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BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

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

CALIFORNIA ENERGY COMMISSION

THE WARREN-ALQUIST STATE ENERGY BUILDING

ART ROSENFELD HEARING ROOM - FIRST FLOOR

1516 NINTH STREET

SACRAMENTO, CALIFORNIA 95814

WEDNESDAY, MAY 9, 2018

10:00 A.M.

Reported by:
Peter Petty

APPEARANCES

Commissioners

Robert Weisenmiller, Chair
Karen Douglas
Janea Scott
David Hochschild
Andrew McAllister

Staff Present: (* Via WebEx)

Drew Bohan, Executive Director
Kourtney Vaccaro, Chief Counsel
Allan Ward, Assistant Chief Counsel
Alana Mathews, Public Adviser
Dorothy Murimi, Public Adviser's Office
Cody Goldthrite, Secretariat

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Pursuant to Government Code section 11126(e), the Energy Commission may also discuss any judicial or administrative proceeding that was formally initiated after this agenda was published; or determine whether facts and circumstances exist that warrant the initiation of litigation, or that constitute a significant exposure to litigation against the Commission, which might include:

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P R O C E E D I N G S

MAY 9, 2018 10:05 a.m.

CHAIRMAN WEISENMILLER: Okay. So let's start with the Pledge of Allegiance.

(Whereupon, the Pledge of Allegiance was recited in unison.)

CHAIRMAN WEISENMILLER: Good morning. First, I want to remind everyone that we're going to take public comment today on a number of items. To provide public comment file a blue card. We'll first go through those in the room and then we'll go through those on the line. You have three minutes period, to make your comments. Certainly we want to make sure everyone has a chance to be heard.

We're working on getting an overflow room set up, so that it will be more convenient for people. The Public Adviser will probably make an announcement on that.

So with that, let's go to Item 1, the Consent Calendar.

COMMISSIONER DOUGLAS: Move consent.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: Consent passes 5-0.

Thank you.

Let's go on to Item 2, State 2019 Building Energy Efficiency Standards. Staff?

(Pause to set up presentation.)

MR. BOZORGCHAMI: Good morning Chair Weisenmiller and Commissioners. My name is Payam Bozorgchami, Project Manager of the 2019 Building Energy Efficiency Standards.

I am here with my colleagues Mazi Shirakh, Project Manager for the Zero net Energy and Peter Strait, Supervisor of the Building Standards Unit in the Efficiency Division, requesting adoptions of the 2019 Building Energy Efficiency Standards for Residential and Non-residential Buildings.

COMMISSIONER MCALLISTER: Hey, Payam? Could you put your mic a little bit closer, so it's a little louder?

MR. BOZORGCHAMI: Sorry.

COMMISSIONER MCALLISTER: There's a lot of people in the room and I just want to make sure everybody can hear. Thanks.

MR. BOZORGCHAMI: You get to tell me to take it away, so.

Energy Efficiency Standards, Residential and Non-Residential Buildings, the Reference Appendices, and the Alternative Calculation Approval Manual.

Commissioners, this is a three-part presentation.

I will be doing the first part, then Mr. Mazi Shirakh will do the second and Peter Strait will finish the presentation.

So let's get started, other than the Warren-Alquist Act there are many recent policy drivers for the Building Standards that really require staff to look at energy efficiency. These incidents include state policies on renewable energy, climate change and other long-term strategic plans.

Staff developed the 2019 Standards with the help of our utility partners and consultants. There were public meetings held both by the utility team and by staff to obtain feedback from the public, and recommendations proposed for the standards.

Since September of 2016 there were nine in-person meetings and ten webinars held by the utilities. And we had 14 in-person meetings here at the Commission and 2 hearings with Commissioner McAllister's office being present. Next slide, please?

The Life Cycle Cost Analysis was used to determine the benefits of each measure that we are proposing, including the cost benefits to the building owner. The life cycle cost was based on Time Dependent Valuation or TDV and considered how the value of gas and electricity changes depending on the seasons and time of

day. Next slide, please.

So with that in the 2019 Energy Standards Part 1 of the Building Standards Code we made minor editorials throughout the administrative regulations to clean any ambiguity. There is a new section on Community Shared Solar Electric Generation Systems or Community Shared Battery Storage System compliance option. Mazi will be presenting that in his section.

Into Part 6 of the Efficiency Standards, in Subchapter 1 being the general provisions we added a new occupancy group "I" to bring in healthcare facilities for the first time. The Energy Commission committed to addressing healthcare facilities in a thoughtful and measured way adding exceptions as necessary to protect patient care. Next slide, please.

For nonresidential mechanical some of the things that we did was ventilation, the ventilation rates for high-rise residential are now based on ASHRAE 62.2. And the natural ventiliation exhaust air rates for nonresidential and hotel/motel are based ASHRAE 62.1.

There are new requirements for HVACs like fault detection diagnostics, expanding the existing requirements to all cooling systems more than 4.5 tons, that incorporates an air economizer.

We have a new air filter requirement for covered

processes. We have new prescriptive fume hood requirements for laboratories, which include fume hoods with automatic sash closures.

For demand response, we made cleanup changes to the demand response language and we added language to allow cloud-based systems. Next slide, please.

For nonresidential lighting the lighting power allowance for both indoor and outdoor nonresidential space are now based on LED technologies. In addition new power adjustment factors have been added to encourage natural light into buildings, and an allowance has been made for small aperture tunable white and dim to warm luminaires.

For the nonresidential lighting alterations section we wanted to simplify the code language to enhance compliance. The three different alteration sections of 2016 will merge into a single altered indoor lighting system section. We aligned the control requirements of the two reduced power options, all three options control requirements' are in the updated table for control requirements for indoor lighting system alterations. Next slide, please.

For the residential, what we did was we updated our mandatory measuring requirements. To get a better envelope assembly constructed we updated measure minimums for wall systems. We added fan efficacy for new gas

furnaces were updated to .45 watts per CFM and we added a new requirement for small duct high velocity equipment, because these systems are operating at a different static pressure than traditional air handlers.

Also we ensured proper air flow and ability to accommodate improved filtrations. We've updated our filter grill sizing requirements and now require that the air filter installed for the system be at least at MERV 13.

We've updated the version of ASHRAE 62.2 that we've incorporated into the standards with the usual set of adjustments that occur when we adopt the model code.

Even though it's not on the slide for all of the dwellings, for all dwellings, the kitchen range hood requirement is now requiring a field verification to conform with HVI ratings. For multifamily dwellings, the dwelling can either have a balanced ventilation system or can use simply a supply only or exhaust only if the prop (phonetic) passes the blower door test. Next slide, please.

One of the major changes that we did in the prescriptive package this code cycle was we introduced the photovoltaic systems. Mazi will be presenting that later on. We raised the -- but before we did that we had to look at the efficiency of the buildings, so what we did was we raised the efficiency requirements for fenestration, added

a new requirement for solid doors in the prescriptive requirement. Quality installation was a compliance grid in the performance package for 2016 and now it's part of the prescriptive requirement.

We increased the R value of the roof deck and wall assemblies. We added a new prescriptive option for heat pump water heaters in new construction, additions and alterations. For newly constructed buildings the heat pump option will require either a compact hot water distribution and drain water heat recovery device or additional PV on top of the 2019 PV requirements. Or that the installed heat pump water heater meet the specifications of NEEA Tier 3.

We updated the existing prescriptive options for gas water heaters based on stakeholder feedback. We have retained under 55 gallon storage options and replaced the quality insulation installation, which is now a prescriptive requirement with the low U-factor window requirement. We've also updated the over 55 gallon storage options and it will no longer need additional requirements to meet the prescriptive standards. Next slide, please.

For the reference appendices, there has been lots of editorial cleanup and updates to make the sections harmonize with federal standards were needed, and to be easier to read and understand.

The updates to the existing JA sections include updating JA 8, which is the qualification requirements for high-efficacy light source to use the most recent ENERGY STAR ratings or tests, excuse me. In NA 7 installation acceptance requirements for nonresidential buildings and covered processes, we added three new sections for testing and verification: lab exhaust verification, fume hood automatic sash closure systems and ventilation and air leakage for high-rise residential dwelling units.

In the residential appendices section RA 2 residential hers verification testing and documentation process, we updated a third-party control program.

And for RA 3 the residential field verification diagnostic test protocols, we provided new verification protocols.

Lastly, we added JA 11 and JA 12. Those are the solar photovoltaic and onsite battery storage, which Mazi will be discussing now.

CHAIRMAN WEISENMILLER: As we're transitioning, the conference room across the hall is now open for overflow. I'm encouraging people to clear out, go over there. Certainly, those who want to do comments can only do it from this room, but you can certainly listen to everything over there. But let's get a little bit of breathing space here.

Go ahead, Mazi.

MR. SHIRAKH: Good morning, Commissioners. I'm Mazi Shirakh, the Project Manager for Zero Net Energy and Photovoltaic Requirements. Next slide, please.

So for 2019 Standards we set six goals: One to increase the building energy efficiency most cost effectively; contribute to the state's GHG reduction goals; sustainably reduce the home's impact on grid through efficiency and PV measures and promote the demand flexibility and self-utilization of the PV generation; provide independent compliance path for both mixed-fuel homes and all-electric homes; and provide tools for Part 11 Reach Codes. Next slide, please.

The 2019 Standards approach have several elements. One was to improve the envelope efficiency as cost-effectively as possible and also, leveling the playing field for all-electric homes.

We also wanted to come up with a criteria for an appropriately-sized PV system. And that is a PV system that complies with the NEM sizing rules that only displaces the electricity consumption of the house on an annual basis and not natural gas. And also come up with strategies that maximize the self-utilization of the PV system and minimize exports back to the grid. Next, please.

As Payam mentioned, you know we have parallel

prescriptive paths for both mixed-fuel homes and all-electric homes. We know all-electric homes tend to have far lower GHG emissions, so with this cycle of standards we removed all the barriers for all-electric homes so the communities who wish to meet those goals, they can do so by using electrification without additional penalties. Next, please.

So PVs must be cost-effective as are all standards measures and we use Life Cycle Costing Analysis. And for NEM we also had to consider the Net Energy Metering sizing rules and compensation rules. So using those two criteria combined, Life Cycle Costing and NEM, we determined that a PV that is sized to displace the annual kilowatt-hour consumption of the house is cost effective in all 16 climate zones.

I should mention that photovoltaics are a prescriptive requirement, but battery storage are not and is only a compliance option. Next please.

So here comes the sun, for the first time we are requiring prescriptive requirements for the PVs. As I mentioned, it's a PV that's only sized to displace the electricity consumption of a mixed-fuel home. Even if you go to an all-electric home the sizing requirement is still the same; it's based on the mixed-fuel home. And that is done so to keep the cost of all-electric homes and mixed-

fuel homes within range.

We also have an option for community solar. And these would be options that will be approved by the Commission that the builders can use instead of rooftop PV systems. And if they want to do so they must demonstrate that these community solar options have the same energy benefits as rooftop systems. Next, please.

So we have two appendices that Payam alluded to, Joint Appendix 11 and 12. JA11 is the qualification requirements for photovoltaic systems. They describe requirements such as orientation and shading and other capabilities.

And JA12 is the qualification for battery storage systems. And basically, JA12 ensures that once a battery is coupled with a PV system it brings the maximum benefit to the grid, to the environment and the homeowner. Next, please.

We've developed, or enhanced, our compliance tool, the CBECC-Res to enable the users of the software, which could be the builders, community planners, local governments to actually assess their GHG and the energy implication of their decisions in real time. If they are trying to meet certain goals they can use this tool to meet both the CO2 reduction goals energy consumption goals. Next, please.

And then this slide indicates how we've been able not only to improve the energy efficiency of our buildings, but also we can achieve very significant CO2 reductions. And the examples here is an existing home, which is a 2000 compliant home, mixed fuel, may generate 6.5 tons of CO2 -- that's metric tons -- per year. A 2016 compliant home, which is the existing regulations, can bring that down to around 3.3. A 2019 compliant with 3.1-kilowatt PV system and a mixed fuel can further reduce that to 2.3.

Now, if you go to an all-electric option the first option would be with a 3.1-kilowatt PV system. We can reduce the GHG emissions down to around 1.1 metric tons per year. And if we size the PV a little bit bigger we can go down to around half.

And none of these options actually include storage. If you add storage to that the numbers will go down further. Next please.

So the savings are very significant. For a residential unit the statewide cost savings, the initial costs are about $9,500. That includes both the PV system and energy efficiency measures. And again, this is a statewide estimate, you know, that would vary depending on the size of the house, of course. And the savings are about $19,000. That's a present value. This is a very conservative assumption that assumes no energy cost

increase over the next 30 years. Even if we assumed a very modest cost escalation for energy, that number will go up to $24, $25,000 of savings.

So in other words, the monthly -- additional monthly mortgage costs as a result of these measures will be about $40, but the energy savings benefits are about $80, which is twice as big.

The energy savings between 2019 and '16 Standards, without the PV, is about 7 percent for all house loads. If we add a PV system to that then the savings will be about 53 percent.

And on a three-year cycle of the Standards, the CO2 savings from residential sector would be about 700,000 metric tons, which is equivalent to about taking off 115 gas cars off the road, with about 18 miles per gallon. Next, please.

So even though we've made a lot of progress and we think we have a very solid foundation for even going after a GHG metric, but there are things that we can do in the future that we need to focus on. And one is to move to a more GHG-based metric that encourages electrification. The second one is moving away from this concept of hourly netting, which assumes that every hour of the year has the same GHG and energy attributes when in fact we know that they do not. They change on a daily basis and seasonal

basis. Maintain an energy efficiency first priority, but also maintaining measures that encourage demand response, demand flexibility that harmonizes the PV systems with the grid.

I think that was my last slide. Next. Oh, one more. That's in savings. We talked about the residential. What's interesting here, that table in the middle, it actually captures all the savings from when the ZNE effort got started 12 years ago. So we're comparing savings between 2019 Standards and 2005. So the numbers are rather impressive in energy units, the terms. We've reduced the energy consumption of our buildings by about 70 percent. And for GHGs we've reduced the GHG by more than 52 percent. So the two efforts actually track each other. And again, we're on pretty good, solid grounds for launching into the future. The combined savings between res and non-res is about 650 gigawatt hours, which is a very large amount. Next, please.

So we're also asking approval for the AACM Manual, Alternative Calculation Method. I know we basically did some clarification and some minor improvements to the document. Next.

MR. STRAIT: Hello, Commissioners, this is Peter Strait.

Staff prepared an Initial Study of the effects of

adopting this update to the Standards and found that they did not produce significant negative environmental impacts. And therefore, the Negative Declaration be appropriate for this project.

We received one commentary on the Initial Study and Negative Declaration. This was from a Native-American tribe that had noticed that we were using an outdated version of the checklist and that the checklist was updated in 2016 to include tribal cultural resources. So we've published an addendum to the CEQA document that adds that updated checklist. That doesn't ultimately change the conclusions that we reached.

We also informally discussed with the Department of Fish and Wildlife the potential impact on aquatic invertebrates. They had identified two studies. Staff had reviewed them. We don't find that they also show evidence of a significant environmental impact.

So again, we are recommending approval of the Negative Declaration based on the contents of the Initial Study. Next slide, please.

Finally, in this Adoption Order we're including a few things. The Resolution Adoption Order includes the nine-point criteria for the -- that was necessary to find for compliance with the California Building Standards Commission. In addition, there's a list of errata. These

are non-substantive corrections, spelling errors and stuff that we're catching at the last minute.

And there are two areas where we're actually requesting that some changes not be adopted, and these are fairly specific. There were changes made in the 15-day language related to duct length. The requirement got dropped as things were rephrased to be more general. We need to revert those changes to what was in the 45-day language, which specified a minimum duct length of 10 feet before certain requirements applied. This occurs in three sections of the document. It occurs in Section 120.1(b)1(a)1. It occurs in Section 120.1 (c)1(a). And it occurs in Section 150.0 (m)12(a)1. In all these cases we're simply not adopting the proposed 15-day changes and staying with what we had in the 45-day language.

The second issue is related to the solar fraction requirement for high-rise residential structures. An exception was proposed in the 45-day language, but a commenter identified that we needed some more analysis to really pin down what the appropriate threshold for that exception would be. So at this time, therefore, we are requesting that we not adopt the changes to Section 140.5(b) that add an exception to that section.

So, to summarize we recommend the following Motion language for your consideration. We recommend move

approval of Item 2 as follows: first, 1) the Initial Study and Negative Declaration for the 2019 Update; 2) the 2019 Update to the Building Energy Efficiency Standards, California Code of Regulations, Title 24, Part 6; the associated administrative regulations in California Code of Regulations, Title 24, Part 1, except for changes to Section 140.5, and changes made in the 15-day language to Sections 120.1(b)1(a)1, 120.1(c)1(a), and 150.0 (m)12(a)1, as noted; 3) the associated Appendices, Joint Residential and Non-Residential Reference Appendices and the Alternate Calculation Method Approval Manual with its appendices; 4) the Errata provided to you and the public prior to today's meetings, which contains corrections of various typographical drafting and similar errors in the update and 5) this Resolution, inclusive of the nine-point criteria.

We'd be happy to answer any questions that the Commissioners may have.

CHAIRMAN WEISENMILLER: Thank you. Let's start with public comment. And I'm going to go through the blue cards I have. We're going to start with public agencies. And I noticed a couple of groups actually have multiple people. Bottom line is you get one shot and you get to coordinate among yourselves. So let's start with the ARB.

MS. ZHANG: Good morning, Commissioners. I'm Zoe Zhang from the California Air Resources Board. I'm here to

thank CEC staff's effort to include indoor and outdoor air quality while pursuing energy efficiency in California. We want to support CEC staff's proposed revision to Title 24, Part 6, where it especially supports the requirement of higher efficiency features on new buildings and in new HVAC systems installed in existing buildings. Thank you very much.

CHAIRMAN WEISENMILLER: Thank you.

Let's go on to the Office of Statewide Health Planning and Development and after your comments please give the court reporter your card.

Go ahead.

MS. SCATURRO: Hello. My name is Diana Scaturro with the Office of Statewide Health Planning and Development, speaking on behalf representing the Building Standards for "I" occupancies, which are healthcare facilities. We've gone through a significant collaboration with the Energy Commission. We've gone through detailed line-by-line analysis. And together we've presented both through our Hospital Building Safety Board process, our Committee meetings, which are public hearings. They're publicly invited meetings.

And then we've also presented through California Hospital Association. We've done a joint webinar specifically to the healthcare community. And we just

wanted to express our support for the 2019 Proposals.

CHAIRMAN WEISENMILLER: Thank you.

MS. SCATURRO: Thank you.

CHAIRMAN WEISENMILLER: Thanks for being here.

Bob Raymer.

MR. RAYMER: Thank you Mr. Chairman and Commissioners. I'm Bob Raymer, Senior Engineer with the California Building Industry Association.

As indicated in our earlier written testimony CBIA is supporting the adoption of these building standards today. It has been a very long process as Mazi indicated, over 12 years. And we would like to extend our thanks, especially to Commissioner McAllister and his team for getting us to this point today. CBIA would also like to extend a special thanks to Payam and Mazi and all the time and patience that they have exhibited with us over the years. And we'd also like to give a shout-out to Dave, Chris, Bill, Danny, Michael and Peter for the significant role that they played as well.

We are especially appreciative of the CEC's willingness to work with industry to significantly reduce overall compliance costs and provide increased design flexibility. This was the key to gaining industry support for these first-of-a-kind regulations.

Among other things, the CEC is providing

significant compliance credit for the installation of battery storage technology. As time-of-use rates kick in, battery storage technology will allow the homeowner to capture the cheaper electricity produced on the rooftop by the rooftop solar panels during the middle of the day and keep that power onsite for use in the early evening hours when electrical rates go up and people crank on the air conditioner.

This storage technology will also assist industry in the utilities to work together in grid harmonization to try to reduce the strain on our existing electrical grid.

Adoption of these standards represents a quantum leap in statewide Building Standards. No other state in the nation will have anything close to this. And you can bet every one of the other 49 states will be watching closely to see what happens. Industry recognizes there will probably be hiccups as with any major change with the implementation of something of this magnitude. And we look forward to working with the CEC leadership and staff to address these issues, should they arise.

Looking towards the future, we are well aware of the desire to seek increased greenhouse gas reductions above and beyond what we've already done, for both new and especially for existing buildings. These efforts will most likely prompt the need for the HCD, the Department of

Housing & Community Development, and the Building Standards Commission, to seek changes to California's electrical, plumbing, mechanical and green building codes. But all this will require a very close coordination with the Energy Commission, then the Air Resources Board.

And in conclusion, we already have major builders interested in implementing a solar-plus-energy-storage package. So once again, CBIA will be working with Commissioner McAllister and the CEC staff on an early adopter program. And with that, thank you for all the time and effort. And once again we support the adoption of these regulations today.

CHAIRMAN WEISENMILLER: Thank you.

ConSol?

MS. CORDES: Good morning Commissioners and staff. I'm Megan Cordes from ConSol and I was the Lead Technical Support to CBIA for the 2019 Standards. ConSol supports Bob's compliments to CEC staff. The 2019 Standards are the most stringent increase to our Building Standards ever. And CEC staff led by Payam and supported by Mazi listened to the concerns of interested parties, explained their rationale for changes and asked for information and technical support as needed to make the best decisions to move the Standards forward.

It's impressive that California will enact an

energy code requires a very efficient envelope and require all new residential units to have adequate solar generation to neutralize their electric consumption. This is a major step towards the state's energy policy of zero net energy buildings and another example of California leading the nation in energy policy and building codes.

The CEC and the building industry are entering new territory with solar batteries and electric vehicles being promoted, and in the case of solar, mandated for new construction.

The 2019 Standards have strong incentives to reduce GHG emissions using heat pumps, both for space heating and cooling and for water heating and storage.

In addition to the CEC proposal the Governor is strongly encouraging a significant increase in the number of electric vehicles on the road. CBIA expresses strong concerns that the electric utilities, the CPUC and the CEC are not ready for all of these interactive initiatives to be implemented without creating grid harmonization issues.

The regulations that these technologies impact need to be updated. These include line extension rules, infrastructure sizing and monthly charges to utility customers to pay for infrastructure maintenance. This requires the CEC, the CPUC, the IOUs and CBIA to work on these issues and arrive at consensus prior to the

implementation of the 2019 Standards on January 1st, 2020.

It is also important to consider the cost of these issues when determining cost effectiveness of future standards. CBIA is ready to participate in the updates of these regulations. Our concern is that if they are not resolved the 2019 Standards implementation could be very difficult.

A primary goal of the state's energy policy is to reduce greenhouse gas emissions; 70 percent of GHG is related to single-family energy consumption, can be attributed to homes built before 1980 when California had no energy code. CBIA has requested at the 2013 and 2016 Standards adoptions meetings that the CEC enact regulations to reduce GHGs from existing buildings. It's more cost effective to reduce GHGs on existing homes than new homes. And we urge the CEC to move forward with existing buildings rulemaking to determine how to impact the existing building market.

We look forward to working with the CEC to reduce GHG emissions in the existing housing stock. Thanks.

CHAIRMAN WEISENMILLER: Thank you.

Southern California Edison?

MS. THOMAS: Good morning Chair Weisenmiller, Commissioner McAllister and Commissioners. I'm Michelle Thomas, Senior Manager of Codes and Standards for Southern

California Edison.

On behalf of for Southern California Edison I'd like to first take this opportunity to thank the Commissioners and the Building Energy staff for their tremendous work on the 2019 Building Energy Efficiency Standards. Furthermore, I'd like to express our support for the proposed standards as they mark an important step in reducing energy use in supporting the state's greenhouse gas reduction goals and broadens customer choice as demonstrated by the inclusion of various clean technologies and control strategies.

SCE supports the Commission's overall approach to the proposed standards as it aligns with our commitment to GHG reduction, customer technology choice and grid harmonization.

As stated in SCE's docketed support letter signed by our President, Ron Nichols, "In its clean power and electrification pathway, SCE has developed an integrated blueprint for California to reduce GHG that includes a combination of measures to produce the most cost effective and feasible path forward. We appreciate the alignment between the 2019 Title 24 Standards, the state's and SCE's GHG reduction vision."

SCE thanks the Commission again for its diligent and thoughtful approach to developing cost effective

Building Energy Efficiency Standards that increase customer choice and demonstrate dynamic steps toward achieving California's GHG reduction goals. We look forward to working with the Commission to support the successful implementation of the standards to our customers and the building industry. Again, thank you.

CHAIRMAN WEISENMILLER: Thank you.

Solar Energy Industries Association?

MR. UMOFF: Good morning Chair Weisenmiller (indiscernible)? Can you hear me now? Okay.

Good morning Chair Weisenmiller and Commissioners. My name is Rick Umoff, California Director here today on behalf of the Solar Energy Industries Association. SEIA is a national trade association of the solar industry, representing over 1,000 solar companies that do business in California and throughout the United States. SEIA member companies have created thousands of jobs in California and driven millions of dollars in investment in the state.

SEIA appreciates your consideration of the proposed 2019 Update to the Building Energy Efficiency Standards, including an adoption of all PV and all new residential construction. We urge the Commission to adopt the proposed updates before it today, as these new rules mark the next step in electrification and de-carbonization

for California.

Over the past 15 years, with the implementation for smart energy policy California has built a strong solar industry that provides innovative clean energy solutions to benefit all California residents. Today California has successfully reduced its energy use and achieved significant cost savings and environmental benefits through the adoption of energy efficiency and distributed generation.

Rooftop solar has helped avoid the costly construction of transmission and distribution equipment to meet peak loads, enable thousands of Californians to take control of their energy use and significantly reduce harmful emissions throughout the state.

The inclusion of mandatory PV on all new residential construction will further these savings and move the state closer to its de-carbonization goals. The combination of mandatory residential PV and energy storage systems is an important step to electrify homes and reduce greenhouse gas emissions.

California permitting of new home construction is expected to exceed 100,000 homes annually in 2020. The adoption of PV on homes at this scale will allow builders to more cost effectively integrate solar into new communities, which will allow Californians to invest in

low-carbon homes that reduce their energy bills and ease the strain on the power grid.

SEIA appreciates the efforts of the Commission to promote the development of solar alongside energy efficiency to pursue zero net energy goals. Over the last two years, SEIA has worked with its members and the Commission staff to develop the appropriate technical requirements for equipment performance, energy design rating and insulation requirements for mandatory residential PV. This has been a positive collaboration driven by a robust stakeholder process.

The Commission's decision today is undeniably historic. California has long been the solar leader in the United States and has paid dividends economically and environmentally for the state.

We urge the Commission to adopt the proposed update to the Building Energy Efficiency Standards before it today. And we look forward to continuing our collaboration with the Commission as we work through implementation of these groundbreaking new policies. Thank you very much.

CHAIRMAN WEISENMILLER: Thank you.

AHAM?

MR. MESSNER: Thank you. This is Kevin Messner with AHAM. Good morning. I'll be very brief. We just

have two words that -- and a couple other tweaks that give us heartburn -- it gives a monopoly to a testing agency. So we don't want to be forced to have to go to -- let's just -- related to range hoods. That's why we're here, so range hoods.

So the language creates a monopoly where you have to go to a certain organization instead of stating what the certification standard is. So usually we attest to a certification standard and aren't forced to go to a certain testing agency. So we don't want a monopoly, we want flexibility to be able to choose other than that and appreciate staff talking to us up to as late as last week. But it's very worrisome to have a monopoly where we have no control and have to go to them based on the building codes.

So we'd like two words taken out and a couple of other suggestions on how the cfm and the working speeds are. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

NRDC?

MR. DELFORGE: Good morning Chair and Commissioners. My name is Pierre Delforge with the National Resources Defense Council. We're here in strong support of the adoption of this Building Energy Code Update. We commend and thank the Commission and staff for the inclusive process that you've held over the past year

and several years. And finding a balance outcome that achieves major advances in energy efficiency and emissions reductions while affording customers significant lifecycle cost savings and which help with housing affordability and giving industry stakeholders flexibility implementation.

This update is another major step forward towards California's clean energy goals. I'm just going to cite a few of these advances which are particularly important on energy efficiency, while we're continuing to move forward on high efficiency buildings, both in residential and non-residential by requiring rooftop or community solar to help advance California's clean energy. Clean electricity goals, by including demand flexibility measures, which are critical to help reduce emissions and to integrate more renewables on the grid. And last but not least, by including an electric water heater compliance pathway that will unlock the potential for very low-carbon buildings as well as was shown by Mazi in his presentation.

Of course, more needs to be done and Rome wasn't built in a day, so there are two important next steps that are ahead of us that we need to get right. And we look forward to working with the Commission on the alternative compliance method, which is critical to achieve the savings that are projected in this code language up for adoption today. And also, on the next update of the code in 2022,

which needs to continue to move the Code towards lower carbon, low emissions buildings in support of California's emissions goals.

So we look forward to working with the Commission. We thank the Commission again for its work and we urge adoption today. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

California Association of Building Energy Consultants.

MR. SELBY: Thank you Mr. Chairman and Commissioners. My name is Brian Selby. I am from Selby Energy and also an Energy Code Ace Instructor. Today I am here speaking on behalf of CABEC, which is the California Association of Building Energy Consultants.

CABEC is a trade organization representing California's energy consulting industry. Our members are the ones who are making recommendations for complying with energy code as well as preparing the compliance documentation.

CABEC supports the adoption of the 2019 Title 24, Part 6 Standards. And CABEC would like to express their appreciation and thanks to the Energy Commission staff for hearing our suggestions as well as incorporating the suggestions into the Standards. It is very much appreciated on behalf of our members.

CABEC would like to encourage the California Energy Commission to continue to work with CABEC, Energy Code Ace and other stakeholders to clarify some of the items that we've identified in the standards as concerns, whether they be compliance concerns or issues that cause problems with interpreting the intent of the code. So we would like to recommend that we keep an open communication and make sure that our members as well as others who aren't members of CABEC have that opportunity to understand the intent of the code as well as apply it and demonstrate compliance.

Once again, I'd like to thank the Commission for hearing our concerns and we have identified some of those concerns in our docketed letter. So thank you very much.

CHAIRMAN WEISENMILLER: Thank you.

Let's go to AHRI, Tom.

MR. SHEEHY: All right, thank you. Thank you, Commissioners, Tom Sheehy here on behalf of AHRI. I will cut to the chase and tell you we're asking you to delay adoption of this. And here's the reasons why. AHRI of course is a trade association that represents over 300 manufacturers of heating, air conditioning and refrigeration of both commercial and residential units.

While AHRI appreciates the substantial work that's gone into the revision the Energy Commission's

proposed changes to Title 24, we're quite concerned that several major and substantive changes were published in the revised express terms on April 20th, 2018 without any of the necessary support required by the California Administrative Procedure Act.

Neither the Initial Statement of Reason, the documented tenet to provide such substantiation nor the Negative Declaration were reissued to reflect last-minute changes in the 15-day language. And it's this 15-day language we're quite concerned about. And we think that those changes need to be expressed in those documents.

Further, changes made in the Revised Express Terms will directly impact the 2019 Building Energy Efficiency Standards Fiscal and Economic Impact Statement, neither of which have been updated for the public. Any measures ultimately adopted by the Energy Commission in the 2019 edition of Title 24 need to clearly and directly be evaluated for impact in accordance with current California law.

AHRI appreciates the efforts of the Energy Commission staff to respond to AHRI concerns in an email dated and received May 8th, 2018. Unfortunately, these responses are outside of the standard regulatory process and do not completely and fully address all the concerns that AHRI has raised.

Specifically, the following issues introduced in the 15-day language are the basis of my urging the Commission to delay adoption today. The 15-day language increases the scope of air filtration requirements for both residential and non-residential occupancies to require high-efficiency MERV 13 filters on the return air and other mechanical systems not previously included.

In a reply from staff yesterday it was stated that it does not matter where the pollutants originate. However, all of the supporting documentation cites the source Energy Commission is trying to address as PM 2.5 caused by vehicles outside. Expanding this requirement as proposed in the 15-day language is not, I report is not, supported by any documentation published by the Energy Commission so far and it's not supported by the industry. It will impact system and statewide power consumption. Removal of the non-residential pressure drop credit for calculation standards to significant impact system design -- - and this measure has not been thoroughly evaluated for the public -- so we're quite concerned about that as well.

Staff's reply regarding water heater requirements was not satisfactory on two counts. First, it's unclear that the performance method for the compliance will allow the installation of a gas storage water heater in the input range of 76,000 to 105,000 btu. And second, the issue AHRI

raised regarding federal preemption has not been addressed.

I see I'm running out of time. I understand everybody else is asking you to approve this today. I would just remind you that the trade association that I represent are the folks that actually make this equipment that's going to have to do this. And that if their concerns aren't met then I think we've got a real serious problem here, going forward. So we would urge you to take these comments into consideration. Thank you very much.

CHAIRMAN WEISENMILLER: Thank you.

Sunrun.

MR. GEHLE: Good morning Commissioners, staff. Helmut Gehle with Sunrun, the nation's largest solar and home battery provider in the country, headquartered here in California with various operation centers throughout the state.

We wish to thank the Commission staff for their leadership and hard work in the 2019 Building Energy Efficiency Standards. I can only imagine how hard it is to combine the diverse set of interests when translating a bold, yet in our opinion absolutely necessary ZNE goal, into workable building standards. Thanks for your hard work on that.

Sunrun is ready to support the implementation of the proposed standards. And will continue to provide solar

and storage solutions at no or low costs to homebuilders. Again, we applaud the Commission and staff for their leadership and fully support the adoption of the 2019 Standards, as proposed. Thank you.

CHAIRMAN WEISENMILLER: Thank you. PG&E.

Please give the court reporter your card as you go through.

MS. CUNNINGHAM: Good morning, Kelly Cunningham. Actually, I'm here on behalf today of the California Statewide Utility Codes and Standards Team. And we strongly support the adoption of the 2019 Title 24, Part 6 Standards. The proposed changes to the building code as presented in the 15-day language represent a balance of many interests. They're a cost-effective way to help customers reduce energy use, lower greenhouse gas emissions, and represent a significant milestone in the continued effort to achieve California's long-term energy and climate goals.

The Statewide Team is comprised of four investor owned utilities: Pacific Gas and Electric, San Diego Gas and Electric, Southern California Edison, Southern California Gas Company and also, several publicly owned utilities. This standard cycle, we also worked with Los Angeles Department of Water and Power, Sacramento Municipal Utility District and an entire collective under Southern

California Public Power Authority. And we worked collaboratively to support this cycle.

Throughout this cycle, the Statewide CASE Team has had the opportunity to work with the Energy Commission and many other dedicated stakeholders. And we thank them all for their input and their collaborative spirit. And we commend the Energy Commission for creating and maintaining a platform for open discussion.

And we appreciate the constructive dialogue that went in to developing code changes that will not only reduce energy, but are cost effective, technically feasible and enforceable. The Statewide CASE Team looks forward to working with the Commission and other interested parties on the next cycle of Title 24. And to support the implementation of the 2019 Standards, we plan to offer tools, training and resources through the Energy Code Ace Program to realize the goals that it promises. So thank you and we strongly support adoption today.

CHAIRMAN WEISENMILLER: Okay. Thank you.

Tesla.

MS. WAHL: Good morning Commissioners. My name is Francesca Wahl. And as was indicated in my written comments, I'm here today on behalf of Tesla to express our support for the adoption of the 15-day language of the 2019 California Building Standards. And specifically, as these

relate to incorporating solar and storage for new homes.

Tesla's mission is to accelerate the world's transition to sustainable energy. Therefore, as a provider of energy products including a solar PV and storage we are committed to working with staff and the other stakeholders to help implement the 2019 Standards and ensuring a successful transition to sustainable energy for customers in California.

First, we'd like to thank Energy Commission staff as far as Commissioner McAllister and his team for their leadership in developing the 2019 Standards and working collaboratively with stakeholders over the past several years.

Second, we'd like to express our strong support for incorporating solar PV as a prescriptive requirement for all new residential construction wherever feasible and providing a pathway to receive credit for storage paired with solar PV under the 2019 Standards.

Energy storage, coupled with solar, is a fully dispatchable, carbon-free solution that will be critical to meeting the state's zero net energy goals and overall greenhouse gas targets. The current requirements laid out for the 2019 Standards for solar and storage provide a good pathway for the industry to help drive down costs, increase efficiency and provide customers savings for new homes

constructed in California.

We also look forward to working with Energy Commission staff on new compliance pathways as we move forward in the Compliance Manual process. Thank you again for your leadership and the opportunity to express our support today.

CHAIRMAN WEISENMILLER: Thank you.

Tim Carmichael, could you give the court reporter a card after you testify?

MR. CARMICHAEL: Good morning Commissioner Weisenmiller, members of the Commission, Tim Carmichael on behalf of San Diego Gas and Electric.

Just want to register a concern that's broader than this program, but it's an ongoing concern for us, and that has to do with the NEM cost shift. It's a growing problem and it's hurting middle-income families who rent and can't afford solar. We continue to hope that the PUC will fix this issue per the AB 327 passed into law several years ago.

We continue to support solar growth and are seeing it expand as evidenced by our rooftop totals. And we want to ensure that the program structure is appropriate. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Let's go to Rmax, Steve.

MR. DUBIN: Get my card first though.

CHAIRMAN WEISENMILLER: Okay.

MR. DUBIN: Good morning and thank you Commissioners, CEC staff. My name is Steve Dubin. I'm the Architectural Development Manager.

CHAIRMAN WEISENMILLER: Is your mic on?

MR. DUBIN: Is it now?

CHAIRMAN WEISENMILLER: Good.

MR. DUBIN: All right, I'll start again. I'm sorry. My name is Steve Dubin. I'm the Architectural Development Manager for Rmax Incorporated here in Northern California.

First of all we'd like to say that Rmax fully supports the California Energy Commission's goals for constantly improving energy efficiency. And we support the adoption of the 2019 Codes and Standards as we have read them so far.

Now that being said, while we appreciate that the Commission has included language for the use of continuous insulation above the deck in the high-performance attic section, we do disagree with the decision to remove Option A as a prescriptive requirement. We understand it remains as a performance option, but we find in our business travels that those are usually met by referencing and building from prescriptive requirements, as they are

written.

Also, we feel that the removal of Option A goes against the "unwritten goal" that I have seen of the California Energy Commission that's also mentioned when we do EPIC-wise forums or in educational seminars that are hosted by Energy Code Ace. And that goal is in the promotion and encouragement in research and development of new and innovative products designed to meet the code. Materials that have been available for decades by Rmax as well as other continuous insulation manufacturers, were designed and implemented in a good part because of the goals that were set forth by codes and standards like the California Energy Commission's Title 24.

But that being said, we again support the adoption of the 2019 Codes and Standards, thank you.

CHAIRMAN WEISENMILLER: Thank you.

Let's go to Mitsubishi.

MR. SEVERANCE: Hello. Thank you for the opportunity to address you this morning. I want to start out by thanking the Energy Commission for all its good work. My sense is that the code is definitely moving in the right direction in many respects.

We're especially, Mitsubishi Electric being a company really dedicated to very high performing high-efficiency heat pump systems, we're very happy to see a

prescriptive path for heat pump hot water heaters even though we don't really manufacture those, because it really allows a pathway for an all-electric ZNE home. And we see that to be a fulfillment of the long-term goals of the Energy Commission and something that's really an objective in terms of reducing greenhouse gases statewide.

I wanted to request from the Commission that you consider a process of code revision in the next cycle that is far more flexible than what you currently use as a process. And one of the reasons for my concern about that, and our company's concern, is that there are many technologies that are evolving very quickly right now, a lot of companies spending significant amounts of money in research and development. And I think there are really key areas where there's a gorilla in the room, especially with grid harmonization technologies, in bringing those to market very quickly. And my sense of your current code revision process is that you decide very early on in the code cycle what things you're going to address. And then you stick only to those.

And innovations in rooftop solar for example, if they're not in your scope of work you're probably not going to address those. Passive solar technologies and phase-change materials that are coming to market in the next couple of years offer the opportunity to eliminate 90 to 95

percent of the heating and cooling loads in our milder climates. And what that does for grid harmonization is really significant.

So I just ask you to really consider kind of this bigger design review of the whole revision process. And consider allowing it to be more agile in addressing some of these emerging technologies that can really be brought to market much more quickly. We believe that that's really in the interest of the long-term goals of the Energy Commission in meeting AB 32.

One example of that is that currently there are incentive programs for solar thermal hot water systems. Talking to solar hot water installers around the state it's somewhat commonly known that that technology has already been eclipsed by heat-pump hot water heaters with passive solar. That's just one example.

We are also -- (timer rings).

CHAIRMAN WEISENMILLER: Your time is up. Thank you. You can deal with that in the next cycle.

FEMALE VOICE: Through written comments.

CHAIRMAN WEISENMILLER: Through our written comments.

MR. SEVERANCE: Thank you.

CHAIRMAN WEISENMILLER: Vote Solar is next.

MS. OLEKSIW: Thank you Commissioners. My name

is Zadie Oleksiw and I'm the Communications Director at Vote Solar. We are a nonprofit organization that works to lower solar costs and expand solar access nationwide by bringing solar energy into the mainstream.

On behalf of Vote Solar's 30,000 California members and because of my own personal stake in the climate crisis, I'm here today in strong support of the CEC's historic plan to acquire solar on all new qualifying homes.

Building solar on new homes as we've heard is consistent with California's zero net energy goals for new buildings. And it's a great way of getting rooftop solar built cheaply for customers. That's because when you install solar PV at the time of construction you get economies of scale and save big on non-hardware costs, like custom acquisition, permitting and financing. Reducing these soft costs, which can account for as much as 65 percent of the new solar systems means that the small increase in the home cost from the solar will be far outweighed by the net energy bill savings from that same solar.

So we did some quick calculations to illustrate this point, keeping in mind that solar equipment only accounts for about a quarter to a third of total solar installation costs. So assuming modules are 40 cents a watt and the other system components and equipment costs

about 85 cents, and if you want to consider a 10 percent profit margin for the builder that would be cost of about $1.40 a watt, or $4,200 for a three-kilowatt system. If you wrap that in a 30-year mortgage at a 3.92 interest rate the incremental monthly mortgage cost is about $20.

Now consider the net energy savings. Under the current net metering tariff and time-of-use B rates a TOU residential customer in the Central Valley would save $85 a month on their electricity bill from that solar array, resulting in a net savings up to $65 a month for new homeowners.

There is an undeniable benefit for future new homeowners on new construction with the solar. This plan would keep California leading with bold ideas for clean energy progress during a time when the country needs that leadership and our environmental leadership more than ever. I strongly urge you to approve the measure to require solar on all new homes. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Nancy Nelson.

MS. NELSON: Good morning Commissioners. Thank you very much for taking all these public comments. It's very impressive all the folks we have in the room. I work for an architectural firm in the Bay Area that specializes in production housing. And I've been designing homes for

over 30 years. I'm very proud of what the building industry has achieved by the implementations of the energy standards, what we've done for energy savings. And it's great to be able to give homeowners new homes that are comfortable, energy efficient and they can feel good that they're not having a negative impact on our environment.

When we design homes there are many factors involved. Architecture is the art and science of building homes. We're talking today about the science part of it. And no one would argue that there's nothing of more paramount importance than our planet and our resources. But along with that we can't give up on the aesthetics as a society. And housing affordability is something else that we deal with. And so, I come with a different perspective. And I've talked to Mazi and Payam many times over the last couple of years to help us maintain those other aspects of home design without completely giving up on things that are important. And I'm here to thank them and to thank you for creating a staff that is so receptive to input.

One specific example, in the previous Energy Code the orientation azimuth for solar was so narrow it was severely restricting roof plan design and plotting of homes. And they listened. We gave them many examples of what was causing the problem. They modified language and helped us to continue to be able to achieve very

attractive, comfortable home designs.

So this is not nearly as technical as everyone else, but I wanted to thank the staff for being so open in the many conversations we've had over the last few years. So thank you very much for your service.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Okay. Now I have a couple of cards which are multiple people, so you have one slot. Environment California, please come on up.

MS. TOVAR: Good morning, my name is Eileen Tovar. And on behalf of Environment California I would like to strongly encourage the California Energy Commission to adopt the proposal before it today, to require solar panels on those new qualifying homes to have solar power.

This historic action makes California the first state in the country to mandate solar panels on new home construction. California has long been home to pioneering solar policies. And we applaud today's decision to require solar power on new homes. At this point any new home or building constructed without solar power is a missed opportunity to capture clean energy from the sun and move California to 100 percent clean energy future.

Environment California has a long history of moving the ball forward on clean energy, including

sponsoring the Million Solar Roofs Initiative in 2006, which jump-started the mainstream solar market by creating a 10-year, 3.3 billion statewide effort to install 300 -- I'm sorry, 3,000 megawatts of rooftop solar power.

Solar is booming in all parts of the country and more Americans are going solar every day. As of 2017 the United States had enough solar energy capacity installed to power more than 10 million homes. California is leading the way with more solar power than any other state thanks to nearly 800,000 solar projects as of the end of 2017. Of the top 15 cities nationwide that have installed the most solar power, 5 are in California: Los Angeles being No. 1, San Diego No.2, San Jose No. 5, Sacramento No. 12 and San Francisco being No. 14.

However, we are only capturing a tiny percentage of our full solar potential. Enough sunlight hits the United States each year to provide 100 times more power than we are currently consuming. Harnessing more of this pollution-free power would mean cleaner air, a more stable climate, less strain on natural resources and more resilient communities. By taking this action today we can help move to 100 percent clean energy and hopefully take away some of the worst impacts of climate change. And start to protect the future for all of our children, our future grandchildren, our great-great grandchildren. Thank

you very much.

CHAIRMAN WEISENMILLER: Thank you.

Okay, California Solar and Storage Association. Yeah.

MR. KNUTSEN: All right, thank you Chair and Commissioners and staff for the opportunity to speak here today. I'm Kelly Knutsen, the Director of Technology Advancement for the California Solar and Storage Association. We represent 500 businesses across the state that are installing solar plus storage, manufacturing, distributing, financing and doing the whole value chain. Here today also is Ed Murray, who's the President of the California Solar and Storage Association and Laura Gray, who's our Storage Advisor.

We are very excited to see that solar PV is going to be required on all new homes going forward in 2020. This is a historic moment that's been said many times before. We still agree. And we urge you to adopt today's decision. It looks like about 15,000 new solar homes each year are being sold in Southern California, and this would move it to 80,000 or maybe even 100,000 as Rick pointed out from SEIA.

This also importantly has a solar-plus-storage option. And this is great for options for consumers and builders to be able to figure out what is something that

the consumer would like to have that would give them the choice of how they would like to meet our very ambitious and appropriately ambitious energy efficiency goals here in the state. And this will lay the groundwork for going forward that solar plus storage is really going to be the future for having solar and storage everywhere across the state in order to meet our ambitious greenhouse gas emission goals.

The cutting-edge storage also, it provides a lot of grid benefits. And I would think that that's going to be an important way that we're going to meet our -- how everything is integrated into the grid.

Solar water heating continues to an important part of the code. I'm glad to see it's continuing on here in this cycle. And we really look forward to -- we had some excellent conversations with staff about how we want to look at the next ambitious cycle you guys are about to embark on, the 2022 cycle when we're looking at the commercial building sector and getting to net zero net energy buildings.

And we're doing -- we're working really hard in the state on the electric side, we're working really hard in the state on the transportation side. There is heating and cooling. That's a big wedge of that greenhouse gas emission pie. We need to start -- continue to reduce.

Solar water heating is right there for it. There's other technologies as well, let's include all of them, going forward.

So I just wanted to conclude saying we're looking forward to working with the Commission, the staff on integrating solar PV, solar storage, solar water heating, all of this into this cycle, getting that implementation right. You guys are doing a great job of figuring out of how to get the technical stuff right. And then, let's get some more ambitious efforts going forward in the future. Thanks again.

CHAIRMAN WEISENMILLER: Thank you.

Anyone else in the room? Please, blue card. Have you -- I need --

MR. INTAGLIATA: Thank you Commissioner. My name is Shawn Intagliata. I'm with a company called Cobalt Creed and I also represent a company called Unico.

The Energy Commission has seen fit to appropriate small duct high velocity into the new standards, the 2019 Standards. And as the leader, Unico, in manufacturing of that technology we cannot thank you enough. We urge adoption today. Five minutes from now would be great. (Laughter.)

We want to particularly thank Commissioner McAllister for his help. He has been awesome. It's been a

long journey. Hhe's been with us the whole time. Our good friend Mark Alatorre, Peter, Mazi and Pam have been terrific. We are a small American-based, American manufacturer of a leading-edge technology and we do not fit into the square peg of traditional HVAC. We love what you are doing in California.

Our federal legislation was introduced by Congressman Henry Waxman. How appropriate. California is our second favorite state in the union. And we cannot thank you enough. And we look forward to working with staff and you guys in the near future. Thank you.

CHAIRMAN WEISENMILLER: A new blue card, NAIMA.

MR. COTTRELL: Good morning I'm Charles Cottrell, representing the North American Insulation Manufacturers. Our members make fiberglass and rockwool insulation.

We want to thank the Commission and staff for all the hard work on the 2019 Update and continuing to lead on energy efficiency issues. NAIMA supports the adoption of the Standards as published.

We strongly support the concept of separating efficiency and generation and encourage the Commission not to allow the tradeoff between the two.

We also support the revisions to the new high-performance attic and wall requirements.

NAIMA looks forward to working with the

Commission on the implementation of the quality insulation installation criteria, as a prescriptive requirement and working with the Commission to develop guidance to help that go smoothly.

Again, NAIMA strongly supports the adoption of the Standards and thank you for the opportunity to speak this morning.

CHAIRMAN WEISENMILLER: Thank you. Anyone else in the room?

(No audible response.)

CHAIRMAN WEISENMILLER: All right, so we're going to go to the telephone line now. Let's start with the California Housing Partnership.

MR. TATEISHI: My name is Collin Tateishi. I work for the California Housing Partnership Corporation. We're a statewide non-profit that assists non-profit owners, housing owners and government housing agencies to create and preserve affordable housing to low-income households while providing leadership on housing, preservation policy and financing.

Many of these affordable housing organizations have extensive experience with energy efficiency and solar at multi-family residential properties. That said we strongly support the flexibility that the California Energy Commission has provided through exceptions for solar

requirements at multi-family properties in the revised standards.

We respectfully ask that the Commission clarify that the following exemptions apply to both low-rise and high-rise multi-family properties: First, the community solar and community battery storage exemption and second, a reduction of solar PV requirement for project paired with battery storage.

Through our work on the CFD's Low-Income Weatherization Program and CPUC's New Solar on Multi-Family Affordable Housing Program, we've learned that mid and high-rise projects, which are common and dense in urban areas often do not have enough roof space for onsite solar systems. Many of these properties with small roofs may be able to host an onsite solar thermal system but may not have the physical roof space necessary for onsite solar PV for common area and tenant-serving uses.

I thank you for your time. And we look forward to engaging with the Commission on this issue, moving forward. And we certainly commend the staff and the Commission's excellent work on this. Thank you for the inclusive process.

CHAIRMAN WEISENMILLER: Thank you.

Sierra Club.

MR. MORENO: Hi, good morning. Eddie Moreno here

on behalf of the Sierra Club California in support of the proposed Title 24 Building Standards.

Yesterday the Sierra Club submitted a letter to the CEC signed by nearly 6,000 members and supporters in California, asking that the CEC adopt the proposed 2019 Update to the Building Code. Thanks to the Energy Commission the state is a national leader in energy efficiency standards. The proposed standards will save energy and water, require solar power, reduce reliance on gas plants, improve air quality and cut climate pollution. And at the same time the new standards will lower utility bills and provide greater comfort for residents.

In light of the rapidly changing climate and California's ambition to be a leader in the fight against climate change we urge the Commission in the next update to the standards, in the 2022 Code, to go further to reduce our reliance on gas and to get the state on the pathway to climate-friendly zero-emission buildings. California now burns as much gas in our buildings as we do in our power plants. And gas is responsible for over 40 percent of the building sector-related GHG emissions.

While we have programs to increase the use of renewable energy and reduce our reliance on gas plants we do not have policies in place to replace gas use in buildings with high-efficiency electric technologies that

can be powered by clean energy.

Again, we support the proposed 2019 Standards. And in the next update for the 2020 -- update to the 2022 Standards we urge the California Energy Commission to align the building energy efficiency standards with the state's common goals by raising the bar for climate-friendly buildings. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Owens Corning.

MR. MULLINS: This is the Market Development Leader with Owens Corning. In addition to our docket comments we would like to verbally thank Commission staff for their efforts in the development of the 2019 Building Energy Efficiency Standards. The Commission staff had to balance previously-stated public policy goals, multiple stakeholder perspectives, and often sort through facts versus hyperbole. Owens Corning wishes to express our support for the current 15-day language as an acceptable industry compromise and a reasonable next step forward in the journey to net zero energy. We therefore support adoption as recommended by Commission staff.

Additionally, we would like to express specific appreciation to Payam and Mazi for their willingness to not only hear industry concerns, but to work with industry in balancing competing agendas. Their leadership was critical

to gaining consensus between manufacturers such as ourselves, CBIA, NAIMA, SEIA and others to largely support the proposed standards. Thank you for allowing us to speak in support of the standards and immediate adoption this morning.

CHAIRMAN WEISENMILLER: Thank you.

Peter Esposito.

MR. ESPOSITO: Good morning Mr. Chairman and Commissioners. As you, Mr. Chair well knows, I've been in the energy industry for almost 40 years. For only the second time I'm appearing on my own behalf, not that of a client. Yesterday was the first where I gave a TED Talk at the Energy Bar Association Annual Meeting in Washington, D.C., urging a holistic approach to reducing greenhouse gas emissions nationwide.

I heard about the mandatory PV Initiative yesterday. And while I'm a huge advocate of solar, I initially thought it was fake news. And I would like to add I think you're about to make a big mistake. I apologize for being late to the game here and I will keep my comments brief and at a high level.

While I spend a good deal of time in California now, I heat a large house in Colorado using insulation, passive and active thermal solar, all this at minimal cost and with minimal emissions. I've been doing this for 22

years and I can assure you that from a financial perspective where I have amazingly low heat and hot water bills, my investment will never pay out. But that was a decision I made knowingly.

My pitch yesterday, as it is today, is there are hundreds of ways to reduce greenhouse gas emissions. More importantly, with accelerating technological advances there will be thousands in a few years. I urge you not to lock in any favored technology today, but rather ease either price carbon or set emissions limits and let consumers choose how they meet those standards. And let providers compete for their business with even better technologies for helping them meet those goals.

We have a high standard of living today in large part because of electrification. Electrification however was successful, because it took advantage of economies of scale. And while there may be a case made for going to back to microgrids, I highly doubt it applies universally.

My skin in the game is that I want to save the planet, but I want to see it done in an efficient and cost-effective manner that raises our collective standard of living. And I know it can be done, because I've done it.

I urge you to avoid in the name of accelerating deployment of today's technologies, imposing a universally prescriptive rule that will lock out tomorrow's. Perhaps a

safe harbor is the way to go in which what you've proposed today says, "We meet the standards, but please don't lock out other technologies." Thank you for listening.

CHAIRMAN WEISENMILLER: Thank you.

Okay. It's the last one, I'm trying to understand, (indiscernible) H-A-H-R-I speaker? He's gone? Okay.

So I think that's -- so anyone else on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay, so we've hit all the public comment. Let's start with staff. Do you have any responses to any of the public comments?

MR. SHIRAKH: I can respond to the last commenter about the requirement for PVs and the contribution to the --

CHAIRMAN WEISENMILLER: Again, I'm asking you to think through all the comments that we've gotten. Are there any that you have to respond to? Not just as simply the last commentator.

MR. STRAIT: I think we can jump in and respond to a couple of the -- for example, I think the biggest one that we need to respond to is the request to delay adoption. I don't know if it would be better -- Matt, would you be willing to speak to that? Matt Chalmers is a member of our legal team.

MR. CHALMERS: Good morning, Commissioners. Regarding --

MR. STRAIT: Mic on.

MR. CHALMERS: Oh. It's on.

MR. STRAIT: Oh, it is? Okay.

MR. CHALMERS: We do not believe that there is a need to delay adoption from the legal standpoint. We have been working with staff for some time now, evaluating all of the various legal impacts. There is nothing that we have heard raised today that we have not already determined. We understand that we're good to go.

CHAIRMAN WEISENMILLER: Thank you.

MR. STRAIT: So the other -- I believe there was the AHAM issue with creating a monopoly. What I would speak to on that is that the -- what they're referring to is that we require that certain types of kitchen range hoods be listed, and a database maintained by the Home Ventilation Institute. This is consistent with how we have the Cool Roof Rating Council and the National Fenestration Rating Council, requiring their rating of certain products.

We are not aware of any other organization that publishes a list of rated products in the fashion that they do. And to the -- if one were to emerge, we are not prohibiting someone else from doing this. And we would be happy to acknowledge them in the standards, either in the

future rulemaking cycle or through one of the processes that we have available for a mid-cycle change. So we don't see that as creating a monopoly. We would love for there to be other resources we could also point to.

So that's our issue there.

CHAIRMAN WEISENMILLER: Okay. So we're going to transition to the Commissioners now. And I think Commissioner McAllister may have some specific follow-up.

COMMISSIONER MCALLISTER: Yes. So thanks for the presentation. Certainly, I want to thank the staff for the hard work. You know, Mayam, not Mayam, but maybe that's what we should refer to you now -- as Payam and Mazi. (Laughter.) You guys are joined at the hip at this point, yeah. But Peter, Chris, Christopher, Danny and Matt, Rebecca, Dave Ashuckian, who's been running a lot of traps on this lately as well, but the whole staff from the Building Standards Office. It's really been a lot of work, a lot of lifting. I really appreciate the interactivity with my office and with me. And just making sure that we're talking to stakeholders and that we're giving everyone every chance to participate.

And even if there are areas where there ends up not being agreement, I would say in the vast majority of cases there ends up being a solution that everyone's amenable to. And so I think you've hear a lot of the

comments along those lines, that flexibility and the transparency of the process I think is really one of our strongest points here.

I guess there were some other commenters who seemed to have specific issues. Certainly the AHRI did. I'm aware of all of the detail we've gone through with that and why we ended up where we are, which I'm actually comfortable with. But I want to give you the change to respond to that and I guess that was kind of the big one.

MR. STRAIT: Sure, I add some additional detail there.

COMMISSIONER MCALLISTER: Yeah.

MR. STRAIT: Where AHRI -- we think where there's some misunderstanding is the Administrative Procedures Act does not require the reissuance of an Initial Statement of Reasons when there are some amendments proposed. There is a sufficiently related criteria that says if you make sufficiently related changes to the 45-day language, and what was noticed in those of proposed action, you must make that available for 15 days. And then you document the differences, any new -- and provide justification for any new amendments -- in the final Statement of Reasons, which is issued following the document.

So there wouldn't be a reissuing of the Initial Statement of Reasons. It would not cause us to revisit the

California Environmental Quality Act documents, as there is no difference in significance or insignificance we've identified.

So those issues we don't see as ones that would require us to either perform some different process or something that is unusual with regard to the Administrative Procedures Act or that would actually -- that would make any sort of delay appropriate. We've heard from dozens of people that this is what California wants and needs, so that's -- we would similarly -- staff would simply recommend adoption of the document.

COMMISSIONER MCALLISTER: Yeah, in terms of the technical piece, you're comfortable where we're landing with the MERV 13 and the --

CHAIRMAN WEISENMILLER: Yeah, I was going to ask to ask you, the attorney was nodding at your legal commentary, but just in terms of on the technical side why are we doing MERV 13?

MR. STRAIT: So, do you want me to respond to this?

MR. BOZORGCHAMI: Actually, I would like to have Peter -- excuse me, not Peter Strait, Jeff Miller act on this one or Christopher Meyer, our Office Manager.

MR. MEYER: Chair, Commissioners, this is Christopher Meyers. I'm the Manager of the Building

Standards Office and have been looking at this air quality issue for quite a while, working with Eric Bijard (phonetic) from Zoey earlier. We basically identified the PM 2.5 and other particulate matter issues that we needed to address.

From a technical standpoint we looked very carefully at AHRI and other comments on concerns that it would require a larger air handler. And with the information that our staff was able to put together and with coordination with the utilities on them supporting us with additional testing, we found that, I think, going to the higher MERV filtration did not cause problems with the system that would cause the additional air handler equipment requirements that initially was feared. It was basically a little bit about a pressure drop and how that pressure drop would affect the efficiency of the system and the system requirements. We found that that was not an issue. And that's what we've been pushing out to the industry and with that information to back it up.

I think there was a -- one statement that we just wanted to clarify. We've been very clear all along that the indoor air quality is an issue from both indoor sources, such as cooking, and outdoor sources of many different types, of particular matter with the non-attainment. So we've been very clear in the documentation

that it's both issues that we're trying to address, not just outdoor air quality in areas of non-attainment.

COMMISSIONER MCALLISTER: Thanks.

So there's a lot of interest, obviously, in this. We've got a full room. I mean, a lot of it are the commenters and people interested in this item.

This has been -- I guess I want to just put this in perspective. This is a step, albeit a very important step, but a step nonetheless in a long trajectory that we have been planning for and telling the world, certainly all of our stakeholders. But there have been goals that California has established since more than a decade ago that are clearly in this direction. And so we've been -- this is one piece of an overall, not just within the Building Standards, but with the overall policy sweep that California has to reduce greenhouse gas emissions. Tight, high-performing homes; focusing on the energy efficiency first, that's been our bread and butter for 40 plus years. And we're in a terrific situation in the marketplace right now where we have a lot of great options that are cost effective, including solar.

And the solar industry is a mature industry now. And so, having had several cycles where we've been opening up possibilities for solar and working with local governments who have done stretch codes to actually include

solar, which is currently covered in about 10 percent of the state. So this is not a radical departure. It's a step in the right direction to reduce our greenhouse gases and improve our air, which for many, many decades California has been doing and doing better and better each time.

So certainly, obviously I'm deeply committed to this update. And also to cultivating an even larger and broader pipeline with technologies, so that we have even more flexibility going forward in future rounds.

We need to -- with local governments, I'm absolutely sure it's happening now, are going to come up with solutions through the Entitlements Process or the Land Use decisions that they own, really that are not happening in this building, but that really are about local government. To come up with other ways of compliance, compliance pathways that get us new green energy, either on the property or out somewhere nearby in the community or via some other options that they'll come up with. So there's a lot of creativity, actually out there. And the future bodes, I think it bodes very well for the future to continue to reduce costs and continue to figure out how to get additive green energy in our communities, which is what it's all about.

So again, I think we have theses ambitious goals

for greenhouse gas reductions. We still have large areas of the state that are out of attainment and for various criteria pollutants. And this Building Standard and buildings are where we spend a majority of our time, inside buildings. We also need quality indoor air and so all those things are wrapped up in this Pollutant Code update at reasonable costs, so really the case for this is extremely strong.

And California, I guess we still believe, we do believe in climate change, we believe in facts and basing things on a record. That seems kind of novel in this day and age, but I think our process is really our strongest -- it's our strongest kind of a statement of how we do business developing a record, making decisions based on that record, collaborating with stakeholders and trying our darnedest to get to some kind of consensus.

And I think in this case we've gotten very disparate stakeholders on board with this, because it's become clear to all of us that it's the right thing to do and that the marketplace is ready.

I know that the builders can build beautiful, healthy, high-performing solar homes. They've already been doing it. And so this codifies that in a way that the State of California, in terms of our policy goals, can leverage in a way that helps our citizens.

So anyway, that's my overall just comment on this, because I think it's important to put it in perspective and really sort of tie it in with a lot of the other things that are happening in the state. But I'll pass it off to my fellow Commissioners.

COMMISSIONER HOCHSCHILD: Well, thank you. I just really wanted to acknowledge our Commissioner McAllister for your careful, thoughtful and thorough stewardship of this really complex standard. This is a very bold and visionary step we're taking today.

And I just want to acknowledge the fact that the fifth largest economy in the world is adopting this standard really sends a message. We'll be the first state in the United States to adopt a zero net electricity standard. Certainly, we will not be the last. And just as other efficiency and renewables' policies we've adopted have spread I absolutely expect this to spread to other states and regions.

Well, I really want to acknowledge the staff, Mazi, Payam, Martha, Chris, Peter and everyone else who worked on this. This is a landmark vote today.

I just wanted to set a little bit of a context okay, because in addition to our clean air goals and the mandate to address climate change one of the top priorities in California is to keep people in their homes. And when

you look at how defaults happen, more times than you would expect what we find is that the homeowner can afford the mortgage, but not the mortgage plus the energy bill. That is the difference maker. And what we're doing today is going to result in the lowest energy bills of any code we've ever done. And I think it's going to have that benefit as well. We cannot let Californians be in homes that are essentially the residential equivalent of gas guzzlers. And this really puts us on a path to a more efficient future.

I also want to set the context for what's happening with solar costs. Okay, so the price of a solar panel has gone down 99 percent since 1980, where a panel was $75 bucks a watt. We're at 40 cents today. And I just returned last week from a meeting with the National Renewable Energy Lab and all of the top global solar PV manufacturers. There is a lot more cost reduction to go on everything from improvements to the glass, the thickness of the cell, the kerf loss with the diamond wire saws, the efficiency. And so what we've seen is every time global demand is doubled the price of solar PV has gone down 24 percent. I believe that trend will continue. We're adopting this in May of 2018. It goes into effect January of 2020. The price is going to keep going down. We'll get more and more affordable.

This policy today also would not be possible without the New Solar Homes Partnership Program, which is a $400 million incentive program. We worked very closely with Bob Raymer and the builders on this program. And we're wrapping it up at the end of this month. That has really helped seed the market and develop economies of scale out there today, as well as the seven cities that have adopted solar mandates of one form or another. I just want to acknowledge Lancaster, Fremont, Davis, San Francisco, San Mateo, Santa Monica and Brisbane have all gotten out ahead and showed that this can work.

And then finally, I believe actually we'll end up -- this policy will end up also reducing long-term customers transportation costs. We require the EV-ready Code for 100 percent of single-family homes today. That means you have a dedicated 240-volt print circuit in the box, in the panel. And you run the conduit. We're not requiring installing the charger or the wire yet, but it costs about half the cost-per-mile to drive an electric vehicle as compared to an internal combustion engine. And as we are transitioning to cleaner and cleaner vehicles, we have 400,00 EVs on the road today, these solar rooms are going be powering people more affordably to get around.

And one final point I'd make, about a year ago, the NREL and the ISO collaborated on a landmark study

looking at the grid benefits that a large-scale PV project could provide you to -- it was a 300-megawatt-for-solar utility scale project - and the ancillary service is including spinning reserves, load-following voltage support, ramping, frequency response and so on and there were amazing results. I think it surprised everybody who conducted the study.

As we go forward, what's happening is now we're putting smart inverters in all these systems, with voltage regulation and telemetry. And there's actually no reason why a network of many tens of thousands of solar roofs can't provide the same services. Solar needs to be and will be a good citizen of the grid in the same way that we're seeing the possibilities with these utility-scale solar projects. So I actually think long-term this is going to help us improve grid reliability.

So for all those reasons I am delighted to support this. And I really want thank and congratulate Commissioner McAllister again.

COMMISSIONER DOUGLAS: So as I consider this issue I really bring a perspective to it that's colored by my role as the Lead Commissioner on power plant siting. And I've been on at this point 40 power plant siting cases or amendments in my time on the Commission. And that work has taken me --

COMMISSIONER MCALLISTER: God bless you. Yeah.

(Laughter.)

COMMISSIONER DOUGLAS: -- that work has taken me to communities all around the state where we've had the dialogue and we've heard views on electricity system reliability and what it takes to maintain reliability, alternatives to power plants, the role of different kinds of policies, energy efficiency, demand response, distributed generation.

And, you know, I've really heard the support around the state for California to continue to move in the direction of more energy efficiency, more distributed photovoltaic and rooftop PV and other solar and other renewable energy, more battery storage, especially when people really understand that it's pairing renewable energy generation with storage that allows us to begin to displace the need for certain kinds of grid services, like those provided by peaking natural gas plants.

And so for a lot of reasons I think that this set of standards both by improving energy efficiency in buildings, which is our bread and butter of the Energy Commission, and also requiring cost-effective measures like photovoltaic in this instance. And promoting like at least having EV-ready houses, so that when you get excited about getting your first electric vehicle you aren't shocked by

how difficult it is to actually charge it at your home, for example. And by using optional compliance alternatives to promote technologies that are going to be really important to us that we need to begin to figure out how to integrate, like batteries -- which, as we move forward and our electricity system evolves, as one of the public speakers said earlier, really will -- or maybe it was a staff presentation -- but really will be how you can use the batteries and the photovoltaic in your home to take advantage of and really be able to optimize and reduce your bills with time-of-use rates, for example.

So I think these standards very much go in the right direction. They also -- I looked closely at the cost and benefit numbers and appreciated the staff presentation on that. I think that it's really good that they save people money, not only over the course of ownership of a house, but month by month in terms of electricity bill savings versus increased cost.

I have over my time seen Commissioner McAllister lead these standards, appreciated his focus on pragmatic approaches that can be implemented that simplify the standards whereas possible to simplify them, that add flexibility for the builders where it is possible to create that flexibility, because that is also how we get better compliance and better outcomes and better buildings for

people to buy and live or work in.

So I'm in strong support of these standards. Thank you.

COMMISSIONER SCOTT: I am also in very strong support of these standards. I don't want to be too repetitive of what you've already heard from my fellow Commissioners, but I have very similar thoughts and reflections to what you have just heard them articulate, so I will echo the comments of my fellow Commissioners.

You know, the 2019 Building Standards really continue to move our state forward in a thoughtful and meaningful way on many fronts: on energy efficiency, on indoor air quality, on climate, on being EV ready. I mean, it's very exciting to be on the cutting edge in this way, but in a really smart way, right? Where the costs and the benefits, it's very thoughtful; it's just very well done.

So Commissioner McAllister, I want to say thank you so much to you for your leadership and vision on this. I also want to say thank you to our team for the great work that they have done. As the Public Member on the Energy Commission I am always cheered to hear throughout the public comments the great public process that we have in place for developing this. I appreciate the way that the staff takes time to listen, be thoughtful, really encourage all kinds of participation and take in the best information

and come up with the best solutions. And so I am always cheered when I hear about our great public process, as well. So thank you to you and to the staff for making sure that that happened on something as important as our 2019 Building Standards. I'm in strong support.

CHAIRMAN WEISENMILLER: Yeah. I want to echo a few things. I mean, obviously, in the past eight years California has gone from about the tenth largest economy in the world to the fifth largest economy. And we've grown our economy at the same time we've reduced our greenhouse gas emissions. And certainly, these standards are a key tool to continue that transformation.

But it's not simply this adoption today that starts a process. I want to discourage everyone from jumping into the well, let's look at the next round. We have to implement these things, you know? (Laughter.)

I mean, Bob Raymer is sitting there. I remember my first year in the Commission we had all kinds of people coming in and saying, "The Standards you adopted last year, where are all the things you said you were going to do that you haven't done?" And so what I'm saying is that this is just a milestone. There's a hell of a lot of work to go between now and 2020 and we really have to keep our eye on the ball to make this work smoothly. And I'm very comfortable that Commissioner McAllister and his staff will

continue to work with our partners in the building industry and their suppliers to make this go smoothly. There will be some surprises and we will need to stay on top of this. But the bottom line is we're going to stay focused on making this happen and happen smoothly. And once we get there, yeah, we can talk about the future.

But the current focus is make this happen and make it happen, so that we can help Californians save money and reduce greenhouse gas emissions. And really continue to have a very vibrant building industry in California and provide those options to our citizens. So I certainly support this.

COMMISSIONER MCALLISTER: I wanted to just make one more comment. So there's a longer-term plan. Every three years we sort of get this snapshot and we have a robust discussion about sort of the profile of what we worked on this round, right? And I wanted to -- and well, certainly this round will be focused on single-family residential and low-rise multifamily. That's the sort of piece that we really focused on, probably because we had this 2020 goal for sure.

So next round, just to get ahead of the compliance options and add the compliance to the materials development process, next round three years from now we're going to -- in the next six months or so we'll get started

on this -- we're going to focus on multifamily, larger multifamily and commercial.

So the multifamily in particular has been sort of a neither fish nor fowl, sort of. It's has to pick from pieces across the Building Code. And it really deserves better treatment, deserves more sort of consistent and organized treatment. And I think we're hearing that very strongly from the multifamily community. And we want to deliver that, not develop a whole new piece of the code sort of specifically for multifamily, but just some guidance that allows them to navigate the code. In developing those projects which are, particularly for low income they are very complex projects to put together. So we want to aid that process along with all the other things that we planned, are doing, and plan to do for the multifamily sector.

And then large commercial has a lot of savings opportunities there as well. And we're going to -- the commercial sector is kind of due for a close look, so we are going to do that.

I did want to build on what the Chair just said. So there are a number of steps. We have to get in front of the Building Standards Commission with the whole package of the Code Update. And once we get through them with a positive vote, before then and then certainly after, in

earnest we develop all the compliance materials for the code. And so, small things like that aren't clear or that kind of are more management or administrative in nature, those can be clarified or worked out largely in that process. And so this sort of those -- where the rubber hits the road, that's kind of what we'll have to care about. "Oh this isn't clear." Well, we can make it clear in that process.

So I would encourage all the stakeholders that have specific interests, specific products technologies that they want to make sure are understood by our -- are seen to be understood. And that they're clearly described in the compliance materials, that they continue to engage with staff as those materials get developed.

So again, thanks to my fellow Commissioners for all the positive comments. I'm really happy to be getting this to the finish line. And one big step for mankind I guess, really so anyways.

MR. STRAIT: So I'm going to jump in really quick just to remind us this is a complicated thing. That staff recommend the following motion language. This reads, and this is a script that we have prepared, "We move Item 2 as follows: 1) The Initial Study and Negative Declaration for the 2019 Update, including its Addendum. 2) The 2019 Update to the Building Energy Efficiency Standards, California

Code of Regulations, Title 24, Part 6, the associated administrative regulations in California Code of Regulations, Title 24, Part 1, except for first any changes to Section 140.5(b) and any additional changes made during the 15-day language to Sections 120.1(b)1(a)1, 120.1(c)1(a) and 150.0(m)12(a)1 as further described in the Resolution. 3) The associated appendices as the joint residential and non-residential reference appendices, as well as the Alternative Calculation Method Approval Manual and its appendices. 4) The Errata provided to you and to the public prior to today's meeting, which contains corrections of various typographical, drafting and other drafting errors in the update and 5) The Resolution inclusive of the nine-point criteria.

COMMISSIONER MCALLISTER: Great. So moved.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This submission was adopted 5-0. Thank you.

MR. STRAIT: Thank you, Commissioners.

(Applause.)

CHAIRMAN WEISENMILLER: Okay, so we're going to continue on to Item 5. Anyone who wants to catch Commissioner McAllister now can do that. The four of us

are going to deal with Item 5, Food Processors, please. I need Virginia Lew now, for example.

UNIDENTIFIED SPEAKER: I think Laurie is over in the overflow room, so if you give her a minute to get here?

CHAIRMAN WEISENMILLER: Yeah, track her down.

(Off mic colloquy re: lunch and schedule.)

CHAIRMAN WEISENMILLER: Okay, so we're going out of order. We're going to go back to 3 and 4, which are items of Commissioner McAllister. We're going to deal with 5 now. So, go ahead. Yeah, do it.

MS. TEN HOPE: Just barely good morning, Chair and Commissioners. I'm Laurie ten Hope Deputy Director of R&D. And I'm joined today by Virginia Lew, who is the Office Manager for Energy Efficiency Research. And we're here today to consider the Food Production Investment Program Guidelines for adoption.

I'm going to provide just a little bit of context for this program. And then I'm going to turn it over to Virginia Lew, who will walk through the guidelines.

I want to bring your attention before I start to the Commissioners and anyone in the audience who's interested in this item, we are also asking for your consideration of an Errata. The Errata is available at the back of the room on the table. And we'll also have a PowerPoint Slide that will summarize the Errata.

So in terms of context, last year as part of the Budget Process included in the GGRF Program was an allocation for the Food Production Investment Program. And the Governor's Office established a taskforce to create a dialogue between industry and agencies as a foundation for what the needs were in the food producer industry. And that taskforce and working group activities provided a baseline understanding between agencies that are already providing incentive programs, identifying what's available, what the gaps are, and also what industry is identified as the technologies that they have already installed and what some of the technology needs are.

That working group process informed our staff's understanding of what the needs are and provided the foundation for the development of the guidelines and the public process, public process for developing the guidelines.

So if we move to the next slide, food producers are a super-important part of the California economy. They are the third largest manufacturing sector in California. They provide over $80 billion of contribution to the California economy. And part of that is as a job provider.

Part of that contribution to our economy results in a significant energy use and accompanying their energy use is GHG impact. And this program is really designed to

keep food producers competitive and to also result in GHG reductions; more efficient processes and GHG reduction. Next slide, please.

So this program was developed as part of the Budget Act of 2017, AB 109. The quote here is basically the language. It's the whole framework for the program, so the context is pretty straightforward, "That this program shall be used to provide grants, loans or any financial incentives to food producers to implement projects that reduce greenhouse gas emissions."

So the Budget Act established $60 million for this program. And the guidelines before you are really designed to save energy and reduce GHG.

As I mentioned in the beginning it was heavily informed by the taskforce and then by the public process. At the beginning, if you'll just indulge for a second, I just want to call out some of the industry members that were really active in the development of the guidelines. They include The Agricultural Council of California, the California League of Food Producers, Foster Farms, Campbell Soup, Hilmar Cheese, California Cotton Ginners, California Dairies, Land Of Lakes, Morning Star, Pacific Coast Producer, the Wonderful Company, the Stanislaus Food Products Company, and West Coast Advisors.

The process was also informed by researchers, by

technology developers and sister agencies, including the Air Board, the CPUC, the California Department of Food and Agriculture. We couldn't have gotten to this point without the contributions of the various members.

So on the next slide are the program goals. Basically, reduce GHG; adopt commercially available advanced technologies, and part of that, the complement to that, is to increase the confidence the technologies work and then do the tech transfer to bring those technologies to a broader -- to more facilities and increase the adoption.

There's also an element to benefit priority populations that are defined by the Air Board, and basically looking at populations of disadvantaged communities, low-income communities and low-income households. A very high percentage of the food producer facilities are in priority populations, so an ancillary benefit of this program will be to bring some GHG reduction to communities that are most in need.

So with that context I'd like to turn it over to Virginia Lew, who will walk through the guidelines that are in front of you.

MS. LEW: Okay, can we have the next slide, please?

So the purpose of the guidelines is to provide

information on how the program will be structured, what sort of technologies would be eligible and what criteria will be used to evaluate applications. We will be releasing grant solicitations periodically and these will be in conformance to the guidelines. Can we have the next slide, please?

So as Laurie mentioned, the eligibility to this program is limited to all food processors. And these are food processors that are defined by the North American Industry Classification system of codes that you see here. And this is limited to food and beverage industry. The applicant must be a food processor, the facility must be located in California and the project must have GHG emission reductions. Next slide, please.

We have two funding categories for this program. Tier I is focused on commercially-available technologies that are drop-in replacements or additions to current systems. And that they result in greenhouse gas emission reductions and have higher efficiency than current industry practices and standards.

So Tier II, if we can go to the next slide, focuses on adoption and demonstration of cutting-edge, emerging technologies. And these are not drop-in ready technologies, they are not widely used in California, but they've been proven elsewhere to reduce greenhouse gas

emissions.

In both Tier I and Tier II we've created an "other" category to allow the potential of funding other technologies that are not listed in our guidelines, and so long as they meet the criteria that we stated here in each one of the slides. So can we go to the next slide?

So this slide shows the proposed funding allocations, items that would be eligible for the grant. And also, the maximum grant amounts.

For Tier I we can provide up to 100 percent of all the program funds to this tier. And for Tier II it could be up to 50 percent. And for both tiers the grant will cover the cost of the equipment in any measurement and verification. And for Tier II, in addition, we are also providing funds for engineering design.

The estimated award size is shown here and the maximum grant amount for Tier I is 65 percent of the eligible costs. And for Tier II it's 85 percent of the eligible costs. You'll note that no installation cost is being allowed for either one of the tiers. And that technologies that are eligible for Tier I are not eligible for Tier II, and vice versa. And we go to the next slide.

So this slide talks about how we're going to handle bundling of technologies within a facility as well as bundling amongst related facilities owned by the same

company. So under Tier I, we're allowing bundling of technologies within the same facility, as well as bundling of multiple facilities within the same company in one application. Tier II, we're only allowing the bundling to occur within the applicant facility. And no bundling allowed in multiple facilities.

And so we've also set aside a priority for funding. And so for Tier I the first priority will go to capped facilities. And these are facilities that emit more than 25,000 metric tons of CO2 annually, as determined by the California Air Resources Board, along with facilities under the same ownership. So they would have the first priority for funds.

The second priority would go with facilities that have to report annually to the California Air Resources Board, but they are less than 25,000 metric tons. They emit less than 25,000 metric tons a year. And they can be bundled together with facilities under the same ownership.

And for Tier II the priority goes to the capped facility, number one priority. And the second priority goes to facilities that need to report their emissions to the Air Resources Board but emit less than 25,000 metric tons a year. Can we go to the next slide?

So we have our selection criteria. We'll look at two phases here. In the first phase we will do an

application screening. And this is looking at the administrative requirements and this pass-fail. And all the requirements have to pass in order to move in to the technical scoring phase.

In the technical scoring phase there are four main criteria. And so the first one looks at the technical merit and need justification for why the project is needed and how it fits within each of the tiers.

The second criteria is looking at the technical approach. And this is looking at some of the factors that would result in a successful project and how the project and the approach to achieve the completion of the project within the term of the agreement. And how the results from the project will be shared amongst other food processers

The third criteria, impacts and benefits, is going to look at the amount of GHG emissions reduced from each project. And will also compare the amount of funding that the state is providing relative to the amount of GHG emissions reduced.

The fourth criteria we've already discussed in the previous slide regarding capped and uncapped facilities.

And if the applications pass the minimum scoring requirements for all these four criteria, then we also have these two optional criteria that would be added on to the

overall points. And the first one deals with proposals that meet all the requirements of being located in, and addressing the need and benefiting priority populations. And so these are populations that Laurie mentioned earlier that are in disadvantaged communities and low-income communities. And the second criteria looks at equipment that is purchased from California vendors. Can we go to the next slide, please?

And this, we've set aside provisions in the guidelines to allow for additional funding rounds. So if we don't allocate all of the funds in the first round we can just roll it in to the second round. And also allocate funds from that may be added to the program later on.

And the Energy Commission reserves the right to do all these areas listed here, such as limiting the size of the grant per application as well as narrowing the specific pool of eligible projects. Can we go to the next slide?

And so this is the Errata that Laurie had mentioned previously. And so, there's an Errata Sheet at the back of the table. And so this Erratum allows for consideration of technologies that reduce other types of fossil fuels besides electricity and natural gas. And this change was something that we had already decided that we were going to do, but it was just inadvertently omitted as

an oversight. And so now, this page here outlines the chapters that we are adding fossil fuels as an additional element. Can we go to the next slide, please?

So this slide shows our tentative schedule. And if the guidelines are approved today then we plan to release this solicitation by the end of the month. And also have grant applications due by the end of summer, with awards coming to the Business Meeting at the end of the year. Go to the next slide, please.

So all this work couldn't have been accomplished without many of our dedicated Energy Commission staff that are listed here. And so I really appreciated all of their help and diligence in helping to achieve our deadlines. Can we go to the next slide, please?

And so this is a slide that shows where you can get more information about our program and also to sign up for the docket and also to sign up for the Listserv.

And so that concludes our presentation. And we really appreciate your support of adopting our guidelines and also the Errata from today's business meeting. Thank you very much.

CHAIRMAN WEISENMILLER: Thank you. Thanks for the presentation.

We have some public comment, so let's start with the Ag Energy Consumers Association.

MS. DUNLAP: Hello, I'm Maddie Dunlap with West Coast Advisors on behalf of the Ag Energy Consumers Association as well as the California Poultry Federation.

And many of our members are food processors who are subject to Cap and Trade, so we would just emphasize the importance of this program, especially as it applies to those businesses under the cap, so that they may meet the robust climate change goals that California has while continuing to remain competitive.

We also submitted some written comments that have some more detailed comments on the process and the program, so thank you.

CHAIRMAN WEISENMILLER: Thank you. All right, California League of Food Producers.

MR. NEENAN: Good morning. I'm Rob Neenan. I'm President of the California League of Food Producers in Sacramento. We're a statewide trade association that represents the $82 billion food-processing industry in California.

We appreciate the opportunity to speak this morning. And the main thing I wanted to convey is what a great job staff did on this project. They worked very hard, they took stakeholder input and we think you're heading in the right direction with this program.

Food processing is the third largest user of

natural gas in this state amongst industrial users. I'm sorry, third largest in electricity, second largest in natural gas. And there are about 40 food processers who are currently in the Greenhouse Gas Cap and Trade Program run by CARB. So going forward this program could be a really great resource for those companies.

But as you know, CARB has a very aggressive goal to reduce greenhouse gas emissions. And how a typical food processer is going to be able to their reduce greenhouse gas emissions by 40 percent by 2030 is going to be interesting. It's only 12 years away and to be able to do that and still run their operations will be a challenge. So our members will have to spend a lot of money on new systems and hoping that new technologies come along to help them move forward and remain competitive in the global marketplace.

The only comment I have on the proposal is that the guidelines allow food processors to obtain matching money from utilities; it was described in their presentation. But we've had an issue in the last few years where our members have applied for utilities for custom project funding, that those projects are held up for long periods of time and maybe eventually not even approved. And given the short timeline that this project is going to move forward, the FBIP, it's going to be critical that we

have collaboration by the utilities and by the Public Utilities Commission, so companies can obtain those matched funds. So we urge staff to work with our members on that issue.

So just in conclusion we look forward to working with the Energy Commission staff to make this program a success. And to bring some great success stories back to the Board. And we also hope that this funding will continue into future years. We know that isn't necessarily your decision, but we certainly hope it'll continue in the future. Thank you.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Foster Farms.

MR. BOWER: Thank you, Tom Bower with Foster Farms. First and foremost, I want to thank the CEC on all the help and what they put forth in these guidelines, listening to stakeholder comments and really trying to get this final draft right. And I want to specifically mention Laurie and Virginia and their staff sitting over here, just a wonderful job of working that process through.

At Foster Farms we supported Cap and Trade, the extension late last year, and this funding was a big part of part of it. It helps us, as Laurie mentioned in the opening comments, to remain competitive not only with our

out-of-state competitors who may not be facing some of these same climate policies, but also to remain competitive in providing quality products and protein to many households up and down the State of California in a cost-effective manner. So this funding goes a long way in helping that.

So again, we wanted to just say thank you. And we fully support these guidelines and the errata that was proposed this morning. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Tod O'Connor.

MR. O'CONNOR: Good morning Mr. Chairman and members of the Commission. My name is Tod O'Connor. I'm a Senior Policy Advisor for CLEAResult. CLEAResult is an energy efficiency services firm with over 240 utilities and their customers, as our customers, and we have a significant presence in California.

We strongly support and urge the adoption of the program and these guidelines. We do appreciate the collaborative effort of all the stakeholders, especially CEC staff as well as the leadership by Commissioner McAllister.

We did have a concern about the issue of utility incentives. That was raised already by the League. I will save time by not repeating it, but I do ask that you take a

look at SB 1131 being proposed by the California Energy Demand Management Council. That's going to put a framework around how these custom projects will be guided by the PUC, so hopefully they will give a -- they will provide guidance on these projects in time to be considered for this program. I thank you for your time.

CHAIRMAN WEISENMILLER: Thank you.

Any other public comment, either in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay, let's transition to the Commissioners. I certainly want to thank Laurie and Virginia and your staff for really pushing this forward as Lead Commissioner on R&D. Certainly, it's important to work with the food processing industry to bring innovation into this area. Obviously we cannot speak for the PUC on stuff. I think certainly we can talk to some of the Commissioners, but whether or not that will any impact, we'll see.

So anyway, I think this is a great program. I think it's important we move in a timely fashion, so we can deal with the realities of people's other requirements to work it out in the fields, so any other comments?

COMMISSIONER DOUGLAS: Well, just briefly I think this is a real opportunity to bring energy savings and help

support our climate goals and support some of the food processing industries in California as they work to meet those climate goals. So I'm in strong favor. I'll move approval of this item.

COMMISSIONER SCOTT: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0.

Commissioner Scott, do you want to make the announcement about the auto that's outside?

COMMISSIONER SCOTT: Yes. We have outside the Commission until 1:00 o'clock and ride-and-drive. So if you would like to try out a Honda Clarity or a Toyota Mirai fuel-cell electric vehicle please go and give one of those a ride. We've also got a Bolt, a battery-electric vehicle and a Volt plug-in hybrid electric vehicle. So, a chance to try out all of the ZEV technologies and that's just right out in front of the Commission.

CHAIRMAN WEISENMILLER: Great. So we're going to take a recess. We'll be back at, I'm going to say maybe 1:00 o'clock. Or we'll do 1:00 o'clock, and basically encourage people -- at that point we're going to pick up Items 3 and 4, which we held and then we'll move on to the rest of the items probably more less in sequence.

(Off the record at 12:19 p.m.)

(On the record at 1:04 p.m.)

MR. LOYER: Good morning or good afternoon Commissioners, chair, Joe Loyer, Senior Mechanical Engineer of the Efficiency Division. I am here to present for your consideration the California State Pipe Trades Council, CSPTC's 2016 Update to its approved application as a Nonresidential Mechanical Acceptance Test Technician Certification Provider or ATTCP.

A mechanical acceptance test is a functional test required by the Energy Standards on newly installed mechanical systems, to ensure these systems work as designed.

The Energy Standards allow organizations to apply to become an ATTCP and to provide technicians with the training, certification, and oversight to perform acceptance testing.

With the adoption of updated Energy Standards, an approved ATTCP must submit an update report to the Energy Commission for approval.

CSPTC was approved on September 14, 2016, as an ATTCP. They submitted their update report on January 10, 2017 and amended it on March 7, 2018.

Staff has determined that the substantive adjustments to the CSPTC quality assurance program meet the requirements in Section 10-103.2(c)3F of the proposed 2019

Energy Standards.

Staff has determined that the non-substantive adjustments to the CSPTC application meet the requirements under Section 10-103.2(c)3 of the 2016 Energy Standards.

Staff has documented its review in a staff report, which was posted on the Energy Commission website and made available for public comment on April 17, 2018. No comments have been received.

Staff recommends that the Energy Commission confirm the Executive Director's findings, adopt his recommendation, and approve the use of the CSPTC quality assurance program that meets the requirements of the 2019 Energy Standards,to be used in place of the 2016 Energy Standards.

Additionally, staff recommends that the Energy Commission approve the CSPTC Update Report to its application and allow them to implement that application.

CSPTC representatives are present today. Thank you for your consideration. I'm available to answer any questions you may have.

CHAIRMAN WEISENMILLER: Thank you. Please come on up.

MR. PARTCH: Good afternoon. I would just like the thank the California Energy Commissioners, Joe Loyer and staff for all of their time and effort regarding the

approval of the updates for the 2016 building efficiency standards and we just want to thank you and we're ready to go.

CHAIRMAN WEISENMILLER: That's great. Thank you.

Any other comments?

COMMISSIONER MCALLISTER: Yeah. I'm glad to have another provider onboard. That's terrific. And I've gotten a series of briefings along the way from Joe and his team, so I'm every comfortable with this.

And just to remind everybody, as mechanical systems, particularly in larger buildings, commercial buildings, get more electronic and get more sort of complex in many way, and design really matters and actual good installation really matters and operational quality needs to be confirmed, the ATTCP Program was established to help that happen in both lighting and mechanical.

And so we're developing a series of -- a group of technicians that can do all of that stuff and they need to be trained. And these ATTCPs are where that happens. And so they're educators and they work with the folks who actually do the jobs out there in the world that we here at the Energy Commission hope and expect are quality.

And so this link in the chain is an important aspect of that marketplace. And so we pay close attention to the applications and try to work as close as we can with

the ATTCPs. So we really appreciate your bringing forth the application and glad that staff found it to be adequate. So I'm fully in support.

Yeah, all right. So I'll move Item 3.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: Item 3 passes 5-0. Let's go on to Item 4.

MR. LOYER: Commissioners, I'm here to present for your consideration the Refrigeration Service Engineer Society's RSES application to become a new non-residential mechanical acceptance test technician certification provider, ATTCP. The difference here is RSES is a brand new applicant. The CSPTC was an update to an existing approved application.

So RSES application was submitted December 12th, 2016 and amended March 6th, 2018. RSES is 501(c)(6) organization with members in chapters in the United States and Canada, and with additional technicians routinely using it's training materials in 50 countries across six continents.

RSES has contracted for two accredited training centers in California to host the training required for the certification and testing and training of technicians.

Staff has visited both of these proposed RSES facilities located in Los Angeles and determined that they have the appropriate training equipment, experience, instructors and capability to provide all the required training and testing necessary.

Staff is recommending a condition of approval for this applicant, connecting to the available training centers in the unlikely event that the contract does dissolve between RSES and the training center. RSES is to find new training facilities.

RSES has engaged the ESCO Group to provide this data management services for RSES ATTs, acceptance test technicians and their employers, ATEs and the completed certifications of acceptance. Energy Commission staff has completed a review of the RSES application and determined that the quality assurance program meets the requirements of the proposed 2019 Standards and the outcome meets the requirements of the 2016 Standards.

Energy Commission staff has documented its review and findings in the staff report, which was posted to the website and made available for public comment on April 17th, 2018. No comments have been received.

Staff recommends that the Energy Commission confirm the Executive Director's findings and draft his recommendations and approve the use of the RSES quality

assurance program that meets the requirements of the 2019 Energy Standards, to be used in place of the 2016 Standards, adopt the Condition of Approval in Appendix 1 of the Executive Director's recommendation and approve RSES as an ATTCP to administrate the program described in its application. RSES representatives are here today. And thank you for your consideration. I'm available to answer any questions.

CHAIRMAN WEISENMILLER: Great. Thank you.

Do you care to say a few words?

MS. SCHIAVO: Thank you, Commissioners. We appreciate your time and consideration for this becoming ATTCP providers. We've been training and educating technicians, contractors and facility managers since 1933. So we're in the business of doing this and just feel this is a great fit for us. So we appreciate your consideration.

CHAIRMAN WEISENMILLER: Any other public comment, either here in the room or on the phone? Okay. Go ahead.

COMMISSIONER MCALLISTER: So I wanted to just make sure. So this is for both the 2016 and the upcoming 2019?

MR. LOYER: No, sir.

COMMISSIONER MCALLISTER: Oh. Okay. I'm sorry.

MR. LOYER: No. This is just the 2016 Standards,

but we are borrowing from the 2019 Standards only for the quality assurance portion.

COMMISSIONER MCALLISTER: Okay. I misunderstood that. That was my expectation, so that's good. So the same thing I said to the previous item. Thank you for -- sounds like you've got a great skill set and we're happy to have you expand into California, so great, looking forward to having you out there in the market place. So I'll move Item 4.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: So Item 4 passes 5-0. Thank you. Thanks for being here.

MS. SCHIAVO: Thanks so much.

CHAIRMAN WEISENMILLER: Let's go on to Item 6.

(off mic colloquy.)

MR. RANSOM: Good morning Chair and Commissioners. I'll be presenting over here for the ARFVTP ten-year anniversary. My name is Shaun Ransom and I am with the Fuels and Transportation Department here at the Energy Commission. And this year, the Energy Commission is celebrating the 10th anniversary of the Alternative and Renewable Fuel and Vehicle Technology Program, otherwise known as ARFVTP.

Through annual investments of up to 100 million, the ARFVTP helps to advance innovations in low and zero-emissions transportation and fuel technologies, assists California meeting its climate goals, improve air quality, and reduce petroleum dependence. Benefits underserved, disadvantaged communities and promotes sustained economic development.

To help mark the ARFVTP's anniversary, the Energy Commission launched a collection of web pages about the ARFVTP and its accomplishments over the past ten years. This is our landing page, which is on Energy Commission website right now. And it has some information and some exclusive content on the projects that are under ARFVTP.

One of the features of the anniversary webpage is the project showcase, which highlights several of the program's successes across its funding categories. Once you're on this page, if you click on any of these thumbnails, it'll link you to a site that has more content on the individual projects.

The showcase highlights ARFVTP investments, such as zero emission vehicle infrastructure to expedite development of conveniently-located fueling and charging infrastructure for low and zero-emission vehicles.

As of April 1, 2018, the Energy Commission has funded more than 7,500 EV charging stations through the

ARFVTP; 7,000 of which have been installed, and 64 retail hydrogen refueling stations with 34 now operational and open to the public.

The Energy Commission's investments in ZEV infrastructure through the ARFVTP support the state's transition to cars with no tailpipe pollution, helping improve air quality and combat climate change.

The showcase also highlights ARFVTP investments to accelerate advancement and adoption of alternative fuel and advanced technology vehicles, including low and zero-emission medium and heavy-duty vehicles.

ARFVTP has supported 48 projects to demonstrate vehicles such as public transit buses, freight, and other fleet vehicles that produce zero or near-zero emissions.

The showcase also highlights ARFVTP investments to expand in-state production of alternative, low-carbon renewable fuel from low-carbon pathways. Transitioning to cleaner-burning, low-carbon biofuels is an important part of California's efforts to meet its greenhouse gas emissions reduction goals, improve air quality, and reduce reliance on petroleum-based fuels.

ARFVTP funding has supported 59 projects to promote the production of sustainable, low-carbon biofuels within California, with a cumulative annual production capacity equivalent to more than 130 million gallons of

diesel fuel.

The showcase also highlights ARFVTP investments to support manufacturing and workforce training to help meet the needs of the state's growing clean transportation and fuels market.

Through the ARFVTP, the Energy Commission has supported 21 manufacturing projects.

Proterra used an ARFVTP grant to build a facility in the City of Industry that is estimated to manufacture and sell 424 buses in the lifetime of the grant, reducing more than 900 million pounds of carbon dioxide. Buses manufactured in this facility are already operating in Fresno County, the city of Stockton, the San Gabriel and Pomona Valleys, and other communities in the state.

ARFVTP funding has also supported workforce training for over 17,000 trainees and more than 270 businesses that translate clean technology investments into sustained employment opportunities.

The ARFVTP 10th anniversary celebrates our continued effort to provide alternative fuels and technologies to California's diverse transportation portfolio. Working with state and local government partners, as well as private stakeholders the ARFVTP has advanced innovations that are transforming California's transportation landscape, setting a course to ensure all

Californians have access to clean mobility options.

As the ARFVTP's anniversary continues, the anniversary webpage will continue to add content highlighting the program's successes. And I'd just like to reiterate that we have a ride-n-drive going on outside today. Feel free if you have some time to test drive one of the ZEV vehicles we have out there.

Thank you. And I am available to answer any questions.

CHAIRMAN WEISENMILLER: Thank you for this presentation.

So first any comments or questions from the audience or on the phone?

(No audible response.)

CHAIRMAN WEISENMILLER: Commissioner Scott.

COMMISSIONER SCOTT: Yeah, great. Thank you very much Shaun for the overview of ARFVTP and our 10th anniversary. I wanted just a chance to kind of highlight - -

(Audio briefly cuts out.)

COMMISSIONER SCOTT: Okay. So thank you to Shaun for the terrific presentation about our ARFVTP and 10th anniversary of the program, just a nice opportunity to highlight some of the successes as we roll into considering the Investment Plan.

And I want to say thank you to Shaun and the transportation team and also to our media team for really putting together a nice showcase of the projects that we've funded over the last ten years. And I'm excited to see what the next ten years bring.

So this is just an informational item, so we'll role on to the next one.

CHAIRMAN WEISENMILLER: Let's go on to Item 7.

MR. ORENBERG: Good afternoon, Chairman and Commissioners. My name is Jacob Orenberg and I'm the Project Manager for the 2018-2019 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program, or ARFVTP.

Today, we are seeking your approval of this Investment Plan Update. If approved, the current Lead Commissioner Report version will be reissued as a Final Commission Report. And this document will serve as a guide for the program's funding solicitations and awards in the coming fiscal year.

The ARFVTP was established by California Assembly Bill 118 in the year 2007. The program was set up to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies. In addition, the program has complementary goals of improving air quality,

increasing alternative fuel use, reducing petroleum dependence and promoting economic development.

The annual Investment Plan Update serves as the basis for the program's funding opportunities and agreements for each fiscal year. The allocations described in the Investment Plan are for general project categories and provide an overview of the status of the fuel or technology and its' potential. The specific requirements of what we will ultimately fund are determined by each funding solicitation and not by the Investment Plan.

California has enacted a number of recent laws and regulations in its efforts to combat climate change, including the ones listed on this slide. Perhaps most notable of these are AB 32 and SB 32, which set statewide greenhouse gas emission reduction targets. To outline the approach that California will take to achieve these targets, the California Air Resources Board developed a Climate Change Scoping Plan. Similarly, Senate Bill 1383 and the California Short-Lived Climate Pollutant Reduction Strategy set targets to reduce emissions of pollutants such as methane. Other state policies, such as the Low-Carbon Fuel Standard and zero-emission vehicle deployment targets, set supplemental goals that will help meet the state's climate change commitments.

All of these laws and strategies guided the

development of the Investment Plan Update and achieving these goals will -- I'm sorry. All of these laws and strategies guided the development of the Investment Plan Update. And achieving these goals will require investments that achieve both short-term emission reductions as well as the long-term transformation of California's transportation sector to zero-emission technologies. While developing this Investment Plan Update, we also considered the availability of other sources of public and private funding being invested in these fuels and technologies.

To date, the Energy Commission has provided over $750 million in funding through the ARFVTP. About 25 percent of this has been invested in biofuel production and distribution projects. Another combined 35 percent has been provided for electric vehicles and charging infrastructure. And 20 percent of the funding has gone to hydrogen refueling infrastructure and vehicle demonstrations.

Some highlights of ARFVTP-funded projects include 59 biofuel production facility projects, 7,700 electric vehicle charging stations, 64 hydrogen refueling stations and more than 300 advanced technology heavy-duty trucks.

For this Investment Plan Update, we published a Draft Staff Report in early November, which was followed by the first Advisory Committee meeting held in Sacramento. We then released a Revised Staff Report in January and a

Second Revised Staff Report in March, and held a second Advisory Committee meeting in Los Angeles County, also in March. Most recently we published the Lead Commissioner Report in late April.

The development of each version of this Investment Plan was guided by the input we received during the two public workshops and from the comments we received through the docket. Each comment we receive is considered and, when appropriate addressed in the Investment Plan.

This slide lists all of the Advisory Committee members for the 2018-2019 Investment Plan. And we would like to thank each of them for their contribution and dedication to the program. The membership of the Advisory Committee includes representatives of fuel and vehicle technology groups, environmental and public health groups, academic institutions, and partnering state agencies.

For fiscal year 2018-2019, we expect that significantly more funding than usual will be available for the program. And the Investment Plan was written to reflect this. The Governor's proposed budget for 2018-2019 provides over $277 million in funding that, if approved in the final budget, will be administered through the ARFVTP. This year, the proposed budget also provides specific guidance for the types of fuels and technologies that the funding can be spent on. This includes $235 million

specifically for hydrogen refueling and electric vehicle charging stations, $25 million specifically for low-carbon fuel production, and $17.5 million for advanced freight and fleet technology projects. The funding is proposed from multiple sources, as described on the slide.

I'll now give a brief overview of each of the funding allocations, starting with Electric Vehicle Charging Infrastructure. Our investments this year are largely guided by two major zero-emission vehicle deployment goals; the first of which is to have 1 1/2 million zero emission vehicles on California's roads by 2025 and the second to have 5 million ZEVs by 2030. While the Air Resources Board is continuing to provide purchase incentives for zero emission vehicles to achieve these goals, the Energy Commission has been tasked with ensuring that there is adequate public charging infrastructure to support these vehicles.

To these ends, we are proposing a $134.5 million allocation for fiscal year 2018-2019, and this will be used to support the installation of public charging infrastructure throughout California to achieve the goal of having 250,000 EV chargers in the state by 2025. This is the largest allocation we are proposing this year, and this level of funding is necessary to achieve the state's infrastructure goals. We estimate that achieving the

250,000 charger goal will require a total public and private investment of between $1 and $3 billion over the next seven fiscal years, and this allocation will provide a significant boost in state funding to help achieve these goals.

The ARFVTP is also the primary source of financial support for the state's hydrogen refueling station network. To date, the Energy Commission has provided funding for 64 stations, and 34 of these are currently open for retail business. For the coming fiscal year we are proposing a $92 million allocation for hydrogen refueling stations, which we expect will fund about 40 additional stations in the state, as well as provide support for initial operations & maintenance expenses. With this investment, we expect that the state will achieve its original goal of a network of 100 hydrogen stations, provide a down payment to achieve the new 200 station goal, enable additional fuel cell vehicle sales, and provide sufficient statewide fueling capacity into the year 2022.

We are also proposing an $8.5 million allocation to support manufacturing operations and workforce training needs for zero emission vehicle infrastructure. This category will fund projects that expand in-state manufacturing facilities for ZEV infrastructure, as well as provide workforce development support for these and other

types of ZEV infrastructure-related projects. These types of projects will create jobs and provide an economic benefit for the state while indirectly supporting the ARFVTP's infrastructure investments. We also expect to pursue opportunities with this funding that specifically benefit low-income and disadvantaged communities to further the state's equity goals.

Our funding efforts in the advanced freight and fleet technologies are also continuing, and for this, we are proposing a $17.5 million allocation. The projects funded under this category are expected to focus on freight and fleet vehicles with zero and near-zero emission powertrains, infrastructure to refuel these vehicles, and non-propulsion projects such as intelligent transportation systems. We expect that the Energy Commission will continue to work with the California Ports Collaborative and help to implement the California Sustainable Freight Action Plan with funding from this category.

Moving on to low-carbon fuel production and supply, we're proposing a $25 million allocation for fiscal year 2018-2019. However, unlike the other categories, the proposed state budget earmarks funding from the greenhouse gas reduction fund for these purposes. As in previous years, this category will provide funding support for the production of non-petroleum diesel and gasoline substitutes

such as biodiesel and ethanol; as well as for renewable natural gas, and, for the first time, renewable hydrogen.

We expect that the category will have a continuing focus on waste-based and renewable feedstocks, such as woody biomass, wastewater, and municipal solid waste, as these tend to have the lowest carbon intensity of any fuel. As in previous years, the funds in this category are open to multiple fuel types and development stages, including pilot, demonstration, and commercial-scale projects.

For the coming fiscal year, we're not proposing additional funding for natural gas fueling infrastructure or vehicles. We currently have unspent funds from previous years for these project types and the Energy Commission recently completed a new funding solicitation to provide up to $16 million to California air districts to fund incentives for natural gas vehicles. The Energy Commission's Natural Gas Vehicle Incentive Project is also still operating and continuing to pay out incentives to reservations holders. In addition, the Air Resources Board is providing incentives for natural gas vehicles with low-NOx engines through their Clean Truck and Bus Voucher Project.

This final slide summarizes all of the proposed funding allocations for the 2018-2019 Investment Plan

Update. Staff requests your approval of this agenda item. And at this point, I'm happy to answer any questions you may have. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

I'm going to get public comment on the Plan. We'll start with public agencies, so CARB, Sam Wade.

MR. WADE: Hello, Chair Weisenmiller and Commissioners. Thanks for the opportunity to testify today. We are certainly in support of the proposed Investment Plan Update. I run the Low-Carbon Fuels Standard. And as the Investment Plan Update specifies, the LCFS is a strong complement to ARFVTP. The LCFS is rewarding the production of low-carbon fuels, especially with respect to the state's biofuel producer.

Last year, biofuels produced 86 percent of the credits issued in the LCFS. And we've also seen increased prices recently in the program, reaching highs of $150 per credit, over the last few months. And that's much higher than we've had historically. So what that results in is approximately $107 million of credit value delivered to instate biofuel producers over the last year.

And at the end of April, the CARB Board heard a proposal from staff to strengthen the LCFS target to 20 percent reduction in carbon intensity by 2030. We hope to return to the Board and hopefully the Board will accept

that proposal at a second hearing in this fall. And so therefore the state's commitment to low-carbon fuels is clear. And the '18-'19 ARFVTP Investment Plan reinforces that commitment as part of an integrated strategy across both CEC and ARB.

We strongly support approval today. Thank you.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Bonnie Holmes-Gen?

MS. HOLMES-GEN: Good afternoon Chair and Members, Bonnie Holms-Gen, with the American Lung Association, in California and congratulations on the ten-year anniversary. We are pleased to celebrate with you. And I've been pleased to be a member of the Investment Advisory Committee and thank you for that opportunity.

I want to note that this week we're celebrating National Women's Lung Health Week to remind the public that lung cancer is a number one cancer killer for women and men. And of course air pollution is a major contributor to lung disease and particle pollution specifically is tied to increased risk for lung cancer, so all this work that you're doing is contributing to reducing chronic illness and reducing lung cancer in California.

We strongly support the 2018-'19 AB 118 Investment Plan. And specifically the increasing focus on

electric vehicles that is consistent with the original purpose of the legislation to create this program, consistent of course with our state greenhouse gas targets, our federal health-based air quality goals and the Governor's plan to achieve 5 million electric vehicles including the infrastructure roll-out.

And the American Lung Association, as I have mentioned I think, has done research on the health impacts of our current dependence on petroleum-fueled vehicles. And looking at the light duty contribution to health impacts, unfortunately, we're seeing over 15 billion in health and climate impacts annually from our dependence on petroleum-fueled motor vehicles in the light-duty sector. In the freight sector I know the ARB has estimated 20 billion in health impacts.

These are unfortunately annual numbers. And so this funding for our ZEV roll-out and bringing together our incentive programs together with the regulatory programs that are in place is a critical alignment that's needed.

So the solution to our problem, to our urgent health problems and our climate and air quality problems that are created by our dependence, our almost exclusive dependence on petroleum fuels is a transition to zero emission.

Over the years of the program, there have been

millions of dollars that have gone to a mix of emerging technologies and even this year's funding is supporting a portfolio of fuels. And we have appreciated and acknowledged the need to support a mix of emerging technologies as we move forward. But given the state's climate leadership, our urgent health and air quality programs are -- we need to refocus this pot of funding. We believe it's overdue. And we strongly support this plan that's moving forward, including the 235 million for EV charging and hydrogen infrastructure.

So thank you so much for the time. This is something we've been involved in for a very long time. And I'm very pleased to be able to be here today to express our very strong support for this plan.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here. Eileen Tutt.

MS. TUTT: Good afternoon Chair and Members of the Commission or Commissioners, I guess. My name is Eileen Tutt and I'm with the California Electric Transportation Coalition. We are a non-profit that is committed to zero emission vehicle technologies across all the sectors: light duty, medium duty and heavy duty.

And I've been very honored to serve on the ARFVTP, l-m-n-o-p-q-r-s-t Advisory Committee. (Laughter.) And I commend the Commissioner Scott and the amazing staff

in the development of this year's Investment Plan. We entirely support this Investment Plan. It's consistent with the Governor's Investment Initiative and we're supporting that as well.

The challenges in getting to the zero emission transportation future are daunting. It is extremely substantial the amounts of hurdles that we're needing to overcome. Our state has committed to transform the transportation sector and getting off our dependence on oil, diversifying our transportation fuel sector, and actually more importantly getting to zero emission technologies that will protect the health and wellbeing of all Californians.

In order to get there, we are going to have to shift. And it's going to require substantial and reliable public and private sector investment. So we are very happy to see this plan. It's a positive step toward providing the public sector investment in a reliable way.

And I do want to give a specific shout out to the investment in workforce training. There have been numerous studies. Most of them are posted on CalETC's website, that show that shifting to transportation electrification is good for our whole economy and for jobs. However, to ensure that our workforce is prepared to support this transformation and develop the skills needed for these good

jobs, we do believe that workforce training is essential and we're really happy to see it in this plan.

So I want to thank you. I want to thank the Commissioner. I want to thank the staff, the whole Commission, and I urge you to adopt this plan today. Thank you.

CHAIRMAN WEISENMILLER: Thanks. Thanks for being here.

Anyone else in the room? Please, come on up and identify yourself. Give our court reporter your card.

MR. ECKERLE: Hi. All right, so I'm Tyson Eckerle, the Deputy Director for Zero Emission Vehicle Infrastructure at the Governor's Office of Business and Economic Development.

And we're here to support -- push strong support for the Investment Plan. You know, in January Governor Brown set out the vision of what we're trying to do with that 5 million vehicles by 2030, but not only for vehicles, but for infrastructure.

And I think we all intuitively know the importance of infrastructure in the zero emission vehicle market. But thanks to the great work done by the Energy Commission, ARB, NREL and industry, I think we have perhaps the best understanding in the world of what we do need to help start the market.

And so what's clear, to get where we need to go, we really need market transformation and not incremental change. And I think this plan really is a key component of that transformation. Past EC investments have filled critical marketplace gaps. They've cultivated key partnerships and built the confidence that stakeholders need to invest in market success. And I think this plan enables the CEC to build on those past successes and help the ZEV market get to scale in partnership with the key stakeholders.

And I wanted to say a little bit about the biofuels. At the last Investment Plan meeting we had some substantial concerns raised by the biofuels industry and I want to point out that this plan does not result in a reduction of funding in biofuels this year compared to the last Draft Investment Plan, but I certainly understand how it can feel that way given the doubling of investment into ZEV infrastructure.

But I think it is also important to point out that ZEV infrastructure can help build the biofuels market. In this context, maybe the most direct connection is the biohydrogen connection. So building these hydrogen stations as outlets helps create a market for biofuels that I think will be very important in our zero emission vehicle future. So I just wanted to highlight that.

So really in closing, I think this is an absolutely crucial plan. And we commend the CEC for its responsiveness to the Governor's Executive Order. And GO-Biz is eager to work with you to help make sure that these investments are a tremendous success. So thank you very much for your great work.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Anyone else in the room? Please, identify yourself. Give your card to the court reporter.

MR. ELRICK: Yes. Thank you. Bill Elrick with the California Fuel Cell partnership and I just wanted to also express my gratitude and support for this plan. CEC especially, but the state has been very generous in a long history of support when it comes to ZEV technology development and specifically for hydrogen and fuel cell vehicles and the support in this plan, where we are now at a point where we have success in the early market launch. The previous funding has really helped us get to this point.

But as was just mentioned, the next step is to ramp this up, scale it up, so that we can begin to phase out of government support and get to a self-sustaining market. So I rushed in because we're working on a new roadmap that looks at how we get there. How we turn this

from a government push into a market pull. We're very excited to release a document as soon as we can on this.

But it's this kind of funding and frankly it's the leadership and the commitment at this level to help push it through its last throes to get it out the door and really get that excitement, because California is leading the world. It has shown what it can do and we really need a bit more of this leadership and support going forward, so that we can get the private investment in, which unlocks this scaling up and enables the broader infrastructure development that can be its own business case and run on its own. It can enable the customers to go out and buy a fuel cell and a ZEV vehicle and really get to all of our environmental, economic and energy stability goals that we're achieving.

So I'm really happy to see this. I'm glad for all the work CEC, the staff and everyone has done to get to this point and we look forward to the next steps together.

CHAIRMAN WEISENMILLER: Great. Thank you. Thanks for being here.

Okay. Anyone else in the room?

(No audible response.)

CHAIRMAN WEISENMILLER: Let's go to the phone lines. Let's start with South Coast, it's a public agency.

MS. WHITE: Hi. Good afternoon. My name is

Vicki White and I represent the South Coast AQMD. I work as a Manager in our Technology Advancement Office and thank you for this opportunity to speak on this item today.

The South Coast AQMD is very supportive of the 2018-19 Investment Plan. Especially the areas of increased focus on electric and hydrogen-fueling infrastructure that includes medium and heavy-duty vehicles, biofuel production, advanced freight and fleet technologies that address needs to lower emissions from goods movement that includes zero and near zero emission technologies.

The South Cost AQMD has successfully partnered with the CEC to significantly lower criteria pollutant emissions, as well as concurrent greenhouse gas and petroleum use reductions with the numerous projects awarded from this program.

Staff thanks the CEC and its Commissioners for the previous awards and look forward to continuing leveraging public funds in an effort to forward our mutual clean air goals. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Let's go on to Energy Independence Now.

MR. GOLDSTEIN: Hi. This is Brian Goldstein, the Executive Director if Energy Independence Now. On behalf of the IN, our Board of Directors, our thousands of supporters and the hydrogen vehicle infrastructure

stakeholders, we strongly support the CEC Investment Plan for 2018.

So while our organization supports all the EV technology, we've developed a specific focus on hydrogen technology. So that'll be the primary focus of my comments, but I'd like to echo Tyson Eckerle's comments regarding the role of biofuels and hydrogen ecosystem. And also mention the role of hydrogen and energy storage to support BEV charging with renewable electricity.

So we're grateful for the opportunity to participate in the ARFVTP Advisory Board. EIN commends the Commission's strong VEB leadership and specifically the commission's support of the robust hydrogen SCEV infrastructure that's going to be necessary to meet the goals that we've outlined here in the state.

We applaud the 2018 allocation of 92 million to support hydrogen electric vehicles and infrastructure. We've submitted written comments on several areas of the budget, but there are a couple I wanted to point our specifically.

We're thrilled about the Commission's continued support for hydrogen stations and renewable hydrogen production. The Executive Order called for 200 stations to strengthen the SCEV market clearly. And it'll help diversify the state's station network. We'd like to

emphasize though that while the 20108 budget proposal reflects the need for hydrogen stations through 2023, we definitely will need further research to identify the appropriate number of stations and the renewable hydrogen production capacity that we'll need to meet the goal of five million ZEVs by 2030.

So our organization estimates that we'll need approximately 1,000 high capacity, multi-position hydrogen fueling stations to support approximately a million SCEVs by 2030. And that would be 20 percent of our overall ZEV goal.

So beyond that, I wanted to mention the most recent Energy Commission solicitation supporting renewable hydrogen transportation fuel production. We're very excited about that and applaud that initiative from the Commission. We recommend that the Commission explore additional opportunities to invest in renewable hydrogen research and development and specifically to identify renewable hydrogen supply gas relative to the projected vehicle adoption over the next several years and then with specific focus on the impact of the Executive Order call for 200 stations.

So that said, we'll make sure that the rest of our comments are submitted in written form. We encourage the Commission to adopt the proposed budget plan and we

certainly appreciate the opportunity to speak today. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Anyone else on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Then let's transition to Commissioner Scott.

COMMISSIONER SCOTT: Okay. Great. Well, I would like to start by commending Jacob for the excellent job he continues to do on the Investment Plan ever year. And this year has been no exception, so thank you, Jacob, for your fantastic work.

As he mentioned, his presentation this year is unique in that the Governor's proposed budget provides specific guidance for the types of fuels and technologies for the funding and adds additional funding. And it's got a strong focus on zero emission vehicle infrastructure in support of his most recent -- Governor Brown's most recent Executive Order, which called for 5 million electric vehicles by 2030, 250,000 charging points to support that by 2025 and also 200 hydrogen stations by 2025.

So this Investment Plan reflects that direction and places an emphasis on investing in the infrastructure necessary to move zero emission technologies into the mass market.

And it's, as you all know, I should step back and mention the transportation sector when you include refining, is 50 percent of the greenhouse gasses in the state. So it's important to make this transition to meet our greenhouse gas goals, to meet our clean air standards, our petroleum reduction goals. And as Eileen mentioned in her comments, also to build our work force in our clean energy -- the transformation that we're making.

So over the last ten years, we as a state, have provided strong support for advancing the zero emission vehicle market. And we've seen really exciting progress. There's close to 400,000 zero emission vehicles on the road today, more than 44 light-duty models are available. And the number of medium-duty and heavy-duty zero emission vehicle demonstrations ongoing, buses, it's very exciting. And to support that market growth it's critical that we invest in infrastructure that will be necessary to enable these technologies. So with this funding the Energy Commission will be playing a critical role in that.

I want to take another moment just to say thank you so much to our Advisory Committee for lending their time, there expertise, their insights, as we develop these plans. I'm really excited about the direction that we're moving and I would like to encourage you all to approve the Investment Plan before you today.

COMMISSIONER HOCHSCHILD: Can we ask questions? Okay. I'd, first of all just really want to acknowledge Commissioner Scott, who has worked incredibly hard on this. I've seen firsthand the wide variety of stakeholders that you engage with and all the travel you have to do. And I just think we're really lucky as a Commission to have you in the role you're in.

I had a question for Jacob. And correct me if I'm doing great violence to the numbers here, but my understanding is the charging infrastructure -- you mentioned to get to 250,000, it's going to be between a billion and maybe 3 billion, is that?

MR. ORENBERG: Yes. That is based on our preliminary calculations for the total cost. That's not exclusively the state incentive (indecipherable) that is all income.

COMMISSIONER HOCHSCHILD: Right. Oh. Okay. So I believe the number is about $10,000 per charger? And I'm just wondering, looking ahead, if we have any sense of expected cost reductions as that industry gets to scale. If we have any insight on what kind of economy of scale we might achieve as we go from where we are now, which is whatever 15,000 chargers or something like that to 250,000 and beyond. If we have any insight from the industry or if there's other stakeholders here who could speak to that?

MR. ORENBERG: Yes, it is about $10,000 per Level 2 charger. And that varies wildly based on the site and location and the type of facility. It's significantly cheaper for a single-family residential, but a shared public charger is about 10,000 per charger or 10,000 in general. The DC fast chargers are significantly more expensive.

For both of them, we are expecting cost reductions in both equipment and installation over the years as manufacturers become more savvy in building these things and find out ways of reducing costs, they --

COURT REPORTER: Can you move the mic just a little closer? Thanks.

MR. ORENBERG: My apologies. So we do expect the price to come down as manufacturers find ways to make these into commodities and for the ramp-up production. And we also expect the cost of installation to possibly come down as contractors and cities become more familiar with installing these.

COMMISSIONER HOCHSCHILD: Uh-huh. Uh-huh. Okay.

COMMISSIONER SCOTT: So I will move approval of Item 7.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: So all those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This item passes 4-0. Commissioner McAllister is absent at this moment.

So let's go on to Item 8.

MR. ORTIZ: Good afternoon, Commissioners. My name is Tomas Ortiz and I'm from the Emerging Fuels and Technologies Office in the Fuels and Transportation Division.

Today I'm proposing for approval two agreements that show our continued support for biofuels projects. These proposed agreements are a result of our recent Community-Scale and Commercial-Scale Advance Biofuels Productions Facilities Solicitation.

The first is an agreement with Anaheim Energy LLC for just over $3 million, to re-establish and convert an existing non-operational bio solids processing facility into a biofuel facility capable of converting collected organic waste into renewable natural gas.

The proposed fuel will have a negative carbon intensity, will produce more than $110 million in combined local and statewide economic activity and create up to 30 high-wage jobs in a disadvantaged community suffering from extremely high pollution and depressed economic conditions. At full capacity this will displace approximately 2.5 million diesel gallon equivalents of fuel and eliminate 57,000 metric tons of carbon emissions annually.

Staff is also recommending approval of CEQA findings and a statement of overriding considerations for this project based on the lead agency, City of Rialto and their CEQA documents which include a Final Environmental Impact Report, Mitigation, Monitoring and Reporting Program, and statement of overriding considerations.

Staff has reviewed and considered the lead agency's CEQA documents and determined that the proposed project falls within the scope of the lead agency's CEQA documents and the project will not result in any new environmental impacts than those already considered by the lead agency.

Staff has also determined that the mitigation measures identified will eliminate or mitigate any significant impacts associated with the project to less than significant levels except for air quality impacts. As to the air quality impacts staff has determined that economic, legal, social, technological, or other benefits of the project outweigh the significant unavoidable and un-mitigatable environmental impacts.

These benefits include revitalizing an existing non-operational industrial site, creating economic opportunities, and reducing regional GHG emissions.

The next agreement for just over $1.8 million, will allow the Monterey Regional Waste Management District

to fuel their fleet with renewable natural gas created from decomposing organic waste material. This biogas is captured from the District's operating anaerobic digestion composting system and landfill gas wells located at the Monterey Peninsula Landfill.

In the future, biogas from the Monterey One Water regional wastewater treatment plant may also be included. This operation will also have the potential for scale-up in production to serve other local and regional fleets.

The landfill gas that will be converted and upgraded to renewable natural gas will greatly reduce carbon emissions. This project will help California reach its goal of reducing solid waste by 75 percent and prohibiting disposal of commercial organics in landfills by 2020.

This project is expected to produce almost 521,000 diesel gallon equivalents of transportation fuel and eliminate approximately 5,600 metric tons of greenhouse gas emissions annually. This is expected to add 5 long-term jobs and reduce methane emissions in a disadvantaged community.

I'd like to thank you all for your consideration of these items. We have Dr. Yaniv Scherson and Andrew Dale on the phone for Anaheim Energy LLC and Guy Petraborg from Monterey Regional Waste Management District and Tim

Flanagan and Paul Stout of Cornerstone Environmental Group, who is Monterey's Waste Management District's main subcontractor for this grant, are here to answer any questions.

CHAIRMAN WEISENMILLER: Great. Thank you.

Let's start with anyone in the room who wants comments, particularly Tim Flanagan. Please come on up.

MR. FLANAGAN: Thank you, Mr. Chair, Members of the Commission. I feel a little bit like Forrest Gump being here today at a landmark decision. Congratulations. Thank you so much for wonderful benefits for the environment in California, so nice to be a fly on the wall.

For our project here, the Monterey Regional Waste Management District is a special district. We were formed 67 years ago when the folks in Monterey County thought it wasn't a good idea to burn garbage on the beach in Monterey. So our district was formed and we've been an environmentally responsible solid waste manager for the past 67 years.

We work under five pillars of sustainability. We have our people. We have finance. We have the environment. We have community. We have innovation. This project touches all five pillars and our mission of turning waste into resources. This facility will support biogas, which will make the first carbon negative fuel collection

fleet in the Central Coast. So it is an amazing effort that we've gone through about a ten-year effort to get to this point.

We are very grateful to the Energy Commission staff and your ability to help these grant funds get us to the finish line that we've got here. This is going to be a great benefit for the community on our mission of turning waste into resources, we're very grateful for this, so almost three-quarter million residents in the regional area. We serve Santa Cruz, San Benito and Monterey County, who are going end up being the beneficiaries of this conversion of biogas to a carbon negative fuel.

So we thank you again. We look forward to your approval on that. And we're very grateful for the opportunity to be here. Thank you.

CHAIRMAN WEISENMILLER: Sure. Thank you.

Anyone else in the room? Let's go on the line and turn to Anaheim Energy.

MR. SCHERSON: This is Yaniv Scherson with NI Energy. And there's some echo in the background as I talk.

CHAIRMAN WEISENMILLER: You may need to mute your line, if you're listening to us on the line.

MR. SCHERSON: Okay, I'm listening on the telephone. But if I mute my line I won't be heard.

CHAIRMAN WEISENMILLER: Go ahead. Try what you

can.

MR. SCHERSON: Okay. Well, so I just wanted to express our sincere gratitude and appreciation for today's meeting and comment that we're thrilled to be part of a syndicate of multiple agencies built on a flagship (indiscernible) that will be the largest in the state for converting organics from landfills, producing natural gas.

I supported the project -- broad support from California Energy Commission, CalRecycle, U.S. Department of Energy, as well as the City of Rialto and major utilities such as from Anaheim and Southern California Edison and our partner Waste Management for (indecipherable) renewable natural gas produces the -- to run the vehicles (indecipherable).

I'll pause there and I just want to add if there are any questions available (indiscernible)

CHAIRMAN WEISENMILLER: Okay. Thank you for being there.

Anyone else on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay. Commissioner Scott?

COMMISSIONER SCOTT: Not too much to add to the excellent presentation. I just want to say thank you very much for being here and also the Anaheim for dialing in.

And we also agree with the mission of turning waste into resources that we're excited about this project. And I recommend it to you.

So if there are no questions, I will move approval of Item 8.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: Item eight passes 5-0. Thank you. Let's go on to Item 9.

MS. HAAS: Good afternoon. I'm Tami Haas with the Fuels and Transportation Division and through the Alternative and Renewable Fuel and Vehicle Technology Program we are seeking approval to enter into an agreement for $1.35 million with Los Angeles Trade Technical College for workforce training and development activities. If approved, funding for this agreement would provide education and training to improve career opportunities and earning potential in disadvantaged communities, while simultaneously supporting the state's clean transportation goals.

Banding together in 2016, multiple communities in Southern Los Angeles, consisting of 200,000 residents, won a federal "Promise Zone" designation, which is shown here. The region adopted the title South Los Angeles Transit

Empowerment Zone or SLATE-Z, with the intent to connect south LA through transportation, education and economic mobility. Based on 2011 American Community Survey data, the SLATE-Z region has a poverty rate of 37 percent. LATTC serves as the lead agency for the SLATE-Z and includes a Transportation Workforce Institute. Next slide.

LATTC's Transportation Workforce Institute has strong industry relationships with LA Metro and other transit agencies and works with many industry partners who have contributed to the development of the Advanced Transportation and Manufacturing Pathway.

Under this agreement, LATTC proposes to use five strategies. First, to educate community youth through the development of career pathways and awareness campaigns for K through 12 students, including the expansion of the LATTC Youth Transportation Academy and the LATTC STEAM Academy.

Second, increase the pool of potential clean transportation professionals in the community through outreach, recruitment, and marketing to SLATE-Z adult residents employing help from 53 community-based agencies that are part of SLATE-Z.

Third, increase career growth opportunities for SLATE-Z residents through up-skilling and incumbent worker training in clean transportation technologies. This targets residents currently in transportation or energy

related positions whose skills are not up with the latest technological developments. This strategy will also include retraining maintenance technicians and drivers of electric school buses.

Fourth, to increase the number of new industry entrants in the SLATE-Z community who are trained in clean transportation technologies, including short-term training and certificate programs.

And finally, it will increase the capacity of community college faculty to provide state-of-the-art training in advanced vehicle technologies. Next slide.

In summary, this agreement seeks to increase the number of residents in disadvantaged communities who have an opportunity to improve their career and earning potential; start educating the community at a young age, giving elementary through high school students a vision and pathway into a good paying career and raise awareness of the benefits of clean transportation technologies in areas that will benefit greatly from them.

We have a representative from LATTC on the phone who would like to make a brief comment and with that we're ready to answer any questions.

CHAIRMAN WEISENMILLER: Thank you.

So let's start with is there anyone in the room with any comments? Then let's go to the phone line.

MS. BARAJAS: Good afternoon. My name is Leticia Barajas. And I'm Vice President at Los Angeles Trade Technical College. I wanted to thank the Commission for the opportunity to consider this proposal given that we seek, through workforce development and workforce training to transform the South Los Angeles community. We see this initiative as a very key element in ensuring that residents of South Los Angeles have an opportunity to understand, to be exposed to, and have access to these training opportunities.

We just wanted to, on behalf of my college President, Lawrence Frank, and the Los Angeles Community College District, thank the Commission for the opportunity to consider this proposal.

CHAIRMAN WEISENMILLER: Thank you.

Anyone else on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Let's transition to Commissioner Scott again.

COMMISSIONER SCOTT: Okay. Terrific, Well we've got a nice array of ARFVTP projects for your consideration today. This one obviously is in the workforce training area. And as Tami ably noted in her presentation, this is just really exciting. I mean it's an opportunity to help ensure that low-income and disadvantaged communities,

specifically this community here in L.A., has a chance to become a well trained workforce with living wage jobs on these clean transportation technologies.

So if there are no questions, I will move approval of Item 9.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This item passes 5-0 also. Thank you. Let's go on to Item 10.

MR. ONG: Good afternoon Chair and Commissioners. My name is Matthew Ong, Air Pollution Specialist from the Emerging Fuels and Technology Office of the Fuels and Transportation Division.

I'm here presenting for possible approval of a contract with the University of California, Irvine, for $350,000 conduct a one-year research paper-study. The study will create a roadmap for the development of renewable hydrogen production facilities in California, similar to the analysis and work they had done in the past for us for hydrogen refueling infrastructure.

Dedicated hydrogen fuel production that also complements the state's requirements for 33 percent renewable hydrogen is critical to support the 200 hydrogen refueling stations that are expected to be operational in

the state by 2025. This study will provide insight into factors affecting where and how future funding may be needed to support this area.

Thank you for your consideration of this item. And I am available to answer any questions you or others may have.

CHAIRMAN WEISENMILLER: Thank you.

Any comments from anyone in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Well, again transition to Commissioner Scott.

COMMISSIONER SCOTT: So I think a few items back we heard kind of the importance of looking into this industry, understanding hydrogen, renewable hydrogen, where it's going to come from and making sure that we have enough to fuel the vehicles and so I support this research. And seeing no questions, I will move approval of Item 10.

CHAIRMAN WEISENMILLER: All those in favor?

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: Thank you. All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This item passes 5-0. Thank you.

Let's go on to Item 11.

MR. LERMAN: Good afternoon, Commissioners. My name is Sam Lerman and I'm an Engineer with the Fuels and Transportation Division. I bring for approval of two agreements for the deployment of battery electric infrastructure for freight vehicles operating at the Ports of Los Angeles and Long Beach.

These projects will lead to transformative changes in California's freight industry while also providing significant environmental benefits to disadvantaged communities in the South Coast Air Basin.

At full utilization, the Energy Commission's investments of these two grants will lead to the deployment of 47 zero-emission yard tractors and forklifts, which will lead to the reduction of nearly 3,000 metric tons of carbon dioxide and 6 tons of nitrous oxide, in a federally designated non-attainment area for Ozone.

Additionally, the recipients have secured significant match funding from outside sources for the near-term deployment of 16 zero-emission yard tractors that will utilize infrastructure investments under these two agreements.

Each of these projects will incorporate battery energy storage to reduce demand charges for the terminal operators. The Port of Long Beach project will incorporate

DC fast charging via the Combined Charging System 1.0 standard, which is an important and innovative step toward commercialization of heavy-duty technologies by utilizing a common charging interface.

The Port of Los Angeles Project will deploy a wireless charging concept for yard tractors that allows for charging with minimal training of vehicle operators and minimal interruptions to a fleet's normal course of business.

Such innovative concepts support the deployment of advanced freight technologies on a broad scale, beyond the Energy Commission's direct investments in these two projects.

Additionally, these agreements are directly supported by the Energy Commission's action items under both the Governor's Zero Emission Vehicle Action Plan and the California Sustainable Freight Action Plan.

So thank you for your time. I'm happy to answer any questions you may have.

CHAIRMAN WEISENMILLER: Great. Thank you.

Let's start with comments from parties in the room. I've got two cards, one from the Port of Long Beach.

MR. CAMERON: Thank you Mr. Chair and Commissioners. My name is Rick Cameron. I'm the Manager of Planning Environmental Affairs for the Port of Long

Beach. And I want to send my appreciation to you, Mr. Chair. About four years ago plus we held a little round table down at the Port of Long Beach --

CHAIRMAN WEISENMILLER: I remember that.

MR. CAMERON: -- with then CTC Commissioner Fran Inman. And since then, with Commissioner Scott's leadership, with the Port's (indecipherable) collaborative, I think we've really come a long way. I want to appreciate the staff, all their hard work over the years, lining up our missions of where we need to be respectively.

Probably four years ago the Energy Commission probably would be like why is the Port Authority on right now? But I think we know why and so I really appreciate that.

I think this award right here is very important for us, as we start to talk about infrastructure. Infrastructure is going to be key for us as we start to move forward working with our marine terminal operators in understanding what the next evolution of this next platform is to support zero emissions on the marine terminals.

So we're very appreciative of your leadership. And once again of staff's hard work in working with my team on this application as well as other applications. I've only gotten good feedback from my team about working with CEC staff and I just want to send my appreciation. So

thank you so much.

CHAIRMAN WEISENMILLER: No, thanks for being here. I wish you would note that Fran is now Chair of the CTC.

Let's go to the Port of Los Angeles.

MR. GOLDBERG: Good afternoon. My name is Jacob Goldberg and I'll be the Project Manager for the Port of Los Angeles on this Advanced Infrastructure Demonstration Project. We would like to express our gratitude to the CEC for continuing to provide support for the development of clean technologies for freight vehicles at the Port and particularly for selecting this proposed project for funding.

This grant targets the installation of advanced infrastructure, something that is often overlooked in sorely needed in the goods movement sector. As zero emissions vehicles and equipment are getting closer and closer to final commercialization and deployment, this project will give us an opportunity to model an idealized version of the charging infrastructure necessary to support the eventual operation of a fully zero emission container terminal.

Again, we would like to thank CEC staff for recommending our project for funding and look forward to conducting this demonstration. Thank you.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Anyone else in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Again, transition to Commissioner Scott.

COMMISSIONER SCOTT: Great. Well, I just want to say thank you so much to both Rick and Jacob for taking the time to be here today and the ports for their partnership with the Energy Commission and their willingness to really help pioneer these technologies. We really are kind of kicking the tires, taking all of this on a shakedown run to see how is it going to work and I appreciate that very much. And then once we get it working, how to accelerate it into the market space.

And also thank you so much for your kind words about our great staff. I know they work hard every day to be good partners with you as well. So if no questions on this, I will move approval of Item 11.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thank you.

Let's go on to Item 12.

MS. WILLIAMS: Good afternoon, Chair and Commissioners. I'm Sarah Williams with the Emerging Fuels and Technologies Office.

Medium and heavy-duty diesel vehicles are a major source of greenhouse gas and particulate pollution. To minimize this, many local air districts have created incentive programs to encourage drivers and fleets to transition from diesel to compressed natural gas. Because these programs are underfunded, Energy Commission staff developed the Air District Natural Gas Vehicle Solicitation. Today for your consideration, we propose two agreements for funding.

First, South Coast Air Quality Management District is partnering with the Port of Los Angeles and Port of Long Beach to match the Energy Commission's $8 million with $6 million incentivizing the purchase of at least 140 low-NOx trucks.

Second, San Joaquin Valley Unified Air Pollution Control District will include the Energy Commission's $8 million in funding in their update to the Truck Voucher Program incentivizing the purchase of at least 80 low-NOx trucks.

These two agreements combined will remove 220 diesel trucks from service. Both projects service disadvantaged communities. Thank you for consideration of

these two agreements. I would be happy to answer any questions.

I understand on the line, we have Vicki White, Technology Implementation Manager at South Coast Air Quality Management District, who would like to say a few words and is open for questions, as well as Aaron Tarango, Supervisor of Strategies and Incentives Department with the San Joaquin Air Pollution Control District who's available to answer questions.

CHAIRMAN WEISENMILLER: Great. So let me start. Is there anyone in the room who has a comment on this? So let's go to the telephone line. Let's start with the South Coast again.

COMMISSIONER SCOTT: Vicki, are you there?

(No audible response.)

CHAIRMAN WEISENMILLER: Let's go to San Joaquin first, while we wait for Vicki.

(No audible response.)

CHAIRMAN WEISENMILLER: Okay. Go ahead.

COMMISSIONER SCOTT: Great. Well, I do want to say thank you to our friends at the air districts for their partnership here. This is another great project to get some cleaner vehicles out there on the road to replace some higher-polluting vehicles. And if there are no questions, I will move approval of Item 12.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thank you.

Let's go on to Item 13.

MS. PUREWAL: Good afternoon, Commissioners. My name is Sharon Purewal and I am with the Fuels and Transportation Division's Zero-Emission Vehicle and Infrastructure Office.

I am seeking approval of eight agreements submitted for Phase I of an expected two-phase solicitation effort to develop comprehensive and replicable electric vehicle-ready community blueprints. With the eight proposed projects in Item 13 will support and accelerate California's goals to increase zero emission vehicle infrastructure under the Zero Emission Vehicle Action Plan and will reduce barriers to electrified transportation access in disadvantaged communities.

Specific projects may also support the California Sustainable Freight Transportation Plan and efforts to accelerate the deployment of advanced energy communities.

The completed blueprints will serve as replicable step-by-step guides for communities and regions throughout California, namely disadvantaged communities and areas that

do not have a background in transportation electrification.

Tasks under these agreements range from analyzing grid impacts of potential infrastructure, engaging potential electric vehicle charging station site hosts and compiling a list of sites, workforce development in the electrified transportation and/or alternative fuel sector and community engagement in the planning process. Each award amount is around $200,000 in addition to a 25 percent cash or in-kind match share contribution from the recipients.

With that, I would like to thank you for your time and consideration of these items. I am available for any questions you may have.

And I also know from the Port of Long Beach, Rick Cameron is in attendance. And I'm not sure if he would like to provide any comments in support of this item.

CHAIRMAN WEISENMILLER: Great. Thank you.

So we'll start with comments from parties in the room. I've got two cards, so let's start with Cameron.

MR. CAMERON: Mr. Chair, Commissioners, thank you again for the opportunity. I'll be brief here. This is another one of these opportunities that on the surface when my port staff looked at this and working with our consultants, it didn't look like it was applicable. But we're going to be the first sea port that really is looking

for a zero emission kind of roadmap in a planning document. It goes back to the previous item you just approved for us in terms of the infrastructure and having that bigger vision. So I wanted to say thank you again and thank you again to staff.

CHAIRMAN WEISENMILLER: Great. Thanks for being here.

Let's go to City of Santa Clara, Silicon Valley Power.

MS. HUGHES: Good afternoon Mr. Chair and Commissioners. My name is Kathleen Hughes from the City of Santa Clara, Silicon Valley Power. And I just want to say on behalf of our city, the utility and our partner Siemens, we'd like to thank you for this grant opportunity. And we look forward to developing hopefully a replicatable, smart blueprint that will not only help our city embrace this ever and rapidly changing transportation future, but provide guidance to others and make it something that we can all grab onto and deploy. Thank you very much.

CHAIRMAN WEISENMILLER: Thank you. Thanks for being here.

Anyone else in the room or on the line with comments on this item? Please, go to Bonnie. Mic, oops, okay. Got it?

MS. HOLMES-GEN: Is it on now?

CHAIRMAN WEISENMILLER: Yes.

MS. HOLMES-GEN: Okay. Great, I didn't see the green light.

Chairman Weisenmiller and Members, Bonnie Holmes-Jen with the American Lung Association in California. And in line with my previous comments, I just wanted to express our support for this item and the other funding items that you're bringing forward under the ARFVTP. But we've been particularly very anxious to see how the Energy Commission can spur local leadership. It's so important to have these local champions building excitement and building the EV readiness at the local level. And it's critical to have that state and local partnership. So we just really are excited about this step and look forward to engaging however we can to help this local blueprint and helping with local EV rollout.

CHAIRMAN WEISENMILLER: That's great. Thank you. Thanks.

Anyone else in the room or on the phone?

(No audible response.)

CHAIRMAN WEISENMILLER: Commissioner Scott, go ahead.

COMMISSIONER SCOTT: And before I jump in I should have mentioned that with respect to item 13c I want to disclose that I'm a member of the UCLA Luskin Center for

Innovations Advisory Board. They're one of subcontractors under 13c.

And on this project I am very excited about this one as well. I want to thank our team for putting this together, doing such a great job, but also the EPIC team. The EPIC challenge with the advanced energy communities I thought was fantastic, a great way to bring local communities along, help with the planning and then roll out the plans that they've put together. And I said, "Hey, why can't we do that with charging?" And here we are doing that with charging.

So I want to thank the EPIC team for their great idea, letting us co-opt it on the charging side and my team on the transportation for putting it together. And if there's no questions on this one, I will move approval of Item 13.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This is also for 5-0. Thank you.

Let's go on to Item 14.

MR. MEYER: Good afternoon Chair and Commissioners. I'm Christopher Meyer with the Building Standards Office. I'm very happy to be bringing you

something slightly simpler than we had earlier this morning.

So this is a technical support contract with Bruce Wilcox for 4 million over just over three years. And it's the first of two technical support contracts we intend to bring before you, before the end of the fiscal year in support of the Building Standards.

And basically this contract provides the critical technical support in the building sciences that we need for implementation of both the 2019 Energy Code and the development and implementation of the 2022 Energy Code.

And anyways, so with that I'd just want to request approval of this contract and I'm happy to answer any questions.

CHAIRMAN WEISENMILLER: First, are there any comments from anyone in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Then let me again transition to Commissioner McAllister.

COMMISSIONER MCALLISTER: So these contracts for res and non-res have been just a key way that we get the job done. It's really an all hands on deck kind of thing and we available ourselves of the skills we have in the building, but also it's just not enough to cover the bases in the time that we have. And so we contract quite a bit

of that work to others and kind of work as a team.

So this contract is for the residential side of that. And I guess I just want to be clear, the next contract for technical support would be for non-res, correct?

MR. MEYER: Yes. That is correct.

COMMISSIONER SCOTT: Okay. So we'll see that down the road. So I am fully in support of this. We've got, as we heard this morning, we've made one big step forward, but 2022 is going to be another big step forward. And we have a lot of implementation to do between here and there. So I would support this strongly.

So I'll move Item 14.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This item passes 5-0. Thank you.

MR. MEYER: Thank you.

CHAIRMAN WEISENMILLER: Let's go on to 15. I guess there's a question about Commissioner Scott's audio?

COMMISSIONER SCOTT: We can hear it in the room, right? We're hearing that it can't be heard on the phone. Can we get our tech folks, maybe I need a new mic or?

(Off mic colloquy.)

CHAIRMAN WEISENMILLER: Okay. So 15, let's go.

MR. SITU: Good afternoon Mr. Chairman and Commissioners, my name is Gavin Situ. I am a Mechanical Engineer of the Local Assistance and Financing Office in the Efficiency Division.

Today, I am requesting approval of an Energy Conservation Assistance Act, also known as the ECCA, 1 percent loan to the Kern Valley Healthcare District. The application is for a $1,918,560. ECAA-Regular funded loan to implement the installation of six energy efficiency measures. The measures include LED lighting upgrades, new variable frequency drives on chilled water plant pumps, new variable frequency drives on cooling tower fans, new high efficiency chiller with variable frequency drive, new high efficiency boilers and new central plant chiller controls.

Upon completion, this project is estimated to save approximately 740,444 kilowatt-hours of electricity and 18,399 therms of gas annually, resulting in an annual cost saving of $125,570. The combined project is estimated to save approximately $1,920,939 over the effective useful life of the equipment.

Energy Commission staff has determined that this loan is technically justified. And based on the loan amount, the calculated simple payback for this loan will be approximately 15.3 years, which is within the 17-year

payback period requirement for the loan program and is within the effective useful life of all measures.

With this information I request your approval of this item for Kern Valley Healthcare District. I'm happy to answer questions you may have.

CHAIRMAN WEISENMILLER: Thank you.

First, any comments on this item from anyone in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay. Commissioner McAllister.

COMMISSIONER MCALLISTER: Thanks very much for the details on the measures. Those are great measures, actually. We see a lot of lighting. We see a lot of PV, but the mechanical I think we ought to do a little bit more outreach to try to get a lot of those variable speed technologies in there, because those really have a long-term bang for that buck. So this is a great project. And I am happy to move --

COMMISSIONER HOCHSCHILD: Let me -- Commissioner McAllister, what is the limit on the payback time he referenced for ECCA

COMMISSIONER MCALLISTER: It's 17, I think 17 or 18, yeah.

COMMISSIONER HOCHSCHILD: Does that give a limit

to the program, put a maximum?

COMMISSIONER MCALLISTER: Yeah, there's a maximum on it. Yeah.

COMMISSIONER HOCHSCHILD: It is 17 years?

MR. SITU: It's correct, for a 1 percent loan it's 17 years. For 0 percent, it's 20 years.

COMMISSIONER HOCHSCHILD: Got it. Okay. Thank you.

COMMISSIONER MCALLISTER: And we try to also -- staff tries to also do the projects first that the payback is not longer -- if the lifetime of the measure is funded or less than that, then try to make sure it's within the lifetime of the actual item.

COMMISSIONER HOCHSCHILD: Great.

COMMISSIONER MCALLISTER: But I'll move Item 15.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor if item 15.

(Ayes.)

CHAIRMAN WEISENMILLER: This item also passes 5-0. Great.

COMMISSIONER SCOTT: Can I just do a quick check?

(Check for audio issues.)

CHAIRMAN WEISENMILLER: Great. So let's start on 16.

MS. SNYDER: Good afternoon, Chair and Commissioners. My name is Katarina Snyder. I'm here with the Energy Research and Development Division.

Today we seek your approval for a proposed agreement with Lawrence Berkeley National Lab improving the life-cycle emission estimates from natural gas imported to California, as mandated by the Legislature.

The research team will obtain natural gas samples from major suppliers and pipelines delivering natural gas to California and measure their chemical properties, including concentrations of hydrocarbons, carbon dioxide, nitrogen, hydrogen sulfide, and variants of elements commonly called isotopes.

This research is innovative, because it will apply a newly developed technique which allows us to detect and quantify using molecules with more than one heavy isotope. The testing methods could help to trace origin of gas and, for example, allow us to distinguish between man-made biomethane and thermogenic methane formed in the earth's crust.

This knowledge will allow us a better understanding of full life-cycle emissions from California's natural gas system. And the results of this project will be captured in publicly available database.

Staff recommends to approve this agreement.

Thank you for your attention and I'm happy to answer your questions.

CHAIRMAN WEISENMILLER: Thank you. First, any comments from anyone either in the room or on the line? Let me see if John from LBNL is on the line now?

MR. CONRAD: Yes. I'm here. I was just going to answer any questions anyone might have about some of the new isotropic methods we're using.

CHAIRMAN WEISENMILLER: Great. Thank you. As the Lead on R&D I have sort of reviewed this. It ties into some of my obscure past, but anyway it's certainly a good use of innovative new science to see whether or not we can actually make some headway in this area. So I certainly support this project.

COMMISSIONER DOUGLAS: I'll move approval of this item.

COMMISSIONER HOCHSCHILD: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thank you.

Let's go on to 17.

MR. CHEN: Hello, Chair Weisenmiller and Commissioners. My name is Peter Chen. I'm with the Energy Research and Development Division.

This proposed project with Efficient Drivetrains, Inc. will develop a production-intent heavy-duty compressed natural gas plug-in hybrid electric vehicle system for heavy-duty delivery truck application.

Efficient Drivetrains will be leveraging a collaborative partnership with companies in charge of engine calibration and fuel system integration to optimize their hybrid vehicle for high efficiency, performance, and ultra-low emissions, while reducing manufacturing costs by 40 percent compared to their current prototype. The CNG plug-in hybrid truck will be emissions tested at UC Riverside over typical real-world driving cycles that optimize over those cycles.

The CNG plug-in hybrid truck will be designed to have 35 miles of all-electric range to support an innovative geo-fencing feature that allows the vehicle to toggle into zero-emissions mode when it travels in disadvantaged communities.

The LA County Department of Public Works will be demonstrating the truck over a six-month period to test its optimized power train and zero emission geo-fencing feature.

If successful, this project will lead to a commercially viable CNG plug-in hybrid electric vehicle system that can be applied to the broad medium and heavy-

duty truck market.

We request your approval of this item at this time and I'm happy to answer any questions.

CHAIRMAN WEISENMILLER: Great. Thank you.

First, any comments from anyone in the room or on the line?

Then we'll transition. I think this is a really interesting project. I mean, obviously I was sort of fascinated by the opportunity on basically zero emission trucks. And at the same time, if you think about the charging infrastructure question, having the hybrid opportunities open up could really be a game changer there. So again, this is pretty interesting. We'll see what comes out of it, but I think it's certainly a good idea to pursue this day at this time.

COMMISSIONER HOCHSCHILD: Mr. Chairman, can you run -- we're doing 20 million a year on this chunk of the natural gas funding.

CHAIRMAN WEISENMILLER: It's about 25. Actually, we're trying to increase the natural gas funding roughly by 59. We're talking PUC. Obviously, there's a lot of innovation needed in the gas sector, some of its safety, some of its adaptation.

COMMISSIONER HOCHSCHILD: And a lot of it's going to pipeline safety, right?

CHAIRMAN WEISENMILLER: Actually, yeah after San Bruno, one of the things that became pretty clear was that it needed to be -- at that point it was like zero research from us on natural gas pipeline safety. That we really needed to step that up pretty seriously.

I think adaptation issues were also critical again as we look forward. Obviously, historically we've done a lot on the energy efficiency, but I think in terms of trying to take a broader view. But I think basically PUC is certainly interested in trying to move forward. I think at this point, part of the question is always what are we talking about and what's the potential trade-off?"

It's sort of trying to get some of the stuff on the table there for them to consider.

COMMISSIONER HOCHSCHILD: Right. I'd move Item 17, unless there's another comment.

COMMISSIONER SCOTT: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This item passes 5-0.

Thank you. Let's go on to Item 18.

MR. LORENZO: Good afternoon, Commissioners. My name is Michael Lozano representing the Energy Research and Development Division's Industrial Agricultural and Water Team. I'm here today to present a competitively bid

project on high efficiency process heating.

In California, approximately 400 trillion btus per year of natural gas is used in industrial process heating. New methods are needed to replace heat generated by fossil fuels with renewables. This solar thermal project integrates an improved solar collector with a new thermal storage system to create a process heating system that can provide heat efficiently at night or on cloudy days.

Under the proposed project GTI and UC Merced will demonstrate the technical performance and cost effectiveness of the emerging high temperature solar thermal with storage technology. This technology was originally developed in the ARPA-E funded Hybrid Solar System Project bench scale. This project will significantly scale up this project and it intends to reduce natural gas use in industrial process heating in an actual facility.

What you would see in this project is basically it's a tube within a tube with a secondary collector in between, a shiny, it looks like a flattened "W".

And what this does is it increases the magnification from 30 times, in a typical system now for a double effect solar system, to 67 times. So essentially we were having a magnifying glass that is twice the size,

achieving much higher heats.

This coupled with particle system for heat storage that's stored in an insulated hopper, we can achieve temperatures up to 650 degrees at the collector or 500 degrees, provided at the hopper.

The goal of this project is to improve the efficiency of a typical real-world process heating system by 20 percent and to show a payback of less than five years. Other goals include validating the system for high temperature use, which is over 500 degrees Celsius and for longevity.

This $1.4 million project benefits from $1.5 million in match, which is well above the 10 percent required by the bond. The term of this project is 45 months and will be conducted at UC Merced and at a site to be determined in a California IOU service territory, in Southern California.

We request approval of this project and I'm prepared to answer of these questions.

CHAIRMAN WEISENMILLER: Great. First, are there any comments from anyone in the room or anyone on the line?

I'll talk about I think all of us have been down to UC Merced and certainly been really excited by the sorts of things they're doing in the solar area, particularly in the solar thermal. And as you indicated a lot of our

industrial usage, thermal energy comes from basically natural gas.

No one in the world has made any case of electrifying that as anywhere close to economic. It's just sort of mind boggling on the cost. So if we could actually do that with solar thermal, particularly high quality, which certainly is an area where Merced really specializes that could really be a game changer. So it's pretty exciting. And it's also good to continue to build off of our relationship with RPE. We've tended to pass technologies back and forth over time.

COMMISSIONER HOCHSCHILD: Which is still going, yeah. In fact, I think they increased the budget.

CHAIRMAN WEISENMILLER: I think so, yeah in whatever message Congress is sending back.

COMMISSIONER HOCHSCHILD: Do you need a motion?

CHAIRMAN WEISENMILLER: Yeah.

COMMISSIONER HOCHSCHILD: I move Item 18.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: So this item passes 5-0. Thank you.

MR. LORENZO: Thank you.

CHAIRMAN WEISENMILLER: Let's go on to 19.

MS. GOULD: Good after. I'm Angie Gould from the Energy Research and Development Division and I'd like to request your approval for a contract with Navigant to develop a distributed energy resources researches or a DER research roadmap.

The team will work with a wide variety of subject matter experts in distribution-level technologies like rooftop solar, smart inverters, demand response, and distributed energy storage to identify the most promising avenues of research in the near, mid and long-term that provide the greatest benefits to California ratepayers.

I'm available for any questions you may have, and staff from Navigant are on the phone line prepared to answer questions as well.

CHAIRMAN WEISENMILLER: Great.

Great, let's start with anyone in the room have any comments? Anyone on the line, so that would be Navigant?

MR. HANSELL: No direct comments, just here for questions if there are any.

CHAIRMAN WEISENMILLER: Okay. That's good. Obviously, all of us are trying to move forward on DER. We've had the joint roadmap activity with ISO and the PUC that seems to be more focused on some of the technologies. And again, I think we did continue to move in this

direction of nailing things down.

COMMISSIONER DOUGLAS: So I agree and I will move approval of this item.

COMMISSIONER SCOTT: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: So this item passes 5-0. Thank you.

MS. GOULD: Thank you.

CHAIRMAN WEISENMILLER: So let's go on to 20.

MR. FRIEDRICH: Good afternoon, Chair Weisenmiller and Commissioners. My name is James Friedrich and I am with the Energy Research and Development Division. I am here today to recommend approval of a $3 million contract with Industrial Economics Incorporated to develop and pilot methods to evaluate the benefits of projects funded through the EPIC program.

One of the primary goals of the EPIC program is to provide benefits to the ratepayers in California's IOU service territories. The CPUC defines these "ratepayer benefits" as improved grid reliability, lower electricity costs, and increased safety. Effective evaluation of ratepayer benefits is crucial to ensuring the program is adhering to its goals and using ratepayer funds efficiently and effectively.

However, evaluating the ratepayer benefits of EPIC-funded projects presents many challenges. First, the EPIC project portfolio is diverse and complex, spanning many different technology categories in various stages of research, making it difficult to develop a comprehensive approach.

Second, it often takes several years from the time a project is funded until the innovation is adopted in the market or incorporated into practice. This means that ratepayer benefits not only depend on a technology's ultimate success, but also its market success. This contract will help us incorporate these future uncertainties in our benefits estimation.

Finally, some of the intangible benefits of R&D, most importantly being the knowledge gained through the research process are difficult to assess. So this contract will help us do that as well.

Industrial Economic Incorporated, our proposed contractor and its team, are uniquely well qualified to tackle these challenges, having undertaken similar efforts with DOE and NYSERDA Research Programs. They will support the EPIC program by developing a comprehensive and defendable framework for estimating the benefits of EPIC-funded projects. The outputs of this project are expected to help the EPIC program better evaluate ratepayer benefits

based on best practices and well-vetted methods and in documenting and reporting the impact of EPIC's investments.

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

CHAIRMAN WEISENMILLER: Great. Thank you. First, are there any comments from anyone in the room or on the line?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay. So I'll transition to the Commissioners. Again, as the Lead in this area I think basically trying to develop more sophisticated tools and make state of the art here is pretty critical. We'll see what comes out of it, but it's probably worth an effort to try to understand the best practices.

COMMISSIONER MCALLISTER: That's great. I'm totally supportive of having better information, so I'll move item 20.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thank you.

MR. FRIEDRICH: Thank you.

CHAIRMAN WEISENMILLER: Let's go on to 21.

MR. O'HAGAN: Good morning Chairman Weisenmiller

and Commissioners. My name is Joe O'Hagan. I'm in the Renewable Energy Unit of the Research and Development Division. The budget for the proposed contract with Energetics before you should be amended to $338,059.

The purpose of this proposed contract is to develop a research roadmap that will help inform future EPIC research addressing grid-connected utility scale renewable energy generation and storage technologies. The roadmap would address both emerging and mature technologies with the goals of reducing costs, increasing flexibility and reliability.

Staff requests that you approve this item and I am available for any questions.

CHAIRMAN WEISENMILLER: First, any comments from anyone in the room or on the line?

Okay. And again I'll transition to the Commissioners. As the Lead in this area, obviously what we try to do is make sure that we've got a roadmap to put some context of what we're trying to do in the specific projects. This is certainly an important area, that providing that sort of overall context is important.

COMMISSIONER SCOTT: I'll move approval of Item 21.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: Passes 5-0. Thank you.

MR. O'HAGAN: Thank you very much.

CHAIRMAN WEISENMILLER: Let's go to 22.

MR. MORI: Good afternoon, Commissioners. I'm Kevin Mori from the Energy Efficiency Research Office, Industrial, Ag and Water team.

The current state-of-the-art datacenter is limited by the speed at which servers communicate to one another in the datacenter network. Current technology uses electrical signals to communicate between servers and the network switchboard, but electricity is not as fast as the speed of light.

UC San Diego is developing a solution that can improve the server-to-server communication speed while keeping the energy use the same using fiber-optic technology.

The goal of this agreement is to demonstrate a fiber-optic architecture that uses partially-configurable optical selector switches and newly developed optical transmitters and receivers to increase server communication speeds to approximately 250 Petabits per second.

As fiber-optics are becoming the new standard for data transfer speed and energy efficiency, this architecture has the potential to double the energy

efficiency of datacenter processing compared to conventional electrical network switchboards.

And this is why staff is recommending approval of this competitively-bid agreement with UC San Diego with a federal cost share of $3.8 million dollars from the Department of Energy.

This project has a 19-month term and will be demonstrated on the campus of UC San Diego.

Thank you for your consideration, and I will be happy to answer any questions.

CHAIRMAN WEISENMILLER: Great. Well first any comments from anyone in the room or on the line? I think UC San Diego might be on the line?

MR. PAPEN: Hello?

CHAIRMAN WEISENMILLER: Yes. We can hear you.

MR. PAPEN: Yes. My name is George Papen. I am the Principal Investigator on the ARPA-E funded Lightweight Energy Efficient Data Center. I'd like to commend the California Energy Commission for having this program in the first place that allows us and other UC institutions to be competitive at the national level.

And I would like to thank particularly the CEC staff and Kevin in particular for bringing this to fruition.

CHAIRMAN WEISENMILLER: Great. Thank you.

Obviously data centers are one of our growing power needs. I think one gets to the efficiency question next as certainly China at this point, is looking at it, in terms of its next round of appliance standards, including data centers in that area. So it's sort of a -- this gives you a way to both improve the efficiency and the effectiveness if one can do this switch.

So again, it's a pretty interesting project and again builds off of our RVE connections.

COMMISSIONER DOUGLAS: So I'll move approval of this item.

COMMISSIONER MCALLISTER: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thank you.

Let's go on to 23.

MR. ERNE: Good afternoon, Commissioners. My name is David Erne. I'm with the R&D Division. I'm here to request approval for two new projects that are microgrids. These are in addition to the four that were approved at the March business meeting and part of the same grant funding opportunity. These two new ones complement those previous four and add some additional unique research opportunities. And both will produce commercializable

solutions.

The first one is with the San Diego Unified Port District. This project will develop a micro grid that will allow the port to island for 12 hours. It will also help support a U.S. DOD critical support facility as well as fuel supply to the nearby airport. It will also help significantly reduce greenhouse gas emissions, which is important for the port.

So this project is part of a larger redevelopment project at the port. And that was project was evaluated by the Port District in an environmental impact report. The staff have reviewed that documentation and we find that the microgrid will not cause any significant environmental impacts. However, the overall implementation of the redevelopment project will result in unmitigated impacts that warranted override findings by the Port District and warrant override findings by the Commission. And that was documented in the backup documentation for today.

The second microgrid is for Gridscape Solutions. This one will demonstrate the ability to virtually control five smaller microgrids that are supporting critical facilities in three disadvantaged communities in both South and North California. And those critical facilities will provide 911 emergency response support and emergency shelter, et cetera.

So we are looking for approval of those two projects and adoptions of the CEQA findings. We have Renee Yarmy from the port, who'd like to speak and Shawn Matejcek from the City of Fontana, who'd like to speak.

CHAIRMAN WEISENMILLER: Thank you. Let's start, is there anyone in the room with any comments? So let's go on the phone line. Let's start with the Port of San Diego.

MS. YARMY: Hello. This is Renee Yarmy. Can you hear me?

CHAIRMAN WEISENMILLER: Yes, we can.

MS. YARMY: Hi there. I'm Program Manager for Energy and Sustainability at the San Diego Unified Port, the Port of San Diego. On behalf of the Port District I wanted to express the appreciation of this grant funding opportunity. This microgrid project further supports San Diego's role for the Department of Defense (indiscernible) ports. And it will help to protect a critical terminal that (indecipherable) inject fuel supplies in San Diego International Airport.

(Audio cuts in and out.)

This project also furthers the resiliency and reliability goals the Port's terminal operation while certainly continue to reduce greenhouse gas emissions. And this project further supports the Port's (indecipherable) Plan by (indecipherable) electrical (indecipherable) while

promoting clean, green and efficient models for other port terminals (indiscernible).

So pending the approval of the Commission this grant will go before the Board of Port Commissioners for approval at our June meeting. In the meantime, staff has been working with our project partner's (indiscernible) kickoff meeting (indiscernible).

And I just wanted to express our appreciation to the Commission for considering this and I'm also available to answer any questions you may have.

CHAIRMAN WEISENMILLER: Great. Thanks for being there. It's actually good to see three separate port projects, right?

Yeah. Let's go on to the City of Fontana.

MR. MATEJCEK: Yes. Can you hear me?

CHAIRMAN WEISENMILLER: Yes, we can.

MR. MATEJCEK: Okay, great. As David mentioned, my name is Shawn Matejcek and I'm the Project Coordinator for the City of Fontana Public Works Department as well as the state's energy champion.

I'd like to personally thank the Commission on behalf of the City of Fontana for selecting Gridscape Solutions to demonstrate the business case for advanced microgrids in support of California's energy and GHG policies.

We are very excited to be participating in this grant program. The City of Fontana is the second most populous city in the County of San Bernardino, which is located in the Inland Empire, excuse me, which historically had some of the worst air quality in the state. As a disadvantaged community we love grant opportunities that allow us the ability to install projects and programs to reduce energy and GHGs.

In addition to the environmental impact this grant will have, solar emergency microgrids provide the City of Fontana additional dependency at our most critical offensive services (indecipherable), our police department and city hall. These buildings house our dispatch center, emergency operations center and traffic control to name a few.

With the infrastructure that this microgrid will provide, we hope to achieve the ability to plug and play additional solar and battery storage in the future, help reduce our carbon footprint to offset peak demand charges.

For every dollar that is saved on our energy costs that's a dollar that could be reallocated back to the city for services, programs and projects. Thank you for your time and I thank you for your opportunity.

CHAIRMAN WEISENMILLER: I was going to say and certainly congratulations for having the PUC business

meeting in Fontana, I think tomorrow.

MR. MATEJCEK: Yes.

CHAIRMAN WEISENMILLER: Yeah, so any other comments?

(No audible response.)

CHAIRMAN WEISENMILLER: Okay. Again, I'll transition to the Commissioners now. And I'll talk about it as the Lead commissioner in this area.

Obviously, as we struggle with climate change and we struggle with the fire issues, microgrids are one of the key tools to try to respond there. I think certainly on essential facilities, this is going to be a key role and so having more of the demonstrations as we try to make it more of the standard business case is pretty critical. I think certainly the Port of San Diego is a major logistical hub for San Diego. And I think certainly for Fontana, we understand how this can help them. So I think these are good projects.

Obviously we need to deal with adopting the override too. Again, I think it makes a lot of sense.

COMMISSIONER SCOTT: I agree. I think these are fantastic projects. And again, I want to say thank you to the ports for being our partners and collaborators in not just demonstrating clean transportation technologies, but in demonstrating all types of clean energy technologies, so

any other comments?

Okay. I will move approval of Item 23.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. And again this includes the override, obviously.

Let's go to 24, Jamie?

MR. PATTERSON: Good afternoon. I'm Jamie Patterson of the Research and Development Division. We released a solicitation on distribution system modeling tool to evaluate distributed energy resources. This solicitation went to research and developing improvements for distribution modeling software tool that can determine operational impacts and integration strategy for microgrids and distributed energy resources, including renewables, plug-in electric vehicles and advanced smart grid equipment.

There were four groups in this solicitation, with one agreement to be awarded in each group. These agreements were discussed with the CPUC and can be mapped to the decision of Commission Picker on grid modernization that was approved on March 22nd of this year.

The first agreement is with Electric Power Research Institute. This project will develop a microgrid

valuation and optimization software tool. The tool will guide microgrid design and distributed energy resource deployments. Using the tool will enable greater use of renewables in a microgrid, where they can more easily support the resiliency of the utility grid.

The second is with SLAC National Accelerator Laboratory. This project will develop a software tool to transfer models and data between the various programs that are used by utilities, distributed energy resource engineers and regulators in California and part of distribution engineering, planning and review activity.

Use of this tool will lower the ratepayer interconnection cost for distributed energy resources by improving the accuracy and timeliness of interconnection reviews and simplify compliance studies.

The third is with SLAC National Accelerator Laboratory. This project will increase the speed of Gridlab D distribution modeling software and improve the performance and accessibility to the community of smart grid modelers and distribution simulation users in California.

This will enable renewable implementers and policy makers to model how smart grid equipment, such as smart inverters, can support greater use of local renewable energy on the grid.

The last agreement is with Hitachi America. This project will develop an intuitive graphical user interface for the Gridlab D distribution modeling software that will provide a user friendly environment for researchers, planners, developers and regulators involved in advanced electric grid technology modeling.

The benefit of this is it expands the potential users of modeling from limited use among researchers to one that may include local communities, developers, public agencies and other organizations that are interested in putting more distributed energy resources on to the local grid.

We are requesting approval of the four agreements and Grant Mack, from the CPUC is here with me today to support these agreements. And I can answer any questions.

CHAIRMAN WEISENMILLER: Thank you. So let's start with public comment. Grant, great to see you.

MR. MACK: Good afternoon Chair and Commissioners, Grant Mack with the Public Utilities Commission. I first wanted to say congratulations on all the Business Meeting agenda items today. Wow! It's always a pleasure to come back to the Energy Commission and see the great work that you're doing and, of course, the interagency collaboration with the PUC.

But I'm here today namely to express our support

for the four distribution-related projects that Jamie just mentioned. As the Energy Commission is aware, the PUC under the distribution resource planning proceeding, with working with the electric investor owned utilities and stakeholders to identify optimal locations for the deployment of distributed energy resources that ideally will help the state in achieving its many policy goals.

These proposed projects will greatly assist the PUC in these efforts. I do want to point out a number of examples:

The first one, the microgrid valuation tool will be useful for long-term planning and system modeling as the tool will identify optimal locations for microgrids containing high percentages of distributed energy resources using cost benefit analysis.

The tool will also model the optimum combination of these resources within the microgrid to maximize both customer ratepayer and societal value.

In addition, several of the proposed projects support interoperability and make distributed energy resource planning and analyses programs more user friendly. Supporting interoperability between modeling tools will open the ability of electric distribution style planning tools and approaches to not just the PUC, but to more stakeholders, performing engineering, planning and review

activities.

Finally, the high performance Gridlab D tool will help increase the speed of distribution modeling to support distributed energy resource integration. This project will add value to the tools currently being utilized in the Distribution Resource Planning Proceeding, which includes an integrated capacity analysis and the locational net benefit analysis, a lot of analyses, by providing faster processing of information and enabling greater participation of researchers, planners, developers and regulators.

The PUC greatly appreciates the collaboration with the Energy Commission on these projects. And we look forward to participating in the Technical Review Committee. Thank you.

CHAIRMAN WEISENMILLER: That's great. Thank you. Thanks for being here. We certainly appreciate the feedback on these and the PUC is really struggling with finding cost effective DER. And hopefully, we can find some, particularly this sort of helping tools.

Any other comments on this from anyone in the room? I don't know if Tony Brunello still here? I assume not. Anyway, any comments from anyone on the phone?

(No audible response.)

CHAIRMAN WEISENMILLER: Then, again I think we've

all heard a good testament on why this is important. And we should move forward on it.

COMMISSIONER DOUGLAS: I move approval of this item.

COMMISSIONER MCALLISTER: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: This passes 5-0. Thanks.

Let's go on to 25.

MS. WEEKS: Good afternoon, Chair and Commissioners. I am Terra Weeks, Advisor to Commissioner Hochschild.

As requested, this is a recurring agenda item to provide updates and offer an opportunity for discussion of energy equity topics related to the 2018 IEPR Update.

On April 20th we held the first 2018 IEPR workshop in Arcata. The meeting consisted of panel discussions on the North Coast energy perspective, energy resilience and microgrids, and offshore wind.

A central discussion point was that the North Coast is energy-constrained due to geographic isolation and limited electric transmission and natural gas infrastructure. The area does have strong technical expertise, particularly at Humboldt State University and the Schatz Energy Research Center, as well as a community

choice energy program, the Redwood Coast Energy Authority.

One of the successes highlighted in the workshop was the completion of the award-winning Blue Lake Rancheria Microgrid, funded through the CEC's EPIC program. The microgrid provides local energy resilience, reduces greenhouse gas emissions, supports local clean energy jobs and saves the Blue Lake Rancheria an estimated $250,000 annually in electricity costs. Blue Lake just launched a second solar+ microgrid project that will be located at a fuel station and convenience store. And the Redwood Coast Energy Authority is also developing a solar and storage microgrid at the Humboldt Country Airport.

Looking ahead, a key challenge is the ongoing effort to provide electricity access to remote residents, particularly members of the Yurok Tribe. More than 50 percent of the Yurok Reservation does not have grid access and many residents pay a disproportionate share of income on alternatives, such as gas generators, propane, wood stoves, and kerosene. Some of the current barriers to electricity access are the tribe's remote, mountainous location situated between Pacificorp and PG&E territories; infrastructure right-of-way challenges; economic barriers, since so many residents live in extreme poverty and limited staff resources within the tribal government.

Lastly, as the Redwood Coast Energy Authority

progresses in the exploration of an offshore wind project along the North Coast, local stakeholders have expressed interest in remaining engaged in discussions on how to best mitigate concerns over potential ecological impacts and the possibility of opening the door to other offshore activities, including oil and gas drilling.

Next, on May 30th we will hold a joint agency workshop with the Energy Commission and Public Utilities Commission, on energy equity in multifamily buildings.

At this point, I would like to provide an opportunity for your discussion. Thank you.

CHAIRMAN WEISENMILLER: Okay. Thank you very much. I mean obviously at this stage we're trying to find a good opportunity for all of us to talk across various topics. Certainly the North Coast is a unique area, in which we haven't had a lot of activities there before. So I was really glad that that was spotlighted here and certainly those off your work now on the tribal site, trying to really up the context there. I don't know in terms of some of the energy efficiency or renewables, how to provide some of our tools in that sort of context.

COMMISSIONER DOUGLAS: Well, you know just to step in on that topic, the North Coast trip was really fascinating, as Tara was saying, from the -- and Mike Sokol was on that trip as well and my advisors and Commissioner

Hochschild joined us for the IEPR workshop.

But you know the opportunity to visit the Yurok Tribe. We had a tribal meeting on offshore wind that was very well attended. We had meetings with Redwood Coast Energy Authority stakeholders, with the local environmental groups, with local fishermen, commercial fishermen, we had a public meeting.

And my overwhelming experience of that entire three days was like you know we need more chairs. Somebody run to the closet and find chairs. Who do we call to get more chairs? Because people were really interested and in every case we had more people come than we expected. We had pretty packed rooms. We had to project a lot to be heard and to have a conversation in this.

And it was a really fascinating trip. And it's clear as Terra said that both that there are tremendous needs on the North Coast that we're not always perfectly well tooled to meet and also that there's a lot of expertise and capacity and thinking and planning that's gone on.

And we were really given a big shout out by the Schatz Energy Center actually, which pointed out in our IEPR workshop that the Energy Commission provided some funding for the Resco (phonetic) that they did up there, the local planning, that really resulted in a lot of

community engagement and partnership building. And some of the partnerships we're seeing up there with the tribes, working with the university, working with the community choice aggregator and working with PG&E as a partner, I think while they're in unique circumstances, they're real models. And there's a lot we can learn from them as well.

CHAIRMAN WEISENMILLER: Yeah, a friend of mine grew up there. And she said obviously in the '60s I mean that was a very depressed area as the forest products lumber industry sort of disappeared. And at that point, the only real salvation was the pot industry, which suddenly started seeing some real money around there. But at this stage at least there's some potential that shifts more to the Central Valley, since you don't need the remote hidden or whatever cultivation.

So again, I don't quite know how they're dealing with those sort of economic shifts.

COMMISSIONER DOUGLAS: Yes. We're seeing that there are economic shifts. And from what I've understood both the legalization of marijuana in the state and growing and other economic shifts have pushed land values down, up there. And we always need to think about a local economy everywhere we look. And how do our energy policies interface with the local economy?

But certainly in the North Coast I would say that

one of the reasons, in addition to very strong sustainability and regional resiliency it is just this really strong emphasis on those two factors. But a major reason why we had so much interest in the potential offshore wind project up there was the economic side. It was the investment in a port, the potential for jobs and the amount of investment and what long-term benefits could come to the region from being potentially the first area in California to have this technology, have a project that's floating offshore wind.

And so there was a huge amount of interest in that.

CHAIRMAN WEISENMILLER: Do you have a sense of how healthy the forests are there? Obviously, they had some fires in I would say Mendocino last fall. But looking at the Sierra's you've had this general die-off.

COMMISSIONER DOUGLAS: Right. They are not affected in the same way by the die-off that we're seeing further south and in other parts the state. However, they have a different climate. It's certainly much moister although they do have dryer summers.

But the amount of wood, including dead wood in the forests along the North Coast, as humid as it is relative to other areas, if bioenergy in some form were commercially viable and feasible, there would be a lot of

wood to be found there.

The reality is that while RCEA, the community choice aggregator, does have contracts with two bioenergy facilities, those contracts are expensive. And what we're actually seeing is production of wood pellets for pellet burning stoves and export of wood pellets out of the Humboldt Port to places like China.

CHAIRMAN WEISENMILLER: Sure. No, again it's sort of when these projects originally started in the late '70s. I mean frankly they would pay you to take the wood waste, which really made the biomass co-gen projects phenomenally attractive. And having said that the whole industry shifted, spotted owl and any number of things, so yeah it suddenly became yeah we're using the wood waste for these other products. What do you mean you -- you know?

COMMISSIONER DOUGLAS: Right. I think the potential scale up of other wood products is what the Schatz Center and others up on the North Coast are really focused on. When we scheduled our IEPR workshop up there, I asked a number of people whether and how bioenergy might fit on the agenda. And the answer was really yes, they have some plants, but they're really focused on other wood products.

CHAIRMAN WEISENMILLER: Yeah. Well, Sierra Pacific has -- what Picker has said of the various biomass

projects that have appeared at the PUC, the only ones that have been economic are Sierra Pacific. And they have been relatively low cost, more like a couple of cents as opposed to 20 cents. And so but there you have a whole industry. It's not just somebody trying to scrape together something out of it.

COMMISSIONER DOUGLAS: Right. Right.

CHAIRMAN WEISENMILLER: Do you have any sense sort of on this energy efficiency side and sense of what we could be doing more there, if anything?

COMMISSIONER MCALLISTER: Well, I've tried a couple of times to have Arnie Jacobson down here speak actually. And he's the head of the Schatz Lab. And they do have a lot of expertise there. They're doing actually innovative things. We could learn from some of the things they're doing up there too. They do a lot of developing country work as well as quite. They've got a really nice portfolio of activity.

But yeah, it's the tail end of the state. It's relatively economically depressed and resources are always needed. And older building stock, so I would kind of just -- well I guess I'll just presume that they have a lot of the same issues we're looking at in other parts of the state that are a little bit challenging to get things done on the existing building front.

And the cultivation piece of it I think is not like everybody's coming out of the woods. There's still some mow mow (phonetic) back in the woods. Not going to come out for a while, because I think a number was like 80 percent or something of the production is still going to be elicit and exported out of the state, even after the sort of legit economy emerges. So that issue is still going to be up there.

CHAIRMAN WEISENMILLER: I mean, you certainly had the impression if you were driving around up there like don't take the wrong turn or have your car break down. You don't want to end up in the middle of someone's plantation.

COMMISSIONER MCALLISTER: Yeah. Yeah. So some of it will come out of the woods, but a lot of it will stay.

COMMISSIONER DOUGLAS: You know one thing that struck me when we took our tour on the Yurok Reservation was that this is a very long river corridor. So the reservation is along the river. It's about a mile on either side of the river, pretty much mountainous, so very steep coming up on either side of the river. And one reason why it's been so challenging to bring electricity to some of the more inland parts of the reservation is that there's not a road along that river. The transportation is by boat or you have to drive a very long ways around to get

to the other end of the Yurok, the inland end of the Yurok Reservation.

And so there's a real struggle. And they're in that struggle and they're getting there in terms of getting electricity to I think the only public school in California that runs on diesel generators, on the Yurok Reservation. And if not the only, I think they said the only, but even then getting distribution to houses along that river corridor is very difficult.

And then you've got the issue that the houses that you -- are very often not up to code. So then how does PG&E connect houses? You certainly are not going to connect a house if you don't think the electricity system can, you know with the wiring. Or there is no wiring or the house isn't up to code. So you're not up to fire safety, so just the string of challenges even once you get the basic grid connection down, connecting houses just is difficult.

And then you have other tribes up there. We spoke with representatives from the Karuk Tribe as well. And they're from an even more remote, I mean you've got to drive a couple of more hours to get there.

The interesting thing is the Schatz Energy Center has working relationships with the Yurok, the Karuk, the Blue Lake Rancheria. And with the Karuk, there is some

talk of an end-of-line microgrid. And that's been explored a bit with the Yurok as well. And so there's an interesting potential there to think about where -- there're certainly areas where grid connection is absolutely Plan A and it's really important. And in the case of the Yurok, they've been working on it for decades.

But there are some opportunities for -- PG&E presented on this workshop for remote microgrids as well that can help bolster these systems that are on the tail-end of the electricity system or aren't connected yet.

COMMISSIONER MCALLISTER: Yeah. We're in a great moment to do that. I mean, I did pretty much those kinds of projects down in the southern tip of Chile, right with exactly the same set of problems. And obviously everyone wants the grid first, but stand-alone technology has come a long way and could totally -- it could be relevant for our policy.

I know there's places like Alaska, they would deal with these issues all the time. So there is a kind of a community of knowledge about this. And again, Arne who's at the Schatz, he's been working with the Yurok for a couple of decades. So yeah, they have a good pool of knowledge there. They need resources. I'm sure they told you they need money.

COMMISSIONER DOUGLAS: It might have come up and

they do, because it is a very large geographic area with a lot of potential, but a lot of needs. And as you think about how do you pull together the resources, for example, to demonstrate a remote microgrid with partners like a tribe and other partners? There is absolutely a need to look for resources and to find ways to leverage and cost share to get some of these things deployed.

COMMISSIONER MCALLISTER: So where does the access to ratepayer funds play out there, if they're not actually ratepayers of IOUs?

COMMISSIONER DOUGLAS: It's an interesting question. And the area at the Karuk Reservation that is kind of being looked at, it's kind of interesting because it's not -- it's adjacent to PG&E territory. It's not actually any utility's territory.

COMMISSIONER MCALLISTER: Yeah, exactly.

COMMISSIONER DOUGLAS: With the Yurok, I think most of the reservation is technically PG&E, but not all of it is. And so that does get challenging.

COMMISSIONER SCOTT: Yeah, I think one thing that would be interesting to continue thinking about, as you mentioned, kind of like the smaller microgrids out at the end of the line. And we're talking about solar and storage and electric vehicles, trying to add that into an area that's that rural that doesn't have electricity in the

first place, what types of innovative, creative solutions can we come up with? Are there leap-frog technologies that we need to be kind of thinking about or helping spur that innovation or that research, so that rural areas of our state can also be part of this clean energy transition?

So it's great to hear what you learned while you were up there. I'm glad you could go.

COMMISSIONER DOUGLAS: Yeah, absolutely. And I'll just raise one more thing, because I thought it was fascinating. As we were at the Blue Lake Rancheria and we were part of the ribbon-cutting for the new microgrid at the gas station and Jana Ganion, who's one of the lead energy staffers at Blue Lake said, "Well, it does sound kind of funny to say that we're putting out a solar gas station, but that's what we're doing and here's why." And you know people did laugh.

But then the tribe mentioned that CalOES is one of their partners, because of the importance in the event of an outage, for example of gas stations having power, because of course without power you can't pump gas. That's one issue. And as gas stations increasingly also host electric vehicle charging, or could, they're certainly in the right physical location to charge. Well, having power is important for that. They have the convenience store aspect, which is great if they can still run cash

registers, if they can keep food cold.

And so actually, you know, solar on gas stations is the sort of thing that might make a whole lot of sense. And so it's sometimes these ideas come to fruition in remote areas first, because they have greater concern with reliability for example. But they could be very good ideas and very replicable.

CHAIRMAN WEISENMILLER: Great. Thank you. Thanks for your help.

Okay. Let's go on to, Michael, anything on 26?

MR. SOKOL: Sure, and good afternoon Chair and Commissioners. Given the action-packed agenda I'm sure you'd appreciate me keeping this item very brief. And so I will.

Just a couple of items I wanted to highlight for SB 350. On the integrated resource planning front there was a workshop that the Air Resources Board held last week on April 30th, to discuss its staff report that describes the greenhouse gas target setting process that's been a joint agency process with the Energy Commission and PUC. So there is a staff draft report that they put out in relation to that workshop that's open for public comment right now. Basically it describes the approach that they suggest moving forward with.

And separately, just this week actually, there's

a staff-level webinar here at the Commission to talk about some proposed updates to our IRP Guidelines for the publically owned utilities.

Separately, just on the forward-looking front two things I wanted to bring to your attention are a workshop on May 30th, that looks at an action plan that's being developed in regards to equity and multifamily buildings and looking at clean energy opportunities there. So there'll be a draft published in advance of that workshop.

And then the other SB 350-related workshop that's up and coming is on June 7th, looking at next steps for the energy efficiency doubling exercise moving forward.

And so with that I'm happy to answer any tee-toe (phonetic) questions you might have or turn it over to you for discussion.

CHAIRMAN WEISENMILLER: Great. Thank you. I think, let's go to the minutes.

COMMISSIONER HOCHSCHILD: Just actually if we could I just wanted to congratulate Michael on your new role and promotion to the Renewable Energy Team. Maybe just take a minute and say what you're going to be doing?

MR. SOKOL: Well, thank you, Commissioner. Yeah. I'm going to be an Office Manager in the Renewable Energy Division in the Renewable Energy Office and so right now getting up to speed on the Power Source Disclosure Program

that's currently in pre-rulemaking.

COMMISSIONER HOCHSCHILD: Yeah, trial by fire. Yeah.

MR. SOKOL: Yes. And then increasingly the RPS side of the house as well and the grid reliability are kind of a larger program area.

COMMISSIONER HOCHSCHILD: Well, let me just say publicly what I've said to you privately, I've been a big fan of your work. I've watched you take on some pretty complex tasks over the last few years and handle them with great agility and focus. And I'm really, really glad to have you join the Renewables team. So congratulations.

COMMISSIONER SCOTT: And I want to echo that congratulations to you. And also say thank you so much for the fantastic work that you have done over the last couple of years to really herd about a trillion cats all into one nice very well organized space for us to be able to digest, to stay on top of, make sure we're hitting all of our deliverables. I really appreciate the fantastic work that you've done in that space. So thank you very much.

CHAIRMAN WEISENMILLER: Yeah, I know all of us want to thank you for your help on the 350. It's been a critical assignment. And you've done well.

COMMISSIONER MCALLISTER: All the data work as well. I don't know how you were keeping all those plates

spinning, but anyway everything seemed to get done, so thanks.

MR. SOKOL: Great. Thank you, Commissioners.

CHAIRMAN WEISENMILLER: Okay. So minutes?

COMMISSIONER SCOTT: Move approval of the minutes.

COMMISSIONER DOUGLAS: Second.

CHAIRMAN WEISENMILLER: All those in favor?

(Ayes.)

CHAIRMAN WEISENMILLER: 5-0. Lead Commissioner, Commissioner Douglas will go first.

COMMISSIONER DOUGLAS: So I've already made my North Coast report. I just wanted to say that last week I had the opportunity to go to San Bernardino County and attend a couple of meetings organized by the Chair of the Board of San Bernardino County and Supervisor Lovingood.

One meeting involved renewable energy. And we had environmental and community and renewable industry representatives there, Supervisors Lovingood and Ramos were part of the conversation. It was a really productive discussion, you know, really about some of the county-level planning work that's been going on.

And I also had an opportunity to meet with some of the large industrial users in San Bernardino County that included some of this cement kilns and mines particularly.

And we talked about their ability and willingness to work with the state on energy efficiency and demand response and to be part of some of our grid services solutions and to potentially do some self-generation as well in their areas, all of which could be very valuable. And also some of the obstacles they face in doing that today.

CHAIRMAN WEISENMILLER: No. It's a good group. I've visited there, so is the water district does a lot of interesting things.

COMMISSIONER DOUGLAS: Absolutely. All right, well thank you very much.

COMMISSIONER SCOTT: Sure. I'll just make my updates to you quick. Last week I attended the ACT Expo in Long Beach. This was fantastic, because they had on the floor of the convention center just dozens and dozens of different types of medium-duty and heavy-duty vehicles that are also zero emission, battery-electric, hydrogen fuel cell and others. And to kind of see them all together is very impressive.

I had a chance to talk about the Energy Commission and the good work that we're doing in that space. So I'm always happy to tout our program and our great staff.

We also hosted there a workshop on the ZEV infrastructure, manufacturing and workforce, to really

start to hear where people think the opportunities are there for the Commission to begin our investments. So that was very well done by Tam and Larry Wheeler and some other folks on the transportation team. I want to thank them for that.

And then this is the conversation I wanted to -- maybe not a conversation, but just a topic I'd like to tee up with you not to discuss today. But we had -- I'm the Chair of the Western Interconnection Regional Advisory Body, which is all part of part of the Western Interstate Energy Board work of western states, looking at transmission, reliability, all kinds of things together. It's three Canadian provinces, 11 westerns states and also Mexico.

And so our last meeting we had in Vancouver a few weeks ago. And one of the key issues that's coming up right now is the reliability coordinator in the west. And so there are various options for what that could look like and that's just something that folks across the Western Interconnect are thinking about. So I just want to raise that. It's a much broader topic.

CHAIRMAN WEISENMILLER: Well, definitely Peak's (phonetic) got to go now that they're trying to tee up with PJM. So the ISOs are (indecipherable).

COMMISSIONER SCOTT: There we go, so those are my

two updates.

COMMISSIONER MCALLISTER: So ISO is pulling out, right?

CHAIRMAN WEISENMILLER: ISO, everyone's pulling out. I mean PJM, once STP was coming in their economics was fragile. And at this point everyone completely undercut their costs, so yeah. I remember talking to BP and ISO a while back it was clear they were out of work, that Peak's days were numbered.

COMMISSIONER MCALLISTER: Yeah.

CHAIRMAN WEISENMILLER: They've done an interesting job. But as I said, they're just not going to be there.

COMMISSIONER MCALLISTER: All right. I guess I'll just rattle off a few things that I did over the last month, a really active month since the last Business Meeting. A full month and just it seems like I've been on the go a lot.

Let's see, congratulations to Commissioner Hochschild on the Pathways Conference in Berkeley. That was really nice. That's been since the last business, right? It was like the day after the last Business Meeting, I think. It seems like an eternity ago, but that was fun.

I did the Getting to Zero National Forum, which

took place in Pittsburg this year. And basically trying to carry this message that zero net energy -- we talked a little about it during the Building Code Update item today, but that zero net energy really kind of is starting to miss the mark a little bit in terms of our policy direction. It's sort of not enough. We've got to take a step further and a step over to really focus on emissions. And energy and emissions are kind of diversions in terms of how we can use them as metrics to gauge power getting along towards our goals.

So we're trying to work with (indiscernible) any advocates to pull them over to new paradigm, get them to understand the challenges of the new grid.

Let's see, did the Chile California Forum. That was really nice, a lot of Chileans. It was at the Chamber of Commerce. There was a lot of building relationships and just getting up to speed on policy, pretty amazing. They have very innovative policy down there. We could actually learn quite a bit from them and economically their whole population is pretty sophisticated. They get time of use pricing. They get real-time pricing, in Chile in a way that our public doesn't really, so how'd they do that?

The Utility Energy Forum in Sonoma as well, that was an interesting conglomeration or gathering of mostly utility staff and executives from up and down the coast,

some from Canada, and then just Seattle, Washington, mostly the West Coast. Dave Ashuckian was involved in organizing that one, but kind of a good conversation about utility business models and CCAs and all the topics of the day.

We had Nancy Ander speaking a couple of weeks ago. It was great. DGS has just turned themselves into a shining example of what's possible. It's really pretty amazing actually what they're trying to do and they're making a lot of progress. And they have a historical bureaucracy that they have to overcome in a way. And they're making, they're chipping away and they're making progress. But they don't have a deficit of vision, which was definitely pretty obvious in spades when Nancy came to visit.

A couple of Mexico events, I had a sort of a tour of one of the Mexican officials, was it CRE Commissioner Montserrat was sort of doing a tour around, checked in at the Pathways thing in Berkeley and came over here and spent the day with a bunch of people over here at the Commission. Interesting, mostly interested in storage. But she'll be around and her colleagues will be around after the election. And so there's good relationships to develop.

And then I had a powwow under the auspices of the MOU just last week with the Mexican Consul General on the clean energy piece of the MOU activities, so anyway just

relationship kind of maintenance there.

Let's see, and again Stanford gave a lecture on EE last week that was good. And then we had to wait out the traffic down there. So you can't really come back this way until after 7:30, you know, so you might as well just chill. And so I think they had the system down in Stanford where they just go up to whatever roof is nearest and there's wine and cheese there. I think that's part of their day.

So in any case, you get to interact with grad students and undergrads and some post docs and whoever's around, you know. And they have some really interesting stuff going on. You know some of the data work that they're doing and they can have some resources and funded a couple of things that (indecipherable). They have a lot of intellectual resources that could help, if we could figure out how to make that happen. As well as the intern program, that's great.

And then yesterday, the SoCal Reliability Workshop, which was worthwhile, it was definitely worth holding SoCal Gas accountable. So that's it for me.

COMMISSIONER HOCHSCHILD: Well, it's been a five-and-a-half hour meeting. I'll be very brief. But I do want to just acknowledge Alana Mathews. We had a really, really fruitful workshop up in Humboldt, which is a five-

hour drive to get there. Who's counting? I was counting. And she did a magnificent job. So yeah, it's (indiscernible) get to Stanford. We had actually a fantastic turnout. And it was great to see all the engagement and really appreciate you facilitating all the public engagement there.

I've been doing a ton of travel to various conferences. I'll just share one story. I was gone for a couple of days last week at some conference and I came back. And I told my older daughter, "Rosa, I really missed you on this trip." And she's becoming a real smart aleck and she said, "What, you were gone?" So apparently satire develops fully by age 12. I'll stop there.

CHAIRMAN WEISENMILLER: I took some time off and I managed to -- came back to go down to Southern California for Aliso Canyon and reliability, yeah and then to China soon. But anyway, well it's good to be back for at least a short time.

Chief Counsel Report?

MR. WARD: No report out for this meeting for the Chief Council's Report.

CHAIRMAN WEISENMILLER: Okay. Executive Director Report?

MR. BOHAN: No report, Chair. Thank you.

CHAIRMAN WEISENMILLER: Public Advisor Report?

MS. MATHEWS: Okay. I just have two things that I want to highlight. First, I'd like to say that we had a very successful Diversity Career Fair. That's one of our diversity initiatives that we have.

And I'd like to thank all of the deputy directors, especially Rob Cook for introducing the ability to have members and participants, not members, but participants and attendees take testing some of the online exams as well as collect exams. And then they fill it out and bring it back, applications for various positions here at the Energy Commission.

But a very, very, very special thank you goes to Dorothy Murimi who was really the force that made this happen this year in my office. So I want to say thank you to her.

And I also wanted to introduce Maria Norbeck who is now the new Executive Assistant in the Public Adviser's Office. And as we know, when we get phone calls here and no one knows what to do with them, they send them to the Public Adviser's Office. And so Maria has very quickly field a lot of calls, including those that dealt with one of the most popular items on today's business agenda. So we can thank her for making sure those people knew exactly where to go and what time to be here.

Lastly, I wanted to mention that earlier today

actually I did a webinar for the USDA. So the investments for our food program and the rate program is getting out there and there are a lot of rural communities. In addition to our diversity initiative in reaching out to disadvantaged communities I've also incorporated reaching out to rural communities and have started to build a network with that. So they were very interested. And it was fortuitous timing that this was on the Business Meeting agenda today. So they will be signing up for the listserv. And with that, that's it. Thank you.

CHAIRMAN WEISENMILLER: Thank you.

Public Comment?

MS. MATHEWS: We do have one public comment. It is from Tony Brunello from Gridworks.

MR. BRUNELLO: Apologies, I meant to be here earlier, so I will not speak long. I'm mainly here to speak to say thank you for item 24b, c and d, as well as for the Hitachi grant of looking at a DER roadmap.

We are very humbled to be a subcontractor for four different contracts that were approved today with Gridworks. Gridworks is focused on decarbonizing the grid. We've been doing a lot of work for the last ten years we've been in operation. And in particular on this item where we're partnering with Hitachi and SLAC, we really think it's going to be a new day of looking at grid planning in a

completely bottom-up way where we are partnering with the PUC, with the CEC, and other entities to make a tool that's really open and useful for policy makers as well as DER providers that are really trying to find new ways to provide grid services.

So again, thank you very much and apologies for not saying this earlier in the day.

CHAIRMAN WEISENMILLER: Thanks. Thanks for coming up for it.

This Business Meeting is adjourned.

(Adjourned the Business Meeting at 3:33 p.m.)

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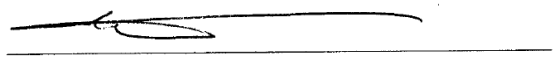

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IN WITNESS WHEREOF, I have hereunto set my hand this 21st day of May, 2018.

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