- and we have come a long way baby, as they say. And I think this, you know, to Commissioner Douglas's point microgrids can be relatively expensive. And if you really need that reliability it's

totally worth it: hospitals and very critical loads, community centers, during PSPS, that kind of thing. And certainly remote travel regions and even just feeders where you've got a really weak connection with the main grid, there are definitely justification for it.

But I want to just emphasize two things. One, the spillover effects. We're going to be hanging a lot of technologies off the distribution grid that aren't necessarily as part of the microgrid, but are helping us manage the grid and large distribution grid overall. And I think that synergy where we're investing in and the power electronics and then the communications and controls and management of batteries and dispatch and things like that, that are actually going to really help us with the resilience of the grid at large not just in an islanded situation.

And then the second thing that (indiscernible) brought up that I just feel obligated is energy efficiency. When you're doing a microgrid every kilowatt hour of energy counts, you have to count those kilowatt hours. And because whatever you use you have to store in a battery, you have to generate independently; you can't rely on this broader grid. So you reduce the scale of everything else you have to do you're your loads and your end users are all as efficient as they possibly could be. And that's just

worth the investment if it optimizes your overall project.

And so I just want to reiterate the congrats and thank yous to Heather and the team. I'm sure you're very relieved to have the entire 2020 IEPR off your plate now, so you can focus on the 2021 IEPR. And I'm excited to work with you on that and it's starting to move down the tracks.

Yeah, so thanks a lot. And really, thanks again to you Chair for your leadership on this issue. I think it's very groundbreaking and it's going to pay off in spades as we move forward, Commissioner Gunda said, to decarbonize the entire grid via SB 100.

CHAIR HOCHSCHILD: Thank you, Commissioner. I really appreciate the point. I think it's true microgrids kind of become a mini-garden bed for further innovations and we're certainly seeing a lot of that. So again, my congratulations and thanks to the whole team.

I would entertain a motion for this item. Commissioner McAllister, would you be willing to move Item 2?

COMMISSIONER MCALLISTER: Yes, I will move Item 2.

CHAIR HOCHSCHILD: Okay, Commissioner Douglas would you be willing to second? (Silence on the line.)

We can't hear you Commissioner Douglas, but I assume that's a yes.

COMMISSIONER DOUGLAS: Second.

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

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And then Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

We'll move on to Item 3. By the way, let me just say we have a long agenda today. We are definitely going to be taking a lunch break. I'm going to try and as close as I can around noon. And then we will reconvene at 1:00, that's the goal. So let's move on to Item 3, Inland Empire Energy Center.

MS. HUBER: Good morning, Chair and Commissioners. My name is Elizabeth Huber. I manage the Office of Compliance Monitoring and Enforcement of the Siting, Transmission and Environmental Protection Division. Yes, try saying that three times fast. (Laughter.) With me are compliance project managers Eric Veerkamp and Keith Winstead and from our legal team Kerry Willis. We're here

to present on Inland Empire Energy Center's request to terminate their CEC license. Next slide, please.

The closure of this nominal natural gas-fired plant, power plant illustrates a cradle-to-cradle opportunity in which a former power plant site is being repurposed into a facility that will help meet peak power needs and support California's goals of our clean energy future. Next slide, please.

A little background, the IEEC was first approved by the CEC in 2003 and was online by May of 2009. In June of 2019 the project owner submitted their decommissioning and demolition closure plan. At the December 11th, 2019 Business Meeting the CEC approved that closure plan and the CEC staff approved the notice to proceed on February of 2020.

Then on March 29th of this year the Delegate Chief Building Official submitted a Certificate of Completion on the closure project. Next slide, please.

Here is a before of the decommissioning and demolition of the site. Next slide, please.

And here is a picture of the future site. Nova Power purchased the site from GE and is utilizing some of the existing building and electric infrastructure, since the battery storage system requires a similar operational footprint at the former energy center with the potential of

hundreds of megawatts as described in the closure plan. Next slide, please.

With that, in conclusion, staff is recommending that the CEC terminate its license. Thank you and we're here to answer any questions you may have.

CHAIR HOCHSCHILD: Thank you, Elizabeth.

Let's move on to public comment.

MS. GALLARDO: This is Noemi the Public Advisor. We do have a couple of people on the line for public comment for Item 3. First though I want to give a reminder to our attendees if you would like to provide public comment, please call our Verizon line, the phone number is 888-823-5065. It's also on the screen the pass code is "Business Meeting."

All right, the first person to make public comment will be Ranji George. And Ranji, I'd remind you to please restate your name in case I mispronounced it. Also spell your name and indicate your affiliation, if any. Your line is open, you may begin.

MR. GEORGE: Hello, can you hear me?

MS. GALLARDO: Yes.

MR. GEORGE: Thank you. My name is Ranji George. I am with the Coalition for Advanced ZEV, zero-emission vehicles. It's a nonprofit voluntary organization representing hopefully the public.

I personally was involved with batteries and fuel cells and natural-gas technologies at the South Coast AQMD for 25-years plus. And we helped launch both the battery era and four years later the hydrogen era in the early '90s. We were the first in the country to do that. And we appreciate ARB and CEC later on joining in those efforts.

I have, I really applaud the CEC staff and the Board members for working hard on introducing the cleanest energy possible in California. I appreciate all the progress we have made. But I just want to flag a concern about batteries. Even though I personally was very much involved in actually helping ARB adopt the 1990s ZEV regulation, it was my research that prompted a whole chain of events on advanced batteries. But thinking through the issues, we really have to look at the disposal of these large-scale batteries. It helps the solar energy, wind energy. That's great, but at some point the CEQA analysis or at some point we have to figure out where will all these batteries line up? It's a substantial increase by a magnitude or maybe two orders of magnitude of batteries coming our way.

And I want to draw your attention to a company called GNB Exide (phonetic). Now that is a great company in mind, one sense, in the sense they were recycling these lead-acid batteries from gasoline cars, one battery per

car. But then the society, the residents felt the way they were doing it was polluting the environment, they were exposed to lead and other emissions from these battery plants. And guess what, ladies and gentlemen, we'll be having 20 or more of these battery large recycling plants coming our way in the future. And those will be located precisely in these communities, like AB 617 (phonetic).

Are we planning, I mean, is there a method to dispose these batteries? I mean, to take custody of these batteries, to dispose it and recycle it back in the cleanest possible way? Could we have a ceiling, some kind of ceiling put where there's the workers are not exposed, the community is not exposed? I would like to put that in front of you as you move forward with your microgrid and other planning.

That's where we, some of us support hydrogen. I know it's a little more expensive than this, but in Europe everybody is seriously looking at hydrogen as one very good alternative without all these battery-waste pollution associated with it.

And finally, if one has to go to batteries let's go to some sustainable battery chemistry that is non-cobalt, non-toxic. And I understand later on there will be some presentation on these sustainable batteries. But I would also invite all the big players. They are all doing

something to move us away from the current cobalt batteries, which has been great. But still, it has these environmental consequences. Thank you ladies and gentlemen for letting me share our concerns.

CHAIR HOCHSCHILD: Thank you. If I could just -- thank you sir for those comments. Actually, and so this item we are entertaining public comment on the Inland Empire Energy Center. But for other public comments on general issues like that we take that usually at the end of the meeting. But your comments are well taken with respect to batteries. And there is some momentum happily away from cobalt in batteries.

Madam Public Advisor, do we have other public comments on Item 3?

MS. GALLARDO: This is Noemi, the Public Advisor. Yes, we do. The next person is Michael Carroll. And Michael, just a reminder to please restate your name, spell your name and also indicate your affiliation, if any. Your line is open, you may begin.

MR. CARROLL: Thank you. This is Michael Carroll with the law firm of Latham and Watkins. And I'm speaking on behalf of the Inland Empire Energy Center LLC, which is a wholly owned subsidiary of PE. I think staff has provided a good overview of the decommissioning process and the current status of the site, which as staff indicated is

intended to be redeveloped for battery storage. I don't really have anything further to add to that, but just wanted to thank the staff and the DCBO for overseeing the process that ran very smoothly during unexpected and sometimes trying circumstances that could have well disrupted the decommissioning process, but for the diligence of the staff and the DCBO and Inland's contractor.

I guess my only regret is that working on decommissioning the power plant that I helped permit initially is a stark reminder that I'm not getting any younger. But I'm going to choose to believe that it's just an indication of how quickly the grid in California is changing under the direction of the Energy Commission.

So with that I would ask that the Commission adopt the staff recommendation and relinquish jurisdiction over the site. Thank you very much.

CHAIR HOCHSCHILD: Thank you.

Any further public comments?

MS. GALLARDO: This is Noemi the Public Advisor. That was the last public comment on Item No. 3.

CHAIR HOCHSCHILD: Thank you. Let's move to a Commissioner discussion starting with Commissioner Douglas.

COMMISSIONER DOUGLAS: Yes, thank you. I appreciate the presentation by staff and thank the STEP

Division staff and Chief Counsel's Office for conducting the required analyses that we do to ensure that the decommissioning and closure of power plant complies with the licensing requirements.

I liked the phrase, "cradle-to-cradle" and in this case and it seemed appropriate, because here we are seeing the reuse of this industrial energy site for continued industrial energy, in this case for battery storage. And for this site will continue to help support our grid and support reliability.

And so I very much support approval of this item. And I'm prepared to move it unless there are additional Commissioner comments or questions. Seeing none, I move approval of this item.

CHAIR HOCHSCHILD: Okay, Commissioner Monahan, would you be willing to second that?

COMMISSIONER MONAHAN: I second it, I second.

CHAIR HOCHSCHILD: Thank you. All in favor, Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

Let's turn now to Item 4, Huntington Beach Energy Project.

MS. HUBER: Good morning again, Commissioners. For the record, my name is Elizabeth Huber and I am the CME Office Manager. The Lead Compliance Manager on this is Joseph Douglas that unfortunately cannot be here today, but we do have Steven Kerr and Jeanine Hinde from the STEP Division, along with our Legal Counsel Renee Webster-Hawkins.

We are here to present a request to approve petition to modify the original VIS-1 section of the facility's conditions of certification. Next slide, please.

Engaging the local community through numerous stakeholder meetings and two virtual town hall meetings, AES the project owner at Huntington Beach Energy Center reached out to the community, agreed upon an alternative visual design concept that would make use of murals to provide iconic imagery when traveling into the city. Next slide, please.

Originally the project intended to feature an architectural design using thousands of blue plastic

spheres hung on a high-tension wire mesh to create a wave. The design's engineering and construction challenges has meant that it is not meeting the goal to mitigate views as part of the conditions of certification of the project. Next slide, please.

Here is a photo of the prototype that was developed of the original blue plastic spheres' wave wall design. Next slide, please.

And here we have a photo simulation of the proposed murals by California artist, Kim West, as adopted by the City of Huntington Beach's Resolution No. 2020-81. Next slide, please.

So in conclusion staff recommends approval of the petition to modify VIS-1 conditions of certification for the Huntington Beach Energy Project. And with that thank you and I'll open up to questions.

CHAIR HOCHSCHILD: Thank you.

Any public comment on Item 4?

MS. GALLARDO: This is Noemi the Public Advisor. Yes, we do have public comment on Item 4. First, we'll start with Stephen O'Kane. Stephen, a reminder to please restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. O'KANE: Thank you, good morning. This is Stephen O'Kane with AES Huntington Beach Energy. That's S-

t-e-p-h-e-n O'K-a-n-e. Well, thank you for the opportunity to speak today. To begin, I'd just like to thank our Deputy Director Shawn Pittard, the CME Office Manager Elizabeth Huber and their staff for helping AES to navigate this petition to amend process and work through the required staff analysis and proposed changes to our conditions and certification.

And as Ms. Huber already mentioned, our Compliance Project Manager Joe Douglas was unable to be here today. And of course Joe has been an immense help for us right through the entire construction of this project as we navigate the regulatory process.

However, it really is the community in Huntington Beach the drove the art concept and this mural selection. As the members of our Siting Committee Commissioners McAllister and Douglas can attest, it's been a very long road to get to the point of nearing completion of the Huntington Beach Energy Project. And this petition and proposed order before the Commission today is the third design that we have presented for this project.

All three of the designs we've presented have really been driven by public input. And we've always been there to seek the support from the City of Huntington beach. If you remember our very first design incorporated surfboards to go with a "Surf City U.S.A." theme. That was

back in the 2013-2014 timeframe. And that had to be reimagined once we changed the technology of our plant and the configuration of the new plant wouldn't support that.

The architectural stream, the wave wall as you saw a prototype there that we had proposed for the combined cycle-power plant, that is now complete and in operations. Really, it had to be reevaluated once we truly understood the scale and complexity of that design. As you can imagine it's an entirely different perspective when you're standing in front of a fully constructed plant versus a two-dimensional desktop computer simulation.

You know, we took a look at it and saw there was risks in engineering, risks in construction, risks in maintenance. But above all there is a risk that we potentially wouldn't have -- we'd have the opposite effects of improving the aesthetics of the plant, and really just end up making it look bigger. You can imagine wrapping a power plant in thousands of plastic spheres can really increase the overall mass of it.

So we went to the community. We held numerous meetings, we met with stakeholders like Visit HB the destination marketing organization for HB, our neighbors the Huntington Beach Weapons Conservatory and the public. In that process, you know, we looked at numerous different artists and mural designs. And that process came up with

Kim West's design. And with that that's the proposal in front of you today. We'd like to proceed with that.

And with the support of both the city and our community members AES urges you to approve our proposed order today. Thank you.

MS. GALLARDO: All right. This is Noemi the Public Advisor. We have another person wanting to comment, Jeff Harris. Jeff, a reminder to please restate your name, spell your name and indicate your affiliation, if any. Your line is open and you may begin.

MR. HARRIS: Thank you. This is Jeff Harris, J-e-f-f H-A-R-R-I-S. I'm here representing AES as well with Stephen. This amendment provides essential visual quality improvement, so I'm glad today to be heard and not seen. I think that's consistent with the theme here.

Stephen has covered everything very well so I'd like to echo his comments and again thank the members of the community who were very active in this process. It's a very collaborative process and we're excited about the outcome here. So I will stop there and make myself available to answer any questions. And thank you for your time.

MS. GALLARDO: Thank you.

Chair, that was the last comment for Item Number 4.

CHAIR HOCHSCHILD: Thank you. Let's move on to Commissioner discussion, starting with Commissioner Douglas.

COMMISSIONER DOUGLAS: Absolutely. So thank you, Elizabeth, for that presentation. And thank you both to Stephen O'Kane and Jeff Harris for your comments. I remember well as does no doubt Commissioner McAllister, the surfboards and the other design changes. And appreciate you, Stephen, going through the -- and discussing with us the process that you went through with the community for envisioning what this would look like and coming up with a design that has the city's support, has community support. So I'm prepared to move approval of this item once we see if any other Commissioners would like to comment.

COMMISSIONER MCALLISTER: Yeah, I'll just step in and so -- yeah, great. So I also vividly remember. And it's great to see that multiple follow-up in the in the sort of reimagining as necessary, together with the community. That's really what the process requires to get to a satisfactory outcome.

That was originally, I think a really interesting process on the visual front and was very innovative and we all kind of went with it at the time. And I'm glad that the final conclusion has an outcome that everybody can live with. So I'm prepared to second after Commissioner Douglas

moves the item.

CHAIR HOCHSCHILD: Thank you. Commissioner Douglas can you move the item?

COMMISSIONER DOUGLAS: Yes, I move this item.

CHAIR HOCHSCHILD: Commissioner McAllister, can you second?

COMMISSIONER MCALLISTER: Yes, I'll second Item 4.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister? Commissioner McAllister you're muted, sorry. Yeah.

COMMISSIONER MCALLISTER: No, I think I said aye.

CHAIR HOCHSCHILD: I didn't get that.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And then Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously. Thank you.

Let's move on to Item 5, Gilroy Backup Generating Facility.

MR KERR: Good morning Chair, Commissioners. My name is Steve Kerr. I supervise the Siting and CEQA Review

Unit in the Environmental Office of the Siting, Transmission, and Environmental Protection Division. With me is Staff Attorney Renee Webster-Hawkins. We're here to present a proposed order appointing a committee to oversee a Small Power Plant Exemption, or SPPE, proceeding for the Gilroy Backup Generating Facility, which is associated with the proposed Gilroy Data Center in the City of Gilroy. Next slide, please.

The data center would consist of two data storage center buildings and an on-campus security building totaling approximately 438,500 square feet. The backup generating facility would consist of diesel-fired backup generators capable of providing an uninterruptible power supply of up to 96 megawatts during an emergency power outage. Pacific Gas and Electric Company is the utility which supplies grid power in this location.

The Applicant, Amazon Data Services, filed its SPPE application on December 17th, 2020, seeking an exemption from the Commission's power plant application for certification process. Staff has been informed by the Applicant that it intends to docket a revised project description and additional updated analysis associated with a change to Tier 4 backup generators. The Applicant also recently submitted owner/occupant and agency contact information, the absence of which delayed staff from

conducting standard noticing activities when the application was originally filed.

The SPPE option is only available for thermal power plants between 50 and 100 megawatts. And pursuant to Public Resources Code section 25541 the exemption can only be granted if, "no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility."

Staff is conducting an environmental review of the exemption application and will produce an environmental analysis document. Next slide, please.

In conclusion, staff recommends approval of the proposed order establishing a committee to oversee the Gilroy Backup Generating Facility SPPE proceeding.

Thank you. We'd be happy to answer any questions you may have.

CHAIR HOCHSCHILD: Thank you, Stephen.

Let's move on to public comment.

MS. GALLARDO: This is Noemi Gallardo, Public Advisor. We do have several people on the line. I'll start first though with Scott Galati, who is coming through Zoom. Scott, you may speak.

MR. GALATI: Yes, good morning. Can you hear me?

MS. GALLARDO: Yes, we can.

MR. GALATI: Thank you very much. First of all,

welcome Commissioner Gunda. Good morning members of the Commission and Chair. And Commissioner Gunda, this is my first time in front of you. I will extend to you an invite to participate in siting projects. They are unique and interesting and fun and I will try to make them entertaining. The water is fine, please jump right in. (Laughter.)

Amazon Data Services is pleased to present our application in the Small Power Plant Exemption for the Gilroy Backup Generating Facility and the associated data center. With me today on the phone line -- they can answer questions if you need them to -- John Carlton, he's the Technical Program Manager and Steve Botic who's the Regional Environmental Engineer.

I want you to know that ADS strived to design the project, so that it does not cause any significant environmental impacts. We filed the application just days before the Bay Area modified its BACT guidance, which required us to retool portions of the application and the air quality analysis, much of which has been submitted to the Energy Commission already as modified.

We look forward to working with staff in providing the data to allow them to do complete, thorough and timely analysis for the committee. And we look forward to getting started, thank you.

MS. GALLARDO: This is Noemi the Public Advisor. Thank you, Scott. So there are several people on the phone line. I am going to open up their lines just in case they do want to make a comment.

So first Steven Botic. Please restate your name, spell it and also indicate your affiliation. Steven, your line is open, you may begin.

MR. BOTIC: Hello, my name is Steve Botic, that's "B as in boy, o-t-i-c. And I'm affiliated with Amazon Data Services and appreciate the time that you are giving this, our project. Thank you.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor again. The next person is John Carlton. And John, a reminder again to please restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. CARLTON: Thank you and good morning. This is John, J-o-h-n Carlton, C-a-r-l-t-o-n. And I'm a Technical Program Manager also affiliated with Amazon Data Services. And I just wanted to say thank you for your consideration of this request.

MS. GALLARDO: Thank you.

Chair, that was the last person on the line to make public comment for Item 5.

CHAIR HOCHSCHILD: Okay, thank you. So I've

asked Commissioner Douglas to be Lead and Commissioner McAllister to be Associate Member for this committee. And I wanted to thank the staff and then members of the public for presenting.

Unless there's any Commissioner discussion I would entertain a motion to have Commissioner Douglas as the Presiding Member, Commissioner McAllister is the Associate Member of the committee to preside over this proceeding.

Any comments Commissioner Douglas you'd like to --

COMMISSIONER DOUGLAS: Yeah, just a brief comment and then I'll make the motion. I just wanted, for the record, to report that I held stock in the Applicant's company and disposed of it in January 2021. So I checked in with our Legal Counsel, there's actually no requirement that I make this disclosure, because disposing of the stock ended any financial interest I may have had in Amazon. But I wanted to make it in the interest of full transparency.

And with that I don't have any additional comments, so I'll make a motion to approve the Committee as described by the Chair, with me serving as Presiding Member and Commissioner McAllister serving as the Associate Member of the committee.

CHAIR HOCHSCHILD: Thank you.

Commissioner McAllister, would you be willing to second?

COMMISSIONER MCALLISTER: Yes, I'll second that motion.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously. Thank you everyone.

Let's turn now to Item 6, Report from Committee and Possible Additional Direction to the Committee Regarding Progress on the Application for an SPPE for the Sequoia Backup Generating Facility. Susan Cochran.

MS. COCHRAN: Good morning Chair and Commission. I'm Susan Cochran with the Chief Counsel's Office. And I am the Hearing Officer assigned to assist the committee appointed to conduct proceedings on the application for a Small Power Plant Exemption, which I'll refer to as an SPPE for the Sequoia Backup Generating Facility.

The CEC appointed a committee consisting of Commissioner Douglas as Presiding Member and Commissioner Monahan as Associate Member to conduct proceedings on the application.

By way of background this proceeding was originally before the Commission on September 9, 2020, for consideration of the committee-proposed decision that had been issued in August of 2020. The project analyzed at that time was to construct and operate 54 Tier II compliant diesel backup generators to provide an uninterruptable power supply for the Sequoia data center in Santa Clara, California.

During the September 9 Business Meeting, the Commission received comments from the California Air Resources Board, CARB, and the Bay Area Air Quality Management District, which I will refer to as "Bay Area," expressing concerns about the air quality analysis contained in the committee-proposed decision. The Commission voted at that time to remand the proceeding to the committee to obtain additional information from CARB and Bay Area about their concerns.

On November 16, 2020, the Commission affirmed its action to remand the proceeding back to the committee and added direction to the committee to provide an update at the January 2021 Business Meeting.

Prior to the January 25, 2021 Business Meeting Bay Area indicated that it had established a new guideline that would require the Sequoia project to meet Tier IV standards for its diesel backup generators. At the January 25, 2021 Business Meeting, the Commission voted to continue the remand and directed the committee to report back on its progress at the April Business Meeting unless it had filed a revised committee proposed decision. The committee has not yet filed that revised decision, and therefore this agenda item is before you today.

On January 25, 2021, the applicant filed a revised project description that included modification to the project's diesel generators to make them compliant with the Tier IV emission standards. Applicant also filed additional documents related to emissions from the new backup generators over the next several weeks.

Since January, the committee has issued a scheduling order that set milestones for the preparation of key documents, including a revised environmental review document that would analyze the changes from Tier II to Tier IV compliant diesel backup generators. The parties have generally met the filing and other deadlines in the scheduling order. In specific, staff filed a revised initial study and propose mitigated negative declaration that revised portions of its original initial study and

propose mitigated negative declaration that was the basis of the August 2020 committee-proposed decision.

On March 12, 2021, the committee held a committee conference largely for the purpose of conducting closed session deliberations on the materials that had been being filed.

On April 12, 2021, the committee issued a notice of pre-hearing conference, notice of evidentiary hearing and related orders. This notice in order sets an evidentiary hearing date of May 11, 2021, with consideration of a revised committee-proposed decision at a June Business Meeting. There are several deadlines over the next few weeks for the parties to meet in order to maintain the schedule for the May 11 pre-hearing conference and evidentiary hearing and the ultimate disposition of the proceeding.

If you have any questions I'm available to answer them.

CHAIR HOCHSCHILD: Thank you, Susan.

This is not a voting item, so we're not going to take public comment on this. However, Madam Public Advisor, did Mike Gravely want to comment on this or the previous item?

MS. GALLARDO: This is Noemi, the Public Advisor. No, it was the Item Number 2 that Mike wanted to speak on.

But I do want to let you know Chair that Scott Galati is still on if needed or if there are any questions, so Susan wanted to let you know that. And also Lisa DeCarlo from our staff is available in case there are any questions.

CHAIR HOCHSCHILD: Okay, thank you. Let's go to Commission discussion. Commissioner Douglas.

COMMISSIONER DOUGLAS: Well, just very briefly. Thank you, Susan, for that really helpful status update. I think, just on behalf of the Committee I'm looking forward to meeting the milestones that she set out and presenting a committee-proposed decision at a June Business Meeting. Thank you.

CHAIR HOCHSCHILD: Okay. Thank you. Any other comments from any of the Commissioners?

COMMISSIONER GUNDA: Chair, I would just like to echo the thanks to Susan and the Siting team on kind of the work, continued work on this particular topic. And thank you, Scott, for welcoming me to the world of -- looking forward to contributing on this. Thanks a lot.

CHAIR HOCHSCHILD: Great. Okay.

COMMISSIONER MONAHAN: Well, and I want to say one quick thing, which is that Commissioner Douglas and I are really committed to moving as quickly as possible and collecting all the information we need to make a decision that's grounded in hard evidence, so just appreciate this

has been a long process. Hearing Officer Cochran has been quite a great steward of this whole process. And we are committed to moving forward as quickly, but with the evidence and the data that we need to make a good decision.

CHAIR HOCHSCHILD: Thank you, Commissioner Monahan.

Seeing no further comments let's move on to Item 7, Zero Code Petition Submitted by the American Institute of Architects California, Peter Strait.

MR. STRAIT: Thank you, Commissioners. One moment, let me just pull up my script here. Thank you. Now, just to ask for the slides? There we go.

So good morning Chair and Commissioners. I'm Peter Strait, Supervisor of the Building Standards Office and I'm here to request that you take action to deny a petition from the American Institute of Architects California as it pertains to their Zero Code proposal. Next slide, please.

Denying this petition places the Petitioner’s request in the correct proceeding for consideration. And it allows the Energy Commission to consider the contents this proposal within the context of the planned Title 24, Part 11 or CALGreen rulemaking proceedings, so the benefits to Californians can be more thoroughly assessed. Next slide, please.

As an overview on February 2nd, 2021, the Energy Commission received a petition from the California Building Standards Commission on behalf of the American Institute of Architects California. This petition requested that the Zero Code for California be included in the state's building standards, specifically in the voluntary appendices of CALGreen.

In consultation with the Building Standards Commission and with the California Department of Housing and Community Development Energy Commission staff found the petition is complete and its subject matter is within the specific jurisdiction of the CEC as the adopting agency for energy standards for buildings.

However, pursuant to Code Sections 1-313(e) of Chapter 1, Part 1, Title 24 of the California Code of Regulations, that's the admin code that governs and specifies the ability to submit a petition, petitions are not to be used -- and this is a direct quote, I apologize – "petitions are not to be used to address matters relating to a currently proposed building standard or an adopted building standard prior to its effective date. Any concerns relating to currently proposed building standards should be brought forward during the public comment period designated for the proposed building standards." Next slide, please.

Now for this reason a staff recommends the petition be denied on the grounds that the proposal addresses matters relating to a building standard that is already scheduled for review. And in addition it has some overlap with what is occurring in Part 6 that we're about to begin.

And as a next step CEC staff will work with the Petitioner to assess the contents of the proposal in the context of the plan to CALGreen rulemaking proceeding. So to be clear this doesn't take the train off the rails it simply switches which set of rails it's on, so that the content will be put into the rulemaking process as intended.

And I am joined by a Kirk Oliver from the Chief Counsel's Office to welcome any questions you may have. And this concludes staff's presentation.

CHAIR HOCHSCHILD: Thank you, Peter.

Let's move on to public comment on Item 7.

MS. GALLARDO: This is Noemi the Public Advisor. We do have someone on the line. We'll start with Michael Malinowski. Michael, a reminder to please restate your name, spell it and indicate your affiliation, if any. Your line is open, you may begin.

MR. MALINOWSKI: Thank you, and thank you Commissioners for allowing me to speak on this matter. My

name is Michael Malinowski, M-a-l-i-n-o-w-s-k-i, speaking today on behalf of the 11,000 design professional members of AIA California, who are the architects of our built environment.

It's startling to consider how much has changed since we submitted our petition to bring the Zero Code to California, in October of 2019. That was only 90 days after Berkeley's Electrification Reach Code made headlines around the world. And not long after our Board of Directors voted to endorse the Zero Code, which had been developed by the nonprofit organization Architecture 2030, led by Charles Eley who collaborated with CEC staff and other experts around the country to quantify what does it mean to create a zero-carbon building.

Today there are nearly 2,000 governments that have declared a climate emergency around the world. And in California 42 cities have adopted individually-crafted climate action reach codes, with many more in the pipeline.

In the 18 months since our petition was submitted the Zero Code for California has also changed. It was originally modeled after the National Zero Code, which has actually been adopted into the 2021 International Energy Conservation Code. The current version of the Zero Code, which we're promoting reflects the actual landscape of adopted reach codes in California, with a focus on

electrification, energy conservation and on-site solar where it's feasible. It reflects nationally recognized principles for net-zero energy performance in buildings.

In the last 18 months we've all seen the world become smaller and more fragile. Many of the principal drivers of our original petition request are now part of the broad conversations and bold actions being taken by you and your staff, world leaders in moving the needle toward more focused initiatives. And it's really breathtaking that the initiatives of the CEC, the breadth they span from buildings to transportation, industry and science.

As an organization the AIA California, is looking forward to continuing collaboration with the CEC dedicated and talented staff, ensuring that the next version of CALGreen is relevant, and forward-looking incorporating zero-carbon building design principles.

Thank you. And I'm happy to answer any questions also.

MS. GALLARDO: Thank you.

This is Noemi the Public Advisor. Chair, that was the final comment on Item Number 7.

CHAIR HOCHSCHILD: Okay, thank you. Let's move to Commissioner discussion, starting with Commissioner McAllister.

COMMISSIONER MCALLISTER: Great. First of all I

want to thank Michael Malinowski for your diligence and just persistence and really shepherding this conversation and acknowledge really broadly the AIA. As obviously interacted quite a lot with the AIA over the years and spoken at conferences. And just always am incredibly impressed with the level of commitment and passion and diligence and knowledge and the professionalism of all your membership, so thank you for representing them so well.

And also Charles Eley and Ed Mazrea and just the whole thought leadership that went into this process originally. I remember back, it must have been in 2017 maybe, when with Ken Alex we started conversing about this possibility. And as Mr. Malinowski said he has the goal post has just been shifting all over the place, as really innovation sprouts, and these innovative flowers sprout all over the globe in terms of how we can build better buildings and lower-carbon buildings. And so the evolution of this proposal, I think, reflects that as you said. And so we're finding our way to find a proper process for this. And also shadowboxing a little bit with actually the Part 6 mandatory proposals, which have also come, as you said, a long way in that same time.

I will also want to acknowledge Peter. Thank you for that great presentation, and Will Vincent and Kirk and the whole team for evaluating this proposal and keeping

those lines of communication open with the zero-code group and advocates.

So I really again just want to acknowledge the work that went into this effort by Architecture 2030 and the AIA California, really, to craft a building standard template designed to help in our collective enterprise to move California in the direction of a clean energy future. Of course we're all firmly on board with that goal. So it's worth repeating what Peter said, so the denial of AIA's petition is a formality in moving consideration of the proposed amendments into the rulemaking process. It's not a commentary on the content. And should not be taken to mean that we will not give its content the same review and consideration as any other code change proposal. So we're all about lifting the hood and examining it together with the advocates.

This is why this determination is paired here with direction to staff to bring consideration of this material into rulemaking process, so we're just switching tracks as Peter said.

So we want to be upfront that the proposal does have a few areas of concern that we need to unpack. And so staff has been following revisions of the proposal and has been working with the Building Standards Commission and HCD (phonetic) as its contents have been refined. And there

are areas of overlap between the proposal and the provisions in Part 6, most notably in relation to community solar and other proposed options for offsite solar including recs.

And so the process going forward needs to ensure that the options provided by any proposed model language in Part 11 need to fit the shape of the underlying mandatory requirement in Part 6, right? These two things are very related, the Part 6 and part 11. So we need to unpack some issues and determine what elements would appropriately fit in the building codes in either part and certainly coordinate between the two parts.

So we absolutely are committed to continue working with the AIA to find creative ways, creative alternatives. for buildings to reduce their carbon footprint and deploy more renewable technology. Our goals are definitely aligned on these topics. And there's some great ideas here about pushing buildings toward having lower impact on climate and the environment. And absolutely there's a hunger by local jurisdictions for a template that they can use to influence their own built environment and new construction and alterations.

So and I'll just point out of the 44 local ordinances actually it's even since we're not now 44, we're now 42, which represent almost a third of the state

population that had been heard under this code cycle, that 40 of them require either all-electric or electric-preferred construction. Worth pointing out that both approaches do contain exceptions. And 24 of those ordinances require additional solar. So this gives us some idea of the direction California themselves are taking, and would like to take and reach those local and state, to meet local and state clean energy goals.

So we're looking at scheduling and determining what we can do in this rulemaking and what we can do in the next intervening cycle rulemaking. And based on the schedule, as we move forward, we want to ensure that we're doing so with AIA and with the input and collaboration of its membership.

So, supportive of this conversation absolutely. And I know that staff will be holding hands and working with you at every step of the way. And I will be overseeing this with a lot of interest and, fully. awareness of the context that we are in. Which, as you said Mr. Malinowski, is a climate emergency. And at the state level we all know that. And the agencies are looking for every way under every rock for ways to reduce carbon in our built environment.

So anyway, thanks for bringing this proposal to us. And I want to also express appreciation to the

Building Standards Commission and HCD for sort of helping develop the situational awareness, pushing it over our submission so that we can properly give it the look and consideration that it deserves.

So with that I'll ask if any of my colleagues have any questions or comments.

CHAIR HOCHSCHILD: Any further comments?

Okay, seeing none, Commissioner McAllister would you be willing to move the item?

COMMISSIONER MCALLISTER: I will, I'll move Item 7.

CHAIR HOCHSCHILD: Commissioner Gunda, would you be willing to second Item 7?

COMMISSIONER GUNDA: I would like to second that item.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That

item passes unanimously.

Let's move on to Item 8, Requiring ATT Certification for Mechanical Acceptance Testing, Joe Loyer.

MR. LOYER: Hello Chair and Commissioners. I am Joe Loyer, Senior Mechanical Engineer with the Standards Compliance Office. I am here to seek approval to make the requirement for mechanical acceptance test technician certification mandatory across the state. Next slide, please.

Every day new mechanical equipment is installed in nonresidential buildings across California. This equipment must be installed according to design requirements and in compliance with the Energy Code for building owners and tenants to realize the promised energy savings, cost savings, as well as their indoor air quality and comfort. Additionally, properly functioning equipment will reduce greenhouse gas emissions, which will help the state of California to meet its climate goals that benefit all Californians.

This will also help improve the consumer trust and reputation of newer energy-saving technologies. Technicians that are trained to provide the required acceptance tests properly will help to ensure that these mechanical systems are installed correctly and to code, allowing California building owners and tenants to realize

these promised benefits. Next slide, please.

Acceptance testing is the verification of installed equipment in nonresidential buildings. The Energy Code requires an acceptance test certification program for both lighting controls and mechanical systems. The mandatory requirements for the program are triggered when specific thresholds are deemed met by the Energy Commission. Until the mandatory requirements are triggered the acceptance testing certification is voluntary. Acceptance testing certification for lighting controls has been mandatory since 2014. There are two providers.

For mechanical systems, today we present evidence that the mechanical system program conditions have been satisfied and seek Commission approval for the mechanical system acceptance test certification program to be mandatory across the state. There are four providers that I'll elaborate about when discussing these, the findings. Next slide, please.

Two mechanical system acceptance test triggers must be satisfied before mandatory certification can occur. First, there must be a minimum of 300 certified technicians statewide. Second, eligible professionals must have reasonable access to the training to become a certified technician. Staff has found that there are more than 350 certified technicians capable of performing the required

acceptance tests. And there are currently four CEC-approved mechanical systems acceptance test providers who train, certify, and provide oversight for technicians and employers.

Two of these providers are associated with trade unions and two are not. Between the four providers all eligible professions have access to training. The providers are the California State Pipe Trades Council, CSPTC, the National Energy Management Institute Committee, NEMIC; the National Environmental Balancing Bureau, NEBB; and Refrigeration Service Engineers Society, RSES. Next slide please.

Staff proposes three recommendations for the Energy Commission today. Make the requisite finding pursuant to Title 24, Part 1, Section 10-103.2 that the mandatory mechanical systems technician certification requirements have been met.

Second, encourage local enforcement of the requirements be delayed until October 1, 2021, to allow time for training and implementation.

And finally, direct staff to implement an intensive outreach and education plan to ensure building departments, the building industry, and other stakeholders are familiar with the mandatory certification program and its application.

With that I am available for any questions you may have. I am joined by Matthew Chalmers from the Chief Counsel's Office. Thank you for your time.

CHAIR HOCHSCHILD: Thank you. Any public comment on Item 8?

MS. GALLARDO: This is Noemi, the Public Advisor. We do have someone on the line. We're going to start with Bill Brown. Bill, a reminder to spell your name, restate your name, spell your name and also indicate your affiliation if any. Your line is open, you may begin.

MR. BROWN: Yes. My name is Bill Brown, B-i-l-l B-r-o-w-n. My affiliation is with Brownson Technical School, which we contract for doing the hands-on evaluation and testing for both NEBB and RSES.

And I just want to take a couple of seconds to encourage the Commission to adopt this. This has been a long time coming, and I think it's a very necessary step that California needs to take in order to really get the energy efficiency of HVAC systems, for non-residential anyway, under control. I think it's a very, very good idea. And I certainly encourage you to accept this. Thank you. That's all I have to say.

MR. HOCHSCHILD: Thank you. Any further comment?

MS. GALLARDO: This is Noemi the Public Advisor. That was the last comment on Item Number 8.

MR. HOCHSCHILD: Okay let's move to Commissioner discussion, Commission McAllister.

COMMISSIONER MCALLISTER: Yeah, thanks, Chair. And thank you, Joe, for that presentation and really for your shepherding this over the years. I'm sort of also looking at Commissioner Douglas here, because we both remember the origin of the ATCP programs on the lighting and the mechanical side. And the lighting, I think, was a little bit more straightforward. And the mechanical has taken a few years longer than the lighting, and I think for good reason. The mechanical contractors -- today's HVAC systems, non-residential HVAC systems are complex. And they're digital and they require a lot of training. And obviously we live in a big state with far-flung projects.

And so the requirement of this to have enough technicians to go out and evaluate, mandatorily go out and evaluate all the new construction, all the new HVAC systems that are getting put in -- even if it's in relatively remote places in the state -- and making sure that the technical capacity and the number of certified technicians are plentiful enough to do that and it's sort of (indiscernible) enough to do that, is a big deal.

So staff has determined that there are enough technicians. And there's a plan in place to get to the final sort of ready for prime time, which is why we've

built in a little bit of time in this proposal to make the mandatory requirements (indiscernible). And so there's a little bit of time to polish things up and then start running when the rubber hits the road.

So anyway I'm grateful to all the stakeholders for their input and diligence and patience. And both up to now and going forward, actually, in cleaning up and making sure that our technicians are fully up to speed when the mandatory requirement kicks in. So I'm fully supportive of this action.

CHAIR HOCHSCHILD: Thank you, Commissioner. Unless there is further Commissioner comments on this I'd entertain a motion for Item 8 from Commissioner McAllister.

COMMISSIONER MCALLISTER: I will move Item 8.

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

COMMISSIONER DOUGLAS: Yes, second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

Commissioner Monahan, I didn't hear.

COMMISSIONER MONAHAN: Oh, that's interesting. Aye, (indiscernible).

CHAIR HOCHSCHILD: Thank you. And I vote aye as well. That item passes unanimously.

Item 9 was removed from the agenda, so let's move on to Item 10. What I suggest we do is get through this item and then break for lunch and plan to reconvene at 1:00. So let's go ahead with Item 10, Eric Stokes.

MR. STOKES: Sure, so good afternoon Chair and Commissioners. My name is Erik Stokes with the Energy Research and Development Division. I'm seeking Commission approval today for the 2020 EPIC Annual Report.

First off I'd like to provide some highlights from our 2020 annual report. Next slide, please.

So the first slide shows the investment areas for how we've organized our EPIC funding. This slide gives a window into where we've kind of prioritized our EPIC investments. One of the things we do in our annual reports each year is feature a project or multiple projects that fall under each of these investment areas. I'll just note that a lot of EPIC projects hit on multiple investment areas. Just as an example, while it's not reflected in our low-carbon transportation funding number, our entrepreneurial ecosystem, for example, has done a lot of

work to support transportation electrification including supporting the development and manufacturing of next-generation EV batteries in California. Next slide, please.

Over the past couple of years we've developed a set of program-level metrics to evaluate the success of the program. The full list of these metrics is included in the annual report, but I wanted to highlight a couple of the more significant ones. The EPIC framework is structured around this concept of an innovation pipeline. And kind of within this pipeline is what we call, "valleys of death," where the private sector isn't willing to invest in these technologies at those various stages. So one of the things we try to do with EPIC funds is target funding towards those valleys of death.

So one of the really critical metrics we use to assess our administration of EPIC is how much private sector investment companies have attracted after initial EPIC support. As you can see on the slide EPIC companies have attracted over $3.5 billion in follow-on private investment. And this number doesn't tell the full picture, because the commercialization pathway for a lot of these start-up companies is through mergers and acquisitions of which we've had several in the EPIC program. And typically these dollar figures aren't reported in those deals. So our numbers are probably considerably higher than the $3.5

billion.

The second metric I'd like to highlight is around equity. It's a priority for all our clean energy programs, including EPIC. AB 523 set a requirement that 35 percent of our demonstration deployment funds go to projects located in and benefiting under-resourced communities. For our cumulative EPIC investments through 2020 we've almost doubled what the statute requires. And we know there is a lot more work to do around equity, but it does provide an indication of how we've prioritized equity in EPIC. Next slide, please.

This next slide shows some of the more tangible benefits of our investments. Over the past year we worked with a consultant to develop more sophisticated tools to measure the benefits of our EPIC investments. As part of this effort the consultant conducted an independent assessment of a portion of our EPIC portfolio, mostly focusing on 19 EPIC technologies in the energy efficiency space and using kind of a fairly conservative estimate and market adoption. What they found was that these 19 technologies have the potential to save $18.6 billion. And then when we take that further looking at what the health benefits are it becomes even greater via the benefits to California in the range in the range of $85 to $191 billion, just from these 19 technologies alone. Next slide

please.

In addition to kind of the more program highlights I also wanted highlight some of projects in this year's annual report. The first comes from our Entrepreneurial Ecosystem. So this company NeoCharge is addressing a pain point for many California households who are considering electric vehicles, is what do you do when you have in clothes dryer in the garage already taking up the 240-volt outlet? Or maybe you already have one electric vehicle and you are looking to add a second electric vehicle. So NeoCharge has developed a Smart Splitter for the 240-volt outlet. And this helps to avoid a lot of the costs to install an EV charger, including what can be some pretty expensive electrical work.

In addition, the charger's intelligence ensures that both the EV and whatever that second device are, aren't drawing electricity at the same time. And they're also working to develop DR-enabling capabilities so that both loads can be responsive to what is happening on the grid. Next slide, please.

So the next project I'd like to highlight is Caban Systems, which was part of our first RAMP cohort. So Caban is developing a battery storage solution to keep telecom towers up and running when power to the larger grid is lost. One of the key value propositions of Caban's

solution is that it can withstand harsh environments including high temperatures. So when Caban first started this project they were able to manufacture about one unit per month even though they probably have quite a bit of demand for their solution. So with the assistance of our RAMP program they are now able to manufacture one unit a day and they are even pushing beyond that in terms of their production capacity. Next slide, please.

So our next project is with the Rocky Mountain Institute which is demonstrating a new technology to improve the effectiveness of the building envelope, particularly for multi-family buildings. Conventional approaches to improving the building envelope are a lot of times labor-intensive. They are also disruptive to the residents. And it's tough on the contractor in having to get access to all the units in the multifamily dwelling, which can be a pretty long-time frame. So what Rocky Mountain is demonstrating is this prefabricated panel that can be installed over the exterior of the building. In kind of using this panelized approach contractors can reduce the amount of time to retrofit a multi-family building from over three weeks to less than one week. Next slide, please.

So the next technology I want to highlight was one that was built by SRI International that can improve

the cost-competitiveness of lithium recovery from geothermal brine. As I am sure you are all aware the Salton Sea is sitting on a very large lithium depository. In fact, large enough to produce over 11 million EV batteries in each year. The SRI technology aims to bring down the capital costs of lithium recovery from geothermal brine by a factor of six, which would make it cost-competitive with the more conventional lithium recovery processes such as evaporation ponds.

Following this project, SRI licensed the technology to a company called ExSorbtion, which then received another EPIC award to further scale up and commercialize the technology. Next slide, please.

So the next EPIC project I'd like to highlight comes from our industrial space and this is Terzo Power, which has reimagined the hydraulic pump. Hydraulic pumps are used widely across the industrial sector. So Terzo has developed a hydraulic pump that uses a highly efficient liquid-cooled permanent magnetic motor. And what this has allowed them to do is not only significantly improve the efficiency of the hydraulic pump, but also downscale the physical footprint of the pump which you can see in the picture. And this will really help kind of improve the value proposition, it will increase adoption of their more energy efficient solution. Okay, next slide, please.

So the last project that I would like to highlight is Nuvve. So they have developed an energy management system that can enable vehicle-grid integration, including vehicle-to-grid applications. So Nuvve is demonstrating this project at the UC San Diego microgrid. And using a fleer of electric vehicles they were able to participate in demand-response options last summer to alleviate grid stress through the heat wave. And they were one of several EPIC projects that supported the state's reliability challenges last year by being able to drop load.

Nuvve was the recipient of two of our awards at our EPIC symposium last year. And we have in the slide that to date that through 2020 they had received $18 million in private-sector investment. More recently in February of 2021 they were able to secure an additional $62 million in private investment, so a good sign that they are on their way towards really being able to scale up this technology and being able to have EVs provide a resource to the grid. Next slide, please.

So this slide shows some of the up-and-coming funding opportunities that we have planned in EPIC in 2021, it's a little bit of a look ahead. Several of these you'll hear about today, including some of the promising technologies that we recommended for funding from our

bridge grant programs.

We also have the map. It just kind of shows the geographic distribution of our projects. And as you can tell we've done a good job of really trying to make sure that EPIC supports the entire geography of the state of California. Next slide.

And with that I'm happy to answer any questions.

CHAIR HOCHSCHILD: Thank you so much, Eric. I do have some comments, but let's first go to public comment. Madam Public Advisor?

MS. GALLARDO: Yes, this is Noemi the Public Advisor. There are no public comments on Item Number 10.

CHAIR HOCHSCHILD: Thank you.

Well, Eric, first of all let me just thank you personally. I really appreciate your diligence and professionalism and attention to detail during the years we've worked together. I'm just blown away yet again. I feel like a kid in a candy store looking at this suite of projects and the whole EPIC team. This is the crown jewel of the Energy Commission.

I wanted to share that I love all these projects. I love the philosophy behind it. In my experience I came to the Commission out of the solar industry in Silicon Valley. And there was something of a contest, I would say, in innovation between what you might call revolutionary

innovation of moonshot deals and then what I would call evolutionary innovation. And I saw a lot of money go to the moonshot stuff. And actually, fairly few of those actually worked. And in the solar industry there was nanosolar and a bunch of these other technologies with chemistries that didn't really happen.

What actually happened in the solar industry is we had evolutionary innovation. Every year things got a little bit higher efficiency. And crystalline silicon ended up just coming down, down, down in costs. And you had actually a revolutionary result, but with this sort of evolutionary focus. So it can be kind of like Neo you just highlighted there. That one innovation to make it easy for somebody who's getting an electric car to not have to upgrade their panel and go to a 200-amp panel or higher. because they can save money with a little splitter like that. You might not say that's a revolutionary thing, but it's very significant, because many times the barrier to adoption is that additional capital cost you have to spend to upgrade your home's electric panel.

So I just saw that kind of throughout this portfolio of projects and just incredibly proud of the whole team, of you Eric in particular, and all the hard work. I really feel great about this portfolio. I think it was this kind of thinking that really helped win the 10-

year approval from the PUC to continue this program. We are on a roll here, so I just really wanted to pause and congratulate you on this report and all the work.

And with that let me open it up to comments from my colleagues. Would anyone like to chime in?

COMMISSIONER GUNDA: Yeah, Chair. I'm guessing Commissioner McAllister -- oh, Commissioner Monahan also raised her hand up. I'll go next to that.

CHAIR HOCHSCHILD: No, go ahead. Go ahead.

COMMISSIONER MONAHAN: No, you go.

CHAIR HOCHSCHILD: Yeah, go ahead.

COMMISSIONER GUNDA: Yeah. Chair, I just wanted to note kind of your incredible leadership in making the Energy Commission kind of a vehicle for clean energy funding for the state. And I think we are really doing some incredible work, through (indiscernible) transportation, through EPIC as well as some of the funding that we're doing through 1477 on the building side. I think the kind of amount of work that's CEC is doing in this space is incredible.

Specific to EPIC, I just want to thank Laurie's team and her vision and the entire village it takes to get things done. I know it's not always easy to conceive of a vision and then deliver holistically, so I just want to congratulate Laurie and her team. And specifically, as you

called out, Eric as well for his leadership in really being strategic and thinking through these elements in a holistic fashion. I also want to thank Eric's team over the last -- the R&D team as a whole over the last couple of months since I started, providing briefings and important aspects in helping me understand the opportunity for investments and the larger public benefit for a lot of work we do.

So congratulations and thank you for that report out, Eric.

MR. STOKES: Yeah, thank you.

CHAIR HOCHSCHILD: Commissioner Monahan.

COMMISSIONER MONAHAN: Well, I heartily agree with Commissioner Gunda's comments. And just think that Laurie and Eric and the team have done a great job of articulating benefits. And I, actually, as I was reading through the report last night it really struck me as we're trying to support the Governor's budget request for reauthorization of the Clean Transportation Program. There's just a lot of great lessons learned about how to communicate impact. And I want to reach out to Eric and Laurie to learn more about the consultants that they hired to do that, because I think there's just great lessons learned for the Clean Transportation Program too. And just being able to lay out a narrative and a story about how impactful our investments are and can be.

CHAIR HOCHSCHILD: Thank you.

Commissioner Douglas. (Overlapping colloquy.) Oh sorry, go ahead.

COMMISSIONER MCALLISTER: Okay, okay. So yeah wholeheartedly agree with all the comments today and certainly echo appreciation to you, Chair, for your leadership on this. And then since I have stepped up to be the Associate on EPIC I've also been getting regular briefings sort of in doses because it's so content-heavy from each office across the Division. And I obviously have been aware of the buildings-related research and some of the analytical projects that the EPIC team, well just the R&D Division has been doing over the last few years, so was clearly very impressed with that.

But I think the appreciation of the system that they've got in place to detect innovative ideas, flesh them out, get a bucket, organize themes and do funding opportunities it's just incredible how rigorous and how complete I think they are in their consideration. I've always felt like I'll throw out a bunch of ideas about uncertainties that we have on the buildings or in any given sector. And they will latch onto it and they'll suss it out and figure out okay what's the actual topic? How do we craft a program opportunity notice about it? And get some funding out there to really see what's what. And I've

always felt that they've really taken ideas and run with them in a really positive way.

And I would just point out now I'm seeing that across the Commission from all the teams that have been putting work in. And so it's incredibly gratifying the level of talent in that division, the Research and Development Division, is just staggering.

And it is a great place that we bring in new talent from outside, young folks who want to get in this early in their careers into this sphere. And they learn about a topic from a firehose and they just blossom. And so it's really gratifying to see that.

Lastly I'll just point out that the EPIC program, all the R&D we do, positions us well for the federal conversation that's happening now, to align with federal policy in California is really locked in with where the feds want to go. And so I think as they work through this infrastructure conversation and figure out what pipeline they can use to really push innovation in very concrete ways, we are a great recipient and a great target for those funds. And I think because they know we can move markets, they know that we innovate well, they know that we do it quickly, and learn, and we make mistakes and we learn from those mistakes and then we have successes. And so I just think the various divisions that we have are a huge

leadership of key innovation and (indiscernible).

So I really want to express appreciation to Laurie and the whole team, Virginia for sure, and just everyone over there and keeps things moving forward. So thank you.

CHAIR HOCHSCHILD: Well, well said.

Commissioner Douglas?

COMMISSIONER DOUGLAS: Yeah, I just wanted to briefly add on to the thanks and appreciation to Laurie and her team on EPIC. This was a great presentation. And Chair Hochschild, your leadership on EPIC is also just super-valuable, because as Commissioner McAllister just said we build so much expertise we are moving markets. We're moving technologies, we're moving markets, we're bringing technology to commercialization that California needs, that the country and the world needs as we move to meet our climate goals. And foster resiliency and reliability and find better ways of doing this, better technologies, better approaches.

And so I always love hearing this presentation. I appreciate the work the EPIC team does. And I really love having this wonderful group of highly skilled and savvy people who know where the cutting edge of the technology is and have a good sense of where it's going. And their insights are valuable to me just across the

board, and connect to work that I do that may not be terribly related to research at all. And yet it's always important to be able to ask the question well where is this going? What do we see as we look forward? And so their perspectives there are great.

I've really appreciated the effort the EPIC team has put into ensuring that the clean energy research that we fund includes and benefits all Californians. And their focus on disadvantaged and underserved communities, their focus on tribal communities. I've really appreciated and seen the move they've made to really do a good job in that area, and so thank them for that as well. Thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner. And just two final thoughts. One, I just again wanted to commend Laurie and the whole team for doing such a good job on these under-resourced communities. The fact we're doing 68 percent of our demonstration projects is phenomenal. And that does not happen without intention. And I think it's unprecedented, actually, to be focused in the way that we are. And we've got to keep going. It's the right thing to do and I think it's a model for the country. And I just really wanted to call that out in particular.

And then, secondly, with the innovation space we have to at some level be comfortable with failure, because there's any time you're taking a risk, putting out funding

into these spaces, not every company is going to succeed. And I think we're all comfortable with that. That's what's necessary. Not every seed you put in the garden bed is going to flower, but we got to make the smartest investments that we can. I feel really good about this strategy. And we're comfortable with that risk and we're going to keep going, so commitment is there to continue pushing this as vigorously as we can. And getting this money out right now I think is a particularly important time on many levels. So thank you to the whole team, and congratulations.

Do we need to vote this out, the report? I guess we do, yes?

MR. STOKES: I believe so, Chair.

CHAIR HOCHSCHILD: Okay, so let's go ahead and do that. Commissioner McAllister, would you be willing to make the motion?

COMMISSIONER MCALLISTER: Absolutely. I'll move Item 10.

CHAIR HOCHSCHILD: Okay. Commissioner Douglas, would you second? Commissioner Douglas?

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: Okay, thank you. All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 10 passes unanimously.

Let's take a break for lunch and reconvene at one o'clock.

(Off the Record at 12:02 p.m.)

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

CHAIR HOCHSCHILD: Are we live yet?

MS. GALLARDO: Yes, we are live.

CHAIR HOCHSCHILD: Okay. Thank you, Noemi. Welcome back everybody. Let's get back to the agenda. We'll move on to Item 11, Electric Vehicle Ready Communities Phase II-Blueprint Implementation.

MR. CORRIGAN: All right. Good morning, Commissioners. I'm Kyle Corrigan and I'm staff in the Advanced Vehicle Infrastructure Office. Today staff is seeking the approval of two agreements awarded under the Electric Vehicle Ready Communities Phase II-Blueprint solicitation.

The purpose of this solicitation was to fund projects developed and identified in Phase I. Phase I advanced and supported communities in building a framework for their transition to zero-emission vehicles. This second phase will be implementing those frameworks. Funding is provided through the Clean Transportation Program. This solicitation provides $7.5 million in funding to four proposed agreements. The first two proposed agreements went to the last month's Business Meeting. And those agreements were Contra Costa Transportation Authority and the City of Sacramento. Next slide.

The benefits to California are to improve accessibility to charging infrastructure by accelerating towards California's zero-emission vehicle infrastructure goals. This will also reduce the barriers to zero-emission vehicles in Kern and Ventura Counties. The EV workforce training component in both agreements will support green job creation and accessibility to those jobs in disadvantaged communities. Next slide.

One of the proposed agreements we have on the agenda today is the Ventura County Regional Energy Alliance agreement. The goals of this agreement are to accelerate and support the deployment of electrified transportation and charging infrastructure; establish an EV coach program

to extend EV awareness, outreach, and education; provide reliable and clean electric mobility services through electric vanpool and paratransit services, all while transitioning motor pools to electric fleets. Ventura County Regional Energy Alliance will also support workforce engagement and training within the Ventura County Community College District as well as other schools in their area. Next slide.

Our next proposed agreement is the Kern Council of Governments agreement. The objectives of this agreement are for Kern COG to administer an effective and timely program to install electric-vehicle charging equipment and allow Bakersfield College to expand their curriculum and install equipment for hands-on training. Kern COG will conduct outreach through their TRANSITions Annual Transit Symposium and other EV outreach and marketing campaigns. The site host communities will have an impact on EV adoption and support electrified transportation options. And you can see all the site hosts by the seals of the cities that are involved in the agreement. All right, and next slide.

Staff recommend approval of both the Ventura County Regional Energy Alliance agreement for $2.5 million and the Kern Council of Governments agreement for $700,515. Staff also recommends the adoption of staff's determination

that these projects are exempt from CEQA.

I would like to thank you for your time and consideration with these items. I am available for any questions you may have about these agreements. Thank you so much.

CHAIR HOCHSCHILD: Thank you, Kyle.

Let's move on to public comment. Any public comments?

MS. GALLARDO: This is Noemi Gallardo the Public Advisor. Yes, we do have someone on the line. First let me remind the audience, attendees if you would like to make a public comment, please call our Verizon line at 888-823-5065. Pass code is "Business Meeting." Please tell the operator your name, affiliation and item number you'd like to speak to. This information is also on the screen on the slide that's currently being shown.

So our first commenter is Linda Urata. Linda, please restate your name, spell it and indicate your affiliation, if any. Your line is open, you may begin. (Silence on the line.) Linda your line is open, you may begin. Linda Urata, are you on the line, from Kern Council of Governments. All right, it looks like we might be having trouble with her line, or Linda is not hearing us.

CHAIR HOCHSCHILD: Okay. If we don't have any further comment let's move to Commissioner discussion, and

we can come back to her if she's able to reconnect. So Commissioner Monahan?

COMMISSIONER MONAHAN: Yes, thanks Chair. And thanks Kyle and to the whole team in the Advanced Vehicle Infrastructure Office for this. So as Kyle noted last month we approved blueprint implementation for Sacramento and Contra Costa. And this is now we're moving to the southern part of the state.

And a key component of the approved implementation blueprints is focused on increasing access, expanding beyond people who live in single-family homes to people who live in apartment buildings and need to charge their vehicles and get access, or even understand what an electric vehicle is. So I also really appreciate the workforce training components of these blueprints.

And again as I said last month, I mean, this is what we're hearing loud and clear from the different entities, advisory group and other stakeholders that we need to engage communities in the planning process for electric vehicles and then support them as they implement their blueprint. So I'm very excited to support this series of grants.

CHAIR HOCHSCHILD: Great.

Any other Commissioner comment on this item? Seeing none unless we have the woman who was trying to

connect let's --

MS. GALLARDO: Chair?

CHAIR HOCHSCHILD: Yes?

MS. GALLARDO: This is Noemi the Public Advisor. Let's try again. And we do have one other person wishing to speak. So we'll first try again with Linda Urata. Linda, your line is open if you could begin speaking.

MS. URATA: Hi, can you hear me now?

CHAIR HOCHSCHILD: Yes, we can hear you, go ahead.

MS. GALLARDO: Yes, we do.

MS. URATA: Okay, good. I see nodding. My name is Linda Urata, that's U-r-a-t-a. And I'm with the Kern Council of Governments. And I wanted to thank the Commission staff and the Commissioners for this award on behalf of KERN COGs member agencies and Bakersfield College and the Kern community college district. And we're excited for this opportunity to expand zero-emission transportation and local workforce development in Kern County, especially in our disadvantaged communities. We appreciate this opportunity, and thank you.

CHAIR HOCHSCHILD: Thank you, Linda.

MS. GALLARDO: All right, this is Noemi, the Public Advisor. The next speaker is Ranji George. And Ranji, a reminder to please restate your name, spell it and

indicate your affiliation, if any. Your line is open, you may begin.

MR. GEORGE: Hello, can you hear me?

CHAIR HOCHSCHILD: Yes, we do.

MS. GALLARDO: Yes, we can.

MR. GEORGE: Thank you. My name is Ranji, R-a-n-j like in Japan, j-i, George like in George Bush, last name. I am with the Coalition for Advanced ZEV, and that's a voluntary nonprofit group advancing sustainable zero-emission technologies.

I just wanted to thank staff and the Board for supporting clean technologies and EV technologies for the last 10, 20 years now and even further than that. Thank you for that.

I just have a comment on the staff proposal. I appreciate the money for EVs going to the communities. But I wish the Board would treat hydrogen fuel cells and batteries on equal footing, 50-50 percent. If any funding is going for a broad category called EV or zero-emission technologies, it should be fairly distributed. That funding should be split to begin with, before awards, into two. And then make a judgment on awarding it.

For example, hydrogen fuel cell technology, we started it at the AQMD South Coast '90, mid-90s. And it took off and we helped California Air Resources Board form

the California Fuel Cell Partnership. And we had hired a company called BKI, "Bevilacqua-Knight (indiscernible). And they got input from us and we had projected hundreds of hydrogen stations by 2015. We are still 10 years and we're struggling to put 200 hydrogen stations. As a result, it lowers the enthusiasm big auto had for hydrogen fuel cells, fizzled out momentum. And only Toyota and Honda and Hyundai are there. Toyota got so frustrated I heard they went to China, and they are building a big infrastructure there for hydrogen fuel, so China embraced Toyota.

And I urge you, ladies and gentlemen, every time you put in some funding please put the equal amount of funding for hydrogen, including that $15 million for heavy-duty trucks. Is it possible to split it 25/25? That way we can accelerate both technologies.

When I was working in South Coast under Dr. Alan Lloyd he was very fair to all three technologies: natural gas, batteries and hydrogen fuel cells. And under his leadership all three actually did so well. But since then, since his departure in late 90s, there was a big push for natural gas technologies under the billion-dollar funds of Carl Moyer (indiscernible). If you total that up in the last 20 years it was billions of dollars going to a few entities. But in the process the batteries and hydrogen fuel cell lost out, particularly the hydrogen fuel cells.

So I urge you to bring back the light-duty sector in hydrogen fuel cells and heavy-duty sector by fairly apportioning these ones. So again, thank you for all your great efforts, and appreciate to share my concerns. Thank you.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. Chair, that was the last comment on item 11.

CHAIR HOCHSCHILD: Okay. Thank you. Let's go to Commissioner discussion, Commissioner Monahan.

COMMISSIONER MONAHAN: Well, I already did. So I support these (indiscernible). Yeah, I gave my comments before the public comment.

CHAIR HOCHSCHILD: Okay. I wasn't sure if you wanted to respond anything else that was raised on that, but fine.

COMMISSIONER MONAHAN: Well, I just want -- I mean, one comment about hydrogen fuel cells. I mean we in the State of California have supported hydrogen fuel cells for a long time and plan to. I see a really important role for them, especially in the medium and heavy-duty side sector. And we're looking at this not just with a lens in California, but also globally, what's happening globally. And it's clear that what's happening globally is that batteries are ahead of fuel cells in terms of the cost

curve, they are cheaper. That doesn't mean we should stop investing in fuel cells. And we just need to be strategic and part of a, I think, recognize that this is important that we have momentum globally.

And we are soon going to be announcing a MOU actually with Zhangjiakou the lead city in China on hydrogen fuel cells and zero-carbon hydrogen, to work with them. So I just want to say we continue to look at this from a global context and really support and transition to ZEV. That includes both hydrogen fuel cells and battery electric in the sectors that make the most sense economically for them.

CHAIR HOCHSCHILD: Great. Thank you. Unless there is further discussion from Commissioners I'd entertain a motion from Commissioner Monahan on Item 11.

COMMISSIONER MONAHAN: I move to approve Item 11.

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

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

Let's turn now to Item 12, Discussion on Developing and Demonstrating Advanced Combustion Systems for the Industrial Sector.

MR. KRUPENICH: Good afternoon, Commissioners. Can you hear me okay?

CHAIR HOCHSCHILD: Yes.

MR. KRUPENICH: I am Ilia Krupenich from the Energy Efficiency Research Office in the Energy Research and Development Division. Next slide, please.

In California, the industrial sector accounts for one-third of natural gas consumption and almost one-fourth of greenhouse gas emission. Eighty-five percent of the natural gas consumed in the industrial sector goes for process heating. And air used for combustion is almost 80 percent nitrogen, which is inert and does not participate in combustion. Replacing air with pure oxygen provides opportunities for substantial natural gas savings. And the goal of the two projects being recommended for approval is to reduce natural gas consumption by 20 percent and to reduce greenhouse gas emissions by 20 percent.

Anticipated total annual natural gas savings for the two projects I am presenting today are over 1.3 million therms, and annual reduction of greenhouse gas emissions are over 9,000 metric tons. Next slide, please.

The first project is with Gallo Glass Company. This project demonstrates an advanced oxygen-enriched combustion process with preheaters to improve recycling of heat that is usually wasted at its glass manufacturing facility in Modesto in a disadvantaged and low-income community. This project is anticipated to reduce natural gas by 25 percent. An interesting aspect is that installation and commissioning of this system will be done without shutting down the furnace.

This project will demonstrate improved economics of such upgrading for their future projects. And Gallo Glass is planning to convert their remaining three furnaces to this technology upon successful achievement of the natural gas reduction goals and verification of their performance. Next slide, please.

The second project is with Gas Technology Institute. GTI will demonstrate flameless oxygen-enriched combustion for an aluminum melting furnace located at the demonstration facility of Custom Alloy Sales in the city of Industry, a disadvantaged and low-income community.

The project is anticipated to reduce natural gas

use by 20 percent. The advanced burner to be demonstrated operates on a wide range of oxygen levels, which is necessary to optimize efficiency and ensure low emissions of nitrogen oxides in either a staged semi-flameless mode at low temperatures or a flameless mode at high temperatures. This demonstration will be at an aluminum melting furnace, but the technology is applicable to steel plants, cement plants and petrochemical industry as well. Next slide, please.

Staff recommends approval of the agreements with Gallo Glass Company and Gas Technology Institute and the adoption of staff's determination that these projects are exempt from CEQA. This concludes my presentation and I would be glad to answer your questions if you have any. Thank you.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. Yes, we do have comments on this item. Toni Scott, you will be first. A reminder to please restate your name, spell your name and also indicate your affiliation, if any. Toni your line is open, you may begin.

MS. SCOTT: Good afternoon, my name is Toni Scott, T-o-n-i S-c-o-t-t. And I have the honor of calling in today on behalf of Gallo Glass Company. On behalf of

Gallo Glass I'd just like to thank you for the recommendation of the investment and funding through this program. Gallo is delighted to have the opportunity to leverage $6.4 million of our own funding, with CEC's funding to advance really what is such an important and revolutionary demonstration projects in a low-income and a disadvantaged community.

We are looking forward to working closely with CEC staff on this effort and wants to acknowledge how wonderful Ilia has already been getting us to this process. It's been truly a delight to work with him. So thank you again for the recommendation of this investment and the CEC support of this effort.

MS. GALLARDO: Thank you. This is Noemi the Public Advisor. Chair, that was the last comment on Item 12.

CHAIR HOCHSCHILD: Okay, thank you. Well, I just want to say I think these are terrific projects. Obviously we've made a lot of headway on reducing emissions in the electric generation sector. And we're now turning really aggressively towards the transportation sector, a lot of progress to come there. Industrial has not gotten nearly the attention that it deserves, so this is great to see.

And I open it up to any other Commissioner comments. Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, I was going to just comment on that industrial. We really, I think, need to find ways to focus and bring resources to industrial processes and improvement. Each plant is kind of different, and the leadership and the goals and the marketplace and the global versus local, lots of different ways that industries approach their marketplace and have opportunities to improve. And so we need to really be able to work with that as a state. And so I would support these. So I think it speaks well to Ilia, thank you for your collaboration with the applicants and getting these in front of us for a vote. And I'm very supportive.

CHAIR HOCHSCHILD: Are there any other comments from Commissioners? Seeing none, I would entertain a motion from Commissioner McAllister.

COMMISSIONER MCALLISTER: Yes, I will move Item 12.

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

COMMISSIONER DOUGLAS: Yes. Second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 12 passes unanimously.

Let's go to Item 13, Solar Heating, Cooling, and Power for Industrial and Commercial Applications.

MR. LASAM: Good afternoon, Chair and Commissioners. My name is Baldomero Lasam. And I'm a Mechanical Engineer in the Energy Research and Development Division. Today, I'm presenting one recommended award from the Solar Heating, Cooling and Power for Industrial and Commercial Application solicitation. Next slide, please.

This graph shows the natural gas consumption by various sectors in California. The industrial sector accounts for more than one-third of the total natural gas consumption and roughly one-fourth of the state's greenhouse gas emissions. The vast majority of this consumed natural gas, about 85 percent, is used for process heat or indirect boiler applications in the manufacturing industry. Next slide, please.

The objective of this solicitation and the project recommended today is to reduce the natural gas consumption from the industrial sector or commercial sector

by advancing the use of solar thermal systems capable of delivering process heat and refrigeration loads or solar electric and hot water. Developing and deploying solar thermal technologies targeting the industrial or commercial sectors can help reduce greenhouse gas emissions in the state.

In addition, the project will inform future deployment strategies by providing data on performance and cost-effectiveness. Next slide, please.

The project with Winston Cone Optics will develop a low-cost and high-efficiency solar thermal collector using non-imaging optics and metal-glass vacuum tube technology to provide cost-competitive thermal energy from a stationary collector for the 100 to 200 degrees Celsius temperature range. The project will reduce over 11,000 therms of natural gas annually by replacing natural gas burned in a boiler. This reduces dependence on natural gas infrastructure and the need for natural gas large-scale transmission and storage. In addition, each square meter of installed collector area will avoid 329 lbs. of carbon dioxide emission equivalent annually. The technology will be demonstrated and deployed at Tyson's San Lorenzo facility. Next slide, please.

In conclusion staff recommends approval of this grant award and adoption of staff's determination that this

project is exempt from CEQA.

Thank you. And I'm joined by Kaycee Chang to answer any questions.

CHAIR HOCHSCHILD: Thank you.

Let's go now to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. We will start with Roland Winston. Roland, a reminder to restate your name, spell it and indicate your affiliation, if any. Your line is open, you may begin. And Roland, if you happen to have Zoom on at the same time please mute Zoom before you begin speaking.

(Audio difficulties - feedback.)

CHAIR HOCHSCHILD: Roland, unfortunately there is still a lot of background noise.

COMMISSIONER MCALLISTER: If you could turn your speaker off, I think that would help.

MR. WINSTON: Hello? (Feedback noise continues.)

CHAIR HOCHSCHILD: Roland, it's still reverberating there.

COMMISSIONER DOUGLAS: Perhaps he might submit a comment by -- Noemi, can he submit a comment in writing to you or by chat or anything like that if the speaker just won't work.

MS. GALLARDO: Yes. I wanted to see if he could try through Zoom first. And if not, if that doesn't work

then he can definitely submit comments. Roland, can you try speaking through Zoom now?

(Audio difficulties continue - echo.)

CHAIR HOCHSCHILD: Okay. You know what, unfortunately I don't think this is going to work. So Roland, maybe you could submit some written comments for the record and we'll get those in there. But I think we should move on.

So this is a terrific project, very encouraged to see this and it has my full support. Are there -- oh, I'm sorry, Noemi, were there any other public comments besides Roland?

MS. GALLARDO: No Chair, no other public comments. That was the only one for Item 13.

CHAIR HOCHSCHILD: Okay, let's see, are there any other Commissioners wishing to comment on this? If not, Commissioner McAllister would you make the motion?

COMMISSIONER MCALLISTER: Yes, I will move Item 13.

CHAIR HOCHSCHILD: Okay. Commissioner Gunda would you second?

COMMISSIONER GUNDA: Yes. Second.

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

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

Let's turn now to Item 14, Lawrence Berkeley National Laboratory.

MR. FUNG: Good morning, Chair and Commissioners. I'm Matt Fung from the Energy Efficiency Research Office. And today we are seeking approval for this 4-year grant, which resulted from a solicitation focused on advancing load flexible technologies and strategies to help meet Senate Bill 100 clean energy goals and support other CEC efforts, including appliance and demand flexibility regulations and the Load Management Standards. The primary goals are to enhance grid reliability in a cost-effective and equitable manner which is especially important to help avoid power outages, such as during last summer's heat wave that affected hundreds of thousands of customers. Next slide please.

The benefits of this California Flexible Load Research and Deployment Hub, or CalFlexHub, project include

improving grid stability and reliability by making customer use of load flexibility technologies easier and affordable, advancing technologies capable of responding to prices, and greenhouse gas emission signals that will be available through the CEC's Load Management Standards rate database. This could result in significant improvements in the cost-effectiveness, operational capabilities, and customer friendliness of load flexibility technologies will provide a foundation for expanding their adoption.

Other benefits include increasing participation which will encourage distributed energy resource adoption to more effectively integrate variable renewable generation than more costly storage resources or more emissions-intensive fossil generators. Achieving these benefits will bring California closer to achieving its electrification, decarbonization goals. Next slide.

In this agreement Lawrence Berkeley National Laboratory or LBNL, will develop a communication system that provides utility rates and GHG signals that originate from the CEC's rate database. This will enable virtually all Californians, including those without internet access, and their compatible devices to receive the signal to support the CEC's Load Management Standards. Demand flexibility projects tested and demonstrated under this agreement will respond to this Load Management Standards

signal so that those devices can dynamically adjust their demand based on price, GHG intensity, and user preference.

Some initial projects include using combined heat pumps for space conditioning and water heating, optimizing thermal or battery storage with other load flexible end uses, and building related vehicle grid integration in residential and commercial applications.

LBNL will also use a defined set of key performance metrics to annually evaluate existing research to determine if the current methodology requires a pivot based on current research results and market needs.

Also using the key performance metrics LBNL, with assistance of its technical advisory committee, will evaluate and prioritize future research needs. CalFlexHub will then be able to develop and perform additional, flexible demand research projects in the remaining years of the agreement.

CalFlexHub will also provide business development and technology resources to advance these load flexibility technology solutions into the market to support a clean energy economy. Next slide, please.

So this slide shows some examples of signal responsive demand flexibility projects that CalFlexHub will be performing in its first year. As you see there is a mix of projects revolving around optimizing electrical demand

flexibility from heat pumps for space conditioning and water heating, optimization of stationary energy storage and vehicle grid integration, and other load flexibility research such as tackling the electrical panel upgrade barrier to greater electrification. As mentioned before additional projects will be prioritized and performed based on industry needs. Next slide, please.

So staff recommends approval of this agreement and adoption of staff's CEQA determination. I am now open for any questions. And David Hungerford from Energy Research Division, Cory Irish from Chief Counsel's Office, and Mary Ann Piette from LBNL are also on the line to answer any questions. Thank you.

CHAIR HOCHSCHILD: Thank you, Matt.

Any public comment on this?

MS. GALLARDO: This is Noemi, the Public Advisor. We do have someone on the line, so we're going to try this again. The team has been trying to resolve that issue earlier. So that's Mary Ann. Mary Ann, a reminder to please restate your name, spell it and indicate your affiliation, if any. Your line is open, please begin.

MS. PIETTE: Lawrence Berkeley National Lab. My name is spelled M-a-r-y A-n-n P-i-e-t-t-e, it sounds like there's no echo problem now.

CHAIR HOCHSCHILD: Yeah, we can hear you fine.

MS. GALLARDO: That's right.

MS. PIETTE: Thank you. I just wanted to express our excitement about the opportunity to run CalFlexHub and supporting the concepts from Matt that this work will help accelerate the development and deployment of technology to allow a clean, affordable, reliable and equitable energy systems to allow buildings to be better integrated with the electric system for assistance in our demand management dealing with renewable over-generation, ramping and peak demand issues. And as Matt said we will coordinate closely with the Load Management Standards and the flexible demand appliances activities. And we appreciate the opportunity to conduct this research.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. That was the last comment on Item 14.

CHAIR HOCHSCHILD: Okay, thanks let's move to Commissioner discussion.

I'm really pleased to support this. I think for a long-time electric load with the exception of a few industrial demand-response programs was just seen as a fixed, rigid thing that we had to ramp up generation to support. And I think a more evolved understanding of the reality is that there's a lot about electric load that can be manipulated, and in ways that support electric

reliability and our climate goals as well and we're just getting going on this.

I want to once again thank Commissioner McAllister for his leadership and the team's work on the Load Management Standards, because I think when that's fully in place I see this work is really funding a lot of tools that we'll be able to make use of through good policy. But there's a lot we can do. It's still exceedingly early days in this and I'm really pleased with this project as a step towards a much more robust focus on flexible load. So I'm really pleased to support this.

Hoping that maybe Commissioner McAllister, would you care to begin?

COMMISSIONER MCALLISTER: Absolutely. So I am super excited about this and this is the culmination of literally generations of work that enable this. I mean, we have the digital economy helping us out in terms of low-cost communications and controls. What we really have in California a stable -- just a deep, deep, deep reservoir of knowledge. And LBNL is really the focus of that knowledge and I have to just call out Mary Ann as a long-term leader in these issues. So I'm super excited to have LBNL leading this work, having a runway that is a number of years to really deepen our knowledge as a state on this stuff. And make it really apply in a very pragmatic way all the tools

that we have at our disposal, including the Load Management Standards.

And I have to also mention David Hungerford as a long-term advocate for these issues. And Karen Herter, Gabe Taylor on the Load Management Standard side, Pierre duVair on the appliance flexible load side, all of these gears are working together in harmony to -- we'll keep it that way -- to really create a new regime and this vision is really compelling.

And I think the rest of the country is waking up to this fact that grid-connected buildings, that grid-connected loads and that flexible flexibility all around is going to help us. And we saw that conclusion even in the SB 100 report where flexible load is a way to reduce costs, as well as decarbonize and enhance reliability as the Chair said. So really, that triumvirate of goals is something that is absolutely in line with load flexibility. And we're going to create the body really, I think, create a significant body of work over the coming years on this and make it practically applicable in the real world for real people, to benefit Californians.

And so I'm super excited. Congratulations, Mary Ann. I know I've been sort of on the edge of my seat waiting for this to come to a Business Meeting. I'm glad to be able to vote for it now. And really look -- well,

this is a part of our future. You know it's a network, not a not a one-direction system anymore, it's a web.

And I think we have been funding this for a really long time in the context of demand response and open ADR, which also was a seed at LBNL that we helped to germinate and grow and is now in wide news. And this is sort of a, I'd say, a next-generation version of that; it's a real transformational initiative in all the good meanings of that word.

So thanks for bringing this to us. I really appreciate it, Matthew.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Any other Commissioners wishing to make a comment? Commissioner Gunda.

COMMISSIONER GUNDA: Yeah Chair, thank you. I just wanted to echo the importance of this grant. I think, as Commissioner McAllister and you, Chair, had both noted this is an incredible intersection of a multitude of things. We're right now in the process of getting some of the IMD data. We're really thinking through enhancements to reliability and resiliency. We're thinking about how to reduce the cost burden as well as the build and the land-use burden, SB 100. So this is all coming together. And load flexibility has an opportunity to really redefine a lot of those elements.

So I just want to congratulate the EPIC team, Matt and the entire R&D team, for putting a lot of thought into bringing this together. And also do not want to lose the opportunity to really recognize Commissioner McAllister's leadership on Load Management Standards, the data, everything that he's been trying to shepherd over the last decade.

So I'm really thankful and really grateful for this beginning to become the fruition of the next step. So congratulations to everybody on your work and looking forward to LBNL's good work on this.

CHAIR HOCHSCHILD: Thank you.

Any other Commissioners wishing to make a comment? If not I'd entertain a motion from Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, I guess I should mention one more thing before making a motion. This also has our (indiscernible) DNA in it. I just have to say that because price responsive, in particular, but all sorts of flexible demand is something that actually he envisioned a long time ago. And so I think that this is a fruition that really builds on that legacy. So I will, with that comment, I will move Item 14.

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

COMMISSIONER GUNDA: Yes. Second.

CHAIR HOCHSCHILD: Okay all in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Congratulations. That item passes unanimously.

Let's turn now to Item 15, Technology & Investment Solutions.

MR. GOODHAND: Thank you, Commissioner. My name is Robin Goodhand and I work in the Energy Research and Development Division. Today with me are Attorney Christina Evola and Mike Gravely.

Today I am presenting Item 15, an applied research long-duration energy storage project from the solicitation "Developing Non-Lithium-Ion Energy Storage Technologies to Support California's Clean Energy Goals." Next slide, please.

The recently published joint agency report on the implementation of "The 100 Percent Clean Energy Act 2018"

Senate Bill 100, or SB 100 for short, highlights the need for long-duration energy storage and green hydrogen technologies for meeting California's energy goals.

This agreement will field test a green electrolytic hydrogen energy storage system and validate system performance in a long duration energy storage application. This proof-of-concept applied research project will focus on the use of metal hydrides as a hydrogen storage medium.

This project will validate the technology's potential future rate payer benefits including the technology's ability to safely store green electrolytic hydrogen in a smaller volume than compressed gaseous hydrogen, provide customer electricity savings through solar generation load shifting, and storing energy over long durations for energy resiliency applications. Next slide please.

This proof-of-concept project will field test the hydrogen energy storage system that will produce green electrolytic hydrogen in a small-kilowatt scale electrolyzer using electricity generated by an existing onsite solar PV array. Up to 67 kilograms of green electrolytic hydrogen will be stored safely within a metal hydride powder over long durations. Electricity will be re-generated on demand by a small-kilowatt scale fuel cell.

The project will validate the system's performance, which is predicted to achieve over 100 hours of energy resiliency.

The project research focuses on systems integration and optimizing thermal management. Next slide, please.

Green electrolytic hydrogen is typically stored as a high-pressure gas in a tank, or as liquid hydrogen. Conceptually, at an atomic scale, hydrogen in this project will be stored in the small spaces between the molecules of the metal hydride powder.

This project will optimize the thermal management and validate the ability of the metal hydride storage to be charged with low-pressure hydrogen and recover the hydrogen from the metal hydrides to generate electricity for use on demand. The hydrogen charging process releases heat, requiring cooling of the metal hydride powder. And the discharging process requires external heat to be applied to the metal powder to release the hydrogen. Theoretically a puncture of a hydride storage tank would cause the metal powder to rapidly cool and prevent an uncontrolled escape of hydrogen gas. This is a significant potential safety benefit compared to other forms of hydrogen storage. Next slide, please.

Future application and deployment of metal

hydride technology beyond the scope of this project may lead to additional benefits for California. This chart compares the volumes required for storing hydrogen in various forms relative to the equivalent energy density of diesel fuel.

Storing hydrogen in metal hydride powders may theoretically require a smaller volume than storing the equivalent amounts of hydrogen as a liquid or as a compressed gas.

Large-scale energy storage will be required to meet SB 100 goals. Metal hydrides have the potential to be deployed at scale and could reduce the overall land area that will be required for energy storage to meet SB 100 goals.

The metal hydride powder's thermal management temperature range makes the technology well suited for hybridized integration with building thermal energy demands such as hot and cold water.

In this project hydrogen will be stored at approximately 40bar. Future thermal management approaches may include warming the metal hydride powder to pressurize the hydrogen. Other research projects have achieved hydrogen pressures of 200bar, which is approaching the pressure range required for vehicle refueling. Future research and demonstration initiatives may show that

storing hydrogen in metal hydride powders can significantly reduce the volume required for energy storage, as well as improve the energy efficiency of hot-water heating and reduce the energy required to produce compressed hydrogen gas. Next slide, please.

We recommend approval of this agreement and adopting staff's determination that this action is exempt from CEQA. This concludes my presentation. Staff and attorneys are available to answer any questions. Thank you.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. There are no public comments for Item 15.

CHAIR HOCHSCHILD: Okay. Well I'm pleased to support this and thank the staff for preparing it. Obviously we're going to have to ramp up a number of tools to reach our SB 100 goals, including another six gigs annually of renewables. And storage is going to be a big part of that and we need everything at our disposal. So I'm happy to be able to support this today. I don't see any other Commissioners wishing to make a comment. Oh sorry, Commissioner Monahan. Oh, please go ahead.

COMMISSIONER MONAHAN: Yes, well thanks Robin for that presentation. I'm really excited about this

investment and others where we're expanding. We're looking more deeply into how hydrogen and fuel cells could be used beyond the transportation sector. I think to drive down the price of hydrogen we will need as many technologies as possible to be able to use hydrogen fuel for delivering zero-carbon energy, so I just really think this is a big, exciting project.

I just had one question for Robin, because I haven't heard of this strategy before. Is this something that is -- do you know if there are global investments in this space? Or is this something where California is kind of out in front in exploring this?

MR. GOODHAND: Certainly, thank you for your question, Commissioner. In short, hydrate and metal hydride as a hydrogen energy storage medium is not new, it has been deployed in other projects around the world. In California this project is certainly the first foray that we have seen in this area.

COMMISSIONER MONAHAN: Great. Thank you.

CHAIR HOCHSCHILD: Sorry, Commissioner McAllister?

COMMISSIONER MCALLISTER: I'd like to comment briefly. Yeah, so it's interesting how hydrogen kind of coming to the foray, a little bit in fits and starts, but it's kind of cross-cutting, complimenting what Commissioner

Monahan just said. You know, trying to build on the transportation sector and figuring out how to sort of decarbonize the existing hydrogen economy, which is actually quite large and tied to the oil and gas sector in large measure, but not completely. And that's a big carbon footprint in this state that we have to work with.

And then figuring out what other sectors of the economy it can actually apply to, so I'm also happy to see this project. And supportive in this kind of ecosystem sense that trying to figure out ways to fund integrative technologies that can span sectors and do storage and piggyback on existing infrastructure, and dovetail with our path forward to decarbonize. All of those things are, I think, have potential and really a lot of need for exploration, so this is a good project along those lines. So this is a good project along those lines.

CHAIR HOCHSCHILD: Thank you, Commissioner.

Commissioner Monahan, would you be willing to move this item? And Commissioner McAllister, would you be willing to second?

COMMISSIONER MONAHAN: I move Item 15.

COMMISSIONER MCALLISTER: I'll second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

Let's go to Item 16, Rocky Mountain Institute.

MS. GALLARDO: (Silence on the line.) Karen, you're muted. Make sure you unmute from your screen.

MS. PERRIN: Sorry, can you hear me now?

CHAIR HOCHSCHILD: Yes.

MS. GALLARDO: Yes.

MS. PERRIN: Okay, greetings Chair and Commissioners. I am Karen Perrin, and my name is spelled K-a-r-e-n," last name is P-e-r-r-i-n. And I'm from the Energy Efficiency Buildings Office in the Research and Development Division. Today, I will provide a presentation on the recommended award, which requests cost share funding to a federal funding award. Next slide, please.

Space conditioning and water heating are a significant part of California's energy demand. And there is a need for more efficient retrofit solutions in buildings and especially in multifamily buildings. This

agreement responds to the increased demand second to improve energy performance in buildings, which fits into California's clean energy goals. Next slide, please.

The U.S. Department of Energy is providing Rocky Mountain Institute with two grant awards. This Commission agreement will provide cost share funding for the two DOE awards, which total $5.5 million and the proposed Commission agreement is for $1.3 million. The goals are to address affordability, decarbonization and market scaling in the construction sector. This agreement includes two project parts, that will occur concurrently. And the next two slides will summarize each of the two parts of the agreement. Next slide, please.

The pods will be designed as a simple, highly efficient, and easy-to-deploy package. It will use a standardized, modular, pre-fabricated approach. The pods be all-electric, with advanced mechanical systems and controls and will be a mass-producible product for multifamily buildings. Under Phase 1 these pods will be built off-site, which can remove some of the time consuming and costly barriers associated with retrofits.

The picture on the right shows the possible integrated system which will include -- actually, on the left -- high efficiency heat pumps for space conditioning and hot water, ventilation, and advanced grid interactive

controls. They will be designed to be affordable and attractive and commercialized for manufacturing scale-ups.

Phase 2 for the pod agreement will be a large-scale demonstration in multifamily buildings and is contingent on the future funding from DOE and CEC.

Demonstrating new technologies can send a signal to the market, but more than technology is the barrier of market adoption, which is also needed in tandem to drive demand. Next slide, please.

There is a strong interest from equipment manufacturers to bring advanced building technologies to the U.S. and to the California market, but they don't have the demand to justify it yet. The collaborative aims to accelerate demand in the market.

The Advanced Building Construction Collaborative will establish and coordinate a network of building stakeholders aimed at accelerating the uptake of innovative, high-performance construction technologies that achieve superior energy and carbon performance, are faster to deploy, have high quality and are affordable to building owners, developers and users.

The goals for California include promoting California-based manufacturing and expanding the statewide pipeline of supply and demand by connecting them to the national markets. My next slide will show a breakdown of

the funding. Next slide, please.

This slide shows that this federally funded award includes two projects: Project 1 and Project 2. Under the Commission's match share agreement they will be combined under one project agreement and both will be done concurrently.

As shown in the slide the cost share will include that CEC will initially fund $62,500 in cost share towards the pre-fabricated pods for the design, building and testing of the prototypes. As shown in the asterisk, the CEC will provide an additional $625,000 as cost share for Phase 2, which is a large-scale demonstration. Phase 2 funds are subject to award of additional funds by DOE and the CEC. And the DOE Phase 2 funds are expected to be awarded in January. For the collaborative, CEC will fund $625,000 in cost share.

If all the future awards are approved this project has the potential to leverage a Department of Energy investment of $10.5 million versus a CEC investment of $1.3 million, thus leveraging state funds by nearly eight times. All CEC funds will be spent in California. Next slide, please.

This is my final slide. Staff recommends the approval of the grant. Staff has determined that this action is exempt from CEQA on both projects. Thank you for

your time and I am available to answer any questions you may have.

CHAIR HOCHSCHILD: Thank you.

Let's turn to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. We do have public comment. First up is Martha Campbell. Martha, I'll remind you to please restate your name. spell it and indicate your affiliation, if any. And also a warning. We had a switch in our Verizon operator, so we're hoping that there aren't any echo issues, but I want to warn you.

So Martha your line is open, please begin. And we'll let you know if there are any issues with the echo. Go ahead. (Silence on the line.) All right, so Martha, we cannot hear you. I think it's an issue with our Verizon line. Verizon operator, if you could unmute the line?

MS. CAMPBELL: Can you hear me now?

CHAIR HOCHSCHILD: Yes, we can hear you.

MS. CAMPBELL: Okay, great. So this is Martha Campbell with RMI. I'm speaking regarding Item Number 16. And I basically just wanted to thank the Commission for continuing to support this work. This is definitely a longer-term vision that is going to take quite a bit of market mobilization and investment and determination to kind of transform the market in a way where these types of

solutions are the norm and they are the way that the construction sector does business.

And we hope that the work that we're doing here can not only provide a catalyst, but help to build the tipping points that are required to make this a norm across our state and, ideally, the country. So thank you for supporting this work.

CHAIR HOCHSCHILD: Thank you.

MS. CAMPBELL: And that's it for me.

CHAIR HOCHSCHILD: Any other public comment, Noemi?

MS. GALLARDO: This is Noemi, the Public Advisor. That was the last comment for Item 16.

CHAIR HOCHSCHILD: Thank you.

Well, I love this. I love the leveraging of federal funds, love leveraging funds generally. And this seems very timely. Let's just open up to Commissioner discussion. Commissioner McAllister?

COMMISSIONER MCALLISTER: Yeah, just quickly, I couldn't agree with the commenter more. We really need to move the market and get to those, get to the penetration and experience out there in California, where we need these penetrations to start ramping up. And so they can kind of fit the way we do market transformation and we can push it with all the instruments in our toolbox. And I agree that

this is essential for our decarbonization, so appreciate it.

And also, I have to say that we have a great relationship now with the Department of Energy and the leadership in EERE and the Building Technologies Office. And we want to do everything we can to dovetail with their resources and certainly leverage as many as we can, get those resources to California. So great vehicle for that as well.

CHAIR HOCHSCHILD: Great. Unless there's other Commissioner comments, Commissioner McAllister, would you be willing to move the item?

COMMISSIONER MCALLISTER: Yeah, I'll move Item 16.

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

COMMISSIONER GUNDA: Yes, second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Thank you. Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote aye as well.

Let's turn now to Item 17, Polaris Energy Services.

MR. DAVIS: Good afternoon, Chair and Commissioners. I'm Dustin Davis with the Energy Efficiency Research Office.

California has committed to sourcing 100 percent of electricity from renewable and zero-carbon resources by 2045 and delivering it reliably. This will require California to not only remain diligent in implementing technologies that use electricity more efficiently, but devices with demand flexibility or the capability to shift timing of when electricity is consumed to better match energy demand and supply and enable excess renewable electricity to be used rather than curtailed.

Agricultural irrigation pumping demand can contribute a significant share of the needed demand flexibility to support the transition to a reliable and affordable zero-carbon electricity future. Lawrence Berkeley Lab identified agriculture pumping as an area with significant demand flexibility potential that is largely untapped. Next slide, please.

The Polaris technology uses software and

automation that integrates price and signals from the grid with agricultural irrigation scheduling and control to lower electricity costs by helping customers use less power when prices are high; increase grid reliability by reducing demand for power when stress on the grid is high; and reduce greenhouse gas emissions due to lessening the need for inefficient natural-gas peaker plants; and shifting operations to increase utilization of energy from renewable sources, such as wind and solar. Next slide, please.

This project aims to leverage the technology developed and tested under a recently completed EPIC grant which proved agricultural energy users can contribute to demand flexibility, but additional technology enhancements and support are needed to ensure customers' expectations are met and proven at scale.

This project will enhance Polaris' automated irrigation and energy management control platform to include additional functionality such as providing energy financial management for users across diverse portfolios of utility service points on different rates and tariffs. And adding intelligent scheduling recommendations that automatically generate irrigation schedules based on user preferences and constraints.

The technology enhancements will enable farmers for the first time to be able to enter irrigation

requirements and operational constraints, receive a recommended irrigation plan, then customize and deploy it directly to an irrigation controller.

The technology will be deployed at minimum 200 sites located in PG&E and SCE utility service territories, leading to 25 to 40 megawatts of grid-responsive peak load reduction, especially during the summer. The project includes about $600,000 in match funds. Next slide, please.

Staff recommends approval of this item as well as staff's determination that this action is exempt from CEQA. Thank you for your time and I am available to answer questions. Also with me today is the CEO of Polaris, David Meyers, who would like to make a few remarks. Thank you.

CHAIR HOCHSCHILD: Let's go to David Meyers.

MS. GALLARDO: This is Noemi, the Public Advisor. Yes, David Meyers is on the line. David, a reminder to restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. MEYERS: Thank you. My name is David Myers, D-a-v-i-d M-e-y-e-r-s. I'm the CEO of Polaris Energy Services. We appreciate the Commission's support during the last three years of research and development examining the obstacles to agricultural sector participation and demand flexibility. And developing solutions to integrate

water-pumping loads with the grid to meet the state's decarbonization goals and reliability needs.

Ag pumping has the second largest load shift potential of all sectors and end uses in this state, surpassed only by commercial and retail buildings according to a report by previous grantee and commenter Mary Ann Piette.

Commissioners McAllister and Gunda have shown interest in our work. I appreciated the agricultural references to "deep reservoirs," and "sprouting seeds" on a prior agenda item. And Commission staff Dustin Davis and David Hungerford provided guidance and exhibited flexibility that enabled us to follow the research and the data to develop and pilot solutions that deliver results, including shifting two thirds of ramp-hour load at participating sites in our transactive energy pilot.

This agreement will provide critical support to shift gears from research and development to wide-scale deployment in an uncertain regulatory environment that has not yet provided the clear, consistent market signals that are necessary for this demand flexibility technology to gain traction on purely commercial terms.

In addition to spurring 10-megawatts of load shed and load shift, this agreement will facilitate Polaris's continued participation in and contribution to the

development of load management standards in technologies, including CEC's latest project.

The technology will be deployed in disadvantaged areas, bringing economic benefits and upscaling to the companies and workers there. To this partnership we can make real progress towards the goal of fully integrating agricultural pumping as a grid resource in California. Thank you for your consideration of this proposal.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. No more comments for Item 17.

CHAIR HOCHSCHILD: A question for either Dustin or David. I'm just curious, it's April now, how much capacity will be online by this August or September? Is there any ability to deploy this in a way that will support for this summer's grid reliability challenges?

MR. DAVIS: Did you want to go and grab that, David?

CHAIR HOCHSCHILD: Oh, he may not be able to. I'm not sure, David, can you hear us?

MR. MEYERS: Yeah, David Meyers here.

CHAIR HOCHSCHILD: Yeah.

MR. MEYERS: Can you hear me now?

CHAIR HOCHSCHILD: Yeah, I can hear you. Go ahead.

MR. MEYERS: Perfect. So we have the ongoing work, and additional to the work we've done under the grant in DR programs. Until we have a large number of projects coming online, some of that work was financed by the previous grant, some by our commercial efforts. Frankly, the prospect of this grant has kept us, has kept people in the company that perhaps we would have had to downsize after the prior grant. And so we have that pipeline.

In terms of new projects specifically from this grant we do have a number that are in the works that are marginal in the economics of the other funding sources and will be helped by the project, but it's a bit of a mix with DR program participation and time-of-use-response. But a short number would be there about 10 megawatts that are, let's say, interested in shifting from demand response to time-of-use response using this technology. And this will certainly help with that.

CHAIR HOCHSCHILD: Great.

Okay, other Commissioner comments or questions? Commissioner McAllister?

COMMISSIONER MCALLISTER: Yeah. So I think there's another example of this kind of ecosystem starting to take shape, right, where this company Polaris can utilize some of the infrastructure, world building and load management. And as the rate regime becomes more time-based

there's a lot of opportunity to shift load and really coordinate load with the grid needs, both in the ISO markets and the individual utilities.

And water pumping is really the perfect manageable load, because you can ramp it up and down, you don't have to turn it on and off, you can really provide the service you need. It's very manipulatable in that way, so a great target for this. And there's a lot of water pumping load throughout the state, so I think as a demonstrative project this will have a big impact. And I really want to thank Polaris for -- and Dustin as well -- Polaris for really innovating in this space and doing really wonderful things to help California.

So I think as we start to revise and reform the DR landscape in the state as well, in conjunction with the PUC and the ISO that'll hopefully iron out some of the challenges you're having in terms of the commercial value proposition. So anyway lots of moving parts to that, but optimistic about solving it in the near medium term.

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

COMMISSIONER GUNDA: Yeah, Chair?

CHAIR HOCHSCHILD: Oh, go ahead.

COMMISSIONER GUNDA: Just a couple thoughts there. I think, and I'm personally very excited about this

investment thanks to Dustin as well as David Meyers on the call today, for taking the time to just help us understand this. And also David Hungerford for his thought process and his work on this particular issue.

I watched a couple of testimonies from the project participants that David Meyers was kind enough to showcase and I'm just incredibly thrilled with the opportunity here. As kind of Dustin noted there's almost close to a gigawatt of opportunity in load flex here. And I know from some of the presentations that David Meyers shared there was a huge load shift last year during critical net peak hours, which is becoming harder and harder for California, so I personally am thrilled with this. I would really like to follow closely on this opportunity and ensure that the Energy Commission supports, both from an analytical standpoint as well as a funding standpoint, to advance this opportunity for the state. So thank you. And I'm very supportive of this.

CHAIR HOCHSCHILD: Commissioner Gunda, would you be willing to move the item?

COMMISSIONER GUNDA: Yeah, I move Item 17.

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

COMMISSIONER MCALLISTER: I'll second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously. Congratulations.

Let's turn now to Item 18, OhmConnect.

MR. WILLIAMS: Great. Thank you, Chair and Commissioners. My name is Brad Williams and I work in the Energy Research and Development Division. In our past project with OhmConnect, they successfully demonstrated their software platform to recruit, motivate and retain large numbers of small residential customers to shift electric load when asked, typically for an hour at a time. They had over 145,000 users and the potential to contribute up to 66 megawatts of load reduction for the California grid.

This project will expand on Ohmconnect's successful demand response program by cultivating new marketing channels, messaging and incentive strategies for increasing program uptake, and adoption of automated

devices by residential users in both disadvantaged and non-disadvantaged communities statewide. Next slide, please.

This project seeks to bring immediate relief to California grid reliability shortages by the summer of 2021. This chart demonstrates how an effective OhmHour would reduce energy demand during a given hour, when needed. Work during 2021 will set the stage for subsequent growth in latter years, enabling a minimum of 25 megawatts of demand response availability to the California utility operators in the first year.

OhmConnect anticipates enrolling more than 40,000 new users into their platform, and at least 30 percent of these coming from under-resourced communities. Next slide, please.

This demonstration project improves and expands OhmConnect's demand response engagement platform to achieve increased load reductions from residential participants. Work will focus on three key elements:

Expanding participation by increasing user acquisition and accelerating user sign-ups through improved cost-effective outreach techniques.

Two, increasing adoption of smart devices by users connected to the platform.

And lastly, optimizing the platform performance to enable increased demand response benefits. Next slide,

please.

We recommend approval of agreement EPC-20-034 and adopting staff's determination that this action is exempt from CEQA. Thank you. This concludes my presentation. I'm happy to answer any questions. Cisco Devries the CEO of OhmConnect should also be on the line to answer any questions should you have them.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment. Is Cisco on with us now?

MS. GALLARDO: This is Noemi, Public Advisor. Cisco is on the line. Cisco, a reminder to please restate your name, spell your name and also indicate your affiliation. Your line is open, you may begin.

MR. DEVRIES: Thank you. It's a pleasure to virtually be with you. My name is Cisco Devries and I am the CEO of OhmConnect. My name is spelled Cisco, C-i-s-c-o, Devries, D-e-V like Victor-r-i-e-s. OhmConnect is based in Oakland, California. And as you heard we pay people to save energy when the grid is stressed. We then sell those aggregated savings bundled together into the energy market and return a good portion of those earnings to the users that created them.

So I'm -- it's really kind of an honor to listen to some of the earlier discussions today about all the

great DR that the state and the Commission are doing. And I'm honored to support you and to be here, of course, in support of Agenda Item 18.

The first thing I wanted to do is to thank the Commission for the 2016 grant to OhmConnect. It really did spur my company to develop, to be able to develop really cutting-edge ability to manage load across lots of small residential customers. And to grow our users from what was then a few hundred to then 30,000. As you heard, we're now actually just crossing 150,000 users. And those users stand ready to support the grid nearly every day.

Last year, for example, we were dispatched by CAISO for at least a portion of our users nearly 1,000 times, and on 298 of the 365 days last year. So we're very proud of our not only being available in times of a crisis during the August peak but also, day in and day out, to help manage the duck curve and other intermittencies and issues as they develop on the grid.

The one thing I'd like to add about this new grant funding we're very excited about is that really core to our mission is we're really going to focus a lot on the lower-income and disadvantaged-community populations. We have had success reaching those communities, but this grant will significantly improve our ability to reach out to them dealing both with language and other barriers. As well as

to help get new smart energy devices to homes that often have not had such things before. So altogether we do hope to be able to bring 25 megawatts more of flexible demand on the grid. We're working as hard as we can to get that done for this summer and will report back as we make some progress.

Thank you very much.

CHAIR HOCHSCHILD: Thank you.

Noemi, any additional public comments on Item 18?

MS. GALLARDO: No additional public comment on Item 18.

CHAIR HOCHSCHILD: Okay. Let's go to Commissioner discussion. Commissioner Gunda?

COMMISSIONER GUNDA: Yeah, thank you. Thank you Chair. Thank you, Brad, for the presentation and Cisco for your comments. I think I just want to take this opportunity, I mean I'm kind of like I'm in my candy store right now as Jared had mentioned earlier. Anything to help with the reliability is candy or spicy chocolate for many years.

And so just going to making sure I kind of do two things here. I think I just want to first thank Virginia, David Hungerford again and all the EPIC team that has been extremely thoughtful in thinking through the opportunity on the demand side. I think this is critical as we go

forward, both from reliability resiliency and our clean energy goals. So I just want to recognize that and ask for us to continue to foster capacity building in that area and the thought leadership.

Also I really appreciate and also want to recognize my appreciation for the conversations we had with the DRPs (phonetic) over the last couple of couple of months, including OhmConnect. And all the comments we've received from the DR community, their thoughtful, productive comments to help unlock the opportunity for DR and reduce some of the barriers for more large-scale adoption of DR including the market participation, as well as the opportunity to really value and account for what DR could provide the state of California.

And so I'm thrilled with this particular project. And I really hope that we continue to invest in DR and provide a safe space. And then kind of a leeway to really understand the opportunity to continue to bring to the table and into the broader decade-to-decade journey we have here, a sprinting marathon that we have to be on for the next two decades. Thank you.

CHAIR HOCHSCHILD: Thank you.

Commissioner McAllister, did you want to --

COMMISSIONER MCALLISTER: Yeah, just briefly. Commissioner Gunda, you said it extremely well. I think

these are the kinds of tools that we need, right? It's aggregated load flexibility that we can understand and dispatch and evaluate: predict, dispatch and evaluate. And so we really have to get better and better at that and it really does take getting a lot of technology out there to actually users. And the residential sector is arguably the most challenging sector to get in. And specifically, disadvantaged communities, low-income communities that have historically been hard to reach by programs, that set of utilities run in their efficiency portfolios and the like. And so a business model like OhmConnect's that gets in there and actually provides value to those customers, those ratepayers, is really important to develop and support.

So I'm happy to support this item as well. Thanks a lot to Cisco and Matt and the team at OhmConnect.

CHAIR HOCHSCHILD: Yes, and I'm in thunderous agreement with that. And, Cisco, congratulations on all the progress. And this is a great kind of poster-child story of the Energy Commission doing a grant like we did to get help as you say and get the company going. And then the 100 million you raised from Alphabet and scaling this at just the right time. And being part of a really important field of demand response that we want to see develop and evolve and really turn into a real force for grid reliability and our climate goals. So thank you.

With that, Commission McAllister, would you be willing to move the item?

COMMISSIONER MCALLISTER: Yes, I will move Item 18.

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

COMMISSIONER GUNDA: Yeah, happy to second.

CHAIR HOCHSCHILD: All right, all in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Let's turn now to Item 19, BRIDGE 2020: Bringing Rapid Innovation, Development to Green Energy.

MR. FERREIRA: Again, good afternoon everyone. My name is Michael Ferreira and I work in the Energy Research and Development Division. I'm here today seeking approval for five new grant agreements that resulted from our BRIDGE 2020 solicitation. BRIDGE is one of a series of

programs we've established to support clean energy entrepreneurs, with this funding opportunity having the specific purpose of bridging the gap between public and private funding opportunities. Next slide, please.

One of the main benefits of BRIDGE is advancing the clean energy economy by providing funding for promising clean energy technologies that can enable the transition away from fossil fuels.

Some of the specific benefits associated with the agreements being discussed today, include improved grid resilience and reliability, as well as technologies that will enable mass adoption of EVs by lowering the cost of batteries and charging infrastructure. Next slide, please.

The first agreement is with All Power Labs to develop a dispatchable biomass energy microgrid. The deployment of resources like microgrids, which can provide reliability and resilience will be critical to help overcome impacts from wildfires and blackouts. In order to meet these challenges microgrid technology needs to be more advanced, standardized and cost-effective while utilizing renewable fuels.

All Power Labs is developing a solution that integrates their existing biomass gasifier technology with inverters, batteries and controllers into a containerized microgrid system.

Integrating these components makes for easier grid interconnection and allows for a modular and scalable design that can be adapted to specific applications by adding the appropriate number of containerized units.

This technology has potential for deployment within California areas where it can consume municipal yard wastes, and wood waste resulting from forest fire mitigation measures. Next slide, please.

The next agreement is with Caban Systems to develop a clean energy backup power system to serve critical infrastructure facilities during power outages.

The lack of a commercialized, clean energy backup power system for critical infrastructure such as cell towers, has left communities increasingly vulnerable during electrical power outages. Not only are people unable to communicate during emergencies, but facilities are also often forced to rely on gas and diesel-powered generators which emit greenhouse gases, harmful pollutants and exacerbate wildfire risks.

Caban's solution focuses on integrating a hydrogen fuel cell into their existing lithium-ion battery pack to supply a minimum of 72 hours of backup energy. When fully developed, this system will provide an emission-free alternative to diesel generators that has a lower cost of ownership, is more reliable and is safer than fossil

fuel generators. Next slide, please.

The next agreement is with Cuberg, who is developing an energy dense, lithium-metal battery that can accelerate the rise of electric mobility.

Current battery technology does not have the sufficient energy density and safety performance needed for mass-market electrification of the automotive and aviation sectors. While there are currently emerging approaches to improve battery performance, many suffer from major challenges with scalability and manufacturing incompatibility.

Cuberg proposes to design an ultra-safe battery module using their non-flammable electrolyte, and integrate it into a highly efficient and energy-dense pack that can enable electrification of medium and heavy-duty vehicles as well as electric aviation. Cuberg has designed their technology so the battery cells can be produced using existing lithium-ion production lines, minimizing the capital investment needed for commercial scale-up. Next slide, please.

The next agreement is with Nextech Batteries, who will develop and demonstrate a lithium-sulfur battery system for the utility scale, grid-storage market.

Storing the intermittent energy produced by solar and wind power is becoming more important as renewable

energy is continually added to the grid. The biggest challenge in finding the right battery for grid storage is cost, with much of the cost of current batteries being tied to expensive metals such as nickel and cobalt.

Nextech's batteries can replace the metal-rich cathode in lithium-ion cells with sulfur, one of the most cost-effective energy and abundant elements on earth that also has the potential for doubled energy density of lithium-ion technology. This allows their battery to target a price per kilowatt hour that is cheaper than incumbent lithium-ion technology, and less than the $100-per-kilowatt-hour price set by the DOE.

In this project the team will demonstrate a grid-integrated storage system on the UC San Diego microgrid. This real-world demonstration will be used to qualify the battery for use in 8-hour duration storage applications. Next slide please.

The last agreement is with FreeWire Technologies, who will develop and demonstrate their direct current fast charging system that will merge the critical benefits of battery-assisted fast charging with grid services and microgrid support.

Currently, business owners and managers face multiple challenges when deciding whether to install EV charging systems, such as permitting and utility

requirements, capital costs, and electricity reliability.

FreeWire's turnkey, modular system design seeks to further reduce soft costs related to these challenges while addressing the critical needs of EV charging site hosts for resiliency and electricity reliability. Their DC fast charger provides power from an integrated battery that is charged during off-peak hours, reducing peak hour demand, alleviating grid strain and reducing electricity costs to the charger site.

Freewire's device uses a 240-volt connection, the same used for a Level 2 charger, while providing the EV charging output of a DC fast charging system. This reduces the need for costly utility upgrades, helping to fast track DC fast charging in California. Next slide.

Staff recommends approval of these five grant agreements and staff's findings that these projects are exempt from CEQA. This concludes my presentation. I believe Martin Lynch from FreeWire and Leland Price from Caban Systems are on the line and would like to comment. And also Alejandro Abalos from All Power Labs is available to answer any questions. Thank you.

CHAIR HOCHSCHILD: Thank you, that's terrific.

Let's go to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. We do have several people on the line as Michael just

mentioned. We'll start with Justin Knapp. And Justin, a reminder to please restate your name, spell it and indicate your affiliation, if any. Your line is open, you may begin.

MR. KNAPP: Hello, can everyone hear me?

CHAIR HOCHSCHILD: Yeah.

MS. GALLARDO: Yes.

MR. KNAPP: Yes, so my name is Justin Knapp, surname is spelled Kilo, November, Alpha, Papa, Papa, but I'm actually affiliated with All Power Labs, so I don't have any comment to make on any public questions. I'm just here in the same capacity as my colleague Alejandro Abalos, so no comment. Thank you.

MS. GALLARDO: Thank you. So next up is Justin Briggs. Justin, reminder -- excuse me, I'm on the wrong item number. Sorry Justin, that's incorrect.

So let me go back here, we will go next to Leland Price. Leland, a reminder to restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. PRICE: Thank you. Can you hear me now?

MS. GALLARDO: Yes, we can.

MR. PRICE: Great. So my name is Leland Price, L-e-l-a-n-d P-r-i-c-e. And I'm the Chief Financial Officer of Caban Systems. Good afternoon, Chair Hochschild,

Commissioners and Deputy Director Laurie ten Hope. Caban is very excited to receive this grant from the CEC to help accelerate our part development for clean, reliable, long-duration energy storage solutions for critical infrastructure in California.

The previous award from the CEC was critical to supporting the launch of our manufacturing line here in Burlingame as mentioned earlier today in the EPIC annual report.

And we're looking forward to working with the CEC on this project. I'm happy to answer any questions you may all have. Thank you.

MS. GALLARDO: Thank you.

Our next speaker is Martin Lynch. Martin, please restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. LYNCH: Yes, thank you. Yes, this is Martin Lynch, M-a-r-t-i-n, and last name, L-Y-n-c-h. I'm the Chief Operating Officer of FreeWire Technologies. And I first want to thank the Chair and the Commission for supporting this vital funding and grant for clean energy.

We provide a very unique product that provides three different types of services for the State of California in regards to its clean energy objectives. One, is it's an ultra-fast charger for electrical vehicles,

which supports electrification of the transportation sector in the state of California. But we also utilize lithium-ion batteries and high-density versions that allow us to reduce the infrastructure costs. So what that means is extensive transformer upgrade that also delay the deployment of fast charging (indiscernible) required with our products. The product installs under three hours, so you can bring on a boost charger and you'll be charging an electrical vehicle in under three hours.

But by way of our lithium-ion batteries we also connect with the grid. And this grant will allow us to provide the bi-directional energy flow to and from the batteries to the grid. And support our grid services and time-shifting energy, as well as when or if the grid does go down or has a brownout we also provide electrical vehicle charging when there's no energy. So when people are racing around to charge their cars they'll find a boost charger able to do that when or if there are brownouts or blackouts.

So I just wanted to thank everyone. This is critical for our ability to provide this type of bi-directional energy flow and provide those kind of product services to the State of California, as well to the electrical vehicle operators and owners in the State of California. So thank you very much.

MS. GALLARDO: Thank you.

Chair, there are no more comments on Item 19.

CHAIR HOCHSCHILD: Okay, thanks.

Let's go to Commissioner discussion. Anyone wishing to make a comment? Commissioner Monahan, did you want to speak to the EV charging one?

COMMISSIONER MONAHAN: Well, actually and all the battery ones too. It's just really an exciting set of investments. These always make me smile and feel happy inside, because these are the technologies that we need really to try to help decarbonize transportation, but also broadly to have a 100 percent clean energy system across all of our sectors. So yeah, a really exciting set of investments.

FreeWire, I would love to see the technology deployed and once we're able to actually go and see each other in person, to see this in person. But yeah, I'm just really excited to support these. I think it's a great set of investments.

CHAIR HOCHSCHILD: Well said.

Other Commissioners wishing to, McAllister.

COMMISSIONER MCALLISTER: Yeah, just quickly. I want to just call out the Division and Laurie and her leadership for kind of being very intentional about the development and diffusion of these sorts of innovations.

And starting and sort of hand-holding them on through and getting them market-ready and helping at all stages of the product development and commercialization cycle.

And that we've seen the presentation on the annual report and other items in previous meetings. But it just is, I think, unique in the R&D world to be that intentional and that multifaceted. And the BRIDGE program is really a great addition.

CHAIR HOCHSCHILD: Well said. Unless there are other Commissioners wishing to make a comment, Commissioner Monahan would you be willing to move the item?

COMMISSIONER MONAHAN: I move this item.

CHAIR HOCHSCHILD: All right. Commissioner McAllister, would you mind seconding?

COMMISSIONER MCALLISTER: I'll second.

CHAIR HOCHSCHILD: Okay. All in favor for Item 19, Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That

item passes unanimously. Congratulations to all the companies and the staff.

Let's turn now to Item 20, RAMP 2020: Realizing Accelerated Manufacturing and Production. We're getting better with the acronyms. You know, I have to say RAMP, REAP, BRIDGE, this is progress from where we were. We had some tangled acronyms back in the old days. But so kudos to whoever came up with these.

Let's go. It's Benson Gilbert it looks like.

MR. GILBERT: Good afternoon, Chair and Commissioners. My name is Benson Gilbert from the Energy Research and Development Division. Today I am requesting approval for five grant agreements selected from the Realizing Accelerated Manufacturing and Production for Clean Energy Technologies solicitation, also known as RAMP, that will help clean energy entrepreneurs successfully advance their technology to the pilot production stage at California manufacturing facilities. Next slide, please.

The RAMP program supports clean energy entrepreneurs with increasing production capacity to help scale their technologies, allowing their innovations to reach a greater number of adopters while advancing California towards reaching its energy goals. Additionally, increasing manufacturing capacity can also lead to more skilled labor opportunities in California.

Next slide, please.

You just heard my coworker, Mike, describe the BRIDGE program and the clean energy technologies that will be advancing with the latest batch of projects. The RAMP program is the next step in the entrepreneurial ecosystem developed by the Market Facilitation Office to propel clean energy entrepreneurs to the initial production scale-up phase for their technology. The RAMP program provides the means to guide entrepreneurs from the end of the prototype phase, to navigating through the world of initial production scale-up in manufacturing their technology.

Let's go meet the newest technologies to the RAMP program. Next slide, please.

The first project will fund the design and build-out of a pilot-scale manufacturing line for a novel space conditioning system that integrates radiant heating and cooling with control systems into concrete slabs to create a high thermal-mass radiant system using a prefabricated production process. This technology offers substantial reductions in cost and construction time for radiant systems. Next slide please.

The next project is to design and build-out a pilot scale manufacturing line for thermos-photovoltaic cells that convert radiant heat into electricity, and when combined with inexpensive thermal storage can create a

cost-effective long-duration energy storage system. Next slide, please.

The third project will scale-up production of Ubiquitous Energy's high-efficiency, solar window coating technology. The solar window technology has the benefit of generating electricity while allowing the use of the window and reduces solar heating. This solar window technology creates the potential to increase solar generation on large multi-story buildings with proportionally smaller roof space available for PV solar. Ubiquitous illustrates the success of CEC's entrepreneurial ecosystem by progressing their technology from the BRIDGE program to the RAMP program. Next slide, please.

The purpose of the fourth project is to bring a silicon carbide wafer manufacturing method into the Low-Rate Initial Production phase. This manufacturing method uses a patented laser-based slicing technology and dramatically lowers the cost of these wafers, which are necessary for advanced, next-generation power electronics such as circuit breakers and EV chargers.

During the project the recipient will complete the manufacturing design and engineering work, develop a stable and scalable supply chain, and demonstrate the pilot-scale production system. Next slide, please.

For the last project, Opus 12 will ramp up its

manufacturing capacity to fabricate membrane electrode assemblies from the combination of carbon dioxide, water, and renewable electricity to produce valuable fuels and chemicals, such as carbon monoxide, ethylene, and other compounds.

Opus 12's technology creates a pathway to electrify, decarbonize, and improve the cost-competitiveness of non-petrochemical alternatives to chemical and industrial products. Next slide, please.

Staff recommends approval of these five grant agreements and staff's findings that these projects are exempt from CEQA. This concludes my presentation. And thank you for your consideration. Staff is available for questions. Representatives from Opus 12 and Antora wish to provide a comment, and representatives from Antora and Clark Pacific are available for questions.

CHAIR HOCHSCHILD: Thank you.

Let's move to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. We will start off with Justin Briggs. Justin, a reminder to restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. BRIGGS: Great. Thank you so much. Yeah hi, this is Justin Briggs. That's J-u-s-t-i-n B-r-i-g-g-s, and I'm one of the cofounders of Antora Energy.

Good afternoon, Chair Hochschild, Commissioners and Deputy Director Laurie ten Hope. Thank you so much for your time today. I'll keep it super brief, I just wanted to say on behalf of the whole Antora Energy team we'd like to express our deepest gratitude and excitement for this project. Thank you so, so much for your support on this. We're really excited to jump in. Thanks so much.

MS. GALLARDO: Thank you.

The next speaker is Etosha Cave. Etosha, a reminder to restate your name, especially if I mispronounced it, and spell it, then indicate your affiliation. Your line is open, you may begin.

MS. CAVE: Thank you. My name is Etosha Cave, spelled E-t-o-s-h-a, last name, C-a-v-e. I'm the cofounder of Opus 12 and I'm really excited to be here. And I want to extend a good afternoon to Chair Hochschild, Commissioners and Deputy Director Laurie ten Hope. I'm excited to express my gratitude from the entire team at Opus 12 for the RAMP award.

We are a small electrochemistry startup in West Berkeley that is developing a platform to use electricity to convert CO2 emissions into usable products. And we want to be a player in electrifying the chemicals industry to reduce NOx (phonetic) CO2 emissions. And the RAMP award will give us the much-needed funds to build out our

manufacturing facility within the greater Bay Area region. And we hope to grow that facility into a future giga-size factory some day.

Getting the RAMP award has already allowed us to attract an additional 10X in private capital interests (indiscernible) emissions. And we are planning to double our team in size over the next 12.5 years.

So within the coming years we hope to make California proud with their investment. And we look forward to growing and developing our mission in the future. Thank you.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. Chair, that was the last comment on Item 20.

CHAIR HOCHSCHILD: Thank you. Great comments, great companies, great portfolio of projects here. I'm really pleased to support this and I think I'd be repeating myself if I went any further. This is in line with our earlier discussions, love the strategy here on all counts.

So are there any Commissioners wishing to comment? If not, let's see. Commissioner McAllister, would you be willing to move the item?

COMMISSIONER MCALLISTER: I will. I'll move Item 19. Oh sorry, move Item 20. It's 20, 20.

CHAIR HOCHSCHILD: Commissioner Douglas, would

you be willing to second?

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously. Congratulations to all.

Let's move on to Item 21, Advanced Plug Load and Smart Exterior Lighting.

MR. SULEIMAN: Good afternoon, Chair and Commissioners. I'm Adel Suleiman. I'm with the Energy Efficiency Research Office.

In California exterior lighting represents approximately 20 percent of all lighting loads and up to 50 percent of all energy costs for local governments.

In low-income and disadvantaged communities exterior lighting is usually inefficient, unreliable, has poor light quality, and poses serious safety concerns for residents and the community. Exterior lighting also uses

electricity when the electric grid is not powered by carbon-free electricity. Next slide, please.

The two research projects being proposed will develop hybrid luminaires with the potential to reduce electricity use by up to 90 percent compared to the standard luminaires through use of solid-state lighting technology that incorporates photovoltaics and storage. The designs have the potential to increase reliability and safety by being on during grid emergencies, such as fire or public safety power shut-off events. These events could result in exterior lighting remaining off for days due to power distribution line damages.

In addition, community-based organizations representing some low-income communities expressed to Energy Commission staff that existing poor exterior lighting is a major safety concern for residents and the community. The proposed designs would address these concerns. Next slide, please.

The first proposed award is with the Electric Power Research Institute. They are partnered with Hubbell, a major lighting manufacture, to design and develop a hybrid luminaire for parking lots and street light application that uses the electric grid only as a backup. The proposed design uses existing renewable energy sources rather than grid electricity during the evening ramp. And

improves light levels and light quality to residents in low-income and disadvantaged communities. A total of 100 luminaires will be demonstrated in 6 low-income communities. Demonstration sites are located in San Diego, Murrieta, Carson, Arcada and Fortuna. Next slide please.

The next project is with UC Davis and will be coordinated by the California Lighting Technology Center at UC Davis. The project will result in the development of a hybrid luminaire system with multiple exterior applications. This project will have an educational component as well where contractors will be trained on installation and programming.

A total of 200 luminaires will be demonstrated in 7 low-income or disadvantaged communities. Demonstration sites are located in the cities of West Sacramento, Livingston, Kern, Dominguez Hills, Moreno Valley and Chula Vista.

Both projects by EPRI and UC Davis will design and develop smart controllers capable of monitoring grid conditions, battery charge stations, illumination output levels and off grid-charging activity for optimum balance and performance. Next slide, please.

Staff recommends approval of these agreements as well as staff's determination that these actions are exempt from CEQA. Thank you for your time and I am available to

answer any questions you may have.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment.

MS. GALLARDO: This is Noemi, the Public Advisor. We do have a person on the line. We're going to start with Andrew Coleman. Andrew, a reminder to restate your name, spell it and indicate your affiliation, if any. Your line is open, you may begin.

MR. COLEMAN: Thank you, this is Andrew Coleman. Last name is C-o-l-e-m-a-n. Chair Hochschild and Commissioners, this is Andrew Coleman from Electric Power Research Institute. EPRI and its team members, Hubbell Lighting and Redwood Energy, are very appreciative of this award. And also we applaud the Commission on their insights with disadvantaged communities and low-income communities, especially for really solving this problem with low-quality exterior lighting conditions in these communities. And what we're going to be doing is developing and testing and demonstrating reliable, affordable and hybrid solar LED lights. And we're striving towards really providing deeper energy savings.

So the addition of these grid connection LED lights will hopefully, you know, through the research provide higher reliability, higher light levels, and reduce the lights' electricity consumption. It's especially

important for these communities, they're far and wide across the state.

And so one of the things that I wanted to also say is that we're really looking towards charging batteries with solar power and also charging the battery during the solar over-generation periods of off-peak hours. And so we applaud the Commission, we applaud Adel's leadership, and we appreciate being part of this research. Thank you.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. Chair, that was the last comment on Item 21.

CHAIR HOCHSCHILD: Okay, thank you. Well look, a terrific group of projects. Love the focus on low-income and disadvantaged communities for demonstrating this and improving lighting safety and reducing energy use. I'm happy to support. Any Commissioners wishing to make a comment on this? If not, Commission McAllister, would you be willing to move the item?

COMMISSIONER MCALLISTER: Absolutely. Likewise agree with your comments and I will move Item 21.

CHAIR HOCHSCHILD: Okay. Commissioner Monahan, would you be willing to second?

COMMISSIONER MONAHAN: I second the item.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously. Congratulations guys, we got through a long series of projects. Great work to all the staff on setting up all that.

All right, let's turn to Item 22, Approval of the March 17th Business Meeting Minutes.

COMMISSIONER MCALLISTER: I'll move the minutes. Oh, if there's no comment I'll move the minutes.

CHAIR HOCHSCHILD: Thank you, yeah.

MS. GALLARDO: Yeah, this is Noemi.

CHAIR HOCHSCHILD: Yeah. No public comments?

MS. GALLARDO: And that's correct, no public comment on Item 22.

CHAIR HOCHSCHILD: Okay, moved by Commissioner McAllister.

Commissioner Douglas, would you be willing to second?

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner Gunda?

COMMISSIONER GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That item passes unanimously.

CHAIR HOCHSCHILD: Let's move on to Lead Commissioner, Presiding Member reports. How about we start with Commissioner Monahan.

COMMISSIONER MONAHAN: It feels like I was just giving a report. I don’t know why, maybe because I went with my daughter on spring break. I took a little vacation over the last couple weeks, so it feels like just yesterday I was giving a report out.

So right now we're doing a lot of work. And I say “we,” the Chair, Hannon, Anna from Governor Affairs, we're doing a lot of work supporting the Governor's budget proposal and also working with our partner agencies, both on that proposal, but also looking at federal funding opportunities. I know this is something we're all thinking

about what are the ways that we could leverage the Biden Administration support for clean energy and clean transportation to help us meet our goals here in California. So lots of discussions about how do we do this.

And with ARB focusing more on the vehicle side we're focusing more on the ZEV fueling and infrastructure side, GO-Biz kind of knitting it all together. So there's been a fair amount of work around that.

And I just want to acknowledge the Chair for stepping in when I went on spring break with the ZEV hearing. (phonetic) I haven't seen it yet, but I plan to watch it this weekend. I hear he did a bang-up job and so did Hannon Rasool. And I want to give Hannon just so much credit. I've said it before, I'll say it again, he's really stepped in and led on all sorts of ways. He does it with humor, he does it with intelligence, he does it with vision and just has been a great partner on all the work to zero-out pollution from transportation.

So our last Business Meeting was approved, the $50 million grant to fund ZEV infrastructure for commercial vehicles and transit vehicles, transit buses that CALSTART is leading. And Lindsay and her team pulled together a virtual event on that, so that was really quite a fun event. And I just want to give Lindsay and her team credit

for all they're doing too in this virtual world still drum up good media, including videos of like what's happening AC Transit and what's happening with the Port of Long Beach. And just they did a great job at Frito-Lay, I don't want to forget Frito-Lay for their investments on zero emissions. So that's been a lot of fun.

I also want to thank Lindsay, because we've been working for almost a year on an op-ed with Commissioner Rechtschaffen from the CPUC and that just got published today in the "Sacramento Bee." It's been a long haul and it was really due to Lindsay and her team's diligence that we finally got it to the finish line. And it's all about how electric vehicles can support a clean grid. That if we charge these vehicles in the right way they lead to lower electricity rates and, of course lower transportation costs.

So really, this idea that we need to build that ZEV infrastructure, because we want to make sure that everybody gets the benefits from the cost savings that come when we electrify transportation in a smart way. So that's it.

CHAIR HOCHSCHILD: Thank you, Commissioner Monahan. And yes, I did my best Patti Monahan impersonation at the (indiscernible) on Friday. Not as good as the real thing, but I did my best.

Let's go to Commissioner Douglas.

COMMISSIONER DOUGLAS: So similarly I did take a little time off at spring break and it's been a very incredibly busy time. But not as external, not as many events and conferences. We did hold another Lithium Valley Commission meeting and I'm really happy to see that commission coming together and doing well. A lot of work supporting the Governor's Office and budget, lot of support, a lot of work coordinating with the Biden Administration on a whole host of fronts. And so it's been a really good time, but I don't have a lot of substantive reports this time around.

CHAIR HOCHSCHILD: Okay, thank you.

Commissioner Gunda.

COMMISSIONER GUNDA: Yeah Chair, thank you. And I have a little bit of a report here, so I'm going to go through this quickly as I can. But first I want to just share that it's been almost two months since I started, and I cannot believe that it's been two months in this role. And I think it's a timely moment just to kind of pause and share some thank yous for helping me transition into this role as seamlessly as possible. So I want to begin by thanking my fellow Commissioners for taking the time to help me understand what this job means and helping me not fall on my face. And making sure I understand the nuances,

the kindness and guidance that you've shared over the last two months, so thank you to the four of you.

I also want to thank the Executive Office. Drew and Linda, thank you for helping me with all that I need to be as productive as I can. I want to recognize my Interim Chief of Staff. Chair, thank you for sharing Le-Quyen and she's been fabulous in helping me stay grounded and make sure that I'm hitting all my time commitments. I'd like to thank you, you're actually a rock star. And also Nina Holloway from my office, who's been fabulous in organizing everything that the office does. And so just wanted to note those thanks.

Also to our divisions, our deputies for all the briefings specifically Natalie and Laurie for a numerous amount of briefings on interconnection issues, storage issues and so on. So thank you for all your staff time helping me stage, get it and learn the different aspects that are happening in the divisions.

And also have to note Aleecia. Aleecia has been doing a great job stepping into as the Deputy for the Energy Assessments Division. As she promised she's definitely delivering on being a better and improved version of her predecessor, who shall stay unnamed in these next few minutes.

And just kind of substantive issues, reliability

has been a focus, especially 2021-'22, and all the way to 2026. And I'm going to share a few thoughts for the sake of my fellow Commissioners here. So we've been doing some reliability analysis for this summer and all the way to 2026 and understanding the potential shortfalls and the need for a new generation that needs to be brought online. And supporting our sister agencies, both CAISO and CPUC on the different programmatic actions that they have to take.

I want to call on Lana Wong for her analysis that she's done for reliability as well as Mark Kootstra and his team for more detailed analysis that they've been doing. I really do believe that CEC has a very important role in developing objective analysis that can help, even kind of inform the state, the stakeholders in a robust public process. And I'm thankful to the team for taking those things on.

We've been working on natural gas coordination. And as you know, natural gas is one of the key elements this year. We are thinking through various aspects of the analysis that we should undertake.

And also looking at getting ready for the summer, and looking at how the summer reliability plays out. And so we're working with CPUC, CalGEM and other entities to think through that.

I'm really excited to kind of re-start up the

energy insights work that we've done last year. We really focused on the COVID impacts last year. And then kind of looked at how what COVID meant to the changes in our energy landscape. But moving forward, we are going to on a monthly basis put out kind of a staff analysis on a critical timely item. And I will come to all of you to solicit the ideas that you might have.

Just for the public here, you know, there's an incredible amount of data at CEC. And what we're trying to do is both develop analysis, but also under Commissioner McAllister's leadership make sure that the data is available to share. And so this is our kind of attempt in modernizing the value of data at CEC.

So there are other elements, preparing for wildfires, and in the summer thinking through the contingency issues with Commissioner Douglas and how to stay prepared for this summer. And also launching some of the improvements that we talked about in IEPR in demand forecasting and about how best to look at the changing climate and how do we take the uncertainty in weather conditions and such moving forward.

I'm really looking forward to hosting the Town Hall with the Chair tomorrow. And I'm just incredibly thankful to the Chair's determination in ensuring equality for all of Californians. And being that taking care of

that sensitive issue and ensuring that that's given enough time to discuss in all forums, the Commission as well as the state. So thank you Chair for your leadership on bringing together its experts to bring to light the racial justice issues and ensuring that our staff feel protected and supported during this important time.

A couple of points on what I've been doing outside of that. I had a really great briefing from National Academy of Sciences, myself and Commissioner Douglas's Office on the future of electric power grid. We're really looking forward to taking some of the insights that they put out in terms of business practices, good architecture, security and resiliency and such.

I had a great tour of SDG&E's emergency operation center, a virtual tour, and how they are preparing for this summer. And I had the opportunity to speak at the Germany California Storage Symposium and highlight the importance of storage as we think through this transition to clean energy grid.

And so I know I used a lot of words there, but thank you. I just wanted to report out for everybody's sake.

CHAIR HOCHSCHILD: Thank you.

Let's go to Commissioner McAllister.

COMMISSIONER MCALLISTER: All right. So let's

see, I got my first shot last week, so we've been comparing notes. You know, I think that's not a BA violation, (phonetic) but to make sure that we're all getting vaccinated. So hopefully there's some light at the end of the tunnel here in terms of moving out of this year-long COVID event. So anyway, I'm looking forward to getting together in three dimensions instead of just two dimensions.

So I wanted to first have a few thank yous. I wanted to first say, really, congratulations to Mike Sokol, the Deputy over the Efficiency Division. His new daughter was born before the last Business Meeting, but I'm not sure he got his due. Or she got her due right, Skylar Rain Sokol (phonetic) was born on March 3rd. So he's going to be back with us next week. But I just wanted to say we're looking forward to having you back, but also congratulations. And then thanks to Christine Collopy for holding the fort while Mike has been out.

Lots has been going on in the Efficiency Division. I won't go through it all here, but I did just want a few highlights. On Monday we had a load management workshop, a load management standards workshop rather, and really to just get to present and discuss and get some initial stakeholder feedback on the Load Management Standards Draft Report. And I will say Gabe, Karen, Gavin,

Corrine, the whole team has just been -- Jen Nelson -- the whole team has been just knocking it out of the park. And it's very well received and very well-conceived. And so I think that's the fact that it's so solid and I think both visionary and pragmatic at the same time is generating a lot of excitement, and rightly so. Really excited to get that moving.

And I think we have a pretty clear runway now to when we do open the rulemaking to have it without a whole lot of obstacles in the way. So I think I'm hopeful we can get that rulemaking done this year; hopefully, fingers crossed. But it's going to be a great resource for many of the things we've been talking about throughout this meeting in terms of load flexibility and enabling markets to solve the problems that we have with the grid. And then enhance reliability, get harmonization and cost reduction. So want to just call out the staff for a job well done there.

On SB 49 really similarly another tool in our toolbox for load flexibility. That's the appliance flexibility standards. Now that's a longer haul a little bit, it's a multi-step endeavor. We're really building the structure from scratch to do appliance flexibility regulations. We have to build the backbone of the process and then do it device category by device category. But there's a really great regime, sort of a vision in place

for that. And Pierre duVair is leading that charge, so a lot of confidence in him and the team.

And then also on the appliances front I want to just note, and for those who don't know it. that we are in a leadership role across states on appliance efficiency standards and different from the flexibility standards our traditional appliance efficiency standards. More and more states have been doing their own work there and standardizing often around what we've done already. And the U.S. Climate Alliance and stakeholders are really looking to us for leadership and even some infrastructure to help them along and on the appliance standards. And Karen (indiscernible) and her team have been very, very helpful to the other states in that regard so I wanted to just note that.

Then on the Building Standards, I won't talk much about that, but I just wanted to congratulate and thank Will Vincent for his emerging leadership. You know it's a complex topic, it's an office with a lot going on. We have some incredible staff doing modeling and all the relationships that it takes to get really get that village walking down Main Street towards the finish line on the building standards. And Will has been really, I think, just incredibly collaborative. And his ability to encourage stakeholders and bring people into the tent is

emerging as a big scale, a big bonus for the Energy Commission. So I want to just say thanks to Will and Alanna for that.

I got a briefing from Noemi about the Diversity Report and really appreciated that, it's amazing. I think we're leading in that respect. And thanks to the Chair for really setting the tone for that.

And finally just thanks to Heather and the IEPR team for sort of really carrying two batons at once and now running forward from here on out with the 2021 IEPR. I'm really excited about working with all of you, but certainly Commissioner Gunda primarily on the various topics. But I think everybody will have a nice piece of the IEPR. And we're doing some pretty heavy topics this year and I'm looking forward to being in the room, either virtual or physically with all of you too on the workshops and all the different interactions that we're going to have with stakeholders along the way. So thank you.

CHAIR HOCHSCHILD: Thank you, Commissioner.

I will just share a few very quick updates. I wanted to just call out Lindsay and thank her for her work on the event, I guess it was yesterday, publicity event around the $50 million we're doing for heavy-duty charging infrastructure and thank Commissioner Monahan. I think there were 230 people who joined that virtually and just

tremendous work. And also again to Commissioner Monahan, terrific work on the op-ed.

We did have the Legislative Hearing, Joint Committee Hearing before the Senate on Friday. I presented along with Commissioner Rechtschaffen and Liane Randolph and Tyson (phonetic) on our $1.5 billion ZEV budget proposal. I think it went really well. Great, robust dialogue with the Legislature, and a four-hour hearing, so fingers crossed that that gets over the finish line.

Commissioner Gunda and I presented to the Governor as part of a larger group on just a reliability periodic update earlier this week and went over all the measures that we were taking. I would say, generally, I think CAISO, PUC and the Energy Commission are working more closely together than I've ever seen. It really does start to feel like one close-knit family solving this problem together, so trying to get ahead of it.

And I've been really enjoying this spring. I should say just the air is clear and it's not too hot. We're not dealing with heat waves and smoke yet, but it's a good time to kind of get our house in order and get things shipshape.

I guess the last thing I'd just share was yesterday I convened a meeting with Commissioner Monahan and Hannon and Liane Randolph and a number of folks the

around the permit problem we face with electric-vehicle charging infrastructure. We're the largest market for electric vehicles in the country, and we have the worst delay in getting EV chargers. So it's a 78-day delay. And talking to a couple of the big EV charger companies, including Electrify America and EVgo they were just walking through what the issues are.

GOBiz has done great work to kind of set this, sort of a permit Olympics. And they're grading counties, again to produce a map on that. There is legislation that would kind of accelerate that and set, essentially, our shot clock. So you do the application and you give them a 14-day time for the county to respond. If they don't then you can actually install it. So that's in motion this summer. But we need to really be focused on that. We're asking for a billion dollars for infrastructure, potentially much more from a potential infrastructure package. And so we can't get gummed up on a on a really slow permit issue.

We had the same problem with solar some years ago. Focused on it in a much, much better place, so we need do that with this as well.

And I will stop there. So thank you everybody.

Let's move on to Item 24, Executive Director's Report. Linda, you're covering for Drew, yeah.

MS. SPIEGEL: Yes. Good afternoon, everybody. Linda Spiegel, Chief Deputy Director for the Executive Director Drew, who's touring the new CNRA building today. He told me he has nothing to report.

CHAIR HOCHSCHILD: Okay, thank you.

Item 25, Public Advisor's Report.

MS. GALLARDO: Hello there everybody, this is Noemi Gallardo for the record. I'm the Public Advisor and I do have a quick report. So if Dorothy, if you could show on the screen the slide. I'm excited to announce that we have set up the web page for the 2021 Clean Energy Hall of Fame. We're planning for the event to happen in December. And for those in the audience not familiar with the Hall of Fame it's an annual event the Energy Commission launched last year as part of our 45th Anniversary. And the purpose is to honor leaders in our state contributing to California's clean energy future through bold, innovative moves leading to equitable outcomes.

I recommend going to the website to get more details and to submit nominations for any individuals or entities that you know that could qualify. The deadline to submit nominations is June 25th. And the nomination form can be found on the Energy Commission's website on the "About" page, that's www.energy.ca.gov/about. That concludes my report. Thank you.

CHAIR HOCHSCHILD: Thank you. That was a home run when we did that last year. And really glad we're going to make them again.

Let's move on to Item 26, Public Comment. Do we have any public comment on the line?

MS. GALLARDO: Yeah, this is Noemi again, we do. But before I do that let me give the instructions. So this is the period for any person wishing to comment on information items or reports of the meeting agenda or any other items. Each person has three minutes to comment. And comments are limited to one representative per organization.

We are not accepting public comment through Zoom. Please call our Verizon line at 888-823-5065. I repeat, 888-823-5065. This information is also on the slide show we're showing now. The pass code is "Business Meeting."

After your line is open, please restate your name, spell it and also indicate your affiliation, if any. Do not use the speakerphone when talking because we won't hear you clearly. If you're also on Zoom either mute or leave Zoom to avoid feedback.

All right, so we're going to start off with Scott Galati. Scott, a reminder to please restate your name, spell it, and indicate your affiliation. Your line is open, you may begin.

MR. GALATI: Hi. Good afternoon, Commissioners. I know it's a long meeting, but we wanted to bring something to your attention that I think is positive news. This is Scott Galati, S-c-o-t-t G-a-l-a-t-i. My company is DayZen, LLC. And I represented Roseville Energy Park on a project that got permitted here by the Energy Commission and recently got an amendment to add an enhancement to the turbine to increase its efficiency and its output. This is the kind of thing that Commissioner Douglas's and others committee was exploring with respect to squeezing out a little bit more electricity from our existing assets. And so there is Matt Garner who participated in that workshop, with Roseville Electric on the line, and he'd like to tell you just very quickly about the project.

But before I exceed my time I wanted to make sure that the Commissioners heard from me directly, that this process worked. It worked extremely efficiently, thanks to the leadership of Shawn Pittard and the Compliance Project Manager Anwar Ali and staff and Geoff Lesh. We really actually had a very good interaction. Eric Knight came in at the end of the process to help us put it all together quickly. And I just wanted to call those people out. As you know, I generally complain about them. So I am here to say they did a fantastic job, this was a successful amendment process in my opinion, the way it should work.

And now I'll let Matt Garner tell you about what they were able to accomplish over at that great municipal utility.

MS. GALLARDO: This is Noemi, the Public Advisor. Matt, a reminder to please restate your name, spell it and indicate your affiliation. Your line is open, you may begin.

MR. GARNER: Okay, thank you. Good afternoon, Chair and Commissioners, and thank you for your time today. My name is Matt Garner spelled, M-a-t-t G-a-r-n-e-r. I'm with Roseville Electric at the Roseville Energy Park. I just wanted to take a minute to talk about the performance enhancements we were able to take care of here at the Roseville Energy Park.

We began with two 45-megawatt gas turbines and were able to upgrade those to get an additional two-and-a-half megawatts out of each gas turbine, and at the same time improve their efficiency by .55 percent and increase exhaust gas flow, thereby getting more steam to our steam turbine, improving overall plant efficiency.

This is just the first of three upgrades that we wanted to perform in order to ensure that when the summer comes we can provide more power to the Sac region and also help with voltage support in this area.

The second and third upgrades we performed, the

low load turndown and the automated -- excuse me -- advanced emissions tuning, were put in place to help with reducing the load, the PMan (phonetic) of the units, while at the same time maintaining our compliance with our air permits.

And we thought going forward that this would be very important as we began to integrate more and more renewables, to be able to support that effort here at the Roseville Energy Park. So what we were able to do is install individual control valves on each of the gas turbines, 30-fuel gas burners and really fine tune the combustion process, really keep the NOx loads, the NOx levels down as we're going into these PMan, or these low load conditions, once again to help with the renewal integration.

I don't want to get into the details. I know you've got staff reports for all of that. But I did want to let you know that despite the COVID challenges, the travel restrictions we have been able to effectively complete this project. We have commissioned the gas turbines and we are now in the CAISO energy and balance market prior to this summer, which was our goal.

I don't want to parrot again everything that Scott Galati said, but the Commission, the working with the energy park do this process went as I would expect it to

be. It was a partnership to get this done and it was a pleasure working with the Energy Commission staff through the permitting process. Thank you again for your time.

MS. GALLARDO: Thank you.

This is Noemi, the Public Advisor. We have one more person wanting to comment. So that's Ranji George. Ranji, reminder to restate your name, spell it, and indicate your affiliation, if any. Your line is open, you may begin.

MR. GEORGE: Yes. This is Ranji George. I am a scientist with the Coalition of Advanced ZEV. It's a nonprofit volunteer organization to promote ZEV technologies in an environmentally sustainable manner.

I'm sorry I have to comment again, but I just want to talk about that $50 million being set aside for heavy-duty infrastructure. I just am sharing this, because I've been in the trenches for 25-30 years fighting for many of these technologies at great cost to my own career. And I have learned, looking back, we have seen tremendous accomplishments. At the same time, tremendous blunders or mistakes.

Let me kind of share with you what happened. As I mentioned we had three technologies going very strong in the mid-90s. Then suddenly a change of management happened and big funding, substantially more funding like Carl

Moyer, Prop 1B, AB 923, you name it came down the pipeline from the Governor's Office and Sacramento. And then they had a criteria called, "cost-effective criteria." And that cost-effective criteria failed to look not only in the short -- it only looked on the short-term, didn't look at medium-term and long-term. There are different -- I mean, different implications if you put the different time horizons.

And as a result natural gas technology ran away with 80 to 90 percent of the funding at the cost of very little funding for battery, and almost negligible for fuel cells.

The same thing happened when ZEV funding came along and it was supposed to be, we thought, 50/50 for battery and fuel cells. But again that cost-effective criteria came in and batteries almost, if I may say so, crushed refuel cells. (phonetic) Today fuel cells in the light-duty sector is barely hanging on. We had predicted tens of thousands of fuel cell vehicles and hundreds of stations last decade. And we are barely even 10,000 vehicles today and 200 stations now.

So this will continue into the heavy-duty structure, if you -- into the heavy-duty infrastructure if we don't pay close attention what kind of stumbling -- maybe we may not notice that stumbling block, but it is a

stumbling block. If you just mention costs, yes battery is ahead of fuel cells and partly is driven by the funding CEC and the CEC, PUC, ARB is giving it. The cost is being driven down by all the focused funding on it.

If we had split the funding into fuel cell infrastructure, in particular, we could get the cost down in fuel cells infrastructure too and invite lots of funding for the vehicle side from the world of manufacturers. So they looked at a lack of support for light-duty infrastructure, so they didn't find much in the fuel cell light-duty sector.

So to avoid the same mistake, please, I appreciate split each funding into equal proportions so that the cost criteria will not be the dominant force and snuffing out again, suffocating the fuel cell technology. Otherwise we'll end up the same thing, which we have ended up in light-duty sector. And the heavy-duty sector, namely 90 percent of the funding going to --

MS. GALLARDO: Ranji, your time is up. Apologies for interrupting, but your time is up. If you could close quickly.

MR. GEORGE: I want to encourage you in your talks with the Governor and with the Biden Administration to please put fuel cells as equal billing, because then the funds will come. I'm sure Toyota, all the big auto

manufacturers will start separating the funds into the fuel cell technology as well, both light duty and heavy duty.

Thank you again for listening to my concerns of the last 25 years. Thank you.

MS. GALLARDO: All right, so Chair this is Noemi again. That is the last comment on Item 26.

CHAIR HOCHSCHILD: Thank you. Well, thank you for all those comments. And with respect to Scott Galati's remark I rarely -- I can and I do agree with Scott Galati. And Scott you made a good point. I really want to attribute to Shawn Pittard and the team on all the work to promote getting the maximum efficiency out of the existing fleet. I think it is imperative, once these facilities are permitted and operating when we're in a period of threat to reliability that we do that. And I want to congratulate everyone on the progress and hopefully more to come. A very fruitful workshop I thought on that, gosh, back in November and nice to see the headway. So congrats to all involved.

Let's move on now to Item 27, Chief Counsel's Report.

MS. BARRERA: Good afternoon, Chair and Commissioners. I have no general reports today other than to recommend a closed session to discuss pending litigation which the Chair will disclose in a minute.

CHAIR HOCHSCHILD: Okay. Thank you, Linda.

So the Commission will now go into closed session as specified in Agenda Item 27(a), which provides notice that the Commission may adjourn to a closed session with its Legal Counsel pursuant to Government Code Section 11126(e) to discuss litigation to which the Energy Commission is party. The Commission will specifically discuss item 27(a)(v) which is the Olson-Ecologic Testing Laboratories, LLC v. Energy Commission. The case is at the Orange County Superior Court, Case No. 30-2019-01115513.

We anticipate returning to an open session, I couldn't say -- I mean, at this point what would you say, Linda? How long would you say?

MS. BARRERA: I would say about less than 30 minutes, maybe 25 minutes.

CHAIR HOCHSCHILD: Okay, so we expect around 4:00 o'clock?

MS. BARRERA: Yes.

CHAIR HOCHSCHILD: Okay, thanks everyone. We'll be back shortly.

(Off the record at 3:24 p.m. for Closed Session.)

(On the record at 3:46 p.m. for Open Session.)

CHAIR HOCHSCHILD: I am back and Commissioner Gunda and Commissioner Douglas are with me. Noemi, are you there?

MS. GALLARDO: Yes, I am and I just began recording.

CHAIR HOCHSCHILD: Okay, thanks everybody. We completed that item. And we are adjourned.

(The Business Meeting adjourned at 3:47 p.m.)

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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 reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

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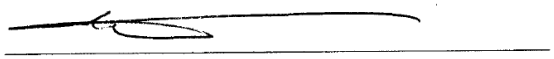

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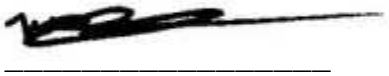

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