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BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)
	)20-BUSMTG-01
Business Meeting	)
_____	)

REMOTE ACCESS ONLY

The California Energy Commission's June 10, 2020 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 is able to participate and observe the meeting consistent with the direction in these Executive Orders. Instructions for remote participation can be found in the notice for this meeting and as set forth below in this agenda.

WEDNESDAY, JUNE 10, 2020

10:00 A.M.

Reported by:
Peter Petty

APPEARANCES

Commissioners (Via Remote)

David Hochschild, Chair
Janea Scott, Vice Chair
Karen Douglas
Andrew McAllister
Patricia Monahan

Staff Present: (Via Remote)

Drew Bohan, Executive Director
Darcie Houck, Chief Counsel
Noemi Gallardo, Public Advisor
Cody Goldthrite, Secretariat

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I N D E X

P R O C E E D I N G S

JUNE 10, 2020 10:00 a.m.

CHAIR HOCHSCHILD: Good morning, and welcome everybody to our June 10th Business Meeting. We're doing this remotely for the second time and what we'll do is we have a pretty substantial agenda. We'll plan to go until 12:45 and at that time then we'll assess whether to continue or to take a break. If we do take a break, we'll set a fixed time for returning.

So let's begin with the Pledge of Allegiance, if I could ask my colleagues now.

(Whereupon the Pledge of Allegiance is recited.)

CHAIR HOCHSCHILD: Thank you, and let's also if we could share a moment of silence in recognition of all the victims of (indiscernible) and violence.

(Whereupon a moment of silence is given.)

CHAIR HOCHSCHILD: Thank you. So let me just say before we get into the agenda this has obviously been a very turbulent and challenging few weeks that we've had. And we're dealing with many things simultaneously, an incredible injustice continuing in the United States, civil unrest in many places, and all this in the middle of a pandemic. And I think the important thing to remember all of us have a role to play in making things better. And getting our country on to a path that really begins with

how we treat each other.

And so I just want to again ask that everyone really let's make every effort we possibly can to be kind to one another, to be understanding and to reach out and support our colleagues and neighbors, our families, in every way that we can. So it's been an unbelievably stressful chapter, but we'll get through it together and we'll get stronger and closer, I hope, because of this.

So with that let's get into the agenda. Today's Business Meeting is being held remotely without a physical location or any participant consistent with Executive Order N-25-20 and N-29-20 per 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 in a public meeting consistent with the directions of these executive orders. Instructions for remote participation can be found in the notice for this meeting as set forth on the agenda posted to the CEC website prior to this Business Meeting.

So again we're using a combination of Zoom and Verizon for remote access today. In case Zoom shuts down for both video and audio, we will continue the meeting on our Verizon phone line. The number is 888-323-5065. We will transfer this Business Meeting.

All right, pursuant to California Code of

Regulations Title 20, Section 1104, 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 per person as to each item listed on the agenda that will be voted on today. Any person wishing to comment on any information items or reports, non-voting items, shall reserve their comment for the general public comment portion of the meeting agenda and have three minutes total to state all remaining comments.

Okay, so I do want to also note today is something of a record. We're going to be pushing out $93 million in grants and loans today to support our clean energy agenda. It's a remarkable number and a lot of staff work has gone into the preparation of all these agenda items.

This is much needed in the moment that we're in. We need economic recovery, so I do want to again thank the staff. I think I speak for all my colleagues when I say I'm just really, really pleased and impressed at the ability of the Energy Commission and all the staff working remotely, to move the agenda forward and as expeditiously as possible.

All right, so let's being with Item 1, the Consent Calendar. We'll take up all the items as one with the exception of Item a, which has been pulled.

First, are there any public comments on the Consent Calendar, anyone?

MR. GOLDTHRITE: This is the Secretariat. We have no public comment.

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

CHAIR HOCHSCHILD: Madam Vice Chair?

VICE CHAIR SCOTT: Yes. I move approval of the consent calendar.

CHAIR HOCHSCHILD: Okay. Is there a second, maybe Commissioner Douglas?

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: Okay, great. All in favor say aye. I vote aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

We couldn't hear you, Commissioner Monahan. Are you unmuted? Can you give us a thumbs up?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: There you go. Okay. Thank

you. That motion passes unanimously.

CHAIR HOCHSCHILD: Let's move on to Item 2, Discussion of Energy Commission Progress on Joint Agency Report, Charting a Path to a 100 Percent Clean Electricity Future, SB 100.

MS. WEEKS: Hi, can you hear me?

CHAIR HOCHSCHILD: Yes.

MS. WEEKS: Great. Hello Chair, Vice Chair and Commissioners, this is Tara Weeks, Senior Advisor to Chair Hochschild and Project Manager for the SB 100 interagency report.

It's been a couple of months since my last update. During this time the interagency team has been busy finalizing the modeling scope for the report, working to ensure interagency agreement on a number of key questions and reviewing comments and input received through our workshop -- I apologize, there is a siren in the background -- all while adjusting to (indiscernible) work arrangements. So we appreciate stakeholders patience over the last couple of months. And I want to provide a quick update on the report timeline and upcoming opportunities for public engagement.

By early July, we plan to release a document summarizing our final modeling scope. This is in response to stakeholder requests for additional details on the

report analysis. The document will include a final list of scenarios that will be modeled for this report as well as technical and substantive assumptions that were made.

We'll also include responses to key stakeholder comments relating to the modeling scope. These include comments that have been addressed in this round of modeling, proposals for future modeling work, and suggestions that were deemed to be outside the scope of SB 100. We expect to receive our modeling results by mid-July and are targeting early August for a draft-modeling results workshop.

Lastly, we aim to release a draft report and hold a draft report workshop this fall. We look forward to sharing our findings over the coming months.

A couple of additional notes on stakeholder engagement, first California as joined the Clean Energy Space Alliance 100 Percent Clean Energy Collaborative, which is bringing together all 14 states and Washington DC to assess (phonetic) 100 percent clean energy policies for discussion on policy implementation.

We all know that California cannot achieve our goals in a vacuum, so we look forward to engaging with our colleagues in other states on this important topic. We are currently working with the Collaborative to facilitate a discussion on integrating equity into 100 percent policy

implementation, which will be led by our Public Advisor, Noemi Gallardo.

We are also planning a follow-on discussion with the Disadvantaged Communities Advisory Group and other environmental justice stakeholders to review our draft modeling results once they are released and discuss implications for communities moving forward.

Lastly, we again want to thank the California balancing authorities for their input to date. And we are working to schedule another meeting with them to solicit further feedback on our modeling and report development.

And that concludes my update. Thank you.

CHAIR HOCHSCHILD: Great. Thank you so much, Terra, for your ongoing tremendous work on this critical effort. Any public comments, Madam Public Advisor?

MS. GALLARDO: No written comments. I'll defer to the Secretariat for anyone on the line.

MR. GOLDTHRITE: We have no public comment on the line.

CHAIR HOCHSCHILD: Okay.

Commissioner McAllister. Let's go to Commissioner discussion.

COMMISSIONER MCALLISTER: Yeah, just there's actually been a lot of progress and a lot of interaction between the principals in SB 100. The technical challenges

I think we are understanding them really well, looking at scenarios, looking at sort of what the various pathways can look like to get to our goals. I think everybody believes it's eminently doable. And obviously the sort of a heft of the analysis and the planning is not to be underestimated, so I think we're all bringing significant resources to this. So between the PUC and the Air Resources Board and us at the Energy Commission, and then with the Independent System Operator sort of chiming in as needed on some of the technical issues, I think we're making a lot of progress.

And again I think the coordination issue with Terra leading that and EAD and their counterparts across the other agencies, I'm really optimistic about how well it's going.

CHAIR HOCHSCHILD: Great, any other comments from the Commissioners? No, okay seeing none, this is a non-voting item. So we'll move on. Thank you.

Let's go on to Item 3, Local Ordinance Applications.

MS. DROZDOWICZ: Good morning Chair and Commissioners, can you hear me?

CHAIR HOCHSCHILD: Yeah, good morning.

MS. DROZDOWICZ: Excellent. Thank you. My name is Danuta Drozdowicz. I work in the Efficiency Division's Buildings Standards Office and I'm here to present local

ordinances from jurisdictions that have applied to the CEC for approval.

In order for a local standard to be enforceable the jurisdiction must file, with the CEC, its determination that its standards are cost-effective. The CEC must then find that the local standards will require a reduction of energy consumption levels, compared to the current statewide Energy Code.

Two jurisdictions have submitted applications for Commission consideration at this Business Meeting, the cities of Richmond and Hayward.

The City of Richmond requires that newly constructed residential buildings are all-electric with gas allowed only for cooking and fireplaces. Prewiring for electric appliances is required where gas appliances are installed. Newly constructed high-rise residential and non-residential buildings are required to be all-electric with no exceptions, although commercial kitchens and life science, public agency and emergency operations buildings may apply for exemption on a case-by-case basis. Nonresidential buildings must also install a minimum amount of onsite solar, either photovoltaic or solar thermal.

The City of Hayward requires that all newly constructed low-rise residential buildings, other than accessory dwelling units, are all-electric. If newly

constructed high-rise residential and nonresidential buildings are mixed-fuel, they are required to install solar panels on the entire Solar Zone and meet higher efficiency levels than the Standard Design Building. Energy related but not subject to CEC approval, the City of Hayward ordinance also includes provisions for electric vehicle charging infrastructure.

Staff posted the complete applications, including the local ordinances and adopted cost effectiveness analysis, on the CEC's website under Docket 19-BSTD-06 for the required public comment period. One comment was received on the Hayward application from the Western Propane Gas Association. The comment was on the merit of renewable propane and is not related to the Energy Commission's possible approval for Hayward to enforce their adopted ordinance.

Staff reviewed the applications to determine if these local ordinance standards will result in the reduction of the energy consumption levels permitted by the 2019 Energy Code, per the requirements in the Public Resources Code. Staff finds that the standards will reduce the amount of energy consumed, and will not lead to increases in energy consumption inconsistent with state law. Staff further confirms that each of the jurisdictions publicly adopted a finding of cost effectiveness for the

standard.

Because staff has found that the applications meet all the requirements of the Public Resources Code, staff recommends approving enforcement of the ordinances. As a point of interest, to date this will bring the number of jurisdictions that have been approved by the Energy Commission under the 2019 Energy Code to 25.

This concludes my presentation.

Staff is on standby to answer any questions that you may have.

CHAIR HOCHSCHILD: Thank you so much.

Let's see if we have any public comment on this item.

MS. GALLARDO: This is the Public Advisor, Noemi Gallardo. I do have comments, but let me check in with the Secretariat first to see if there's anyone on the line.

MR. GOLDTHRITE: We have no comments on the line.

MS. GALLARDO: All right, I will proceed. I have two comments that we received in writing. The first one is from Barbara Halliday, that's spelled B-A-R-B-A-R-A, Halliday is spelled H-A-L-L-I-D-A-Y. She's the Mayor of the City of Hayward. This is a letter of support for Agenda Item 3b.

"Dear Chair Hochschild and Commissioners. I urge support and approval for the City of Hayward Application

for approval of Reach Codes.

"The City of Hayward was one of the first California cities to adopt a climate action plan in 2009 and sustainability remains a top priority for Hayward. Earlier this year, our City Council adopted a three-year Strategic Roadmap and electrification reach codes was included as one of the key initiatives. Hayward is expected to add approximately 2,000 housing units in the coming decade and ensuring all-electric construction of our new residential buildings will help Hayward meet its long-term greenhouse gas reduction goals.

"The Energy Commission funded a study by E3 that evaluated different possible pathways for achieving climate targets in California. Of all pathways evaluated, the high electrification pathway focusing on electrification of buildings and transportation was the least-cost pathway identified for achieving our targets. This is particularly true in communities served by community choice energy programs. Hayward is served by East Bay Community Energy, which is working towards providing 100 percent renewable energy ahead of the State of California mandates.

"The City of Hayward brings before your Commission a very carefully considered local ordinance that promotes the electrification of buildings where it is shown to be cost-effective. The City conducted significant

stakeholder outreach, worked hard to incorporate feedback from the community, and brought the ordinance before our City Council Sustainability Committee several times. The item was approved by our Council unanimously with public support.

"The City of Hayward has met all the requirements of the Energy Commission in preparing this submission, and we urge you to approve this ordinance. Thank you in advance."

The second comment is from Beckie Menten. That's spelled B-E-C-K-I-E, Menten is M-E-N-T-E-N. She's the Program Manager of Building Electrification and Energy Efficiency at East Bay Community Energy. This is a letter of support for Agenda Item 3b.

"I am writing today to urge support and approval for the City of Hayward application for approval of Reach Code. East Bay Community Energy is a community choice aggregator operation in California's Bay Area. EBCE has been serving customers in Alameda County since 2018. In 2021, EBCE looks forward to enrolling new customers in the communities of Pleasanton and Newark, as well as customers in San Joaquin Valley with the inclusion of the City of Tracy.

"EBCE is committed to providing its member agencies, including the City of Hayward, with a cost

competitive and low carbon electricity product. The City of Hayward has gone one step further, choosing to opt its community into the brilliant 100 percent renewable product offered by EBCE.

"Local jurisdictions have a unique ability to adopt energy codes for building construction that are more stringent than those of the California Energy Commission, provided that the codes are shown to accede energy efficiency targets of the existing building code and that the jurisdiction has evaluated the cost effectiveness of these codes.

"The City of Hayward brings before your Commission a very carefully considered local ordinance that promotes the electrification of buildings where it is shown to be cost effective. The City has conducted significant stakeholder outreach, worked hard to incorporate feedback from the community and brought the ordinance before its counsel twice. The item was passed.

"The resulting ordinance adopted by the Hayward City Counsel promises a reduction in carbon emissions for new buildings and includes requirements for additional electrical vehicle charging infrastructure.

"The leadership of the City of Hayward will not only help California meet its carbon goals to reducing emissions resulting with buildings, it will also help

provide a model for the California Energy Commission to consider in pursuing development of energy standards for the next round of Title 24 updates.

"When local communities step out in from of the state they develop a market for new technology, for a trained workforce and for informed building officials. This early market development is critical to helping California advance on a low-carbon future.

"The City of Hayward has met all the statutory requirements in preparing in preparing a submission. And EBCE urges the Commission to approve this ordinance."

That concludes the comments.

CHAIR HOCHSCHILD: Great. Thank you, Noemi. So I have a few comments on this item. Let's go first to Commissioner McAllister and the other Commissioners.

MR. GOLDTHRITE: Chair, we have --

(Overlapping colloquy.)

MS. GALLARDO: Go ahead, Secretariat.

MR. GOLDTHRITE: We have Lauren Cullum from the Sierra Club that would like to speak on Item 3.

MR. GOLDTHRITE: Oh yeah, sorry. Commissioner McAllister is that okay if we go to Lauren?

COMMISSIONER MCALLISTER: Yeah. That's great.

MR. GOLDTHRITE: Hi, Lauren. Good morning. Go ahead.

MS. COLUM: Hi, good morning. Can you hear me?

MR. GOLDTHRITE: Yes.

MS. CULLUM: Great. This is Lauren Cullum on behalf of the Sierra Club of California, representing 13 local chapters in California and half a million members and supporters throughout the state. And I'm speaking to express our strong support for the Energy Commission's approval of the local ordinances submitted by Hayward and Richmond today.

These Reach codes are the result of a statewide cost effectiveness analysis and an extensive stakeholder engagement process. And this local democratic processes leading the way to the state to implement decarbonization solutions that are critical in the fight against climate change.

Including everything happening with the COVID-19 pandemic, our work to improve air quality making it safer for everyone to breathe by transitioning our homes and buildings away from using dirty fossil fuels has become more important than ever. It is that much more important that we reduce air pollution as it has been found that air pollution makes individuals more vulnerable to the virus.

These Reach codes are not just a measure to reduce our greenhouse gas emissions and help meet our climate goals, they will reduce indoor and outdoor air

pollution and their associated health and economic impacts.

CEC is providing the bold leadership that is necessary to combat climate change, clean the air and improve housing and energy affordability.

Again, Sierra Club of California supports the Commission's approval of these Reach codes today and urges the Commission to build upon this local leadership in its 2022 code cycle. Thank you so much.

CHAIR HOCHSCHILD: Thank you, Lauren.

All right. Let's go to Commissioner discussion, Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, so thanks, Chair. And I wanted to first thank Danuta and the staff for really keeping on top of these issues, the Building Standards Office and Mike and the team. I really want to give them kudos for their kind of detailed analysis, but also their understanding of our role and their really conscientious application of our role, which is limited as Danuta explained. We have to show that it's as least as stringent as the statewide minimum Building Code. And then the local governments really have the -- and as the Mayor of Hayward and Beckie said in their comments as well, the process at the local level is really key to the decision making which is a local decision.

So they put it through a process that's publicly

vetted and do an analysis in their own context that they deem to be adequate and then bring that package to us.

I think local governments are looking seriously at decarbonization, because they have a legal obligation to. They have to do their climate planning. They have to meet the SB 375. They have to really figure out what to do at the local level and consider all pathways. And I think they're finding those pathways. And they're also adjusting them and putting -- sort of taking into account the local context, the market realities, what technologies are really out there? And what can they require in their own local context? Where their housing market is, their population in the multifamily, single family? And incorporating the necessary flexibility to allow each project to move forward, if that's an exemption process or that's another kind of boundary around their local decision and then that's what they're doing. And so that's really good to see that considered process. I really appreciate both cities, Richmond and Hayward for bringing this to us.

And then I guess I would just highlight to my colleagues, the single and the low-rise residential are relatively straightforward for some of this. Because the technology pathways are relatively clear, the more complex buildings, commercial, high-rise, residential, infill, things like that are a little bit more complex. And so

we're seeing solutions developed for those in a more contextual basis.

So staff is working really hard to create the modeling tools and the compliance tools to enable as many buildings as possible to take advantage of new technologies and really be responsible buildings on the grid. So that's a work in progress, but very robust discussions going on with stakeholders across the state.

So I think things like pre-wiring and being prepared for the future and incorporating broader issues, like fire hardening, earth quake resilience that are not part of our wheelhouse are also necessary, or showing the creativity of local governments. That's really wonderful to see and then we have this very diverse state and local governments innovating and leading. So it's just nice to see snapshots of that basically at every business meeting at this point and then watching local governments develop tools that we can then use at the state level.

So thanks a lot and I obviously support this item.

CHAIR HOCHSCHILD: Okay. Are there any comments from other Commissioners? Okay.

(No audible response.)

CHAIR HOCHSCHILD: Okay. The only thing I would add to Commissioner McAllister's comments is that I have

one thing that sometimes gets missed in this discussion of gas versus electric, is sort of a choice to choose between two technologies, but there really is a fundamental efficiency difference that is (indecipherable) actually exists with transportation as well. Just combustion technologies inherently do not operate with the same efficiency. And so it's true with electric cars, but also things like a water heater typically (indiscernible) heat pump water heaters is about three times more efficient than a gas water heater and these kind of things. And so you do get an efficiency gain just by virtue of the technology category.

But I also wanted to say these policies are, as Commissioner McAllister noted that local policies developed through a local process with local leadership and local enforcement, are almost really these two tests of whether it considered cost and whether it violates Title 24. And so we -- if it meets those tests it gets approved.

But I do want to say that we really love to see local leadership on decarbonization. It's incredibly important and the cities that are doing this are collectively making a future impact. And it's something that's been spreading, particularly (indiscernible) almost every meeting as more and more cities expand their efforts. So I want to congratulate the cities for these policies and

I'm happy to support this item.

So with that, do we have a motion, Commissioner McAllister?

COMMISSIONER MCALLISTER: As long as there are no other comments, it looks like there are not so yeah, I'll move this item.

CHAIR HOCHSCHILD: Okay. Is there a second, Commissioner Monahan?

COMMISSIONER MONAHAN: I second it.

CHAIR HOCHSCHILD: Okay. Let's vote. All in favor?

Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

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

Let's move on to Item 4, Evergreen Economics, Incorporated, Economic Services.

MR. BAEZ: Good morning, Chair and Commissioners. Can you hear me?

CHAIR HOCHSCHILD: Yes, good morning.

MR. BAEZ: Very good. My name is Carlos Baez and I work in the Appliances Office in the Efficiency Division. I am here today to seek approval of a contract with Evergreen Economics to provide the Efficiency Division with economic analysis services through what's called the California Multiple Awards Schedule or CMAS, which include preapproved rates for these services.

The services needed are to provide the Appliances Office with Standardized Regulatory Impact Assessments or SRIAs, for appliance efficiency rulemakings under Title 20. Appliance rulemakings that are expected to have at least a $50 million impact within the state over a 12-month period after full implementation are considered major regulations, and require that a SRIA be completed before the rulemaking can move to the public comment period. Evergreen Economics would provide between two and three SRIAs each fiscal year, up to a maximum of nine over a three-year period.

This contract is necessary to provide access to economic modeling tools and expertise required to complete multiple SRIAs. The scope of work includes knowledge transfer from Evergreen Economics to Appliances Office staff, which will enable staff to prepare these Standardized Regulatory Impact Assessments in the future.

Thank you for your time. We have staff on

standby and we are available to answer any questions. Thank you.

CHAIR HOCHSCHILD: Okay. Thank you. Let's see first if there is public comments.

MR. GOLDTHRITE: We have Keith Rivers from Evergreen Economics on the line.

CHAIR HOCHSCHILD: Go ahead, Keith.

MR. RIVERS: No comment.

CHAIR HOCHSCHILD: No comment. Okay.

Anyone else, Noemi?

MS. GALLARDO: No comments from the Public Advisor.

CHAIR HOCHSCHILD: Okay. Let's to Commissioner discussion, Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, so thank you Carlos for presenting this. And this is a pretty straightforward item, I would say. We by law have to do the SRIA analysis when the economic impacts, one of our regulations, typically focus mostly on the appliance side has a relatively important economic impact on the state. And so it would be an analysis if we needed it to happen, it's best to bring in an outside resource. And this is a good approach.

CHAIR HOCHSCHILD: We typically for these --

COMMISSIONER MCALLISTER: (Indiscernible.)

CHAIR HOCHSCHILD: Commissioner, we typically contact out rather than do that in house?

COMMISSIONER MCALLISTER: You know, we've gone -- historically we've more contracted -- well it's a relatively new requirement, the SRIA. And the limit is $50 million, I believe. So and many of our regulations do not have that scale of impact, so when there's a relatively important one that comes through we need to do this analysis. And we've explored and actually implemented pathways to do it in house, but the resource is -- the need is relatively episodic. And so it turns out it's likely a better path to contract it out. And it's a fairly modest amount of money to have that resource that's more flexible.

CHAIR HOCHSCHILD: Okay. That's all. Colleagues, does anyone want to comment on this? If not, I'll entertain a motion from Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, I'll move Item 4.

CHAIR HOCHSCHILD: Okay. Is there a second? Vice Chair Scott?

VICE CHAIR SCOTT: Second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

CHAIR HOCHSCHILD: Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: 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 5, Energy Efficiency Technical Support Contract.

MR. SAMUELSON: Good morning Chair and Commissioners. My name is Brian Samuelson with the Efficiency Analysis Unit of the Energy Assessments Division. Today I am here to discuss the Energy Efficiency Technical Support Contract, Number 800-20-001 for your approval.

This work authorization contract with Guidehouse, Inc. is for three years and 1.5 million from the Cost of Implementation Account, Greenhouse Gas Reduction Fund and is needed to provide technical support, so that the Energy Commission can meet the mandates under Senate Bill 350, the Clean Energy and Pollution Reduction Act.

SB 350 requires the Energy Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses by January 1,

2030.

Under this legislation, the Energy Commission is to provide to the Legislature recommendations and an update on progress toward achieving this goal every two years in the Integrated Energy Policy Report. Technical support in improving analytical methods for forecasting energy efficiency savings, tracking savings from market based activities, preparing cost and performance analysis of existing and emerging electric technologies, identifying implications on long-term decarbonization goals of transportation and housing planning, assessing demand response potential, and developing a common platform for long-term statewide energy demand scenarios, are needed to comply with this legislative mandate.

That concludes my presentation, and I am available for any questions. Thank you.

CHAIR HOCHSCHILD: Great, thank you.

Any public comments on this item?

MR. GOLDTHRITE: This is the Secretary. We have no comments on the line.

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

CHAIR HOCHSCHILD: Okay. Let's go to Commissioner discussion, Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, just I support

this item. Actually we saw the benefit of this approach in Guidehouse as an input to one of our rulemakings, in fact yesterday and has been for the last few months on the fuel substitution analysis tool that's helping support AB 3232. And so the Efficiency Division needs this resource to do detailed assessments of all of the themes in various legislative settings that we need to implement.

So it's a valuable resource to have and really I think a critical input to the staff management of these various parallel efforts on decarbonization and figuring out how to manage our building stock etcetera. Integrating transportation, we're looking at the carbon impacts of all that.

So I support this item.

CHAIR HOCHSCHILD: And Guidehouse is formally Navigant, correct?

COMMISSIONER MCALLISTER: Yes, it's the new name of Navigant.

CHAIR HOCHSCHILD: Okay.

COMMISSIONER MCALLISTER: And they are -- I mean there was a process to get here, but they have been doing these kinds of scenario analyses for a long time, support the PUC and have been supporting us in specific contexts. So this is another of those realms that we need going forward.

CHAIR HOCHSCHILD: Okay. Unless there's any comments from anyone else on the dais, I'll entertain a motion from Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, I'll move Item 5.

CHAIR HOCHSCHILD: Okay. Madam Vice Chair, would you be willing to second?

VICE CHAIR SCOTT: Second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And my vote is aye, so that item passes unanimously.

Let's move on to Item 6, ECAA 1 Percent Loans to the City of Trinidad, Ambrose Recreation and Park District, Snelling Community Services District, and Colusa County.

MR. MCLEOD: This is Barry McLeod speaking. I'm with the Efficiency Division's Local Assistance and Financing Office. I am here today seeking approval for four proposed resolutions for Energy Conservation

Assistance Act or ECCA loans.

First, the City of Trinidad, located in Humboldt County is requesting a 1 percent loan for just under $50,000. The loan will finance the installation of the 14-kilowatt DC roof-mounted solar PV array on the roof of the town hall to reduce grid energy use. Upon completion, the project is estimated to save $4,400 in annual utility costs.

Second, Ambrose Recreation and Parks District, in Contra Costa County, is requesting a 1 percent loan for just over $517,000 for the installation of one 50.8 kilowatt DC solar PV system, energy efficient lighting, HVAC unit replacement, programmable thermostats and pool pump smart controls. The project is estimated to save the districts an annual energy cost of approximately $36,000.

The third request is for a 1 percent loan for approximately $123,000 for the Snelling Community Services District, in Merced County. This project is to install a 34.5 kilowatt DC ground mounted solar PV system and replace two sewage lift station pumps with highly efficient submersible pumps at the sewage treatment plant. Upon completion, the project is estimated to save approximately $13,000 in utility costs annually.

The fourth and final request is from Calusa County for just over $1.6 million 1 percent loan for four

solar PV systems totaling 281 kilowatt, plus 16 other energy efficient measures at seven sites. The project is estimated to save the county over $160,000 per year in utility costs.

CEC staff has determined that all four of the requested projects funded by these loans are CEQA compliant, technically feasible and meet the requirements for ECCA 1 percent loans.

We request your approval for these four loans. And staff are available for any questions. Thank you.

CHAIR HOCHSCHILD: Great. Thank you.

Let's see if we have any public comments.

MR. GOLDTHRITE: Yes, we have Wendy Tyler from the County of Colusa and Andy Roth from Air Con Energy on the line.

MR. GOLDTHRITE: Go ahead, Wendy.

MS. TYLER: Good morning, Commissioners. Just on the line to answer any questions you may have and to thank you for your consideration of our proposal.

CHAIR HOCHSCHILD: Great, thank you.

Andy, are you on a separate line or you're with her?

MR. ROTH: Yes, I am. My name is Andy Roth. I am Director of Services for Air Con Energy. We're an energy services company working with Colusa County on this

project. We appreciate your consideration. If there's any questions please let us know.

CHAIR HOCHSCHILD: Okay. Thank you.

Any other comments either on the phone or in writing?

MR. GOLDTHRITE: We have no other comments on the line.

MS. GALLARDO: Okay, this is the Public Advisor. No written comments and it sounds like the Secretariat says no more comments on the line.

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

COMMISSIONER MCALLISTER: Yeah, so this is really another nice set of projects. And it's really great to see smaller cities and park districts and rural parts of the state take advantage of the ECCA program. And in particular I always liked integrated projects that have a bunch of different -- that sort of pool a bunch of different investments, different end uses and different improvements together. That really makes a strong project.

In particular, kudos to Colusa for getting a bunch of interesting things together in one, including generation PV and efficient lighting and HVAC and cool roof. It shows a really comprehensive view of upgrades that are needed. Also, I really like to see pumping and

heavier loads. Those save massive quantities of energy over their lifetime, even though they're relatively -- and they require relatively important upfront investment. So this is the perfect program for those kind of projects.

So really thanks to all the applicants and the staff for doing the analysis and bringing these forward. I'm supporting this item and I'll move Item 6, if there aren't any additional comments.

CHAIR HOCHSCHILD: It's a great point, Commissioner. I think as electric rates go up and there's a number of forces driving that unfortunately for both gas and electric going forward. But as electric rates go up, the opportunity to bundle some of the more expensive efficiency, harder to reach groups, as it were, with the lower cost service jobs increases. And so it's a great (indecipherable).

COMMISSIONER MCALLISTER: Yeah, and lighting also has a massive, very quick payback. And if you can see fit to say, "Okay, well we have a long-term payback requirement for the ECCA program." So you can do a lot of capital intensive projects if you bundle and you keep under the dozen or 17-18 year payback you can do a lot with that. You can do some capital intensive projects that over the long term will really pay you back.

CHAIR HOCHSCHILD: Yeah.

Any other comments from the Commissioners? Well, I would say I am the biggest fan of the ECCA program. I mean it's amazing. We've been operating it for almost 40 years, we'll be coming up on 1,000 projects now (indiscernible) done since it's inception and no defaults. And so I just wish we had more funding to do but --

COMMISSIONER MCALLISTER: Actually, I'll throw in a final comment that I've been asked to speak about the national kind of stimulus conversation in a number of different forums. And this program, along with the Prop 39 experience and a few others that we've had in the state really are beacons for the nationwide discussion about what you can do with funding. And it doesn't have to be grants, like Prop 39. It can be low interest loans and have a really long-term impact.

And we're approaching $1 billion in the ECCA program, over three plus decades, never a default as you say. And we could -- there was $130, $140 million out there circulating right now in that program and it's a revolving fund. And it'll come back and we can lend it out again. So that structure could take orders of magnitude more funding from wherever it comes to really move the needle even more across the state. And provide a nice example for other states in the federal stimulus conversation.

CHAIR HOCHSCHILD: How big is the backlog? In other words if we had -- let's say there's another stimulus package and a bunch of money comes in, how many shovel ready projects at these terms, 1 percent, etcetera?

COMMISSIONER MCALLISTER: I'll defer to staff on that, but I think when there is more money available projects find their way to it. So it's not like everybody is beating down the door and there's a huge long queue like actively. I think there are a few projects in the queue, but staff can confirm that situation.

But when the public jurisdictions know that there's money available, they come and they apply for it. So I don't think we'd have much of a problem getting out these long-term loans.

CHAIR HOCHSCHILD: Is there anyone on staff who'd like to comment on that? Yeah, Barry?

MR. GOLDTHRITE: Hey, Barry, do you want to (indiscernible) go ahead.

CHAIR HOCHSCHILD: I can't hear you.

MR. MCLEOD: Oh, you can't hear me?

MR. GOLDTHRITE: Go ahead.

MR. MCLEOD: Okay. They shut me off I guess. Currently, there's $6.7 million available for these one percent loans. And we expect another about 3 million to come in with the June payments, so they pay every six

months. So that's almost $10 million and we loan up to $3 million per project, per loan. So there's some small ones here, but we've done some $3 million ones too.

CHAIR HOCHSCHILD: So you say there's funds available now, still?

MR. MCLEOD: Yes.

CHAIR HOCHSCHILD: Okay. That's good to know. Okay. Okay.

Great, okay. Unless there's comments from the other Commissioners, I'll entertain a motion on Item 6 from Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, I'll move Item 6.

CHAIR HOCHSCHILD: Okay. Madam Vice Chair, would you be willing to second?

VICE CHAIR SCOTT: Yes. I second Item 6.

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

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye. '

CHAIR HOCHSCHILD: And I vote aye as well. Item

6 passes unanimously.

Let's move on to Item 7, Aemetic Biogas.

MS. MAGANA: Good morning Chair and Commissioners. I'm Pilar Magana with the Fuels and Transportation Division's Advanced Fuels Production Unit. And I'm presenting for approval and agree with Aemetis Biogas for approximately $4.1 million.

This project is the final grant to be considered for approval from the low-carbon fuel production program solicitation funded through the greenhouse gas reduction fund. The other three low-carbon production projects were recommended for funding at the April business meeting.

Aemetis will construct and operate a biogas cleanup plant added to the existing ethanol production facility in Keyes, California.

Biogas will be transported from up to 30 dairies in the surrounding regions and be upgraded to renewable natural gas at this new biogas cleanup plant. The project will result in approximately 6.8 million vehicle gallon equivalents per year as renewable natural gas when the facility is producing at full capacity.

At this production rate, it's expected that the emitted biogas cleanup facility can reduce GHG emissions by more than 2.6 metric tons of CO2 equivalent per year. This reduction is equivalent to the emissions of approximately

900 operating heavy-duty trucks per year.

The renewable natural gas being produced will be used for onsite fueling of trucks as well as be distributed to a local disadvantaged community for use as a transportation fuel.

In addition to providing low-carbon transportation fuel to a nearby community Aemetis will also be conducting outreach efforts to keep local communities and schools informed on the project's benefits and operations.

Thank you for your consideration. I'm happy to answer any questions you may have at this time. And we also have staff on standby as well as well as Andy Foster and Robbie Macias on the phone from Aemetis to answer any of your questions.

This concludes my presentation.

CHAIR HOCHSCHILD: Okay. Thank you.

Any public comments, Noemi?

MS. GALLARDO: No written comments. I'll defer to the Secretariat for anyone on the line.

MR. GOLDTHRITE: We only have Andy Foster on the line.

CHAIR HOCHSCHILD: Okay. Andy, do you want to make any comments?

MR. FOSTER: Sure, real quickly. I would just

like to say thank you to the Commissioners and to Pilar and the other staff at the CEC for working with us on this proposal during some very challenging times. Aemetis, as was mentioned is a -- we have the state's largest production biofuels refinery in Keyes. And we are not working with local dairies to generate renewable natural gas through covered anaerobic digesters. We've completed our first two digesters in the local area and are about 90 percent complete with our privately funded and private pipeline that will convey the gas from the dairies to the Aemetis facility. And we are now about 90 percent complete with PG&E on their engineering for the interconnect, as well as about 60 percent of the design is complete on our facility as well.

We look at this as a great opportunity, as Pilar mentioned, to replace diesel gallons on the road and to also continue to strengthen the dairy economy here in the Central Valley. And we thank you very much for your consideration.

CHAIR HOCHSCHILD: Thank you.

All right, let's move to Commissioner discussion. Commissioner Monahan.

COMMISSIONER MONAHAN: Yes, thanks Pilar for that really great explanation.

And I want to say one of the things that Pilar

didn't mention was that this is addressing one of our most challenging problems with reducing greenhouse gas emissions, which is methane. And we need solutions across the state to address this problem. And this project is an example where we are trying to a win-win, reduce methane emissions and reduce pollution from the transportation sector.

So Aemetis is on our agenda multiple times today, so I think we all -- it's another place we have to do a field trip to visit.

MR. FOSTER: We'd like to have you.

COMMISSIONER MONAHAN: So I appreciate your leadership in terms of leaning in on embracing new technologies, new strategies and really support this grant and look forward to one day be able to -- actually our shelter in place and visit your facility.

MR. FOSTER: That'd be great. Thank you very much.

CHAIR HOCHSCHILD: Thank you.

Any other comments from Commissioners on this item? Okay, hearing none, I'll entertain a motion from Commissioner Monahan.

COMMISSIONER MONAHAN: I move to approve Item 7.

CHAIR HOCHSCHILD: Okay. Is there a second, Vice Chair Scott?

VICE CHAIR SCOTT: I second Item 7.

CHAIR HOCHSCHILD: Okay, all in favor.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

CHAIR HOCHSCHILD: Let's move on to Item 8. Advancing Next-Generation Heating, Cooling and Water Heating Systems -

MS. PERRIN: Good morning, Chair, Vice Chair and Commissioners. My name is Karen Perrin, can you hear me okay?

CHAIR HOCHSCHILD: Yes. Good morning, Karen.

MS. PERRIN: Great. I am with the Energy Efficiency Research Office.

According to the CEC's 2009 California Residential Appliance Saturation Survey, 90 percent of the state’s buildings use natural gas or propane to provide space conditioning or water heating. The majority of homes

in California rely on these carbon intensive fuel sources to provide space and water heating.

I am presenting the two remaining projects from the solicitation recommended for funding. Staff previously presented agreements under this solicitation. The other five agreements were approved at last month's Business Meeting.

Projects from this solicitation focus on the testing and development of low carbon warming potential heat pump systems for space and water heating.

A key strategy to help meet the state's Green House Gas emission reduction goals is the electrification of water and space heaters that use low global warming potential refrigerants.

The two agreements for your consideration today are with the Association of Energy Affordability, a nonprofit organization working to increase energy efficiency in residential and multifamily housing to foster and maintain affordable communities.

The first project will demonstrate the performance of a variable capacity central heat pump water heating system that offers grid flexibility and uses Carbon Dioxide or CO2 as the refrigerant. This technology is well-suited for larger multifamily buildings such as those in this project. The project will collect real-time

performance data and operational efficiencies across different design configurations and will use this information to develop best practice design guidelines and provide feedback to the Codes and Standards process.

The second project will develop and test a combined space conditioning and water heating heat pump system that uses low-global warming potential refrigerant. The combined system or modules will be pre-fabricated offsite and will be designed to streamline the retrofit process and minimize impacts on building residents. The goal of the project will be to show at a proof-of-concept level that these combined systems are well suited for the California market.

Testing of both these projects will be conducted in multifamily residential buildings located in low-income or benefitting disadvantage communities.

This concludes my presentation and staff recommends approval of these agreements. We have staff on standby and I'm happy to answer any questions.

CHAIR HOCHSCHILD: Great. Thank you.

Let's see if we have any public comment first.

MR. GOLDTHRITE: This is the Secretary. We have no public comment on the line.

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

CHAIR HOCHSCHILD: Okay. Let's move to Commissioner discussion, Madam Vice Chair.

VICE CHAIR SCOTT: Okay, great. Thank you, Karen, for your excellent presentation. I don't have too much to add actually to what she said just to highlight the fact that this is equipment that we expect will be much more energy efficient, high energy efficiency. And also the low and no global warming potential refrigerants that are going to be housed within it.

And then it's going into multifamily buildings, right? So this is kind of a win-win-win all around. Like many of the EPIC projects I'm just waiting for them to be done, so we can get the information back. So I heartily recommend these to you. And if there's -- I will -- well, first let's see if there's any comments.

CHAIR HOCHSCHILD: Great. Terrific.

Any other comments from the Commissioners? Yes, Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah, no I just can't not comment on this. This is just going like the Holy Grail.

VICE CHAIR SCOTT: Great.

COMMISSIONER MCALLISTER: I mean as Vice Chair Scott said, multifamily, it's got a low-income focus. Now more than ever we need both of those and there is just

massive market movement needed in that sector toward decarbonizing technology. And then here's a great group, so much to like about both of these projects. So it really is checking a whole bunch of critical boxes for our long-term directional development here. So thanks for that.

Thanks to Vice Chair Scott for your leadership on this.

CHAIR HOCHSCHILD: Yeah, agreed. Any other comments? Okay, if not I'll entertain a motion from the Vice Chair.

VICE CHAIR SCOTT: I move approval of Item 8.

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

COMMISSIONER MCALLISTER: I'll second.

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

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. That

item passes unanimously.

CHAIR HOCHSCHILD: Let's move on to Item 9, Developing Non-Lithium Ion Energy Storage Technologies to Support

MR. GRAVELY: Okay, good morning Chair and Commissioners. Mike Gravely, Senior Engineer in the Research and Development Division.

Ever since California's Chapter AB 2514 energy storage bill in 2010, California has been the leader in the nation in addressing the use of energy storage to support future energy goals. As a result of that legislation over the last decade California utilities have installed or approved for installation over two gigawatts of energy storage. The technical challenge is over 95 percent of this energy storage has been one technology, lithium ion.

While lithium ion is a solid technology and performs well, the technology is not ideally suited for longer duration applications like riding through multi-day wild fires, public safety power shut-off events. Furthermore, the technology has challenges like thermal runaway, limited life cycle and relies on materials that are either rare earth materials or have environmental justice issues like being mined by children in some foreign countries.

There is also an industry concern that these

materials may not be available in the quantities needed as the future projection international quotes for energy storage.

As California looks to the future in meeting the goals of SB 100, the state is expected to continue to add large amounts of additional energy storage. For the long-term perspective the state should rely on not only on one technology, but have a diverse portfolio of possible energy storage solutions. Next slide, please.

In 2019, the R&D Division released GFO 19305 to provide an opportunity for new and emerging (indecipherable) lithium ion phase technologies to demonstrate their technology performance, safety and future price point. The GFO received 37 proposals. This large response demonstrates the fact that the industry also agrees with the need for more diverse energy storage technology solutions.

The GFO offered two groups. Group 1 was the non-lithium ion energy storage technologies that had completed the design, had a working model or were ready to further development to an actual field site. Group 2 focused on green hydrogen and integrating green hydrogen production into a system that can also produce electricity.

Both groups had to deliver a system that received electricity and delivered electricity, so they were

comparable to lithium ion energy storage systems.

We're recommending grants today of five agreements from Group 1 and two agreements from Group 2. Next slide, please.

In the first three grants on Group 1 we're recommending for today's approval are all working long-duration storage. Antora Energy, Inc., this grant will develop and validate the performance of a thermal energy storage system using carbon blocks to store energy with the goal of being able to provide up to 100 hours of energy storage. The system will be evaluated at an industrial site that has existing solar to be used to charge the system.

Form Energy, Inc. This grant will develop and demonstrate the performance of an aqueous sulfur sodium air system for long- duration storage that can provide up to 100 hours of energy storage. The system will be built and evaluated on the UC Irvine Campus.

E-ZN Inc., this grant will develop and demonstrate the performance of a zinc reactor in an electro-chemical cell system for long-duration storage that can provide 24 to 48 hours of energy storage. The system will be built, tested, then evaluated in an agricultural greenhouse facility. Next slide, please.

The following two grants will include one for

working more classical battery design that are based on the use of zinc. This grant will design a simple and integrated zinc ion cells to a residential energy storage system. The technology is similar in size and shape to lithium ion battery system and it tends to provide better performance at a lower cost.

In addition to laboratory evaluation, the system will be evaluated for field performance and complete UL certification, so it will be acceptable for residential applications.

ANZODE, Inc. The grant design is simile and integrates a zinc and magnesium battery chemistry for applications in residential, commercial, industrial energy storage markets. The battery (indiscernible) with this technology are similar in power and voltage to a standard 12 volt lead acid battery, but are smaller and lighter. The system will complete prototyping, testing, safety evaluations and field application analysis under this grant. Next slide, please.

The final two grants are from Group 2 and will be evaluating and demonstrating the generation of green hydrogen through electrolysis and then converting this hydrogen into electricity. SB 1369, chaptered in 2018, defines green hydrogen, green (indecipherable) hydrogen as energy storage and requested the Energy Commission consider

potential uses of green hydrogen as an energy storage solution in the future.

With California expecting large amounts of extensive renewable generation in the future, using this excessive renewable generation to produce green hydrogen is considered one of the new opportunities for energy storage.

The next two grants are designed to address different methods of generating green hydrogen and assessing the application where those hydrogens can be used for energy storage.

Dash2Energy, LLC. This grant will integrate a green (indecipherable) hydrogen system with power generation from a 1-megawatt wind turbine within a microgrid at Palmdale Water District. This grant will evaluate the generation of green hydrogen from the wind system at Palmdale. The wind will be used to produce hydrogen and then the hydrogen will be used to provide electrical resiliency with long duration storage, high reliability, price stability, new business case models and lower the costs of the Palmdale site.

This effort will integrate multiple technologies together to get them to operate in a seamless fashion for electricity in, electricity out.

T2M Global, LLC. This grant will evaluate a green hydrogen system that can produce hydrogen through

electrolysis as well as recover diluted hydrogen from waste streams such as biomass converting to flue gas and ammonia.

Most electrolyzer systems require purified water as an input. However, under certain modes of operation this electrolyzer may generate water as a byproduct. The product will be tested, validated, system performance in a laboratory setting and used as result to develop (indecipherable) commercial scale system. Next slide, please.

This slide shows the grants are being awarded to companies throughout California. One of our program objectives is to encourage the growth of these technologies around the state, so they can result in the broader expansion of the economic development, increase the number of stable, good quality jobs throughout California. Next slide.

In addition to approving these grants today, we request the Commission to approve the staff determination that all seven of these grants are exempt from CEQA. In addition to myself, several staff from the Commission are standing by to answer questions you have. We request approval of these seven grants.

CHAIR HOCHSCHILD: Thank you, Mike.

Okay. Let's go to public comments. Do we have any public comments on the line or in writing?

MR. GOLDTHRITE: This is the Secretary, we have no comments on the line.

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

CHAIR HOCHSCHILD: Okay. Let's go to Commissioner discussion, Vice Chair Scott.

VICE CHAIR SCOTT: Okay. I don't have much to add to Mike's thorough presentation. I might just note that it's exciting to see some different types of technologies, storage technologies come out that will be available to help complement what we already have with the lithium. The lithium ion storage technology that just provides a wider range of options. Some of these to my understanding will be laundered in that four-hour storage range that we typically find with lithium ion.

I also appreciate having the electrolytic hydrogen as part of the discussion as well. And Mike mentioned this in his presentation, but what I like also about this set of projects is they are set up to be electricity in, electricity out. So hopefully at the end of the day that makes them much easier to integrate with the grid, kind of a maybe plug and play is a little strong, but just easier to integrate with the grid.

So I recommend these projects to you all.

CHAIR HOCHSCHILD: Okay.

Any other comments from any of the other Commissioners?

COMMISSIONER DOUGLAS: Just a brief moment, I'm very supportive of this. I think the longer duration storage fills a very important niche and need. And I've tracked this as its moved forward and gotten a briefing or two on the issues from Mike. So thank you. And I just look forward to supporting it.

CHAIR HOCHSCHILD: Great. Commissioner Monahan?

COMMISSIONER MONAHAN: I just wanted to comment as well for all of the projects, but just wanted to comment on the electrolytic hydrogen ones which -- we've always had this theoretical value of hydrogen being available for storage and for vehicles instead of curtailing renewables used to produce hydrogen and then to use it strategically. So I'm very excited with these projects. I think they're all really interesting and (indiscernible) to transportation and how do we make sure that we are (indecipherable) indicate renewables and curtailments. Use that energy to reach our clean energy goals in California.

CHAIR HOCHSCHILD: The only other point I'd add, first of all just thanks again to the Vice Chair and the team for these proposals. Obviously with the increase in solar and wind because of their very, very low cost this may help address the (indecipherable).

The only other thing I would add is that with a portfolio like this you don't expect every single technology to succeed. And I think if you put out a bunch of graphs like these everything works. You may not be taking all the risk you meant to take and I think we all go into this eyes wide open. This is precisely what we should be doing to try to push the envelope. And hopefully it'll be some (indecipherable)and fill a niche that needs to be filled. And it's just great to see this diversity of chemistries.

And I think with these grants we are now approaching something like 50 energy storage demonstration projects we've done in California, which is by far the most of any state in the country and the most diverse in terms of chemistry as well. So that's a great thing.

So with that I'd entertain -- oh sorry, Commissioner McAllister. Yeah, go ahead.

COMMISSIONER MCALLISTER: Yeah, I really wanted to just express an appreciation of the materials issues that Mike brought up. And making sure that the access to rare earths and other materials in these diverse chemistries, that's a priority as well for the state and the nation, and obviously for the economy and for just the natural resource extraction issues around many of the battery technologies.

And then also I wanted to point out kind of the issue of long term and seasonal storage as really a focus going forward for the Commission and everybody trying to find -- large swaths of California are winter peaking, actually. And so the seasonal issue is very important to resolve. And getting cheaper and bigger there, obviously as well some of the demand side work that we're doing, is really going to be key to make the grid work all year.

CHAIR HOCHSCHILD: Yeah.

COMMISSIONER MCALLISTER: But this is a great group of projects, so I support it for sure.

CHAIR HOCHSCHILD: Yeah, one thing I mean there's still more types of storage. I had a meeting yesterday with a company called Renewal that is using the clean door gas valves. They're creating a weight on a chain with a pulley basically to work the shafts to run on surplus power and then generate power units. There's still more types of energy storage to be pioneered.

With that I'd entertain a motion from the Vice Chair for this item.

VICE CHAIR SCOTT: Yes. I move approval of Item 9.

CHAIR HOCHSCHILD: Okay. Commissioner McAllister would you second?

COMMISSIONER MCALLISTER: I'll second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: 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 10, Advancing Envelope Technologies for Single-Family Residential Buildings, Low-Rise Multifamily Buildings, and Mobile Homes.

MR. THACH: Hi, good morning. Are you able to hear me?

CHAIR HOCHSCHILD: Yeah, good morning.

MR. THACH: Hi. Good morning Chair, Vice Chair and Commissioners. My name is Jackson Thach. I am a Mechanical Engineer with the Energy Efficiency Research Office in the Research and Development Division.

The purpose of this solicitation and recommended awards is to develop and demonstrate innovative approaches to advance window and building envelope systems in single family residential homes, low-rise multifamily residential

buildings, and manufactured homes. The building envelope, including windows and walls, are critical elements of the building design. We waste energy when conditioned air escapes to the outside. By developing envelope systems, buildings may reduce HVAC and lighting use while taking one step closer to California's goal of decarbonization of the building sector.

Staff recommends approval of the following 4 projects. The first project is with Lawrence Berkeley National Lab and will demonstrate the use of thin-glass triple-pane windows, which offer significantly better thermal performance over dual-pane windows. They will be used as a drop in replacement for dual pane windows, which may minimalize retrofitting costs and installation time. Test sites will be located in disadvantaged or low-income communities. This project aims to overcome the historical barriers to mass-market adoption of high-performance windows in the residential and low-rise multi-family sectors.

This second project is with Electric Power Research Institute. They will design an all-electric manufactured homes that meets or exceeds 2019 Title 24 requirements, verify the performance of the envelope technology, compare on-site PV installation with factory installation for cost-effectiveness and identify pathways

to improve access to efficient housing to low-income communities without increasing upfront costs. It will include involvement from three major mobile home manufacturers.

The third project with Rocky Mountain Institute will design and test two different types of high performance prefabricated exterior retrofit panels suitable for low-rise multifamily building in California climate zones. Developing an automated and well controlled process may allow for onsite work to be done in under a week and in some cases within a day while reducing the cost of installation and tenant disruption. The ultimate goal of this project is to develop a commercialization plan that enables manufacturers to produce similar products at scale and establishes a service for carrying out these envelope retrofits to meet California market demand.

And finally, the fourth project with the Gas Technology Institute will build three single family all-electric mobile homes that will feature vacuum insulation panels and advanced air sealing technologies. GTI will leverage the findings from a DOE grant that was awarded to them to use enhanced factory automation and an integrated information technology system for modular home production facilities to reduce costs of high-performance homes. One of the test sites will be located in a disadvantaged

community.

Together with EPRI's previous project, we will have participation from five different mobile home manufacturers.

Thank you for your consideration. In addition to staff, a few of these recipients are also on standby and available for any questions that you may have. And with that, this concludes my presentation.

CHAIR HOCHSCHILD: Thank you, Jackson.

Let's go to public comments. Is Christian Collen on?

MR. GOLDTHRITE: This is the Secretary, so we have Ram Narayanamurthy, the Program Manager from Advanced Building Programs from EPRI and Martha Campbell from the Rocky Mountain Institute on the line.

CHAIR HOCHSCHILD: Okay. Let's start with Ram.

Good morning, Ram. How are you?

MR. NARAYANMURTHY: Good morning, Commissioner, doing well, thank you. And good morning to all the Commissioners too. We want to just say thank you to the Commission for your support as we've gone through all electric mobile homes, single family, multifamily and now manufactured. And entering into the mobile home sector is one of the two sectors along with the (indiscernible) systems buildings that are not part of the new code, so we

are hoping to have a good demonstration of how to achieve all electric in mobile homes.

Thank you again for all your support and we will remain for questions.

CHAIR HOCHSCHILD: Great. Thank you.

Let's got to Martha.

MS. CAMPBELL: Good morning, can you her me?

CHAIR HOCHSCHILD: Good morning.

MS. CAMPBELL: Great. This is Martha Campbell from the Rocky Mountain Institute. RMI just wishes to thank the Commission for supporting this research. We are convinced of its promise to assist ratepayers and cost effectively and resiliently decarbonizing their buildings while mitigating the impacts of electrification on the grid.

So thank you again for this opportunity and we're here if you have any questions.

CHAIR HOCHSCHILD: Great. Are there any other additional comments either on the line or in writing?

MR. GOLDTHRITE: This is the Secretary, we have no one on the line.

CHAIR HOCHSCHILD: Okay. No more on the line. Noemi, do we have any more in writing?

MS. GALLARDO: No written comments.

CHAIR HOCHSCHILD: Okay. Let's go to

Commissioner discussion, Vice Chair Scott.

VICE CHAIR SCOTT: Thanks. I think this is another set of terrific projects. I think the mobile home point was really important. Mobile homes are typically not always part of the Building Standards. And so to be able to manufacture a mobile home that can meet the Title 24 Building Standards just the same way that any other type of home can and the same level of affordability. I think it's a really important component to this research. And I look forward also to seeing what those results turn out to be.

I also want to compliment the research team for working so closely with Commissioner McAllister and the buildings team. I think looking at how the research that we're doing in buildings and building envelopes and triple pane windows and all of that really helps lay the foundation for the next set of our Building Standards. And so I really appreciate how our research and our Building Standards continue to complement one another. That is all I will say about this.

CHAIR HOCHSCHILD: Great. Commissioner McAllister, did you want to say a few thoughts?

COMMISSIONER MCALLISTER: Yeah, for sure. So thank you very much for that Vice Chair Scott and I totally agree. I'm thinking of the Building Standards Office right now. They're probably smiling at this, Mazi Shirakh in

particular. He's been really working on this skinny triple window for a couple of years now. There's great technology from the thin glass now that we didn't have even a few years ago with the proliferation of flat screen TVs, et cetera, that's lower cost and really enabled that project on the skinny triple in those new and existing retrofit. And so that's great to see going forward.

And I want to just say thank you to Laurie and her team for always circling back and figuring out what the next -- what pushing the envelope literally and figuratively actually here means for the research activity. It's really great.

And then really just a couple of other quick comments. On the manufactured homes design, I just want to second your comments, Vice Chair Scott. And also just point out that that is a very unique market that has manufacturing, mostly not in California, virtually entirely not in California I think. And in parts of the country they just don't really value building codes and understand the positive impact that an efficiency code can have. And so it's just a huge hole in the new building stock, in the manufactured homes. And so this is a really I think overdue area for us as we get a handle on other sectors, this is really one that needs focus. That's really great to see that.

Also, I want to point out to the indoor air quality issues as well. So I think that's another area where manufactured homes tend to underperform. And we want to make sure to keep an eye on that.

On RMI, I really appreciate the comment there and the presence on the at the meeting here today by RMI. And to the energy strong model that they're doing in Europe is something that we really need to learn from and try to replicate in a contextualized way here in the US and in California. So that means taking existing buildings and figuring out how to standardize and really take a manufacturing approach to their upgrades.

And so I think this -- you know, envelope upgrades to be able to do that at scale and commercialize and get the cost down is really, really important.

And then across the board here, you only build a building once. So the envelope -- in the Efficiency Division the sort of theme, the trope is take care of the building shell. It's the most long lived piece of a new building. And it's worth investing in early on, because it makes all the other problems smaller.

So it's really great to see the focus on bringing really new technology, which you don't think of the building envelope is being sort of a place where truly new technology can be applied, but it absolutely can be and

it's great to see these projects doing that.

So I'm in total support.

CHAIR HOCHSCHILD: Great.

Unless there's comments from Commissioner Monahan or Commissioner Douglas the only other thing I would add is that obviously the Governor has a big focus on affordability with homes. And he's very ambitious in terms of the amount of housing we need to build. And I think that includes mobile homes and so I'm just especially encouraged to see that segment included. I don't recall us funding that before, or if we have I may have missed. But that's really nice to see it. I think one advantage of mobile homes is they are prefab and so there's a lot of savings you get in standardization.

I visited some prefab all electric home manufacturing a year or two ago. And really came to appreciate how much more affordable that can make it when you have standard processes in place. It just not waste (indecipherable) actual assembly of the units is significant, so terrific.

Thank you, Vice Chair Scott, for leading this.

With that I'll entertain a motion from the Vice Chair.

VICE CHAIR SCOTT: Yes. I move approval of Item 10.

CHAIR HOCHSCHILD: Commissioner McAllister will you second?

COMMISSIONER MCALLISTER: I'll second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

CHAIR HOCHSCHILD: Let's move on to Item 11, Validating Capability of Second-Life Batteries to Cost-Effectively Integrate Solar Power for Small-Medium Commercial Building Applications. And Commissioner McAllister to your point about the use (indiscernible) suggests that.

MR. KURAL: Good morning Chair, Vice Chair, and Commissioners. This is Tanner Kural, from the Right Research and Development Division's Energy Generation Research Office.

Electric Vehicle batteries are typically retired

at 70-80 percent of their original capacity, at which point they are often still capable of performing use cases other than powering EVs. Giving retired EV batteries a second life as stationary energy storage would alleviate the burden on the battery recycling pathway and lessen the need for newly mined materials. The research projects before you today are responses to the Second-Life Battery solicitation, which focused on funding applied research and development projects that aim to validate the capability of second-life batteries to cost-effectively integrate solar PV and provide resiliency for small-to-medium-sized commercial buildings.

Projects funded by this solicitation will characterize the degradation rate of second-life batteries through laboratory testing and pilot test various technology improvements and operational strategies that optimize the useful life of the second-life battery.

Staff recommends approval of the following two research agreements, which are the first of four projects proposed for award under this solicitation. Both entities are previous CalSEED recipients.

Smartville will develop and validate a heterogeneous second-life battery system that enables hot-swapping of individual battery modules to limit the system's down time, optimized degradation control that

normalizes battery health over long-term usage, and adaptability across an array of battery chemistries and manufacturers. The project team will conduct a pilot demonstration at the UCSD Rare Archives Building. The project leverages funding from an ongoing ARPA-E project that is developing a proof-of-concept for the Battery Management System technology. Smartville is contributing $955,000 in match funds to support the project.

Repurpose Energy will conduct laboratory testing to identify the degradation rate and effective useful life of individual Nissan LEAF EV battery cells. The research team will apply findings from laboratory testing to a full-scale pilot demonstration at a co-op grocery store in a low-income community affect by public safety power shutoffs. The pilot test will compare two approaches for repurposing EV batteries. The first, building a system with whole packs of moderately degraded cells, and the second building a system from disassembled modules to increase the system's energy density.

Repurpose Energy is a spin-off startup company from a recent successful EPIC-funded second-life battery microgrid project conducted by UC Davis. RePurpose Energy is contributing $1.5 million in match funds to support this project.

Thank you for your consideration on these

proposed awards. We have staff on standby and are available for any questions you may have. Thank you.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment.

MR. GOLDTHRITE: This is the Secretary. We have no one on the line.

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

CHAIR HOCHSCHILD: Okay. Vice Chair Scott?

VICE CHAIR SCOTT: All right. There's a few cool things about these few projects. Just to highlight briefly for you, I think this is again another really interesting intersection of the research that the Energy Commission is doing and the greater goals of the state rate, so we can really see how research into our energy systems is blending or colliding with our transportation. And the transformation we're trying to make in the transportation system and then that helps us get to solar with storage, which will help us as we're working towards the 100 clean energy standard. So I love projects like these where you can kind of see two or three different realms coming together in a smart way.

Another thing that Tanner said in the presentation is that I wanted to highlight for you, I really think the research team has done a great job putting

together a smart strategy for how we do investments. So it was mentioned that these projects were CalSEED projects. So CalSEED is the program that EPIC uses to -- you it's a grant of about $100,000. And it helps people get their idea and turn it into a proof of concept.

And then we have additional types of investments that we make along this kind of energy innovation pipeline to keep moving projects through. You can get it from an idea into the proof of concept, into a pilot or a demonstration and then hopefully out into the market. And you can see that pathway with these two projects.

And so it's pretty exciting to see, but I just wanted to add those two things to the presentation.

CHAIR HOCHSCHILD: Fantastic.

Other commissioner comments, Commissioner Monahan?

COMMISSIONER MONAHAN: Yeah, I'm really excited about these projects. I've got to say having been in the transportation space for a long time, and there's always this theoretical value of storage from second life batteries from vehicles. And to see this playing out here in California is just really exciting.

When we think about what's the cost benefit of an electric vehicle versus a conventional vehicle, we usually just think about the fuel cost or the electricity cost.

But having a second life battery or using vehicles as a grid service in terms of frequency regulation and other services, there are always ways to help bring down the cost of electric transportation faster.

I mean the cost of batteries is coming down very fast. And we're looking at maybe 2023 to 2025 cost parity on the vehicles themselves. But if you can keep finding the extra value, it's just a way to accelerate electric transportation. And think this is particularly in the heavy-duty space with these big batteries that are going to be for busses and for trucks. And to have that second value is really something pretty exciting.

The only other place I've seen it playing out is in Delaware actually. So there's a thought leader in Delaware, this guy (indecipherable). And for many years I was like, "Oh my gosh, really. I don't know about his ideas." And now they're all coming to life around electric transportation. So yeah, just kudos to the team and as Commissioner Scott was saying the interplay between what's going on with the EPIC program, what's going on in transportation and the electricity factor, and bringing them all together it's just very exciting. So yeah, strong support for these projects.

CHAIR HOCHSCHILD: Great. Any other comments?

Okay. I'll entertain a motion from the Vice

Chair.

VICE CHAIR SCOTT: I will move approval of Item 11.

CHAIR HOCHSCHILD: Commissioner Monahan do you second?

COMMISSIONER MONAHAN: I second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: 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 12I, Geothermal Energy Overcoming Technology Hurdles and Enabling Recovery of the Mineral Lithium.

MR. GENTRY: Good morning Chair, Vice Chair, and Commissioners. This is Chuck Gentry. I am a Mechanical Engineer in the Energy Research & Development Division.

As the amount of renewable energy on the California electric grid continues to climb, it becomes

increasingly important to add new baseload and load-following renewables such as geothermal power. The purpose of the GEOTHERMAL solicitation is to fund projects that help increase the cost-effectiveness and value of geothermal power by improving the productivity and flexibility of geothermal facilities and by advancing technologies for the recovery of lithium from geothermal brine.

Lithium recovery from geothermal brine has multiple benefits. It provides an additional revenue stream to the geothermal plants and provides a domestic supply of lithium to help satisfy the increasing demand for the important metal. A total of five projects from this solicitation will be recommended for funding, the final two of which will be presented in this Business meeting.

The first proposed agreement is with Hell's Kitchen Geothermal. This project will develop and demonstrate a fundamentally new and innovative method for managing silica in geothermal operations. Silica leads to significant scale buildup in the wells and throughout the plant and is currently expensive to manage. This new technology called Geothermal Micropillar Enabled Separators, takes a completely different approach than conventional methods. It separates solid particles in solution as they flow through a series of carefully

positioned staggered posts. This technology has the potential to lower the cost of managing silica and also may allow geothermal power plants to operate more flexibly.

The next proposed agreement is also with Hell's Kitchen Geothermal. This project will integrate multiple brine pretreatment processes to demonstrate a system for completely preparing geothermal brine for lithium extraction. Pre-treatment is a necessary step to clean up the brine before lithium extraction can take place. This project will help build confidence in the emerging lithium extraction industry at the Salton Sea. The system will be demonstrated on flowing geothermal brine at five gallons per minute. This approval request is for Phase I of the project, which includes planning and design.

This concludes my presentation. Staff are on the line and are available to answer any questions.

CHAIR HOCHSCHILD: Thank you. Do we have any public comment on the line?

MR. GOLDTHRITE: This is the Secretary. We have no public comment on the line.

MS. GALLARDO: This is the Public Advisor, no written comments either.

CHAIR HOCHSCHILD: Okay. Thank you, Madam Vice Chair.

VICE CHAIR SCOTT: Okay. I think this is also a

nice set of projects here, being able to improve the production and also the flexibility, I think of geothermal plants is I think very valuable as we're heading towards our, again our 100 percent clean energy standards. I look forward to seeing how these projects turn out. And I also think demonstrating the technology to recover the lithium out of the geothermal brine, again, is incredibly important. I don't need to tell you all lithium is a component of the batteries that we're using both for storage and in our electric vehicles. And so finding some good ways to do that with a California resource I think is also important.

So I recommend this set of projects to you as well.

CHAIR HOCHSCHILD: Great, any other comments from the other Commissioners?

Okay. Here again, we addressed this at some length in the last Business Meeting last month and I'm in full support of this. I think it is a really exciting pioneering effort that will make and bear a lot of fruit that provides all these benefits both to the in-state mineral development and to the geothermal industry, which we need for our clean energy future to support the electric vehicle manufacturing. And to provide jobs in a part of the state that desperately needs them. So terrific

(indiscernible) and thank the Vice Chair and staff for all their work to put this together.

With that I'd entertain a motion from the Vice Chair on Item 12.

VICE CHAIR SCOTT: Yes. I move approval of Item 12.

CHAIR HOCHSCHILD: Commissioner Douglas, will you second?

COMMISSIONER DOUGLAS: Yes. I second this item.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

Let's move on to Item 13, Food Production Investment Program. Is it the Food Production Investment Program or Improvement Program, I always (indecipherable) Food Production Investment Program.

MR. UY: Hello. Can you hear me okay?

CHAIR HOCHSCHILD: Yeah. You're live.

MR. UY: Good morning, greetings Chair, Vice Chair and Commissioners. My name is Kevin Uy and I am with the Energy Research and Development Division. Staff is providing a presentation on the Food Production Investment Program, followed by a recommendation to approve several awards. This presentation summarizes the results to date of the Food Production Investment Program over the past two years. Next slide, please.

The Food Production Investment Program, or FPIP, funds drop-in and emerging energy technologies at food processing facilities in California.

FPIP is part of California Climate Investments, a statewide initiative that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment — particularly in disadvantaged communities. Next slide, please.

California is the largest food producer in the U.S. with over 5,700 facilities. Food production is a key economic sector in California and contributes $82 billion annually to the economy, provides 198,000 direct jobs, and 562,000 indirect jobs.

Food production is also a large contributor of greenhouse gas emissions with about 3.2 million metric tons

of CO2 equivalent emissions per year. Next slide, please.

Scoping of the FPIP program was done in collaboration with key stakeholders. Before the program started, a working group was created, which included public agencies, utilities, researchers, trade organizations and most importantly food producers. On this slide, you'll see the list of organizations represented in the working group.

In addition to public workshops, several working group meetings were held to get feedback on the program as it was formed. The result was a program, which was easy to apply to, conformed to the seasonal schedules of food producers and provided funding for what they needed most, implementing modern technologies. In essence, FPIP was designed by food producers, for food producers. Next slide, please.

This slide shows a map of FPIP project locations including Tier I and Tier II projects. Tier I provides funding for drop-in technologies such as boilers, compressors and refrigeration systems while Tier II provides funding for emerging technologies such as microgrids, solar thermal and electrification technologies. Ninety-two percent of FPIP projects are located in and benefiting disadvantaged and/or low-income communities. Next slide, please.

FPIP funding has gone to a variety of facilities

including animal feed and ethanol; beverage, breweries & wineries; dairy processing; prepared food; meat and rendering; and fruits, vegetables & nuts. The number of awards to each type of facility are provided on the slide. Next slide, please.

This slide shows FPIP by the numbers. FPIP has allocated $118 million across four funding opportunities to 48 projects resulting in 164,000 metric tons of CO2 equivalent annual emissions reductions. Next slide, please.

So what do these numbers mean in other terms? FPIP greenhouse gas savings are equivalent to over 35,000 passenger vehicles removed from the road; 2.7 million 10-year-old trees planted; and energy use from nearly 28,000 homes. FPIP reductions are equivalent to 5 percent of the emissions from the food products manufacturing sector. Next slide, please.

FPIP has made a tremendous impact on food production facilities. The testimonials shown were provided at our March Business meeting. I won't read them word-for-word, but the main takeaway is that many of these projects would not have happened if not for FPIP funding. To read the full quotes along with many others please refer to the March Business Meeting transcript. Next slide, please.

As mentioned previously, FPIP is part of California Climate Investments. Updates on FPIP and other CCI programs can be found in the CCI Annual Report to the Legislature. The 2020 report was published in April. On the left is the title page, in the middle is the FPIP summary page and on the right is a profile write-up for one of our projects at the Sun-Maid raisins factory. Next slide, please.

Thank you for your time and attention. If you could please transition back to the agenda, I'll now pass the floor to my colleague, Kaycee Chang, to present the recommended awards.

MS. CHANG: Thank you, Kevin. Good morning, Chair, Vice Chair, and Commissioners. My name is Kaycee Chang and I am with the Energy Research and Development Division. Staff is seeking approval of 16 Food Production Investment Program projects for a total of $36.6 million. All 16 projects will result in reduced greenhouse gas emissions and energy consumption. Eleven of the projects are expected to benefit priority populations through either criteria pollutant emission reductions or job creation.

The first project is with Spreckels Sugar Company to install a microgrid system at their sugar manufacturing facility in Brawley. The system consists of 1 megawatt of ground mounted solar photovoltaic panels, 880 kilowatt-

hours of battery energy storage, and a microgrid controller.

The second project is with Aemetis Advanced Fuels Keyes, a biofuels and animal food producer in Keyes. They will install a microgrid system consisting of 1.56 megawatts of solar photovoltaic panels and 1.25 megawatts of energy storage, integrated with a microgrid controller.

Microgrids provide resilience to food processors, allowing them to continue operating during blackouts or power shut-offs.

The third project is with California Custom Processing, an organic almond processing facility in Madera. They will install an industrial-scale high-temperature solar thermal energy system to convert solar energy into heat for facility processes and is an early example of the potential to decarbonize industrial process heat.

The fourth project is with Pacific Ethanol Stockton, a biofuels and animal food producer in Stockton. They will be implementing Mechanical Vapor Recompression that takes waste steam and recompresses it for reuse. This project will demonstrate the potential for significantly reducing greenhouse gas emissions at food processing and other industrial facilities with large evaporation and distillation systems.

The fifth project is with Anheuser Busch who will install over 200 state-of-the-art steam traps at their breweries in Fairfield and Van Nuys. This project will demonstrate the benefits of mass deployment of efficient steam traps at other large industrial facilities, including pharmaceutical and chemical facilities.

The sixth project is with J&J Snack Foods, a frozen food producer in Vernon. They will upgrade their inefficient refrigeration system and install heat recovery components and an energy efficient industrial fryer. Heat recovery will allow the facility to capture heat normally rejected to the atmosphere for use of pre-heating water resulting in energy savings.

The seventh project is with California Dairies to install dryer exhaust heat-recovery systems and condensing economizers at two of their dairy processing facilities in Turlock and Visalia. Heat recovered from dryer exhaust will be used to pre-heat dryer intake air. Heat recovered from boiler flue gas will be used to preheat water for boiler makeup, sanitation, and other uses.

The eighth project is with E & J Gallo Winery in Fresno. The project will replace old refrigeration compressors with efficient ones that have variable speed controls. Installation of these energy efficient replacements has high potential for replicability in other

facilities.

The ninth project is with Pacific Coast Producers to install a new refrigeration system at their fruit and vegetable canning facility in Oroville and install ceramic insulation on existing rotary cookers at three fruit and vegetable canning facilities in Woodland, Oroville, and Lodi. Ceramic insulation was chosen over fiberglass since it allows for easier wash down and helps prevent corrosion.

The tenth project is with PepsiCo, a beverage processing facility in Ventura, to install a condensing heat recovery system, which preheats boiler make up water and process water. This will help displace natural gas consumption to the boilers.

The eleventh project is with Sun-Maid Growers of California, a raisin processing facility in Kingsburg. They will install a microgrid consisting of three kilowatts of rooftop solar photovoltaic panels, one megawatt of energy storage, and microgrid controllers.

The twelfth project is with Baker Commodities in Kerman to install an efficient boiler with selective catalytic reduction and a regenerative thermal oxidizer. The new thermal oxidizer will utilize waste heat from the existing product drying process, reducing natural gas consumption compared to the existing system, which burns natural gas to provide heat for pollution control.

The thirteenth project is with Valley Fine Foods, a frozen food producer in Yuba City. They will replace the existing refrigeration systems that use high global warming potential refrigerants up to 2,000 times the potency of carbon dioxide with high efficiency trans-critical carbon dioxide refrigeration systems.

The fourteenth project is with Sun-Maid Growers of California in Kingsburg to install an optimized steam and hot water system. Additionally, they will install a heat exchanger on the steam tunnel exhaust to recover waste heat and further reduce fuel consumption.

The fifteenth project is with E & J Gallo Winery to replace old refrigeration equipment, including refrigerants at three wineries in Livingston, San Miguel, and Modesto. They will replace the existing conventional refrigeration system with a high efficiency, ultra-low-global warming potential alternative.

The last project is with Bimbo Bakeries USA. They will install advanced ovens at two bakeries in Montebello and Placentia. The ovens will have new controls that allow the ovens to burn natural gas only when necessary, reducing natural gas consumption.

These projects are projected to reduce greenhouse gas emissions by over 68,000 metric tons of carbon dioxide equivalent.

Staff recommends approval of these 16 projects and I am available to answer any questions you may have. In addition, there are representatives from these companies that would like to make a few comments. Thank you.

CHAIR HOCHSCHILD: Thank you.

All right, let's go first to public comments.

MR. GOLDTHRITE: So we have Andy Foster from Aemetis Advanced Fuels. We have Philip Gleckman from California Custom Processing. Inbal Nachman from California Dairies, Erik Watkins, from Pacific Coast Producers, Mike Miller from Pepsi Co., Brian Cullen from Valley Fine Foods; and Kevin Yavari from Bimbo Bakeries, on the line.

CHAIR HOCHSCHILD: Okay. Do you want to just go ahead in that order?

MR. FOSTER: Sure, this is Andy Foster from Aemetis. Thank you again to the Commissioners and to the Commission staff, Kevin and Kaycee, for all your work in support of this project. I know you've got a full agenda, so I'll keep it quick.

I just wanted to say that this is a very important pillar in our strategy at the Keyes ethanol plant to reduce our steam usage, which is generated with natural gas and convert as much of our process over to electricity, ultimately replacing 85 to 90 percent of the steam uses at

our facility. And this is a very key first part of that along with mechanical vapory compression and some of the other projects that we have underway.

So we're very appreciative of your support and look forward to implementing this project.

CHAIR HOCHSCHILD: Great. Thank you.

Is it Philip Gleckman?

MR. GLECKMAN: Yes, can you hear me?

CHAIR HOCHSCHILD: Yes. Go ahead.

MR. GLECKMAN: Philip Gleckman from Sunvapor and I'm speaking on behalf of California Custom Processing, or CCP for short. CCP is one of the San Joaquin Valley's leading almond producers and is a certified organic processor. Today, all of the steam used for pasteurization is generated in natural gas boilers. After this project is built 100 percent of the steam will come from Sunvapor's solar boiler during peak conditions.

CCP and their discerning global customers value the unique sustainability impact of this project, engineered by Sunvapor. And we acknowledge the critical role of the Energy Commission in awarding this grant. Thank you.

CHAIR HOCHSCHILD: Thank you.

Inbal Nachman.

MS. NACHMAN: Inbal Nachman, I'm with Skyven

Technologies, California Dairies' partner in cutting carbon emissions in their manufacturing processes.

On behalf of California Dairies we'd like to thank the California Energy Commission for accelerating the adoption of drop-in technologies that can substantially reduce GHG emission with projects capturing heat from hot exhaust streams and using it to preheat (indecipherable) streams can be applied to many types of industrial processes. And further more typical condensing economizers can improve boiler efficiency by 6 to 10 percent and reduce fuel needed to heat process water.

These projects at California Dairies are estimated to reduce about 9,300 metric tons of CO2 emissions per year. So that is very substantial for California Dairies. So thank you again for giving California Dairies the opportunity to prove that sustainable business practices and integrative solutions pay off and benefit both the industrial sector and local communities. Thank you.

CHAIR HOCHSCHILD: Thank you.

Cody, sorry who is next? Is it Mike Miller or Erik Watkins?

MR. GOLDTHRITE: Erik Watkins is next.

CHAIR HOCHSCHILD: Okay.

MR. WATKINS: Okay. Hi, good morning. This is

Erik Watkins from Pacific Coast Producers. We would like to thank the California Energy Commission for approving this grant through the FPIP program. We are very strong supporters of this program and believe it is the best method to support food manufacturing as they take the difficult steps required to meet California Climate Action Goals.

We'd also like to thank the Commission and staff, especially Cyrus and Kevin. We probably wouldn't have a program without them. And their support is much appreciated. Thank you.

CHAIR HOCHSCHILD: Thank you.GENERAL COUNSEL: Mike Miller. Noemi, is Mike on the line? Mike?

MR. GOLDTHRITE: Followed by Brian Cullen.

CHAIR HOCHSCHILD: Okay. Mike, can you hear us?

MR. MILLER: I can hear you. Can you hear me?

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

MR. MILLER: Very good. Thank you. I appreciate the opportunity. I just wanted to thank the Commission and FPIP for the opportunity. We have to continue to improve some of our older operations. And we as Pepsi Co. have signed on to some pretty aggressive greenhouse gas reductions as just one pillar of our sustainability program. And certainly grants like this help us in our

scope one and scope two areas to continue to improve our operations and reduce our impact on the California environment.

So I just wanted to take a moment and thaand the work that everybody's done to work with us, Kevin and the team, to approve this project. So thank you for your kindness.

CHAIR HOCHSCHILD: Thank you.

Let's go to Brian Cullen. Brian, can you hear us?

MR. CULLEN: Can you hear me?

CHAIR HOCHSCHILD: Yeah, we can hear you.

MR. CULLEN: Good morning, Commissioners. My name is Brian Cullen. I'm the CFO of Valley Fine Foods. I produce refrigerated and frozen pasta and also convenience breakfast items. I'd like to extend a very large thank you on behalf of my organization for your consideration for your consideration of this grant.

As a smaller company with variability in cash flow and profits, it's often times difficult for us to prioritize projects that are focused on the environment and reducing our greenhouse gas footprint. This grant will allow us to do just that. Reducing our process facility's greenhouse gas emissions and also replacing our current R22 system with environmentally friendly CO2 refrigeration. So

this is very exciting for us and once again thank you very much for your consideration.

CHAIR HOCHSCHILD: Thank you.

Do we have any other folks on the line wishing to comment?

MR. GOLDTHRITE: We have Kevin Yavari from Bimbo Bakeries and that's the last one.

CHAIR HOCHSCHILD: Okay, Kevin, good morning.

MR. YAVARI: Good morning. Thank you. Can you hear me?

CHAIR HOCHSCHILD: Yes, good morning.

MR. YAVARI: Good morning. Yes, Kevin Yavari, with Bimbo Bakeries, USA. We want to issue an overwhelming thank you to the Commissioners today for your consideration and the staff of the Energy R&D Division for this award and are in full support of funding for such a critical program for California's food industry.

Our company is best known through our brands that are in 83 percent of households across the US: Sarah Lee, Orowheat, Ball Park, Thomas's English Muffins, Entenmann's to name a few. We operate seven large bakeries spanning California from Sacramento to San Diego. And your investment is allowing us to make significant impacts to the energy efficiency of these facilities and make real sustainable improvements come to fruition.

So your approval today will not only decrease our GHG impact, but keep and add jobs to our facilities and other businesses within California. So thank you.

CHAIR HOCHSCHILD: Terrific. Thank you so much.

Madam Public Advisor, do we have any other public comments in writing?

MS. GALLARDO: Yes, this is the Public Advisor. I have a comment from Daniel, spelled D-A-N-I-E-L, last name is Slagel, S-L-A-G-E-L, on behalf of E. & J. Gallo Winery, a California Beverage Processor. I'd like to thank you for this investment, which is being leveraged with our own funding to advance greenhouse gas emission reductions at our Courtside, Modesto, Livingston and Fresno facilities.

We are grateful for the opportunity to partner with the Energy Commission on this important project. We also would like to take the opportunity to encourage future funding and continuation of the Food Production Investment Program. We know that you have limited resources and a number of worthy programs that you support. But this program does have such a significant impact on this critical California industry and investment that individual food and beverage processors can make a substantial impact in ensuring the viability of the operation, continued employment opportunities, reliability of processing options

and continued economic sustainability. Thank you. This concludes the comment.

CHAIR HOCHSCHILD: Thank you.

Let's move on to Commissioner discussion, Vice Chair Scott.

VICE CHAIR SCOTT: All right. Well, I'd like to say thank you first to our staff for doing the overview of the FPIP program. I just thought that was an important summary to provide to you my fellow Commissioners, and also to the interested public, especially since we've got about 16 grants that are up for consideration.

And I also really want to appreciate the project proponents, all of you, for participating, so closely with us and also for dialing in and spending a little time to speak with us this morning.

I think that our team knocked this one out of the park. They did a really fantastic job in the outreach, reaching out to the food production folks, really listening to what would make this be the most impactful and effective program that it could be. And I think you see that in the breadth of food producers that have participated, the different types of projects that we're going to see and the amount of CO2 or global warming pollutant reductions that we anticipate seeing.

So I'm just very excited about this. I won't

repeat the things that you saw in the Food Production Investment Program overview, but this is a great set of projects.

CHAIR HOCHSCHILD: Great.

Are there any other comments from the other Commissioners? Commissioner McAlister. Yeah, go ahead.

COMMISSIONER MCALLISTER: I guess I just wanted to reiterate, actually, just thanks to the staff first and all the applicants for a huge group of wonderful projects. And some of you know I did industrial energy efficiency for a really long time. I had sort of a previous career doing that internationally and just across the border in Mexico.

And this is agricultural, but a lot of these projects really they're industrial. And I think the comment that was made about drop-in technologies that have common applications and common processes is really relevant. Industrial broadly is a hard -- each facility has a history and a way, an operational market composition. But there are categories of initiatives. You know, you've got on energy efficiency like compressors and economizers and heat recovery. Steam management is huge. Steam is an old technology, but it is still everywhere. And it is because steam is -- hopefully will do a lot of things.

Heat pumps, market developments for heat pumps and natural gas efficiency. And then alongside the heat

pumps the refrigeration work, and so all of these things work together. And I think we need to -- I agree with the comment that looking for more funding and figuring out how to leverage this investment learn from that. More broad coverage in the broader agricultural industrial sectors would be very helpful and clearing this is very critical for reaching our goals down the roads. So anyway, I think all of these investments are a really helpful look forward.

As Commissioner Scott said last time we're impatient to see the results and learn and grow and do more, so I'm very supportive.

CHAIR HOCHSCHILD: Thank you, Commissioner. Yeah, the only other thing I would add is it's just nice to engage with this set of stakeholders. We have worked very closely for a very long time with folks like home builders and clean energy technology, clean transportation, but not really as much with food producers. And thanks to this program we've been able to do that very successfully.

So I just really want to complement the Vice Chair and all the staff for that engagement. Vice Chair Scott and I did a visit with a couple of these companies a few days ago with Secretary Karen Ross from the Agriculture Department and it was terrific to go (indiscernible) so an incredible projects and so fully support.

Unless there are other comments from the

Commissioners I'll entertain a motion from the Vice Chair on Item 13.

VICE CHAIR SCOTT: Yes. I move approval of Item 13.

CHAIR HOCHSCHILD: Commissioner McAllister, would you second?

COMMISSIONER MCALLISTER: I'll second Item 13.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

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

Let's move on to Item 14, Proposed Natural Gas Solicitation for Air Quality Impacts from Natural Gas and Improving Natural Gas System Resilience.

MS. SCHMIDT-POOLMAN: Good morning Chair, Vice Chair and Commissioners. I am Martine Schmidt-Poolman and I am with the Environmental Research Unit at the Energy

Research and Development Division.

Under the Proposed Natural Gas Solicitation for Air Quality Impacts from Renewable Natural Gas and Improving Natural Gas System Resilience, staff proposes four applied research agreements, totaling a little over $4 million.

The first two proposed agreements that are proposed are aimed at improving our understanding of California's historical climate and improving availability of quality-controlled and up-to-date historical climate datasets to foster natural gas sector resilience.

To start, we propose awarding Eagle Rock Analytics around $1 million to develop a data assimilation platform. This web-based platform will provide for central access of multiple, quality-controlled data streams that are significant to the natural gas sector. And this includes weather observations, remote sensing and modeled historical climate data.

Secondly, we propose awarding the University of California, San Diego almost $1.4 million to develop two separate regional models in order to produce a spatially and temporally detailed historical climate record. One model will be targeted to realistically describe a range of wet weather including atmospheric rivers. And the second will be targeted towards dry weather, with an emphasis on

wildfire conditions.

The resulting fine scale data is then going to be used to evaluate high-impact extreme events and to provide insight for preparation for co-occurring extremes and sequences of hazardous events.

The next two proposed agreements are both to characterize climate and criteria air pollutant emissions before and after a renewable natural gas project is developed. The generation of biomethane, which is also called renewable natural gas, is an important strategy for both reducing methane emissions from the dairy sector and providing a renewable, low-carbon substitute for fossil natural gas.

These projects will help the state move forward in the ability to quantify the emissions at a wide-ranging set of separate facilities across the state through complementary approaches at different sites.

The third agreement that we propose is to Electric Power Research Institute, for about $1 million. This project will characterize and quantify emissions of greenhouse gases and other air pollutant emissions from a variety of waste management activities that potentially produce biomethane, such as at a landfill, wastewater treatment facility, and dairy.

And then the fourth proposed agreement will be to

the University of California, Riverside, also for about $1 million. This project will conduct a comprehensive, multi-season study of methane emissions from dairies in order to quantify the greenhouse gas reduction benefits of installing these dairy digesters.

The project will measure in depth on-farm methane, nitrous oxide, and ammonia emissions from standard manure handling practices. And will measure how these change following digester installation in order to provide an evaluation of the impact of this mitigation measure on total greenhouse gas emissions from a California dairy farm.

This concludes my presentation. Thank you so much for your consideration. We have staff, including myself, available for any questions you might have.

CHAIR HOCHSCHILD: Thank you so much.

Any public comments on this item.

MR. GOLDTHRITE: This is the Secretary. We have no one on the line.

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

CHAIR HOCHSCHILD: Okay, Madam Vice Chair?

VICE CHAIR SCOTT: Yeah. I think this is an important set of projects for us to consider. It's always important to have the most up-to-date and granular data

that we can have in order for us to make these kind of well thought through decisions and to be able to have science to base our decision and policy making. And I think both of these areas that Martine presented are areas where having some additional data would be really useful to us.

And that is all I will layer on.

CHAIR HOCHSCHILD: Great. Unless there's additional Commissioner comments, let's entertain a motion from the Vice Chair.

VICE CHAIR SCOTT: I move approval of Item 14.

CHAIR HOCHSCHILD: Commissioner Douglas, will you second? Yes, second by Commissioner Douglas?

COMMISSIONER DOUGLAS: Sorry, seconded.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

CHAIR HOCHSCHILD: Let's move on to Item 15,

Storage Monitoring, Smart Shutoff and 3D Mapping Technologies for Safer

MS. ORTIZ: Hi. Yes, can you hear me okay?

CHAIR HOCHSCHILD: Yes, good morning or good afternoon, I mean.

MS. ORTIZ: Good morning Chair, Vice Chair and Commissioners. My name is Rita Ortiz. I am an Energy Commission Specialist with the Energy Systems Research Office in the Energy Research and Development Division.

I am requesting your approval today for three agreements, which are results of a solicitation intended to improve the safety and integrity of natural gas infrastructure in California. These projects will improve pipeline-locating technologies and develop 3D visualization software for mapping underground pipelines and improving assets management. These projects will collect and integrate pipeline data from multiple sources and different technologies, visualize pipelines on maps, and make the information available to field workers on GPS-enabled devices. If successful, these agreements will improve natural gas supply reliability, increase gas customer safety, and reduce property loss due to excavation damages.

The first agreement is with Gas Technology Institute. The recipient will conduct a field demonstration of above-ground and in-pipe measurement

technologies for mapping subsurface pipelines. The project will adapt and improve electromagnetic detection technology to locate metallic pipes from the ground surface and use an in-pipe technology to focus on congested areas and plastic materials. These technologies will improve the accuracy of subsurface pipelines in both the horizontal and vertical dimensions.

The second agreement with Bakhtar Research and Engineering will enhance an existing pipe detection technology using forced resonance imaging. This is a new and cost-effective approach to estimate depth and diameter, and confirm pipe material type. This proposed technology will improve the accuracy of detection by at least 70 percent from current mainstream locating equipment.

In the third agreement Gas Technology Institute will develop and demonstrate a 3D visualization software tool for mapping subsurface pipelines and improving pipeline asset management. This platform will assist field users and utility operators by visualizing pipeline data from a variety of locating technologies in near real time. The technology will also provide field operators with digital documentation and guidance, so that the proper procedures are applied to the selected locating technology.

Thank you for your consideration. This concludes my presentation. And myself and staff are on the line to

answer any questions.

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

MR. GOLDTHRITE: We have no comments on the line.

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

CHAIR HOCHSCHILD: Okay. Madam Vice Chair?

VICE CHAIR SCOTT: Yeah, again I'll just note that this is another important set of science-based projects that I think really help us with the natural gas infrastructure insuring that we are able to better locate it. That helps us to keep it safe and helps us to make sure that we are keeping the safety and the integrity of that system and know what's there in a much more impactful and meaningful way. So I support these projects as well.

CHAIR HOCHSCHILD: Great. Unless there's other comments from the Commissioners, I'll entertain a motion from the Vice Chair.

VICE CHAIR SCOTT: Yes. I move approval of Item 15.

CHAIR HOCHSCHILD: Commissioner Douglas, would you second?

COMMISSIONER DOUGLAS: Second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

CHAIR HOCHSCHILD: Let's move on to Item 16, Decarbonization in Healthcare and Large Buildings.

MR. MEISTER: Commissioners, I'm Bradley Meister with the Energy Efficiency Research Office. Can you hear me?

CHAIR HOCHSCHILD: Yeah, good morning.

MR. MEISTER: Good morning or good afternoon, I'm here today to request approval of five energy projects. Healthcare buildings, including hospitals, are the second largest consumer of energy per unit of floor area of all building types using about 2.5 times more energy than other commercial buildings.

Healthcare related greenhouse gasses in the United States are unfortunately increased 30 percent between 2006 and 2016. Additionally, many large buildings in California have an unnecessary high demand for building

heating energy, high hot water distribution system losses and exceptionally poor boiler operational efficiency. Based on the review team scores and suggested funding level, staff requests approval of the following projects.

The first project is with the Gas Technology Institute. This innovative project will design, model, and demonstrate integrated HVAC water heating technologies for a large medical center located in the disadvantaged community in Baldwin Park and includes the following: heat recovery chiller and boiler stack economizers; implementation of a variable air volume system with economizers; optimize control strategy to minimize building heating, ventilation, air conditioning energy consumption. And the benefits of this project will reduce energy in these systems by over 30 percent.

The next project is with the Electric Power Research Institute. And this project will demonstrate an innovative energy efficient and effective ventilation system at a health care facility. Large air handling units equipped with a new energy recovery technology called high efficiency dehumidification system will replace aging conventional system at Jacobs Medical Center at the University of California, San Diego. This high efficiency dehumidification energy recovery system will reduce or eliminate energy consumption associated with reheating

supply air and also increase chiller efficiency and reduce water usage at the cooling tower.

The benefits of the proposed project will completely eliminate the reheating load and can also reduce the cooling load by about 24 percent.

The next project is with the University of California Berkley, Center for the built environment. And this project will reduce natural gas consumption in large commercial buildings. The project will target three main areas of energy waste and natural gas fired boiler-fed hot water systems, a necessary demand for space heating, hot water distribution losses and poor boiler operational efficiency.

The packages will be demonstrated in a disadvantaged community at Genentech campus in South San Francisco and as a tool to identify future projects at a California State University campus and also with the City of Oakland. When implemented this project has the potential to reduce HVAC energy use by over 30 percent.

The next project is the Southern California Gas. And this project will deploy and demonstrate the technical and economic viability of high efficiency natural gas fired heat pumps to significantly reduce the consumption of natural gas and greenhouse gas emissions at large commercials hotels in Southern California.

The Weston Bonaventure is a 1.5 million square foot hotel located in a low-income census tract in Los Angeles. It is surrounded by disadvantaged community priority populations and is the site for deployment and demonstration of modular high-efficiency heat pump technologies. The technology has the potential to double the efficiency of the existing hot water system.

And the last project is with Mazzetti. This project will result in the development of a comprehensive and interactive guidebook for decarbonizing existing healthcare facilities. The decarbonizing healthcare guidebook will include emerging energy efficiency equipment and systems, customized design improvements to reduce natural gas use, increase efficiency and provide a clear path to decarbonizing hospitals.

The recipient will collaborate with hospital engineers and designers as well as state regulatory agencies and healthcare nonprofits and organization to design a comprehensive design guide.

The Office of Statewide Health Planning and Development participated on the scoring committee, and is looking forward to this future research and guidebook as well.

The innovative retrofit guidebook will provide a path to reduce energy use at existing hospitals by 10 to

over 30 percent. This concludes my presentation and I'm happy to answer any questions. We also have staff on standby. Thank you.

CHAIR HOCHSCHILD: Thank you.

Let's go to public comment.

MR. GOLDTHRITE: We have Ram Narayanamurthy from EPRI on the line.

CHAIR HOCHSCHILD: Ram, good afternoon.

MR. NARAYANAMURTHY: Commissioners, thank you again for the opportunity. We want to give thanks to the Commission staff for your support, also to our partners at USCD Health who have been very innovative and very proactive in working on this award. And hopefully as we go through this we can also demonstrate how we can do decarbonization (indiscernible) demonstrate the indoor air quality and health benefits of our dehumidification technology.

So thank you again. Thank you to everyone.

CHAIR HOCHSCHILD: Thank you.

Any other comments in wiring, Madam Public Advisor?

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

CHAIR HOCHSCHILD: Okay. Let's go to Commissioner discussion, Vice Chair Scott.

VICE CHAIR SCOTT: Yes. This is also, I think, a nice cutting edge set of projects for us to consider. I like that it is looking at critical infrastructure. I think that's just a really important component of many of the projects that we're looking at increasing the energy efficiency of the equipment, reducing the amount of gas that it uses. It helps reduce global warming pollution and it also helps save money. And again it's helping to make improvements in this critical industry in the state.

I also wanted to highlight the note that our friend from EPRI made and that we've heard Commissioner McAllister say many times, the indoor air quality is also a really important consideration. And so I'm looking forward to seeing what the results of that are with the set of projects as well.

CHAIR HOCHSCHILD: Great. Thank you.

Unless there's other -- oh, Commissioner McAllister, yeah.

COMMISSIONER MCALLISTER: Yeah, just quickly, thanks Bradley. I really appreciate your effort on this and Ram for being here.

Just to highlight the healthcare industry specifically, it does have a unique relationship with the Building Code in California. And that's because for good reason historically it's a sector that has a lot of

autonomy due to its particular requirements and that are obviously critical for healthcare, which is fundamental to our quality of life. So bringing that conversation along, staff, various staff at the Energy Commission have been doing that, Gabe Taylor and others engaging with these key stakeholder group. And looking for solutions together with OSHPD, (phonetic) who really oversees the facilities in the healthcare industry.

And so there's a lot of detail but avoiding reheat is one of these critical needs that is a huge energy waster. And now we have technology to help improve that situation, so I'm super optimistic about this looking forward to this project and seeing how it (indiscernible).

CHAIR HOCHSCHILD: Are you optimistic enough to make a motion?

COMMISSIONER MCALLISTER: Oh, yes. Well, actually I'll leave it to Vice Scott to make a motion.

VICE CHAIR SCOTT: Alright. I will move approval of Item 16.

COMMISSIONER MCALLISTER: I'll second it.

CHAIR HOCHSCHILD: Okay, second by Commissioner McAllister. All in favor, Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

Item 17, approval of the minutes? Do we have any public comments on the minutes, on May 13th?

MR. GOLDTHRITE: We have no comments on the line.

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

CHAIR HOCHSCHILD: Okay, any comments from the Commissioners. Is there a motion, Madam Vice Chair?

VICE CHAIR SCOTT: Yes, I'll move approval of the minutes.

CHAIR HOCHSCHILD: Okay. Is there a second?

COMMISSIONER MCALLISTER: I'll second.

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

Vice Chair Scott?

VICE CHAIR SCOTT: Aye.

CHAIR HOCHSCHILD: Commissioner Douglas?

COMMISSIONER DOUGLAS: Aye.

CHAIR HOCHSCHILD: Commissioner McAllister?

COMMISSIONER MCALLISTER: Aye.

CHAIR HOCHSCHILD: Commissioner Monahan?

COMMISSIONER MONAHAN: Aye.

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

Item 18, Lead Commissioner and Presiding Member Reports, Commissioner Monahan.

COMMISSIONER MONAHAN: Well, I want to start just by saying we're kind of just beginning the IEPR workshop process. We already had one, thanks to all of you for joining that on heavy-duty vehicle electrification. Now we're moving into light-duty electrification where we've been dealing with some vehicle miles traveled issues on Friday.

So and I wanted to congratulate both the Fuels and Transportation Division and the IEPR team for accomplishing this. I mean, there's a lot to do to go from in-person into a Zoom meeting platform. As I think the first meeting went off without a hitch. We had some lessons learned. And we're trying to smooth things in the next one where we're going to be allowing participants to ask questions and then ranking the questions, so that the facilitator of the panels can then look at the questions and see if they want to incorporate those into the panel discussion.

And I feel like it's a good example of where the

teams are really trying to use technology to do the best public outreach that we can. I mean, we all know these are trying times. It's hard to do public outreach well in an online platform. And we recognize that some folks in some cities just don't have access to good Wi-Fi. So trying to make sure there's always a phone call in option, but I do think there are things that we can do or technology that we've never done in our IEPR workshops that can actually make them more interesting. And we're trying, so we'll see how it goes.

I really -- Heather in particular like she -- it takes a lot of folks to pull off some of these Zoom webinars, as we all know. You have to have a whole team of people making sure that it goes off without a hitch. So I'm excited to try and see how it goes.

I also think one of the benefits, as I mentioned last time, is you could do it two days instead of having it one day of eight hours. You can do two days, but it also means you have to kind of do it shorter because three or more hours, as we all know, on a Zoom call and your head wants to explode. So we were trying to have shorter workshops over two days and use these new technologies to make them more interesting for everybody.

So I mentioned last time that I had held an all-hands FTD meeting with our team and we did it again, so we

had a second one. And we tried Zoom breakout rooms this time, because again we're trying to figure out like how do you foster collaboration and community when you work remotely? I would say it was just varying degrees of success, because there were some lessons learned like people have to be at the computer and they have to tap a button saying, "I want to go into that breakout room." But for those who were in the breakout rooms I think they had a good experience.

So today we're going to be publishing the -- well we, not me -- the Fuels and Transportation Division is going to be publishing the Revised Investment Plan. There is an advisory committee meeting next week. And then we're going to meet with the Disadvantaged Communities Advisory Group the week after that.

Really again, our plan is to get the -- our goal is to get the Investment Plan to you this summer. Some of it will depend on what kind of feedback we get. We really were prioritizing in the revision like how do we continue to make progress on clean transportation, electrified transportation as much as possible, but also create jobs and promote economic recovery to respond to the crisis, the economic crisis for like COVID.

So I'm very curious to get feedback from stakeholders, since as I mentioned I think in our last

time, we got feedback in a pre-COVID world. And so this will be the first time we're getting feedback in the COVID world. And because we're -- as I said you can only have these ZOOM meetings for so long, so we're focusing the conversation at this next Zoom meeting really on the economic crisis caused by COVID and reactions from the Advisory Committee and others, the public on that question.

So I think that about wraps it up for me.

CHAIR HOCHSCHILD: Okay, Vice Chair Scott?

VICE CHAIR SCOTT: Great. Well, before I jump into my updates, I wanted to take a minute to thank our staff in the R&D Division, but also those in Contracts, Grants and Loans and the Legal Office. Today, you may have noticed that today we did over 40 R&D agreements, which as the Lead Commissioner for R&D is really exciting for me. But that's a lot of work for our Contracts, Grants and Loans, our Legal Office R&D Division to develop those agreements, to get them prepared to be considered at the Business Meeting. So I just really wanted to recognize and acknowledge the tremendous amount of work that they did to help bring these projects across the finish line.

Here, we have a few more that are coming for your consideration. Those will be in early July, because we have a few extra days to get some of those projects done thanks to an Executive Order, so stay tuned for a few more.

I also wanted to highlight the heavy-duty ZEV market trend workshop. Great work, Commissioner Monahan, in kicking out the IEPR. I thought it was really interactive and engaging. And I think new ideas about how to continue to make them more interacting and engaging, making sure all the panelists are on video so people can see them when they're speaking and other things like that, I think will really wonderful going forward. And I was happy to be able to participate on that initial IEPR workshop.

I wanted to highlight also that the Chair and I had a chance to check in with all of the deputies across the Energy Commission just to get a sense of how is teleworking going. How are people feeling about it? What else can we do to help support folks as we do telework, because we recognize that this a challenging time. Folks are still trying to balance home school, telework, how to amuse bored kids, taking care of parents, keeping an eye out for pets. And there's no kind of clear delineation any more between home and work or home and school or things like that. And so just kind of really being mindful of what we can do to help support folks as we continue to telework, so that it continues to be a good experience for people. And that we keep firing cylinders, which I really think that the Energy Commission has done and that's in no

small part to excellent work across many folks within the Commission.

I wanted to highlight also that we had a virtual tour of food processor facilities, so as the Chair mentioned that as we were doing the FPIP grants just a little while back. But that was really fantastic. I appreciate the hard work that Laurie ten Hope and her team and LeQuin from the Chair's Office and Rhetta from my team did to put that together, and really make it interesting and engaging. I think we had about 90 minutes.

I was pleased to be joined with Secretary Karen Ross, as the Chair had mentioned, Alice Reynolds from the Governor's Office joined us as well. And we heard from about three or four of the FPIP projects and they did a really nice job. We had some short videos to see. We had a chance that we could have some discussion. And so this is a nice way to see what some of these projects look like in a time where most of us are all still maybe hanging out at our houses or home offices and not having a chance to travel around the state and really see these projects.

One of the ones that was super impressive and I might get the number of days wrong, but they swapped out major equipment within nine days. And that they literally had no wiggle room on either end. It was like the food processing was going. They stopped. They had nine days

until they had to get the next set of food processing up and running and they put in all that new equipment in that timeframe.

And so one of the other things I think I really appreciate the collaboration with the food processors in working with the Commission, and our Commission staff in working with the food processors, to understand what those cycles look like. And how we can be most effective in getting the equipment out, but also in doing the grants at times when people are available to apply and then understanding, oh okay, well they didn't put it in yesterday, because we've got to wait until they've got that nine-day cycle or that nine-day availability two or three months from now. So their flexibility and nimbleness within the program I think is really quite impressive. So I was glad to have a chance to do that virtual tour. I'm looking forward to doing more within FPIP and also within R&D.

I also wanted to mention to you all that yesterday I had the opportunity to participate in a -- I'm looking up the title of it here -- a house natural resources committee discussion, which was really quite wonderful. The official title of the forum was "After Coronavirus, Building a Prosperous Environmentally Friendly Economy." So there were me and three other speakers. And

we had a chance to talk about the types of programs that the House Natural Resources Committee may want to consider as they're thinking through how do we build jobs?

So I talked a little bit about the EPIC program and the Energy Innovation Pipeline that you guys are so familiar with, which is basically how do we get a good idea to proof-of-concept, out into how you manufacture it, into the market, out into the public market at the market place. And how we really kind of nurture great ideas that are interesting and innovative technologies that we hope will be some of the things that help us get to the 100 percent clean energy standard. And we need to plant those seeds now right, 2030 is not that far away. And this pipeline takes a little bit of time, so I talked about that a little bit.

I talked also about the importance of diverse communities in this transition. We have to make sure that we bring our low-income communities, tribal communities, rural communities, communities of color, all the communities that have been unduly impacted by the burden of pollution need to be part of the solution in a meaningful way. And we need to make sure that they are part of the clean energy economy both in helping shape it, but also with meaningful, living wage jobs, jobs that you can raise a family on, jobs that you can send kids to college on.

But that is also an important consideration. And I talked a little bit about how the Energy Commission tries to do that with some of the grants that we give out as well.

And then the third thing that I highlighted were that there's a lot of state programs that are actually already up and running in this space. And so if you add some funding to some of those programs we don't need to recreate everything from -- we don't need to recreate the wheel. And so I talked about Prop 39 and how that was a win-win-win all around. We had schools. Those are critical infrastructures. We put money in to help improve energy efficiency and HVAC, which means these better learning environments for students. It helped create jobs and an upgraded critical infrastructure.

And I also talked about the charging infrastructure and also hydrogen refueling infrastructure. And how much more of that we need around not just the state, but around the country, because obviously this is how natural resources committee -- they're interested in more than just California. And that those are also jobs that can't be outsourced. Those are jobs that happen right here in the communities where you're upgrading a school or where you're putting in that infrastructure.

So those were three of the things that I talked about with the House Natural Resources Committee. That was

just yesterday. And then I know the Chair will probably speak about this, but I did want to note how much I appreciate hearing from Professor Duster last Friday to talk with our staff about everything that's going on in the world right now and providing us a little bit of perspective and an opportunity to talk with one another.

So those are my updates for you all today.

CHAIR HOCHSCHILD: Great. Thank you.

Let's go on to Commissioner McAllister.

COMMISSIONER MCALLISTER: Yeah. Great, so thanks Chair for all of your attention. So I just wanted say this was a great meeting and congratulations to Vice Chair Scott just for all of the items, and the R&D team for getting all of those items on the agenda. Just a really great slate of wonderful projects, looking forward to seeing those move forward, I mean doing the people's business. And kudos to the Executive Office and just all the admin heft behind all of that to do this virtually and seamlessly. And the Public Advisor obviously is front and center in that as well. So really it's a team effort, so doing the Commission and California's business is just a pleasure when all the cylinders are firing, in particulary when all the cylinders are firing. So I wanted to just say that.

I wanted to just point out the Assembly Bill 3232 building decarbonization efforts has had a lot of progress

in the last month or so. We've had two workshops, one on May 22nd and another one yesterday on various aspects of that. There's a growing, I think, level of expertise and attention to this in both the Efficiency Division and the Assessments Division. It was a really key joint effort across divisions.

And there are many threads in our buildings: technological, cross fuels, with local governments, just a lot of stakeholders, technologies, programs to help with focus subsidies or financing on different market development initiatives. There's just a lot of different activities. And 3232 alongside a list of a whole suite of activities across buildings and appliances and planning and forecasting. Really, you have to work together and so staff has kind of -- we are all developing this muscle of integration where we're always trying to pay attention, oh what other group does this apply to and who do I need to bring into a given conversation? That obviously is made more challenging with COVID and remote work.

And I'm just really heartened to see that sixth sense kind of developing across the staff that I work with and oversee. So I really want to thank everybody for that.

Let's see, I wanted to give everyone a heads up. You'll remember a couple of a few meetings ago I highlighted the December release of the US Energy and

Employment Report that was a national effort that NASEO kind of put under its wing when it was disowned by the Department of Energy a few years ago in the change of administration. So that had been happening with great feedback on that and a lot of good data. And together with the Public Utilities Commission, the Energy Commission funded a California-specific effort to deepen the survey, to do more sampling, to ask -- to target more California entities, to understand the jobs landscape here in California.

So that work is nearing completion. It's basically completed. Been tweaking a few final details and we'll be seeing that in the next few days. It's not a Commission document. It's from DW Research with our logo and the PUC's logo on it. But it'll be coming out hopefully by the end of this week.

And obviously the jobs landscape is something that we're all looking at. And trying to figure out, as Vice Chair Scott just said, these are jobs that can be key to restart our economy in ways that really focus on a green and sustainable and our communities, disadvantaged communities, low income communities, communities of color.

And I think the increasing importance or just urgency of the equity issue and what we deal, we've been focusing on this for years. But I think it's only worthy

of more and more ever increasing focus really as an organizing principle for much of what we do.

So hopefully the jobs report can -- the data will have access to more data than even is in the report. And hopefully we can look at the demographics and the geographies and look at that data in some more detail to help us formulate policy recommendations and certainly implement the ones that we already have responsibility for. So I'm excited to get that California-specific product out there, so we can start to work with that.

Let's see. I wanted to second Commissioner Monahan's sort of appreciation of Zoom as a potential tool to increase engagement, because I've been on a few calls -- we're all of a certain age and I certainly am learning how to do -- no criticism there, right? I'm probably more of a certain age than the rest of you basically. But I think if you think about what it was like when it has been like in a physical space, and hearing (indiscernible) in a meeting, that is a linear activity. There's no way to have different threads going on at once. Everybody is focused on the same thing in any given moment.

And with the potential, like yesterday in the AB 32 workshop, 3232 workshop that we had, yeah there were questions on different themes coming up in real time in the chat. And so to the extent that there's five or six

questions floating in on a given topic, well maybe there's a way, since that is recorded and it's on the record maybe there's a way to sort of say, "Okay, well cost effectiveness. We're going to break out a session quickly. Let's have some real time interaction with stakeholders and get that on the record." Rather than, or not in substitution for it completely, but rather than having to wait two weeks for everybody's comments to come in on that, maybe we can get it started and get staff engaged and another topic at the same time, which you just can't do when your physical presence is not set up.

And yet here we have the opportunity to put multiple streams on the record at once that is transparent and accountable. So I know there are lots of issues there and it's certainly a lot of effort on staff's part to manage that. I don't want to get ahead of ourselves, but I do feel like there's at least a potential to speed up or enhance engagement that allows us to develop a record for decision making in a more efficient way than maybe historically we've been able to do. So anyway I've gotten kind of excited in thinking about that.

I know Commissioner Monahan is kind of the thought leader on this front here, so I'm happy to pitch in my own two cents with Executive Office and everybody who's actually got to actually execute on this. But just some

thoughts there.

And then kind of related, I guess more broadly, but I want to just thank all of you for -- I talked earlier about the kind of web of issues and so many details that cross our silos and our divisions and our responsibilities for oversight. And I just want to thank you for sort of managing this inter related web of issues. So when staff comes and talks with you about a certain issue that we're all mindful and I think that's happening.

So it's a new set of skills, because all of us have a so related in the decarbonization world that we're in. So your attention to all of that is very appreciated. Buildings are complex. Transportation is complex. And behavior is complex. And so all of our touches really matter and they need to be coordinated.

So and then finally I imagine, Chair Hochschild, you'll bring this up. I also appreciated the talk from Troy Duster, the other day. And I wanted to thank both you and Vice Chair Scott for the letter, for the statement you sent out last week, I think it was, just about acknowledging the pain or historically-based pain and systemic injustice we still have to deal with in our society.

And I think I am working on it sort really going into listening mode and just kind of trying to understand.

We certainly have levers to pull at the Energy Commission to focus on equity to emphasize that, to make it an organizing principal in our world. The problems we're talking about really are deeper and more systemic. And they're not energy related, per se. What we can do is help create jobs for folks look like the communities they serve, and try to really make that happen in practice in a way that it hasn't enough of. It hasn't been enough of and we don't have that situation now. We need to help create that situation, that economic vitality across the board and that justice.

But anyway I wanted to just bring that up and give it a little bit of voice from our perspective and just acknowledge that listening is probably the skill we need to practice, many of us need to practice the most going forward.

So that's it for my comment.

CHAIR HOCHSCHILD: Thank you, Commissioner McAllister, very well said.

And let me just say again for all the staff and stakeholders, you know that letter, we're prohibited under Bagley-Keene from being able to send a letter from all five of us. But I very much feel that what the Vice Chair had noted is it reflects the sentiments of all the Commissioners and we're all in this together.

Commissioner Douglas.

COMMISSIONER DOUGLAS: Thank you. I have a brief report. Our work has continued at a rapid clip here and I'll join my colleagues in their comments about the effectiveness of the remote public meetings. It's of course not perfect, but I think it's gone very well under the circumstances. I participated in a number of the IEPR workshops and the DCAG meeting, the last DCAG meeting, which was remote. We have held a series of permitting meetings, public meetings both pre-hearing conferences and evidentiary hearings for data center cases.

We recently conducted a public workshop for the update to the RPS regulations. And that process is moving forward on time I'm glad to report. And we got from you know very helpful public comment at the workshop. And we're now waiting written comments.

I also had a chance to participate in a panel discussion of the implications, or what does COVID-19 mean for the clean energy transition? This was hosted as part of the energy systems management program first virtual speaker series at the University of San Francisco. It was a nice panel, a nice event, and one of the things that I talked about there was how the state is moving forward and we are meeting our goals. And we're able to implement our programs. And of course there are challenges and there are

changes presented by COVID. And those challenges and changes, as has been discussed, are deep and broad and societal. And for people directly affected with their health and their jobs and so on, you know dramatic sometimes, and has been very significant. And we're a small piece of the picture. But I do think that we have been able to continue moving forward in a positive way with the work that we do.

And so anyway that's my only report today.

CHAIR HOCHSCHILD: Good. Well, thanks everybody.

Yeah, just building on Commissioner McAllister's comments sort of about what's happening now in our country, I have found myself the last 10 days getting very emotional on certain points. Just, you know, watching that horrific media on what happened in Minnesota, but also the massive peaceful protests. One of which I had an opportunity to participate in with my family on Saturday. And just seeing the incredible diversity of support in age and race and people marching, not just in our country but all over the world, these protests in Australia, in India.

And it's really remarkable and I actually feel a great sense of hope that this moment has really reached a tipping point. And that we can make some lasting positive changes in our country. And I also just want to say I feel so thankful to be with all of you at the Energy

Commission. I really feel that we've become closer together. And the town hall we had on Friday with Professor Duster was extraordinary.

Thank you to Lindsay from making that into a recording. That video is on YouTube now. And Drew sent it out to all staff, but please feel free to forward that, share it widely. I think it's a remarkable talk about the moment we're in and sort of the path forward.

So I wanted to just say also we have two summer interns starting, Lou Nguyen (phonetic) who is a senior in high school has just joined this week and is going to be helping with the IEPR. And on some research around Lithium, recycling and some other projects. And then Jane Stevenson (phonetic) who is at Stanford and is going to be working support on SB 100. So welcome to them and I look forward to meeting with everybody else, some fellows as well. I am very sorry not to be able to be in the office. It's really not quite the same experience doing this remotely, but (indiscernible) summer fellows are a great experience.

I really think that mentorship changes lives. I feel absolutely the beneficiary of that just having had people encourage me and inspire me. And so I know we all aim to do that, to pass that on.

Just a couple of interesting companies that I met

with this week that I just love to see the innovation. One of them is called Canoo that is a new company, about 300 people I think in Southern California, that's manufacturing an electric vehicle. But rather than selling it they do a long-term lease, but only to one customer. And it's a new business model that goes along with Gabe cars (phonetic) and everything else, but we're just seeing a lot of innovation in the business model as well, particularly transportation.

And the other is called Renewal, (phonetic) which is using depleted oil and gas wells to do a gravity feed energy storage system. You know, just very creative stuff.

So the last thing is really just with the Vice Chair, one topic I'd love to work with you on is around lithium recycling. And I understand PUC and CalRecycle have done a little bit on this. And obviously we've funded some stuff relevant to this, but I do think we need to work to make a more robust lithium recycling plan and maybe even set some goals for the state. Because my sense is the vast majority of lithium ion batteries, particularly in two-wheel devices like scooters and bicycles and such, are not being recycled effectively. So that's something on my mind I'd love to explore further.

Anyway, those are the main points that I feel are super-important.

So let's go to the Executive Director's Report, Drew. Drew, did we bore you to tears, are you still with us?

MR. BOHAN: Apologies, I had not unmuted the second place I need to unmute. Can you hear me now?

CHAIR HOCHSCHILD: Yes, we can. Yes.

MR. BOHAN: Commissioners, thank you. I just have two quick points to make. The first is this is the last Business Meeting of the fiscal year and the budget is set to be in print this Friday and adopted Monday or Tuesday of next week. And so we'll know the finals then and I'll report at the next Business Meeting on the budget and how we faired, which so far looks like we faired pretty well.

And the second thing is I just wanted to share the thanks that Vice Chair Scott said first to the teams that made this meeting possible. End of year can sometimes be a scramble and COVID made this year particularly challenging. But I want thank some of our admin team, Rob Cook who leads it, Melanie Vail (phonetic) is number two, Rachel Rechtenwold (phonetic) who runs our accounting division and Adrian Winnick (phonetic) who runs Contracts, Grants and Loans. They and their teams, every single one of them really worked very hard to make sure we got these all pulled together for this meeting.

And then I also want to thank in particular Laurie ten Hope and her team for doing the substantive work on the EPIC projects. I'll just give one illustration, Mike Gravely spoke about non-lithium storage. Mike is a state treasure, as you know, I think we've even declared that officially. And these projects start with an idea and then a lot of heavy workload that nobody really sees in figuring out how to write the solicitation, what do we want exactly and what don't we want and what does a team look like that is what we judge to be successful? And all of that goes in right at the front end. Fast forward today, you guys see the back end and the final projects and then ultimately they get implemented and completed.

But there's just I wanted to illustrate what I know you know, but wanted to say it, that there's a lot of work that goes into it. With that I'll thank you very much.

CHAIR HOCHSCHILD: Great, thank you.

Public Advisor's Report?

MS. GALLARDO: Hello, this is Noemi Gallardo, the Public Advisor. I have a quick thing. The Commissioners did touch on how the agency is doing what it can to make sure that we're making our remote proceedings more engaging, interactive and equitable.

My office is definitely working on that and I

wanted to invite the public to also help us with this by providing any feedback or input on what would work for you. So I wanted to let you know to feel free to contact my office. And the way you reach us is to either write via email at publicadvisor@energy.ca.gov. You can also call us at 1-800-822-6228 and you can also find this information on the CEC website.

That concludes my report. Thank you.

CHAIR HOCHSCHILD: Okay. Thank you.

Is there any public comment?

(No audible response.)

MR. GOLDTHRITE: We have no public comments on the line.

MS. GALLARDO: This is the Public Advisor, no written comments either.

CHAIR HOCHSCHILD: Okay. Let's go to Chief Counsel's Report.

MS. HOUCK: Yes, thank you, Chairman. Just a brief report, I wanted to introduce our summer interns. Danielle Rosendun (phonetic) is a rising QL at UC Davis and Katherine Romero (phonetic) is a rising QL as UC Hasting.

Danielle's previously worked for private law firms and she's also worked on solar development projects and Senator Ed Marky's campaign as well as for the Sierra Club. And Katherine has worked for the San Luis Obispo

District Attorney's Office and has previously volunteered for a grassroots campaign to ban fracking in San Luis Obispo County.

We are really happy to have both of them on board for this summer. I know that there's been challenges with the intern program given the shelter-in-place order and remote working, but we seem to be making it work in large part thanks to two of our attorneys: Samantha Aarons and Nick Oliver who've really gone above and beyond to help integrate our interns into the office. And make sure they have assignments and can connect with all of us. But I want to welcome them to the office.

And then I also just want to thank Alan Ward and our Transactions Unit for all of the hard work they've done in working with staff to get this end of the year meeting in place. And I really appreciate everything that they have done, so that's my report. Thank you.

CHAIR HOCHSCHILD: Great, thank you.

I think that's it. I think we're adjourned. Thanks everybody.

(The Business Meeting adjourned at 12:50 p.m.)

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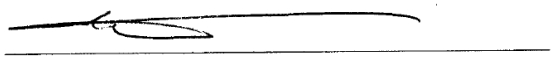

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