DOCKETED	
Docket Number:	22-BUSMTG-01
Project Title:	Business Meeting Agendas, Transcripts, Minutes, and Public Comments
TN #:	246202
Document Title:	Transcript of 9-14-2022 Business Meeting
Description:	N/A
Filer:	Liza Lopez
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	9/26/2022 9:46:07 AM
Docketed Date:	9/26/2022

BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)
	)22-BUSMTG-01
Business Meeting	)
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WEDNESDAY, SEPTEMBER 14, 2022

10:00 A.M. – 3:30 P.M.

REMOTE ACCESS ONLY

Public comment is accepted solely through the Zoom platform.

The California Energy Commission's (CEC) September 14, 2022 Business Meeting will be held remotely only, consistent with Senate Bill 189 (Committee on Budget and Fiscal Review, Statutes of 2022). The public can participate in the business meeting consistent with the direction provided below.

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

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

Reported by:
Peter Petty

APPEARANCES

Commissioners

David Hochschild, Chair
Siva Gunda, Vice Chair
Kourtney Vaccaro

Staff Present:

Drew Bohan, Executive Director
Linda Barrera, Chief Counsel
Dorothy Murimi, Public Advisor's Office
Geoff Lesh, Engineering Branch Manager
Kirk Oliver, Chief Counsel's Office

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P R O C E D I N G S

SEPTEMBER 14, 2022 10:03 a.m.

(Start of Introductory Video.)

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

The Energy Commission will continue to post a recording of this business meeting on the Business Meeting webpage in addition to posting a transcript of this business meeting rendered by a professional court reporter in the docket system on the business meeting webpage.

To increase access to the California Energy Commission's proceeding, this meeting is being held in-person and is also available for remote participation.

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

website. Pursuant to California Code of Regulations Title 20, section 1104(e) any person may make oral comments on any agenda item.

Once the public comment period begins, to indicate you would like to give a comment in-person please use the QR codes shown in the room and fill out the form.

For remote participants, please raise your hand by clicking on the "Raise Hand" icon at the bottom of your screen. If you are joining by phone, press *9 to raise your hand and *6 to unmute.

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

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

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

(End of Introductory Video.)

CHAIR HOCHSCHILD: Well good morning friends, and welcome. Today is Wednesday, September 14th and I call this

meeting to order. Joining me virtually here on the dais are Vice Chair Gunda and Commissioner Vaccaro. Commissioner Monahan is unfortunately under the weather today and Commissioner McAllister is traveling for business. So let's begin with the Pledge of Allegiance.

(Whereupon the Pledge of Allegiance was recited.)

CHAIR HOCHSCHILD: I am happy to announce today that the Commission will be seeking to approve over $24 million in grants and investments today, contributing to our state's economic recovery. And these include 5.5 million for the UC system on behalf of UCLA, 5 million for Anaheim Transportation Network, 7 million for reliable, equitable and accessible charging for multifamily, and vehicle-to-building technologies for resilient backup power.

So before we turn to Consent, I'd like to clarify a few items for Item 1. GridLab, that one item has been removed from the agenda, I think we'll take that up next month. As has Item 2, the information item on getting California on track for 2030 and 2045 climate targets. And Item 7 regarding the San Joaquin Valley Air Pollution Control District.

So we'll turn now to the Consent Calendar, Items 1a through 1h. Madam Public Advisor, do we have any public comment on the Consent Calendar?

MS. MURIMI: Thank you, Chair.

Once again, just instructions for folks. If you would like to make a public comment use the raised-hand feature on Zoom at the bottom of your screen. Giving that one moment.

Chair, seeing no public comment, back to you.

CHAIR HOCHSCHILD: Okay. I would welcome a motion on Items 1a through 1h. Commissioner Vaccaro, would you be willing to move those items?

COMMISSIONER VACCARO: Yes, I move approval of Items a. through h. of Item 1 on the Consent Calendar.

CHAIR HOCHSCHILD: Thank you.

Vice Chair, would you be willing to second those?

VICE CHAIR GUNDA: Yes, I second them.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Those items pass 3-0.

We will now move to Item 2, the Information Item on Getting California on Track to 20 -- oh sorry, is this one still on?

MS. MURIMI: That one was removed from the calendar.

CHAIR HOCHSCHILD: Okay, sorry.

So we'll turn to Item 3, information item on the ZEV- Related Manufacturing Map. Welcome to Jonathan Bobadilla to present.

MR. BOBADILLA: Thank you. Next slide. Hello, my name is Jonathan Bobadilla, staff in the CEC's Fuels and Transportation Division. Today I will be providing a brief demonstration of our California Zero-Emission Vehicle-Related Manufacturing Interactive Web Map. This is a web application hosted on the CEC website with information on companies with ZEV and ZEV-related manufacturing operations in California. A link is provided on the presentation slides for convenience.

Before moving on to showing the app in detail I wanted to briefly note what we mean by "manufacturing," and "California ZEV-Related Manufacturers."

For the purposes of this tool, manufacturing refers to the manufacture, production, and/or assembly of complete Zero-Emission Vehicles and ZEVs, ZEV components and batteries and/or ZEV infrastructure hardware for commercial sale.

A California ZEV-Related Manufacturer is a company with at least one manufacturing facility physically located in California that manufactures said hardware for commercial sale.

We gather information from a variety of sources online such as company websites, LinkedIn, Crunchbase, Pitchbook, Yahoo Finance, and partner entities that share their own data with us.

If you have any questions on the methodology or suggestions on how to make our web products better I'm happy to take questions at the end of the presentation if we have time, or offline through follow-up conversations.

With that said, can the meeting host please start the video for Item Number 3?

Visitors are greeted with the informational splash page, which can take you to a CEC web page on manufacturing and the data vintage shown, which are currently from February 2022. The emails shown here are to reach out to staff for questions regarding the information shown.

In a little bit, yeah, clicking outside the splash page you'll see that the header contains our current title, which is "California Zero-Emission Vehicle-Related Manufacturing," and below the title is a link to the table of the data shown here in an ADA-accessible PDF.

To the right is a link to the CEC's ZEV Statistics web page, which shows a wide variety of data and tools related to ZEVs and ZEV infrastructure.

The app is sectioned into two parts. On the

right is an interactive GIS map of California with blue dots spread around. You can zoom in on each dot with your mouse scroll wheel or use the +/- widget on the bottom right. When you zoom in, you'll notice each dot represents a California ZEV-Related Manufacturer. You can also change the base map by clicking on the square widget on the top left, and those features will be presented in just a moment. Do a pause, there.

And as shown here when you zoom in the dots on the screen will become visible and each of those dots are you can interact with, so clicking on them will give you more data on those companies that are shown.

As an example I'll zoom in on Zero Motorcycles, Incorporated, in Scotts Valley. Clicking on their dot will make a text bubble appear which lists company attributes such their company name, product category they manufacture, a hyperlink to their website, a brief description of what the company does, city, state, and zip, and the year that they were incorporated. You can do this for all 43 dots on the map.

Moving to the left section are multiple widgets that interact with the map. At the top is a search bar where you can look up manufacturers by name. So let’s say, for example, you want to see if BYD is on the list. You can start typing B-Y-D and you'll notice that their name

appears, which you can click on and it will make the dot corresponding to BYD be the only one that appears on the map.

The X on the right of the search bar will erase the name and will make all the dots come back.

You can cycle through the list of 43 manufacturers in alphabetical order by company, using the table arrows. If you find a manufacturing company you're interested in you can click on the 4-dot icon to zoom in. The attributes table is the same as what appears when you click on the dots.

The final widget are these four toggles that let you filter out by Manufactured Product. So let's say you're only interested in seeing the companies that manufacture ZEVs. Click on the ZEV icon and the 19 ZEV manufacturers will appear on the map and table widget. If you want to see all the ZEV manufacturers AND ZEV battery manufacturers, click on the ZEV Batteries widget and you'll get ZEVs plus the batteries, which are 23. If you want just the batteries, unselect the ZEV and keep Batteries toggled, and you'll see only the 7 companies that manufacture batteries.

To date, we have identified 43 ZEV and ZEV-related manufactures in California, and that number is expected to grow on the next update towards the end of

fall.

That concludes my walkthrough and can the host please go back to this slide?

CHAIR HOCHSCHILD: Thank you so much, Jonathan. That was terrific.

And I just want to highlight this is precisely the kind of thing I want to see us do more of as an agency, taking all the data that's out there and then rendering it in a way that's really -- this feels very public-friendly to me, very accessible, very understandable and useful, not just for stakeholders but also for the media that's trying to cover these issues. And particularly on this one where out of the $10 and a half billion in our extraordinary budget this year, roughly, I think 3.7 billion is going into ZEV-related activity and charging infrastructure. So really, really timely, really helpful, amazing work.

I just want to thank you and the whole team for all your work. And we met earlier and you had some good dialogue. And I think you've got feedback from a number of folks on it and just really want to say hats off for this.

But let me open it up to questions from Commissioner Vaccaro or the Vice Chair on this. So any comments?

COMMISSIONER VACCARO: Yeah, thank you. Thank you, Chair Hochschild. So first of all I agree. I mean, I

echo everything that you said, solid presentation, and just what a wonderful, accessible tool. I think I have to two observations. I think I would love to see something like this as we do our offshore wind development. And as we really look at the supply chain development and what this looks like for California, I see a tool like this being just incredibly valuable in that space.

In addition, I would just say that I can't wait to see more blue dots in the lower region of the state, sort of in the Salton Sea region, Imperial County, Riverside County, And a lot of effort going on to realize the Lithium Valley vision. And just seeing some more of those blue dots in that region is something I'm looking forward to. So thank you so much.

MR. BOBADILLA: Thank you.

CHAIR HOCHSCHILD: Well said.

Well, so Vice Chair Gunda any --

VICE CHAIR GUNDA: Yeah, I just want to say congratulations, Jonathan. That's really helpful. As I think the Chair mentioned this mostly, just kind of briefly at one point, thinking of what I see the CEC's (indiscernible) data gathering, and access, and being the state's data repository is a foundational task of our agency. And this is really in line with our modernization efforts, and all the way from the infrastructure to the

data gathering at a more discreet level. And then kind of being able to provide that in visualizations, dashboards and downloadable forms. This is wonderful. And I'm so glad to see so many dashboards coming out of the agency.

And as Commissioner Vaccaro just suggested, I think there is probably an opportunity to begin to bucket these dashboards by the sector or kind of work we do. So it becomes easy landing pages. I know that there is work on that as well. But you know, just kudos to you and the team. Thank you.

MR. BOBADILLA: Thank you.

CHAIR HOCHSCHILD: The one question I'd have Jonathan, and maybe this is as much for the media team as it is for you, but how are we getting the word out there about this? What is the outreach strategy to just make the stakeholders and the public aware of this tool now exists?

MR. BOBADILLA: Yeah, and media has been a great partner. They've sent out blog -- we've been in blog posts, and Twitter and LinkedIn posts, sharing the tool. Whenever we do have any presentations related to ZEVs we show that this map is a tool that's available. When folks visit the website itself, we can send it to -- there's an email there that people can contact us. So let's say, for example, a manufacturer wants to get added on to the list they can reach out to us directly and tell us about

themselves and what they're manufacturing in California. And we'll do our best to integrate those into the next update, and so far that's been the tools that we have at our disposal for marketing this.

CHAIR HOCHSCHILD: And then we're updating it sort of in real time? Or are there -- what's, as we learn of new companies, what's the interval for updating that?

MR. BOBADILLA: Yeah, we're aiming for a twice-a-year update.

CHAIR HOCHSCHILD: Okay.

MR. BOBADILLA: So our next one is going to be towards the end of fall. And we keep a watch list of companies. So we add the companies throughout the year into the watch list. And then at the time of update we'll go through that watch list and see which ones we're going to add to the list versus which ones maybe need more time to develop. And so that's our intake process.

CHAIR HOCHSCHILD: Okay. Well, again, phenomenal work. My request to you would be if you could email this to all Commissioners and Advisors, and with a short couple-sentence summary of what the tool does so that people can just share with their contacts by email. It's just a terrific, terrific body of work and we want to get it out there. So that'd be terrific.

Thank you again for all the work.

MR. BOBADILLA: Yeah, thank you. Will do.

CHAIR HOCHSCHILD: Great job. All right. Thank you.

We'll turn now to Item 4, Information On Non-Lithium Storage Technology and welcome Mike Gravely to present.

MR. GRAVELY: Good morning, Chair Hochschild, Vice Chair Gunda and Commissioner Vaccaro. I'm Mike Gravely, Energy Storage Technical Team Lead for the Research and Development Division. Today I would like to provide a short overview of the energy storage with a focus on non-lithium-ion energy storage technologies. I will review the need for energy storage in California including future progressions.

MS. MURIMI: Apologies. Apologies, Mike, if you could turn on your video?

MR. GRAVELY: Oh, okay. Thank you. I'm sorry, yeah. Thank you again. Okay, so thank you.

I will conclude by sharing updates of the Energy Commission plans to implement the long-duration energy storage program established in the state budget, which will support large-scale demonstrations of promising long duration energy storage technologies and accelerate their market adoption. Next chart please or we're okay with that?

Energy storage -- oh let's see, back up one chart please to Number 2. Energy storage of all types will play a big role in California's clean energy future. Currently, California has a little over 3.3 gigawatts of energy storage installed and operating during the extended heat storm of last week where systems performed superbly. It helped California reliably serve its electricity demands. It's important to note that approximately 95 percent of that energy storage is one technology, lithium-ion batteries. And lithium-ion batteries, where they work well for short duration and are reliable, they're not very well-suited for long duration applications.

Early this year the PUC completed and published the state's Integrated Resource Plan, which calls for the approval of up to 15 gigawatts of energy storage by 2032, with 1 gigawatt of that total expected to be long duration energy storage. The Joint Agency SB 100 Report, along with other reports from industry and academia, projects the need for an estimated 40 to 50 gigawatts of energy storage by 2045 to meet the state's goal of a carbon-free electricity system.

With this projected growth in energy storage deployment, California needs to invest in multiple energy storage solutions and not just one technology. While lithium-ion batteries are very effective, as was

demonstrated last week, there are other technologies that are better suited for longer rates and applications. Meeting California's goals will require a diverse portfolio of storage technologies, including ones that can discharge over 8 hours to 100 hours or more to meet our future requirements. Next chart.

The Energy Commission EPIC program has over a decade of experience managing the full spectrum of energy storage research activities, funded projects spanned from early research with small grants to more advanced demonstrations in the laboratory, and first-of-a-kind field demonstrations just extensively helping companies scale up their system as they compete in the marketplace.

As these photos illustrate, the Energy Commission has assessed a wide range of technologies from small residential commercial-size battery systems to larger flow batteries, thermal energy storage, and flywheel systems, and even larger grid-scale containerized systems and underground storage systems. Several of these technologies have progressed rapidly and are ready for large-scale utility grade applications. Next chart.

2020 was a pivotal year for the energy storage at the Energy Commission, where there was a strong focus on expanding our investment in long duration energy storage. During that year, the Energy Commission awarded 25 new

energy storage grants across the spectrum of applications and technologies. Eight of those grants were for energy storage applications with durations of ten hours or more, and sizes up to eight megawatt hours.

Three of those -- additionally, three of those grants were for technologies looking to commercialize 100 hours of energy storage with the capability of future projection commercial price on a price-per-kilowatt that would be as low as one-tenth of the current per-kilowatt-price of lithium-ion batteries. Next chart.

When we look at the current technologies active in the global marketplace, we see that it is rich with new and emerging technologies that show great promise in providing high performance solutions at a lower cost than the current lithium-on systems. Companies developing these technologies recognize that lithium-ion is the baseline everyone must design to, and to be successful they must be price-competitive with lithium-ion.

As we look at this collage of pictures we see there is a wide range of technology solutions. Some have already been demonstrated through the EPIC program such as zinc-hybrid, iron air, zinc air, flow batteries, flywheels, and thermal storage.

Additionally, there are very creative systems being developed throughout the world and being demonstrated

that have not yet applied for or secured EPIC grants. Some of these include gravity feed systems, additional flow battery designs, and thermal storage. Many of these technologies are working in the medium to high kilowatt-sized systems, and several are now advanced into the multi-megawatt size. Overall, these technologies present an opportunity to gain lower cost, better performance, longer useful life, and improved safety. Next chart.

These new emerging technologies provide opportunity to capture new values that are challenging today's lithium-ion technology. The supply chain everyone is aware of today, and with the international unrest, we can find that lithium-ion systems could have as much as a multiyear delay to be able to build the system once the order is improved.

Safety is an area where these technologies are different chemistries, different designs and lower risk to thermal runaway and other challenges that we see today.

Cost and performance, these technologies offer improvement in cost per kilowatt, improvement in energy density, charge time, and lifecycle costs. Overall, the field just demonstrates it. By demonstrating and validating these technologies at a larger scale California could help build the market confidence and support innovative companies need to apply for investments and

secure long-term power purchase agreements, which is critical to the growth into the California marketplace. Next chart.

In this year, in Fiscal Year 2023 State Budget, the Energy Commission received $140 million to advance non-lithium-ion technology to a higher commercial state. Using lessons learned from a decade of EPIC research the Energy Commission staff developed and proposes a series of three new grants to allow some of these EPIC technologies to advance to the next level of field performance.

The first one is a 60-megawatt hour combination of flow battery and zinc hybrid technologies into an integrated system that provides the best of both technologies. This system will be installed on the Viejas Native American tribe's microgrid to support the critical resources of that under-resourced community.

The second one is an 80-megawatt hour zinc hybrid system to be installed on the Camp Pendleton Marine Corps Base and provide critical resiliency and reliability services to support the national defense mission. And when these services are not needed the energy storage will provide services to support the California grid.

Federal grant targets an ion-air technology provider that is rated at 5 megawatts and 100 hours and is to be installed in the PG&E territory. This system will be

in front of the meter installation and will demonstrate new opportunities to apply non-lithium-ion batteries to support critical good services and validate the value of 100 hours of energy storage duration. Next chart.

In '23-'24 budgets the program will receive an additional 240 million to continue the advancement of non-lithium-ion energy storage technologies. Energy Commission staff will develop and release in the summer of '23 a large competitive solicitation that will support the award of five to seven grants in the summer of '20 -- throughout California in the '23-'24 timeframe. This solicitation will be open to all non-lithium-ion technologies that meet the requirements that are clearly defined in this solicitation.

Funding is also planned to attract federal funds through the DOE and DOD opportunities to use cost share and bring in additional funds to California.

And after those first two opportunities if we still have any remaining funds there will be a second solicitation in 2024 that will use up the remaining funds, as we still have time to uncover them. Next chart.

If we look at the next steps we will be working to bring the initial three grants to our future business meeting in the next one to two months. And we'll start developing the large solicitation that would allow us to

attract the most cost-competitive solutions that we can compete on a level playing field with lithium-ion systems.

Overall, the effort is expected to clearly demonstrate that non-lithium-ion technologies can compete with lithium-ion technologies in performance, useful life, safety, and costs.

There are several individuals and organizations who would like to make comments on these. One of those individuals that Dr. Imre Gyuk, Director of Energy Storage Research at the Office of Electricity, in the DOE Office of Electricity. And the second one is Peter Dailey from the International Electric Power, an international energy storage financing firm, who just wants to comment on the commercial competitiveness of non-lithium-ion battery technologies.

And with that I'm happy to take any questions from the dais.

CHAIR HOCHSCHILD: Well first of all, Mike, thank you so much. I want to highlight that you've been working to prepare for this moment for several years. We did a workshop in the spring to get stakeholder impact and input even before the money got approved. And I think that put us in a really good position to be able to act swiftly. I mean, it's amazing to push out almost $100 million by next month after just getting the funding this summer. So thank

you.

And I note that two of those three projects will be online by June to help with reliability for next summer, so that's terrific. And I just also want to especially compliment you on the diversity of the locations and partnering with the Native American tribe; all terrific.

I did have one question. Is it just the chemistry on the flow battery is vanadium; is that correct?

MR. GRAVELY: That is correct, a vanadium flow battery. That is correct.

CHAIR HOCHSCHILD: Okay. And then just can you quickly recap for my colleagues and I, roughly the round-trip efficiency of the different chemistries that we're talking about here?

MR. GRAVELY: Yeah, so the round-trip efficiency most of the battery systems are in the 80-90 percent, some of them a little bit higher. So the flow batteries are around 80 percent, the zinc batteries are around 90 percent. The larger systems, the thermal storage and ion air, is around 40 to 50 percent on the average and so we're still working on those. So but you have the larger systems though they don't -- you may go a week before you're recharged, so you don't -- in the shorter systems, eight-hour systems, you're recharging every day. So round-trip efficiency becomes a bigger player. When you have 100

hours and you don't have to recharge but once a week, then that round-trip efficiency doesn't become as critical as some of the other elements of the technology.

But in general, lithium-ion has an 80 to 85 percent round-trip efficiency. Probably the collage I showed you, I would say a third of those are in the same range. But most of them are in the 60 to 80 percent. And then only the larger systems, the thermal storage and the other ones that are doing 100 hours have it closer to 50 percent. But I would say in a general sense, you would see 70 to 80 percent being the average across that whole spectrum of a collage of different technologies.

CHAIR HOCHSCHILD: Yeah, well in many ways I would just say that this is sort of analogous to the offshore wind work that Commissioner Vaccaro is devoting so much of her time to now, in the sense that it's a new technology category. You know, we have onshore wind, but offshore wind has different attributes that are good for the grid. And it's the same thing with long duration storage. And this is an area again, where California is leading the world.

And $380 million for this technology category is monumental. And I think combined with the passage of the IRA, there's a lot of really exciting benefits because domestic content gets you a 40 percent tax credit, and

domestic manufacturing get you a 50 percent. And so the timing of this is just beautifully aligned with our big investment and with the scaleup that's possible here.

So anyway, my congratulations to you, Mike. And I'm just opening it up to any questions or comments from Commissioner Vaccaro or the Vice Chair.

VICE CHAIR GUNDA: Yeah -- oh sorry, Commissioner Vaccaro, if you want to go first, please?

COMMISSIONER VACCARO: No, go ahead. I'll go after you. Thank you.

VICE CHAIR GUNDA: Yeah, Mike, just thank you again. And I think I want to just reflect on one of the things that we've heard at the long duration storage workshop that you helped put together is we might need long duration storage as early as '27-'26. So this is incredibly nice to see that we're beginning to move forward.

One of the questions when you think about the market right now from a barrier standpoint for long duration, could you just expand on what you see as the critical things we ought to be doing as a Commission to help accelerate the deployment?

MR. GRAVELY: Sure. I think the most critical thing is what we are doing. And that is we are highlighting the companies that we work with and have this

capability. We heard from this in April that 5 megawatts to 10 megawatts is a huge stepping stone. So ultimately, when you're buying 15,000 megawatts, or 45,000 megawatts of batteries you're not going to buy them at a kilowatt or a megawatt at a time. These companies have to be able to produce 50 to 100 megawatts. And so it's our belief that these first three companies for sure will be able to leverage in a '25-'26 timeframe project in the 30 to 50-to-100-megawatt range.

Our ultimate goal that we placed into legislation was to bring four to six companies to a point where they can actually deliver 30 to 50 megawatts in that before 2032, in an operating system. And one of the big elements is the financial market, getting the confidence that the technology is going to be there and that it will perform. And so this is a big stepping stone. So I want to point out this $380 million is to make a big step and advance people to the next level. We'll be working with the PUC a lot on their long-term projections and trying to demonstrate what it takes for these technologies.

We're developing what we call a bankability matrix, so we can show these technologies are bankable and convince the financial market. Because they need -- when you're talking about $150 million dollar projects you need financing to be able to do that. And to be able to get

that financing the financier needs to be comfortable that you can deliver and you're going to be around. So I think what this $380 million is going to do for California and for the world is to advance these technologies that have been ready at the smaller scale, but haven't been able to make that big jump. And what we're going to do is give them the opportunity to build their system, deliver it in a reasonable time, and prove it works. And then also show they have the manufacturing capacity to take the next step and deliver a 50-megawatt 8-hour system, so 400 megawatt hours.

So I think that's the biggest one is a performance proof of proof, and convincing the financial market that these technologies are reliable and real and will be around.

And so I think the lithium-ion market is already there. Or I tell this, if we have a lithium-ion project, 50 megawatts, there's a bank. You can go to 25-30 banks to get financing. If you have a flow battery, if you want to get financed nobody will open the door for you. So we're trying to open those doors.

VICE CHAIR GUNDA: Awesome. So Mike, just one kind of comment, and I'll pass it on to Commissioner Vaccaro. I think what we've seen last week, I mean ten days of this extreme heat event that was so much outside

our planning standards. And it really kind of reiterated the point of carrying the strategic reserve outside the planning standards. But we need to decarbonize that strategic reserve. And I think the long duration storage could play a vital role in that. If you have a battery that you don't have to charge for several days and continue to use through a heat wave like this that would be extremely helpful. So I just want to say thank you. And this is incredible work that you guys are doing, thanks.

MR. GRAVELY: Thank you. Thank you, sir.

COMMISSIONER VACCARO: So really quick I'll just chime in. I agree with and echo everything that the Chair and Vice Chair Gunda said.

Mike, thank you for the presentation. Really I want to thank you for the clarity. I mean, I think what you do is you make clear that you and your colleagues in ERDD in the Energy Commission are really standard bearers for explaining and really making clear why diversity of technology and resources is so important, as we're pursuing this energy transition. But what it means, like what the work is that you're doing means, for cost-effectiveness and for market penetration I think this presentation just did a fabulous job. And I just want to commend you for that.

And I think that's really the drumbeat is for folks to understand why it's so important that we make, and

that the state makes these investments, and what it means to our clean energy future. So I appreciate the presentation, really appreciate the work. And I'm looking forward to those first three projects coming through in the coming months.

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

Mike, I just have a few a closing thoughts for you. One is that traditionally when we talk about long duration sort of people think pumped hydro, I mean that's been the dominant. But I would just point out that in a drought the opportunity for that is threatened. And so having these other chemistries is really, really strategic on a number of levels.

So I would also note that one of the big bills that got through the Legislature this year was the legislation championed by Senator Laird to accelerate SB 100. And so that moves the target to 90 percent by 2035, and 95 percent by 2040, keeping the end date of 2045. And so the need for storage, the need for long duration storage increases as we accelerate SB 100.

And then finally, one request for you, as you partner with these companies we really, really want to focus on getting as much manufacturing in California as we can. I recognize -- I'm familiar with a number of these

companies and they're not -- some of them are headquartered here, some of them are manufacturing elsewhere. But whatever part of the value chain they're able to manufacture in California, we want support that. And so in the course of your work, both with these initial three projects, but also all the next wave to follow to make sure they're fully aware of the offerings that we have, both through our cash grant, battery manufacturing, and through CAPA (phonetic) tax credits and CalCompetes tax credits and so forth from GO-Biz. We really want to focus on ramping up all the manufacturing that we can in-state, so just please make every effort to support that goal as you move forward with the program.

MR. GRAVELY: Yes, sir. That's part of our plan.

CHAIR HOCHSCHILD: Yeah, great. Well, Mike tremendous work, incredibly proud of you and the whole team. And this is just really exciting that we're moving this quickly. So thank you again from all of us.

All right, we'll turn now to Item 5, Orange Grove Energy Center. I welcome Elizabeth Huber.

MS. HUBER: Thank you. Good morning, Chair, Vice Chair, and Commissioners. My name is Elizabeth Huber. I am Director for the Siting, Transmission, and Environmental Protection Division, commonly known as STEP. I am here today to request your approval of a Settlement Agreement

between the California Energy Commission and the Orange Grove Energy Center. Also with me from the Division are Engineering Branch Manager, Geoff Lesh and our lead attorney from the Chief Counsel's Office, Kirk Oliver. Next slide, please.

The Energy Commission STEP Division has a responsibility as public servants to ensure that reliable energy supplies are maintained at a level consistent with the need for such energy for the protection of public health and safety, for promotion of the general welfare and for the Environmental Quality Protection.

As required under the Warren-Alquist Act, the CEC has established a monitoring and enforcement system to assure that any facility it has certified is constructed, operated, and decommissioned in compliance with applicable laws, ordinances, regulations and standards, and in compliance with the conditions of certification specified in the Final Commission Decision. The STEP Division implements this program.

Once the Energy Commission approves a power plant, the Energy Commission is responsible for conducting compliance reviews and ensuring that these permitted power plants comply with all laws and conditions of approval throughout the life of the facility. The focus of this review or inspection is on worker safety, fire safety,

hazardous materials management, site physical security, and other conditions of certification as warranted.

Of the Energy Commission's 76 jurisdictional power plants 12 are in wildfire risk areas identified as either an elevated risk, known as Tier 2, or an extreme risk known as Tier 3. The Tier 2 fire threat is where there is a higher risk from utility related wildfires. And Tier 3 fire threat areas are areas where there is an extreme risk, including the likelihood and the potential impacts on people and property from a utility related wildfire. Next slide, please.

Four of the 12 fire-risk power plants are in San Diego County including the Orange Grove Energy Center, which is mapped in a Tier 3 extreme fire risk area. The Orange Grove Energy Center is a 96-megawatt natural gas-fired, peaker power plant consisting of two identical simple-cycle combustion turbine generators. The facility is located near the Pala substation in unincorporated San Diego County. The project was certified by the Energy Commission on April 8th, 2009, and began commercial operation in April 2010. Next slide, please.

The Energy Commission staff investigated the Orange Grove Energy Center regarding an alleged failure to conduct fire pump testing and to report this change in the facility operation. The investigation included an onsite

visit, conference calls and discussions with facility personnel, and a comprehensive review of all relevant documents.

Based on this review of the information, the Energy Commission staff determined that the Orange Grove Energy Center failed to perform the required annual flow testing for their two fire pumps for the years of 2015, '16, '17, and 2018. This is a violation of their CEC license. Next slide, please.

The next step by the Energy Commission staff was to send a Compliance Advice Letter to Orange Grove Energy Center, requesting additional information for the annual flow testing for the fire pumps and what steps they were taking to come back into compliance.

After review of this additional information, the Energy Commission's staff sent Orange Grove Energy Center a Notice of Violation alleging noncompliance with its fire pump testing provisions. The staff's review also later determined that the facility had not reported or sought the CEC's approval for this change in operation as required, again, by its compliance conditions. Next slide, please.

Therefore, the Energy Commission staff and the Orange Grove Energy Center believe that rather than engaging in a formal adjudication it would be more productive to enter into a settlement agreement to allow

the Parties to focus on ensuring that the fire protection systems at the facility remain safe and reliable. The legal requirements at issue, as well as the Energy Commission staff's allegations are included in the Settlement Agreement, which provides for a payment of $200,000.00 by Orange Grove Energy Center to the Energy Commission, which is then deposited into the state's General Fund.

In addition to the monetary agreement, the Orange Grove Energy Center will conduct and report the results of its fire pump testing, and will file a petition with the Energy Commission for any future changes in operation, design or performance of the facility. Next slide, please.

Staff recommends that the Commission approve the Settlement Agreement and the changes to the reporting requirements in the Commission Decision and direct the Executive Director to execute the Settlement Agreement on behalf of the Energy Commission.

This concludes the presentation and we're happy to answer any questions.

CHAIR HOCHSCHILD: Thank you so much, Elizabeth. And let me first say, again congratulations to you on the new role. We're really excited for your contributions in the months and years to come and a real reflection of your professionalism over the last few years. And I want to

thank Shawn Pittard as well for his many years of service to the Energy Commission.

Let's go to public comment on Item 5. Dorothy, do we have any public comment?

MS. MURIMI: Thank you, Chair. We do have a few raised hands.

Just a quick reminder for attendees, use the raised-hand icon to indicate that you'd like to make a comment. And if you're calling in press *9 to indicate that you'd like to make a comment and *6 to unmute on your end.

So first we have Imre Gyuk, and apologies if I've misstated your name. Please state and spell your name and give your affiliation, if any. You may begin your comment. Again, this is for Item 5. And that was I-M-R-E G-Y-U-K, Imre Gyuk. Your line is unmuted. (Audio difficulties.) Seems to be having some technical difficulties, we'll come back.

Next we have Peter. Please state and spell your name, give your affiliation if any. This is for Item 5. That is Peter. (No audible response.) Seeing no responses. There may be two -- we have two more raised hands, Ms. Steph?

MR. GRAVELY: Noemi, this is Mike Gravely. I think the two of them wanted to comment on Item 4. And

I've asked them to wait till the end at the public comment, so I think that that's why they mixed it up. I think they were both interested in commenting on Item 4 and we're on 5 now, so I think they will pick up at the public comment at the end.

MS. HUBER: Okay, thank you for letting me know.

DR. GYUK: I'm online.

MS. MURIMI: Oh, apologies. That was Imre, did you have a comment on Item 5? (No audible response.)

Okay, we have Gwenneth O'Hara.

MS. O'HARA: Yes, hi. This is Gwenneth O'Hara and I am Counsel to Orange Grove Energy. And just wanted to take a minute first of all to say that Orange Grove Energy has a long-standing commitment to energy needs in California and looks forward to continuing its relationship with the Commission. And to take time to thank the Commission staff for working very collaboratively with us to get this issue resolved, and we look forward to the partnership going forward.

MS. MURIMI: Thank you, Gwenneth.

We have Olga Gomez. Olga Gomez, your line is unmuted. You may give your comment. Please state and spell your name.

MS. GOMEZ: Yes, can you hear me now?

MS. MURIMI: Yes.

MS. GOMEZ: Okay. First I'd like to say in my Rumsen language: [Greeting in Rumsen]. I'm saying, "Good day. Hello to all people. I am happy to be here with you all, my relatives and relations."

I'd like to make a comment and a question at the same time. I am Tribal Council from the Costanoan Rumsen Carmel Tribe. And my comment is like -- because I have another meeting to attend to in just a little while I've just got just a brief comment and question.

Okay, lack of water in the region is not just a single potential problem with lithium mining. Toxic chemicals can leak from evaporation ponds, pools to the water supply such as hydraulic acid, which is used in processing lithium as well as waste products that can filter out of the brine. Lithium is usually extracted from rock using more traditional methods. Nevertheless, this requires the use of chemicals.

In Nevada, research found impacts of a fish 150 miles downstream, downstream from a lithium processing operation. And in Australia, research showed that only 2 percent of the country's 3,300 tons of lithium-ion waste was recycled. That in itself can cause problems of unwanted batteries, electronics, batteries that can end up in landfills, etcetera, and ionic fluids can leak into underground water reservoirs.

The key problem here is that manufacturers are usually secretive regarding what actually goes into the batteries. My question is where will the future of the lithium waste be going to from these lithium-ions in the future to be recycled?

And my next question is, what guarantees do we as people and of the children have today, tomorrow, and those to come, have of the guarantee that these mining projects will have no effect on our drinking water resources. Or respiratory ill health from the impacts of air pollution and climate change?

And as people are meant to, we depend on ecosystems for water source, for land, the atmosphere for our own existences. And those are my two questions I have with that. And also (indiscernible) Tinker.

Thank you. And those are just my comments and my questions. [Rumsen language].

MS. MURIMI: Thank you for your comments.

And Imre Gyuk, did you have a comment on Item 5?

DR. GYUK: Yes, I believe I can talk now.

MS. MURIMI: Okay. Yes, go ahead.

DR. GYUK: Commissioners, I'm Imre Gyuk and I direct the Energy Storage Research Program at DOE's Office of Electricity. It's my pleasure today to support the energy storage plans of the California Energy Commission as

explained by Mike Gravely.

The California Energy Commission and my DOE storage program have a long history of collaboration, going back to when there was little support for energy storage. Back in 2005 we formed an MOU to explore the advantage of energy storage for frequency regulation. This became the first commercially viable application of storage on the grid. It was the beginning of an exponential rise in storage deployment.

Today, energy deployment is measured in gigawatts. California alone has some 3.3 gigawatts installed. And every one of these was needed when temperatures in California reached record highs earlier this month.

Energy storage has a new driver. It's no longer about a better functioning grid or about a more cost-effective grid. It's about climate survival. We must decarbonize and we must turn to renewable resources. And we can't do this without energy storage, massive amounts of it.

Short duration storage, say 15 minutes to 4 hours, has already found its place on the electricity grid. Lithium-ion batteries have proven a good and reliable medium for applications up to four hours with good business cases. But as we continue to install more renewable

resources we will need storage of medium duration, say four hours to one day, and eventually long duration. And for this lithium batteries are not ideal. We must turn to non-lithium batteries like flow batteries, zinc, and sodium-ion. There is much research on these options and many startups, but very little deployment.

The Department of Energy has big plans for long duration storage based on the Infrastructure Investment Act. New York State Energy Research and Development Authority also has substantial plans, which we are supporting through an MOU. But first in line is the California Energy Commission. CEC has put together a well thought out portfolio of medium duration, non-lithium technologies.

To support this effort we have formed an MOU with CEC. An experienced team of experts at Sandia National Laboratory will provide technical assistance to CEC. They will be visiting the factories and sites to oversee manufacturing quality, help with safety issues, and aid in system commissioning. We look forward to a fruitful collaboration. Thank you very much.

MS. MURIMI: Thank you, Imre.

Next we have Peter. Please unmute on your end, you may begin your comments.

MR. DAILEY: Good morning, it's an honor to speak

to this august, thought-leading group. We have had our own assets in California and think it's one of the best places in the world to be involved in the energy business.

My name is Peter Dailey D as in David A-I-L-E-Y. I'm the CEO of International Electric Power, which has been in business for 19 years as an energy and power investor and developer. We have done $3.5 billion in power plant transactions in the U.S. and abroad. We are now focused solely in the U.S. markets on battery storage.

Prior to launching into battery storage we spent six months with scientists and engineers studying all battery technology. And we concluded that the Eos zinc-bromine battery was the best on several elements: the electrolyte, the sustainability of the materials, the round-trip efficiency, the long duration state of charge. And from an economic standpoint, the cost. And from an operational standpoint, the robustness of the technology. It lasts at least twice as long as lithium-ion.

There is however in any technology no free lunch, so nothing is perfect. Unfortunately none of the engineers and scientists have come up with a perfect electrolyte. But in our view the best utility-scale, long duration application is the Eos technology and we have invested substantial dollars in that technology.

We are currently installing 120 megawatts of Eos

batteries and let me repeat that: 120 megawatts. And you know, I understand that California has substantial need for non-lithium technology. Our projects are actually in construction. We have discussed the technology with not less than 190 investors. And, as you know, Eos recently went public. The technology, we believe, is now proven and we're putting our money where our mouth is.

And the Chairman mentioned the IRA. This technology will attract a 50 percent tax credit. And if it's in an energy community it's potentially 60 percent. So the bottom line is for California we are prepared to install 100 install-and-connect by the fourth quarter of 2024, 100 megawatts and 800 megawatt hours of battery storage.

So thank you for your time. Please let me know if you have any questions.

MS. MURIMI: Thank you for your comment, Peter.

Chair, with no further comments I'll go back to you.

CHAIR HOCHSCHILD: Okay, thank you. We got a couple of comments that I think were not related to Item 5, but were valuable. And thank you for all of those.

Let's turn now to Commissioner discussion, starting with Commissioner Vaccaro.

COMMISSIONER VACCARO: Thank you, Chair

Hochschild.

So good morning, Elizabeth. Thank you for the presentation, I really appreciate it. You know, I appreciate the work of the STEP team and the CCO team and the investigation, the working through, developing what you all believe is a fair and reasonable settlement. I know that you, the Executive Director, CCO, wouldn't move forward with something that you didn't think was fair and reasonable. And I really appreciate that the project owner was able to meet staff and get to this resolution.

And I think I can support this, but I just want to let you know I've got some reservations, or a little bit of pause here. And I think it's just because of the structure of the way the settlement agreement (indiscernible) was presented to us. Like we're supposed to be focused on the four corners of the documents in front of us, yet I feel like I have a lot of questions.

And I've got some concerns, because your presentation said, "This is a project in a Tier 3 area." This is a fire suppression system that had not been tested as it should for at least 2015, 2016, 2017, 2018. I'm not entirely sure by the settlement documents when it was fully remediated. Was it before the Notice of Correction, before the Notice of Violation? Like I don't know, but I know it was at least four years in a Tier 3 area, where the State

of California has just seen devastating impacts from wildfires. And the whole point right, of a fire suppression system is to be able to protect property and protect lives, not just of the workers at the facilities but the neighboring communities.

And so for me, this seems really serious and really big. And I don't know what the maximum amount of the penalty is that we could have asked for, or that staff could have pushed for in a quasi-adjudicative context. So I'm not sure $200,000 is the right amount. But I'm not sure that it's not either. I suspect that what staff did was also look at comps, or comparable; by that I mean comparable settlements that we might have had in the past where fire suppression systems and other things were at issue.

And so I say all of this, because I've got a number of questions, and they're not in the four corners of the document. And I'm pretty sure we can't have a discussion about it. But Kirk Oliver is here to set me straight on that.

And so this is a lot of words, right? But it’s just letting you know why I'm a little bit conflicted, because I support the work that you all do. And I think you do exercise good judgment in this space. But I also feel like this is very serious, and that we probably could

have gotten more as a penalty out of this. And I think a higher penalty is probably warranted. But when you take everything on balance, and again what a settlement affords everyone in terms of use of resources, economy of resources, not having to go through any type of adjudication, I get all of that.

But I'm really very conflicted. And so maybe one of the questions I have and maybe it's for Kirk Oliver to answer is what can we talk about right now in this moment, if at all other than whether or not to approve this settlement? And if that's really the box that we're in right now that's okay, I just need to know it. Or if there's more that we can discuss that would just be (indiscernible).

CHAIR HOCHSCHILD: Could I add to your question? I would love to hear the rationale of how we got to $200,000. And what can you share about why that was the number brought to us?

MS. HUBER: I'm definitely going to defer to our legal experts in the Chief Counsel's Office and Kirk should be here to answer that question. (No audible response.) Kirk I think you're muted.

MR. OLIVER: Thank you very much. I'm just trying to get my video to go. Can you hear me now?

CHAIR HOCHSCHILD: We can hear you fine. Yep.

MR. OLIVER: Okay, very good. Well, I hope you can live without my video, it's not working right now.

So those are all very fair questions and sitting in the position that the Commission sits in I think those are entirely legitimate. And also we're striking a balance here. Because the Commission, if we were not able to go forward with an approval on the settlement, the Commission, as you know would be possibly involved in the next alternative, which would be to prosecute the case through the complaint process.

So we're striking a fine balance here to keep the Commission informed in general about how this process went forward across the board. And how it happened in this particular case without stepping over the line and calling into question the Commission's ability to fairly hear the case if it were to come before the Commission. So that's the balance we're trying to strike.

So with that in mind I think first and foremost it raises in my mind the need for an informational item to be brought to the Commission to talk about this process and the resolutions that we have received. In other cases there are faces on the Commission that weren't here when those other settlements were approved. And it's fundamental to us that we do treat the different violations similarly. So it should be the case that the Commission

has the access to what those resolutions were and in general how they were reached.

I can tell you in this particular case we did have comparable settlements that we looked at in terms of how much of a penalty was obtained for similar violations. And we went back in, to the best of our ability were -- used those as a starting point.

Now, when we're talking about violations of these requirements we're talking about a penalty structure that was adopted 30 or 40 years ago and has never been updated. So the penalties that we're dealing with here, for a single violation that doesn't extend over more than one day, regardless of the consequences of that violation, the maximum penalty is $75,000. And if the violation occurred over a period of time the law would allow an additional $50,000 computed on a daily basis to be added to that maximum.

So in the powerplant context for one violation the maximum penalty is $125,000. And the statute also --

COMMISSIONER VACCARO: I'm sorry. I'm going to interrupt you, Kirk. You mean "per violation," right? Or you mean "totality?"

MR. OLIVER: Per violation.

COMMISSIONER VACCARO: Thank you.

MR. OLIVER: So in this particular case there the

requirement extended over a four-year period of time. And it involved two separate fire pumps. So there was a total of eight potential violations that we engaged with the company over. At $75,000 a violation you're looking at something between a million and a half a million dollars. At $125,000 that would have been a maximum million-dollar penalty.

We had brought to you a couple of years ago for a resolution, a settlement agreement with the Geysers facilities that were all combined into one particular settlement. That involved many more separate violations than this did. That extended over a much longer period of time. That was also in a high fire-danger area and there was a fire that actually occurred outside of those facilities, as I'm sure you're well aware.

In that case the penalty structure and the factors that we considered -- and keep in mind this is something that we engage with the regulated entity over to try to come up with a reasonable resolution of it -- we mutually agreed in their case that a penalty of $2.1 million was appropriate.

In this case the violations extended over a much shorter period of time. There was not a fire in the proximity of the facility. And in neither case was there a harm or property damage that occurred as a result of the

violation, in either the Geysers or here. And the Geysers case involved a great many other violations. But the ones that dealt with the testing and the reporting of the testing ended up yielding a penalty in the range that we ultimately settled on here, which was approximately $25,000 per violation.

CHAIR HOCHSCHILD: Okay. Can I ask a question though --

MR. OLIVER: Yes.

CHAIR HOCHSCHILD: -- which is one, and I very much appreciate the point of Commissioner Vaccaro's question here -- just it seemed to me one principle we ought to adhere to: it should be more expensive to get a penalty than to just be non-compliant, right? I mean, I don't know what the cost for them to administer these fire pump testing procedures are eight times over the course of four years. But presumably $200,000 is more than that.

If it's less than that I do have an issue with it because this should not be, I think partly we want to send a message, "You really have to comply and it's more expensive not to comply." So I mean, one question I have is what is the cost to this entity to do that testing? Do we have some sense of that?

MR. OLIVER: Well in the investigation we did obtain information about what the expense to the company

would have been in terms of constructing a collection facility that would collect the pump test water. There was an indication in the investigation, the investigation file is there, that the expense of constructing that was dramatically less than the penalty that was taken here. So I can say that the staff is well-confident that the penalty that was taken here far exceeded what the cost of compliance was in this particular case.

CHAIR HOCHSCHILD: Okay, thank you. That's helpful.

Commissioner, any further questions on your side?

COMMISSIONER VACCARO: Yeah, and I guess -- yes, yes I do. I just have just a couple. So first of all thank you, Kirk, really appreciate your ability to answer those questions and to provide that background.

I like that you raised the topic of an informational item in the future to the Commissioners. I feel like it probably needs to be something other than informational. I think it probably needs to be maybe an action, the possibility of some action in some direction from the Commission as well on maybe some things that we would like to see, even in the settlement agreements.

I understand these are negotiations. And I know it's very -- there's certain things that are just hard to get that agreement on from project owners. But I do feel

like there's some content that really is important to be in these settlement agreements for us to feel, is that we are really understanding sort of the factual underpinnings and what's going on. Sort of what is recklessness versus just a negligence of a certain sort. And how "eyes wide open" are folks in some of this.

So for instance, like I read the background materials. So from 2010 to 2015 I guess we're presuming that this testing was occurring as it should have. But for some reason, starting in 2015, it hadn't been. And these things make me curious. What happened between 2014 and 2015?

And again, I still am curious how soon after you alerted the project owner did we get sort of that compliance? And how do we make sure in the future that there is compliance? I mean, I heard, Elizabeth, you mentioned they're going to be doing reporting. But weren't they reporting to us all along? Or is this something where there was no reporting? So it makes me wonder, were we getting reports telling us that there was compliance when there actually was no compliance or were we not getting reports?

And so I mean I don't want to belabor this issue, right? But I feel like it's serious when we are in a Tier 3 area, even if there wasn't an actual fire. I feel like

"Thank goodness there wasn't a fire." But really, the reason for these types of safety measures is to make sure that there is a readiness and to avoid harm to life and to property. And so to me that's not a pass. That to me isn't a reason for a lower amount just because you didn't have the catastrophic event occur.

So there's a lot here, but what this tells me is there's an opportunity for us as an agency to think about what we're looking for as we develop the settlement documents, the content. And really, when we -- when it's okay to deviate from the comps I totally respect, Kirk, the mention of the comparables and how important it is, because we don't want to be arbitrary. We don't want to be doing things that are unfounded and aren't bounded in reasonableness. On the other hand, I don't think comps are outcome-determinative. I think they just provide some framework for analysis and for thinking about where we go.

So again, I just mentioned I could support this, but I'm conflicted. I'd love to hear what my colleagues on the dais have to say, and any further questions that the Chair and Vice Chair might have before we kind of get to an actual motion and vote on this item.

Thanks for the willingness to sort of hear all of these words and all of these thoughts, but this one to me is just it's serious. The Geysers was very serious as

well. So again, thank you Elizabeth and Kirk, for your professionalism and responding to these questions.

MR. OLIVER: Thank you, Commissioner.

CHAIR HOCHSCHILD: Thank you, Kirk. Thank you, Commissioner.

I'll just say, you know, I'm happy to support this proposal as it's crafted. Just going forward though I really appreciate the direction of Commissioner Vaccaro's comments. And the principle that matters to me is that the fine that's assessed be more expensive than the cost of compliance, right? We don't want this to be like a parking ticket. There should be a consequence, and that it reflect the urgency around fire, going forward.

So but for purposes of this I'm fine with the proposal. And would welcome any comments from the Vice Chair as well, if you have any thoughts you'd like to share?

VICE CHAIR GUNDA: No, I just really appreciate Commissioner Vaccaro raising these questions. And for me this is really informative. I haven't really followed previous cases on this. And it's just I really appreciate the dialogue and the principles laid out. So I look forward to future cases.

And then how we go about thinking through what Commissioner Vaccaro especially pointed out, which is how

do we look at the projects and compliance in the new climate change paradigm, right? To the extent that we have the obligation to provide compliance, to avert issues like this given the climate conditions, given the equity implications, like what we've seen in the last year on Russell City, right? So how do we really think through the changes that need to be made from a compliance and the principles that we want to push?

So I look forward to having the discussion. And I really look to Commissioner Vaccaro's expertise on this. And I totally agree with the Commissioner and with Chair Hochschild, just the principle of the fine being a meaningful deterrent for noncompliance. So with that I know I look forward to supporting it. But then really want to pursue Commissioner Vaccaro's recommendations, moving forward.

CHAIR HOCHSCHILD: So Commissioner Vaccaro, any final comments or amendments to you'd like to offer to this? I'm totally open to anything you'd like to put forward.

COMMISSIONER VACCARO: Yeah. Yeah, thank you. No, I don't have any amendments. Again, I want to commend the staff and the CCO teams for their work and their diligence. I mean, I know what it takes to reach one of these negotiated settlements. And I know that there was a

lot of diligence on the investigative side.

So again, I just want to commend you all for the work and for bringing this forward. My questions, my thoughts are not a reflection in any way of anything negative in the work or your professionalism. It's just the way that I'm thinking about it with the hat that I wear right now. So thank you all for that.

I am prepared Chair, to move approval of this item.

CHAIR HOCHSCHILD: Okay, that would be great. Commissioner Vaccaro has moved Item 5.

Vice Chair Gunda, would you be willing to second?

VICE CHAIR GUNDA: Yes, second Item 5.

CHAIR HOCHSCHILD: All in favor say aye.

Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 5 passes 3-0.

And let me just emphasize I really -- Commissioner Vaccaro's point about the urgency on fire, we cannot overstate this. This is something we need to pound that drum in every way every day that we possibly can, to ensure we're being fire-safe. We're being hit by the worst

wildfires in our state's history the last few years. And so this is an all-hands-on-deck moment. And I hope, Elizabeth, that you can take this conversation and dialogue as some guidance for how to approach these kind of questions in the future and hope that was useful for you and the team.

MS. HUBER: Very, good direction.

CHAIR HOCHSCHILD: Okay. Thank you so much. Appreciate all the work.

We'll turn now to Item 6, Anaheim Transportation Network. Welcome, Esther.

MS. ODUFUWA: Yes. Good morning everyone. My name is Esther Odufuwa with the Fuels and Transportation Division. And I will be presenting the ATN agreement this morning.

Today I am seeking approval for one agreement which is the last of the seven agreements that resulted from the Zero-Emission Transit Fleet Infrastructure Deployment Solicitation. When completed this project and others will demonstrate large-scale infrastructure projects, they will demonstrate resiliency, and also provide the best practices and key lessons learned for future replicability at other transit agencies. Next slide.

So again, this is an agreement with the Anaheim

Transportation Network, otherwise referred to as ATN. The new infrastructure will in the future allow for the operation of zero-emission transit fleets and more clean buses which will then reduce greenhouse gases and motor vehicle emissions in a region that is classified as: an extreme non-attainment area for the eight-hour ozone; and a serious maintenance area for carbon monoxide.

The project will also provide reliable charging infrastructure that will increase reliability and operation of the transit system, providing access to job centers and services for disadvantaged communities.

And as I previously presented at the October 13th, 2021, business meeting there are more than 11,500 transit buses operating in California. And again, if all these transit buses in the state were capable of discharging through an average dedicated 60-kilowatt bidirectional charger, combined they would represent about 700 megawatts of flexible capacity that could support the grid during the times of peak demand.

Another great benefit of this project to the community is that ATN will be providing free services. Actually, they actually provide free service for employees of the Anaheim Resort and these people will enjoy cleaner buses and cleaner air. Next slide.

So CEC funding will allow ATN to install the

charging infrastructure, including microgrids to support up to 50 electric transit buses. So this project is part of ATN's strategy to convert its entire fleet by installing them infrastructure that will enable an optimal EV-designed charging system during lowest grid peak energy demand and avoiding the need to utilize the grid at peak demand periods. So theoretically the BYD buses that can be used to power a home, feed energy back into the electricity grid, and even provide backup power in the event of a blackout or/and emergency.

With that said the V2G or V2V has not yet really been developed but BYD has done Vehicle-to-load, which is also known as V2L, and this is a functionality in some recently launched EVs with features that allow large batteries in electric vehicles to power something external to the car, such as a domestic appliance.

For this project the microgrids and the EV charging equipment will be connected to the utility electric grid; the solar arrays will be installed to generate green power; staff would also be trained on the use and safety requirements of the new infrastructure; and finally, best practices will be shared with other stakeholders.

So shown on this slide is the rendering of the solar canopy arrays over the bus charging at the Claudina

facility. Next slide.

The charging facilities will use a combination of 200-kilowatt AC chargers and 80-kilowatt AC chargers. For the 200- kilowatt AC chargers shown on the left both wires will be plugged into a single 60-foot electric bus for charging. Similarly, for the 80-kilowatt AC chargers shown on the right, both wires will be plugged into a 40-foot electric bus for charging. So having three 80-kilowatt chargers and one 200- kilowatt charger will actually offer ATN the flexibility while charging the mix of BYD's 40-feet and 60-feet electric buses.

So these buses will be used to demonstrate the infrastructure in the project and will have a range of between 175 miles for the 40-feet buses, and up to 220 miles for the 60-feet buses on a single charge. And this can be fully charged between 2 hours to 3.5 hours, depending on the battery capacity of the bus. Next slide.

This project will also create an integrated scalable system for solar-powered charging of buses and offer resiliency by installing an onsite battery energy storage system with a microgrid controller unit across the two sites that allows it to interact with the chargers, the grid, and the PV system in place.

So shown on this slide is the Tesla Megapack battery energy storage system which stores energy for the

grid reliably and safely, eliminating the need for gas Peaker plants. Each unit can store over 3-megawatt hours of energy, and that's enough to actually power an average of 3,600 homes for one hour. Next slide.

Staff recommends approval of this grant award and adoption of staff's determination that the project is exempt from CEQA. Thank you all for your time and consideration of this item. I believe Diana Kotler, the Executive Director at ATN is on the call to make comments and answer any questions about the project. That concludes my presentation.

CHAIR HOCHSCHILD: Thank you so much, Esther. We'll turn now to public comment on Item 6.

MS. MURIMI: Thank you, Chair.

Once again, for individuals that are on Zoom go ahead and use the raised-hand feature to indicate that you'd like to make a comment. And if you're calling in press *9 to raise your hand and *6 to unmute on your end. Giving that a moment.

Seeing no raised hands, Chair, I'll hand the mic back to you.

CHAIR HOCHSCHILD: Okay, Diana Kotler is not on to make a comment?

MS. ODUFUWA: I actually saw her on the call.

MS. MURIMI: Oh, Chair, she has just raised her

hand to me so (indiscernible).

CHAIR HOCHSCHILD: Oh yes, please. Diana, welcome. You're welcome to make a comment at this time if you'd like.

MS. KOTLER: Well I just wanted to thank Esther and the Commission staff for working with the ATN on this project. And we're really looking forward to delivering this. Oh sorry, I just saw my timer come in. I apologize. I just wanted to thank the Commission staff for consideration of our project. And we look forward to working with you on delivering this system to the citizens of California and Anaheim. Again, thank you for your consideration.

CHAIR HOCHSCHILD: What is -- can I ask you what is the timing when you think this project would be complete?

MS. KOTLER: We are anticipating that the construction of the project will begin late fall and it will take approximately 10 to 12 months to complete.

CHAIR HOCHSCHILD: Okay. And then are you advantaged by the new tax credits in the IRA in any way for this?

MS. KOTLER: I believe we are.

CHAIR HOCHSCHILD: Great. Well, terrific. Thank you all for your work, Esther, to you and the team.

You know, I just want to observe again we are pushing out so much money these days, we -- in many states and most states a $5 million investment to do EV charging and microgrids for supporting 50 electric transit buses would be the biggest thing they do all year. For us this is another milestone in what's now almost $4 billion we're putting into EV charging in the coming years. But this is just fantastic to see.

I think the heavy-duty stuff for me is particularly exciting because of the grid benefits that are available. And I just want to point out we had the highest electric demand in the history of the state last Tuesday. We needed absolutely every lever that we could to support that substantial challenge. And the flexibility that we get with these kinds of projects is good for the grid. And this is one of the reasons why the ISO is very supportive of electrification. It's just more tools at our disposal, and we want everything that connects to the grid to be a good citizen of the grid. And I think this is another example of that, so I just want to say my enthusiastic support for this. I'm channeling Commissioner Monahan who's under the weather and not able to join us today, but thanks to all.

I just would open up if there's any comments or questions from my colleagues? If not Commissioner Vaccaro,

would you be willing to move Item 6?

COMMISSIONER VACCARO: Yes, I'd be happy to. I move approval of Item 6.

CHAIR HOCHSCHILD: And Vice Chair Gunda, would you be willing to second?

VICE CHAIR GUNDA: Yes, second Item 6.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: And I vote aye as well. Item 6 passes 3-0.

We, as I mentioned earlier, Item 7 has been removed from the agenda. So we'll turn now to Item 8, Reliable, Equitable and Accessible Charging for Multi-family Housing. I welcome Kristi to present.

MS. VILLAREAL: Good morning Chair and Commissioners. My name is Kristi Villareal, and I'm with the Fuels and Transportation Division. Today staff is seeking approval for three projects that were proposed for funding under the Reliable, Equitable, and Accessible Charging for Multi-family Housing solicitation, which is referred to as REACH. Next slide, please.

At-home charging for electric vehicles or EVs is

often the cheapest and most convenient form of charging. Installing charging for multi-family housing like apartment buildings can be challenging, especially when the residents are low-income. Multiple studies have shown that homeowners are far more likely than renters to own EVs, due in part to a lack of accessible charging infrastructure at home. The REACH solicitation is designed to address these issues and add measurable benefits for these communities and statewide.

The proposed projects will deploy at least 583 Level 1 and Level 2 charging ports to multi-family housing properties and test innovative models for installing charging to help meet statewide electric vehicle adoption goals. At least half of the chargers are within disadvantaged or low-income communities. Next slide.

The first proposed agreement is with Ecology Action Santa Cruz. Staff is requesting $2,999,801 for this project, which will install at least 375 Level 1 and Level 2 charging ports. The scale of this project makes it unique. By using Level 1 installs in conjunction with Level 2 costs are kept lower because of the installed cost differences between the two, Level 1 being the less expensive of approximately $3000 per port. This allows for a widespread rollout.

Ecology Action is targeting 75 percent of the

installations in disadvantaged communities. The images on this slide show examples of chargers and charger layouts that they plan to utilize. Next slide.

The next proposed agreement is with CLEAResult Consulting Incorporated. Staff is requesting $2,007,360 for this Scalable Charging to enable majority EV ownership, or SCHEME project. The SCHEME project will use an innovative technology, the smart EV circuit breaker, which has a lower cost of installation and ownership. This project will install at least 100 Level 2 charging ports.

CLEAResult anticipates that about 75 percent of the served units will be in affordable housing developments. Next slide.

The final proposed agreement is with Sacramento Municipal Utility District, or SMUD. Staff is requesting $2,229,000 for the ChargeReady Community project, which is the Sacramento region's replicable, equity-first EV charging solution for multi-family housing. ChargeReady Community's unique approach will implement streamlined installation for both existing and new construction multi-family housing, offering no- and low-cost payment options.

This project also provides the infrastructure for a no-cost, onsite carshare program, which is funded by Sacramento Metropolitan Air Quality Management District. This project will deploy a minimum of 108 Level 2 EV

charging stations at 6 affordable housing properties throughout Sacramento. Next slide, please.

Staff's recommendation is to approve these agreements and adopt staff's determination that these actions are exempt from CEQA. Online I believe we have Ecology Action's Mahlon Aldridge and Sherry Bryan. We also have should have Joshua Rasin from SMUD as well as JoAnne O'Neill and James Russell from CLEAResult who are available to make comments and/or answer questions. Thank you very much for your consideration. I am happy to answer any questions you may have as well.

CHAIR HOCHSCHILD: Thank you so much.

We'll turn now to public comment on Item 8.

MS. MURIMI: Thank you, Chair. We'll start with Mahlon, Mahlon Aldridge. Apologies if I've misstated your name. Please state and spell your name, give your affiliation, and you may begin.

MR. ALDRIDGE: Great, thank you. Yes, this is Mahlon Aldridge. I'm with Ecology Action. My name is spelled M-A-H-L-O-N, Aldridge A-L-D-R-I-D-G-E, Vice President of Strategy here. And I wanted to just give a very heartfelt thanks to the Commission, the staff at all levels that we've engaged with on this over the last actually probably two-and-a-half years. And the Commissioners as well that we've had a chance to engage

with.

The approach that we've used is a departure from typical approaches, the typical approaches that really hadn't worked in the multi-family sector. And we've spent, now it's been four years really determining the market failures in multi-family and designing an approach that could be used to overcome those market barriers.

And we did some early pilot testing through contracts with CCAs. And brought that information to staff as an innovative approach to delivering charging for multi-family, and particularly for affordable ways to keep the prices low for the drivers. And to make it easily adoptable for the property owners who are the major stakeholders in the ones where the major barrier and the market failure had been. So just really have appreciated the openness and of the team, top to bottom, on this.

And it I guess I would just say that the Commission's investment here will focus a lot on the Central Valley, 50 percent of the money and the chargers will be going to Central Valley. And this approach that we've provided is based off of our 20 years of working and energy efficiency, using what's called the direct installation model. And we believe that it'll play out and be very successful. And we'll hope to see more and more investment by utilities and others in this same model.

So thank you for that. I'm happy to answer any questions about it.

CHAIR HOCHSCHILD: Thank you.

Any other public comments on Item 8?

MS. MURIMI: Yes, Chair. We have James Russell. James, your line is unmuted. Please state and spell your name, give your affiliation. You may begin your comment. And you may need to unmute on your end. That's James Russell, James Russell.

MR. RUSSELL: Ah, there we go. Hello, my name is James Russell, J-A-M-E-S R-U-S-S-E-L-L. I'm the Director of CLEAResult's Transportation Electrification Practice. And I work with CLEAResult's passionate team of more than 90 employees here in California. CLEAResult is a national company but we have decades of success delivering clean energy programs and services in California. We're very proud of our role contributing to energy innovation here, as well as our capacity to then scale up those services, both in California and ultimately throughout the nation.

We have been working with utilities and Community Choice Aggregators in California to provide technical assistance for EV charging projects for several years, focusing primarily on hard to reach and underserved segments particularly in multi-family. From that work we have a strong appreciation for the challenges that multi-

family residents and property owners face, which led us to developing this highly scalable model for charging at multi-family properties, which also future-proofs each site we touch to ensure that demand for charging can be met well into a future where zero-emission vehicle adoption becomes widespread.

As was mentioned at the presentation our project will support the daily needs of charging of we estimate more than 300 current and future multi-family households in northern California, significantly improving those residents access to clean mobility.

I want to thank you very sincerely. Thank you to the Commission for creating this opportunity and to specialist Kristi Villareal for all of your support of this exciting effort.

MS. MURIMI: Thank you. Next we have Josh Rasin. Josh, you may begin your comment. Please state and spell your name and give your affiliation.

MR. RASIN: Hi, thank you. Josh Rasin, J-O-S-H R-A-S-I-N, a Supervisor of Emerging Technologies with SMUD. And I'd just like to thank the Commission for their REACH grant award on behalf of SMUD.

SMUD is in a leadership position to help advance transportation electrification through our experiences with both infrastructure deployment and providing access to

electric vehicles. This grant money specifically will allow SMUD to expand and accelerate our plans to deploy EV charging infrastructure, as well as bringing electric vehicles to underserved and under-resourced communities in Sacramento, while hopefully creating a technology and business model that we expect will benefit the industry and society at large. So we're very much looking forward to deploying this technology and this this project, and we really appreciate the award. Thank you.

MS. MURIMI: Thank you.

And with that, Chair, there are no more comments, back to you.

CHAIR HOCHSCHILD: Well, great. Thank you so much, thunderous approval from my side on this set of grants. And I just want to thank Kristi and the whole team and all the stakeholders. And urge you guys to move as swiftly as possible to get this infrastructure deployed. We need it. Charging is the big barrier now we've got to overcome. So thank you to all.

Unless there are further comments from my colleagues. I'd welcome a motion from Vice Chair Gunda on Item 8.

VICE CHAIR GUNDA: I move Item 8.

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

COMMISSIONER VACCARO: Yes, I second.

CHAIR HOCHSCHILD: All in favor say aye.

Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well, Item 8 passes 3-0. Thank you Kristi and the team. And good luck to all.

MS. VILLAREAL: Thank you.

CHAIR HOCHSCHILD: We'll turn now to Item 9, Lumen Energy Strategy. I welcome Katelynn to present.

MS. DINIUS: Good morning Chair and Commissioners. My name is Katelynn Dinius and I work on the transportation team in the Energy Research and Development Division. Today, I am presenting two final recommended awards from the EPIC solicitation Vehicle-to-Building Technologies for Resilient Backup Power. Next slide.

The proposed awards will benefit Californians by advancing products and pathways that enable electric vehicles to provide backup power at competitive costs compared to conventional solutions like fossil fuel generators or stationary storage. The bidirectional charging technologies being demonstrated can enhance

customer resilience by supporting critical loads during grid outages. Using electric vehicles to replace fossil-fueled backup generators can reduce harmful greenhouse gas and criteria pollutant emissions, providing environmental and public health benefits.

Bidirectional charging technologies can also increase the benefits of electric vehicle adoption, not only providing drivers with clean mobility but also enabling electric services like clean backup generation. Next slide.

In the first proposed project Center for Transportation and the Environment will partner with electric transit bus manufacturer, New Flyer Industries, to advance and demonstrate bus exportable power systems, which can discharge energy stored on battery and fuel cell electric buses to buildings or critical loads. New Flyer intends to develop this technology into a commercial product for its electric bus platforms.

Compared to an equivalent stationary energy storage solution the bus exportable power system can deliver the same backup power capability at 50 percent of the cost. The project will conduct a first-of-its-kind demonstration using electric transit buses to support critical HVAC and air filtration loads at the West Oakland Public Library and critical operation and service loads at

the AC Transit's bus yard.

The project will work with the community-based organization West Oakland Environmental Indicators Project to incorporate the capabilities of the bus exportable power system into their community resilience planning, using it to help mitigate the impacts of natural disasters, wildfire smoke, and extreme heat.

The California Air Resources Board estimates there are approximately 11,500 transit buses operating in California that will need to transition to zero-emission by 2040 to meet our state climate goals. Although the project focuses on vehicle-to-building and back-up power use cases, if all 11,500 transit buses in this state were capable of discharging to the grid through a dedicated 125-kilowatt bidirectional charger, combined they would represent 1.4 gigawatts of flexible capacity that could support the grid during times of peak demand. Next slide.

In the second proposed project Andromeda Power will develop and test an integrated powertrain system for light-duty electric vehicles that enables AC bidirectional charging. The top figure illustrates how DC bidirectional charging is done today.

To safely discharge electricity from EVs to the grid or to a building, costly off-vehicle equipment is required and limits widespread adoption. The bottom figure

shows how Andromeda Power's integrated powertrain system can enable AC bidirectional charging at an up to 70 percent lower cost compared to today's DC pathways. This cost reduction can be achieved by modifying the vehicle's existing motor and electronics that otherwise sit idle during charging.

The modifications enable these existing components to provide safe power conversion in place of off-vehicle equipment, reducing infrastructure complexity while enabling more cost-effective vehicle-to-building back-up power and vehicle-to-grid use cases. Next slide.

Staff recommends approval of these grant awards and adoption of staff's determination that these projects are exempt from CEQA. I'm available for any questions as are representatives from Center for Transportation and the Environment and Andromeda Power. Thank you and that concludes my presentation.

CHAIR HOCHSCHILD: Thank you, Katelynn. Before we go to public comment can I just clarify the point you just made? You said 1.4 gigs of capacity that represents the electric buses that are today in circulation? What are you basing that number off of?

MS. DINIUS: That would be if all transit buses in California were zero-emission and (indiscernible) bidirectional capable.

CHAIR HOCHSCHILD: I got it. So if every transit bus converts to electric and had bidirectional we would get 1.4 gigs. Okay, that's helpful. Thank you.

We'll turn now to public comment on Item 9.

MS. MURIMI: Thank you, Chair.

Once again, for individuals that are on Zoom go ahead and use the raised-hand feature to indicate that you'd like to make a comment, you can find it at the bottom of your screen. And for those calling in press *9 to indicate that you'd like to make a comment and *6 to unmute on your end. Giving that one moment. Again, use the raised-hand feature if you'd like to make a comment. And if you're calling in press *9.

Seeing no raised hands, Chair, back to you.

CHAIR HOCHSCHILD: Okay. Just again, thunderous, thunderous support for this, so needed. And we will be so much better off as a state when this kind of infrastructure is deployed.

MS. MURIMI: Apologies.

CHAIR HOCHSCHILD: And sorry, Dorothy, was there someone wishing to make a comment?

MS. MURIMI: Yes. Apologies, Chair, it just came in. Yeah.

CHAIR HOCHSCHILD: Okay. Let's go ahead and take that comment then.

MS. MURIMI: We have Olga Gomez. Go ahead and unmute on your end, you may give your comment.

MS. GOMEZ: [Greeting in Rumsen] My name is Tinker, okay. I'm hearing about the things with the whole thing with not being the, how do you say, the nontoxic all this with what she was talking about and sharing with the vehicles and all this and that. But my thing is, and my question is on the lithium mining, the lithium mining itself being toxic or not? Toxic or not to the environmental, to the soil, water, all these things that come along with mining, with extraction of lithium. So those are my kind of questions.

And I'm coming also from like I said, I'm Tribal Council of the Costanoan Rumsen Carmel Tribe. And these are kind of my questions and my comments I'd like to make. Because I know lithium extraction is a lot of chemicals that are involved with that. A lot of chemicals go underground, to pumped underground. So it does, to me, I feel it does affect a lot of the air quality. It affects the soil, it affects water. But I'm not hearing any of that. I'm just hearing all the good about what the outcome is with vehicles with all these things. But I'm not hearing, and we're not hearing nothing on the impact of anything else. [Rumsen language.]

CHAIR HOCHSCHILD: Yeah, I think I can respond

just briefly to that. I mean, obviously in California half of our air pollution comes from transportation, and that's a huge concern particularly for low-income communities, which is part of the reason why there's such a big focus on zero-emission transportation. And the issues you're describing are also a big concern for fossil fuel extraction, both oil and natural gas.

The lithium in California is really not mining. There is no hard rock mining for lithium in California. It's in a geothermal, superheated brine reserve which is by far the greatest way to produce lithium in the world. There's very significant impacts if it's just from hard rock mining and from the evaporation ponds you see in Chile and Argentina.

And one of the things that's compelling to me about the lithium recovery in the Salton Sea is it's a much, much greener process. Having said that there are environmental impacts for every form of energy generation, including electric vehicles, including lithium, and even including this process. But relative to the other forms it's much greener. It's something I think we should do more of a sort of focused public workshop on to get into those questions.

But Dorothy, do we have any other comments on Item 9?

MS. MURIMI: Thank you, Chair. No. No more comments on Item 9, back to you.

CHAIR HOCHSCHILD: Unless there is Commissioner comments I'd welcome a motion from Vice Chair Gunda on Item 9.

VICE CHAIR GUNDA: I move Item 9.

CHAIR HOCHSCHILD: Is there a second from Commissioner Vaccaro?

COMMISSIONER VACCARO: Second.

CHAIR HOCHSCHILD: Okay. All in favor say aye.

Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well, Item 9 passes 3-0.

We'll turn now to Item 10, Minutes from the August 10 Business Meeting. I believe I was supposed to make an announcement on that. Linda Barrera, what was it you wanted me to say?

MS. BARRERA: That we're proposing to just move to the August 10th business meeting, not the July 13th as shown in the agenda.

CHAIR HOCHSCHILD: Okay, so we're just approving the August 10th Business Meeting Minutes. Are there any

public comments on that Dorothy?

MS. MURIMI: Thank you, Chair. I'll make an announcement again. for individuals that are on Zoom who would like to make a comment use the raised-hand feature. And if you're calling in press *9. Again, this is for Item 10, the August 10th Business Meeting Minutes.

Seeing no raised hands, Chair, back to you.

CHAIR HOCHSCHILD: Okay. Is there a motion from Vice Chair Gunda on Item 10?

VICE CHAIR GUNDA: Yes, I move Item 10 for approval.

CHAIR HOCHSCHILD: Is there a second from Commissioner Vaccaro?

COMMISSIONER VACCARO: Second.

CHAIR HOCHSCHILD: All in favor say aye.

Vice Chair Gunda?

VICE CHAIR GUNDA: Aye.

CHAIR HOCHSCHILD: Commissioner Vaccaro?

COMMISSIONER VACCARO: Aye.

CHAIR HOCHSCHILD: And I vote aye as well, Item 10 passes 3-0.

We'll turn now to Item 11, Lead Commissioner, Presiding Member Reports. Let's begin with Vice Chair Gunda.

VICE CHAIR GUNDA: Thank you, Chair. I just

wanted to point a couple of things. In the Consent Calendar we've approved one item on hydrogen. So I just wanted to congratulate all the staff who have been working tirelessly on that.

I want to call out the UCLA and UC Irvine investments and their focus on hydrogen.

Given that the IEPR has a focus on hydrogen, I wanted to just kind of lay out a couple of things. Looking at equity that's inclusive of workforce development and certainty, certainly relevant for thinking about a just transition, I think the existing gas pipeline workforce and the blending really is an important topic to follow through and understand and the implications of it.

The other thing is CARB's Draft Scoping Plan indicates that hydrogen blending could play an important role, specifically for hard-to-electrify end users and as a complement to cross-sector electrification. So given those important elements, I think it's an important project. And I just wanted to highlight that I'm looking forward to those projects.

I want to give a shout-out to UC Irvine who have been a longtime leader in hydrogen research, so happy to see that there and I'm supporting a symposium that they're putting on. I understand that the UCLA project is going to be doing important lab scale testing, that will research up

an even higher and more aggressive 100 percent injection of hydrogen into the gas infrastructure. So I just wanted to note the importance of these projects and wanting to raise support of them.

The second element I wanted to talk through is we had an IEPR workshop on equity, the third in the last regional workshop, which was really great. But you know we had to miss out, a few of us, because of the reliability concern.

Chair you already mentioned this, September is based on the early indication, September was the highest and longest heatwave that California has experienced. And as the Chair mentioned, we were almost on track to hit 53,000 megawatts last Tuesday. We ended up being around 52,000 because of some of the demand-side dispatch that we've seen. So it was an extraordinary, extraordinary event.

Just to put it in kind of the level of planning and how it goes. We were expecting a 44,500 megawatts September peak, and we got up to 52,000. That's over 7,000 megawatts, really looking at about a 15-16 percent departure from an expected forecast. That is not what we planned for. And if not for the incredible mobilization out of the Governor's Office and all the state efforts and incredible team at CEC we wouldn't have gotten through

that.

So I just wanted to thank and congratulate all the staff who have tirelessly worked on that. Especially the Renewable Division, under the leadership of Deana, was able to stand up our DSGS program, the Demand Side Grid Support program, very, very quickly and able to bring in almost 300 megawatts of support to the grid over those nine days.

There's a lot of people to thank. Given the time we have today I'm going to do an informational item, maybe at the next business meeting on the event, but I just wanted to thank all the team that has been involved. I'll call out a few people: Deana Carrillo, Ashley from Renewables, Guadalupe Corona, Lisa DeCarlo, David Erne, Ben Finkler. All of them were instrumental in making DSGS launch, so thank you all.

CHAIR HOCHSCHILD: Just I'm really glad -- well, first of all, congratulations and thank you for all the incredible work. But I would really welcome an informational item presentation on this from you on the next business meeting to just walk through the different elements how we were able to keep the lights on under such incredible duress, it'd be really helpful.

Let's go to Commissioner Vaccaro.

COMMISSIONER VACCARO: Yeah, thank you. So I'll

just keep this brief. So the first thing I wanted to mention is that last week I had the honor of testifying as a witness for a House of Representatives field hearing in Morro Bay on offshore wind energy development. It was really sort of a look at opportunities and challenges just a tremendous witness grouping that they have. There are four panels, I was on one. Again, it was my honor to be able to just support our efforts and to listen and learn. So it was Congresspersons Conway, Stauber, Panetta, Lowenthal, and Carbajal who presided over that.

And I just think it's really important the attention that's being paid to the efforts here in California, especially as we are preparing for the first-ever offshore wind lease sale this fall. We have assurances from the Bureau of Ocean Energy Management that that's still expected to happen in 2022, and we're gearing up for that.

So a segue, and that is related to offshore wind, is that we are gearing up for Energy Commission staff to have a workshop in early October. I think we're looking somewhere around October 6th, just to provide some transparency around the Assembly Bill 525 work that we're doing so many things. It was Herculean that we got the planning goals adopted mid-August. But there's still so much work to be done to meet the requirements of Assembly

Bill 525. So it's to provide that transparency, as well as to allow stakeholders and others to provide some input as we move forward on the next two deliverables which are two reports that are due in December of this year.

And then finally, this isn't to report out on my activities or my lead Commissioner areas so much as just a recognition of Shawn Pittard I understand this is his last Energy Commission business meeting.

Chair, you already welcomed Elizabeth, we're so thrilled for her. And I am sad though to see Shawn Pittard go. He's really showed tremendous leadership in his time as a Director over STEP. He brings an integrity, transparency in his process, he builds team, and he builds morale; really seen the transformation in the STEP Division. Over the years I've worked with him in my role as Commissioner, as Advisor to former Commissioner Douglas, and then in my former role as the Chief Counsel. So I just really wanted to recognize and uplift all of the tremendous work that Shawn has done in his time here at the Commission. He is truly a public servant who needs to be recognized for his tremendous work. And that's it for me. Thank you.

CHAIR HOCHSCHILD: Thank you so much, Commissioner. I know all of us on the Commission, Vice Chair Gunda, Commissioner McAllister, and Commissioner

Monahan join you in those words of thanks and recognition for Shawn. Thank you for an incredible career at CEC and we wish you the best of luck.

I did want to say a few more things just on the grid challenge we had last week. This was an all-hands-on-deck event. And I do want to highlight the actions that the Energy Commission took, really, were instrumental in keeping the lights on. And it's everything from the Demand Response Program, which we approved in July, and got 250 megawatts out of that just in a matter of weeks. To all the investments we've made in energy storage where we now have increased by 15x the amount of energy storage on the grid since 2019; from 200 megawatts to 3300 megawatts, enroute to 15,000 megawatts by the end of the decade.

And all that work on energy storage, investment, and research fed into that. To all the conservation efforts, and that goes to the staff and the Commissioners, urging their friends and colleagues to conserve. We needed all of that. And I view this as one of our biggest tests and a test that we passed successfully keeping the lights on in a heat event that was more severe than the one we experienced in August 2020 when we did have outages for those two nights. So just an incredible effort.

And this buys us time. I do believe we're in good shape for the next year. And now we can add a bunch of

new clean resources to better support the grid. I think all together it's 5 gigawatts that are supposed to come online in the next year, so we'll have more cushion. But I just wanted to recognize the incredible team effort that went into that last week.

The only update I wanted to share was that I spent last week in Washington DC with Mike Gravely visiting with the Department of Defense on a bunch of projects we're working on for a new clean energy demonstration. And with the Department of Energy, which now has almost $100 billion to push out the door to the states, about two-thirds of that is from the Infrastructure Bill, a third from the IRA. And so we're going to be applying for a bunch of that money to support grid resilience and storage and a bunch of other good stuff.

And I want to recognize Jennifer Martin-Gallardo for all her work to get us organized with respect to those federal grants and the EPIC team and others who are getting ready to bring, put as much of that money as we can to work.

I think I will stop there. And we'll turn now to Item 12, Executive Director's Report.

MR. BOHAN: Thank you, Chair. Is my audio working?

CHAIR HOCHSCHILD: Yeah, it is.

MR. BOHAN: Good, good. All right, we're towards the end of the meeting, so I want to move quickly. I'll talk next time about the efforts we're making to streamline the business meetings a bit. You saw some of that today. I'll talk about that at the next meeting.

Also the $10.5 billion that the Energy Commission is slated to get now between the State Budget and pardon me IGA and the IRA, we want to talk -- I'll do that at the next Director's Report -- about how that is going to impact the organization and some of what we're thinking about.

I also want to thank the team as Vice Chair did for the incredible effort. As California and stepped up across the state, so did our team. And it's odd to acknowledge your boss but I want to say the Vice Chair's leadership was both inspiring and keeping everybody on task. So it was it was he who helped us through it.

And then finally, I also want to give a shout-out to Shawn and reflect and agree with all the comments, Courtney, you made which I thought were really heartfelt and a very accurate description of Shawn. He led the Division through a significant transformation. We used to cite power plants and that was most of what the job was. And he took a division and shifted it completely into a new entity.

And Elizabeth, I want to welcome. She inherits

that Division that Shawn was instrumental in building. And I want to wish you all the best in retirement. So thank you.

CHAIR HOCHSCHILD: Thank you so much. We'll turn now to Item 13, Public Advisor's Report.

MS. MURIMI: Hello Chair. The Public Advisor's Office has nothing to report at this time.

CHAIR HOCHSCHILD: Okay, thank you, we'll turn to item 14 Public comment.

MS. MURIMI: Thank you, Chair.

So this is the period for any person wishing to make comment on information items or reports on the meeting agenda or any other items. Each person has up to three minutes to comment and comments are limited to one representative per organization. We may reduce the comment time depending on the number of commenters.

If you are called on please restate and spell your first and last names, state your affiliation if. Attendees use the raised-hand icon to indicate that you'd like to make a comment. We will unmute your line, and make sure on your end you are unmuted. If you're on the phone press *9 to raise your hand and *6 to unmute on your end. Do not use the speakerphone feature, it will make it difficult for us to hear.

All right we'll start with Jin Noh. Your line is

unmuted. Please state and spell your name, you may begin.

MR. NOH: Hi. Good morning Chair Hochschild and Commissioners. My name is Jinn Noh, J-I-N, last name N-O-H, and I'm the Policy Director for the California Energy Storage Alliance, CESA. And I just wanted to offer some brief comments on Agenda Item 4 for non-lithium-ion energy storage technologies and the informational update provided by Mike Gravely.

I wanted to start off commending Mike and his team for the significant achievements made in investing in long duration energy storage, R&D demonstrations through the EPIC program. I think there's been many strides made there and hope to see the fruits of those investments in the coming years as they advance to commercialization.

I wanted to also briefly touch on the $140 million that were approved and allocated in the 2022-2023 State Budget by AB 205, which is intended to support the commercialization of non-lithium, long duration storage technologies.

We here at CESA really view that as a once-in-a-lifetime opportunity to make a difference in commercializing these technologies, but also to really support mid- and long-term reliability. We think a key way to commercialize an emerging technology is to develop them for a grid-connected purpose and develop that operational

track record, so that it demonstrates the ability to interconnect, integrate into the ISO market and meet real grid obligations. And California happens to also have a '26-'28 procurement obligation for 1000 megawatts of these resources. And so we could really use all the capacity that we can get to support known capacity constraints in the face of extreme weather events and to facilitate the transition away from Diablo Canyon and fossil-fuel generation.

And so I'm hoping that as the program, under which the $140 million is designed and opened for solicitation, that it is designed to solicit a range of technology types, sizes, use cases, and accommodates different commercialization needs and strategies. Because by the nature of the technology, or project, or as a result of different levels of maturity there may be valid reasons for projects pursuing different commercialization paths where some could be supported through incremental deployments over time, which may be more apt for modular technologies versus others that require larger project sizes.

And we've surveyed a lot of our members, hearing a diverse range of perspectives, and we're in the process of collecting and aggregating this information. But I really do think the program could be designed in a way to

construct a large portfolio of these long duration storage technologies. And that really maximize the total megawatt impact that can be funded and supported where this $140 million could really be stretched to support 100 megawatts worth of projects, and more if we get more funding from the Legislature next year to help cover the missing money cut. Thank you.

MS. MURIMI: Thank you.

Next we have Ms. Steff. That's M-S S-T-E-F-F. Your line is unmuted. Please state and spell your name, give your affiliation. You may begin.

MS. SAAVEDRA: My name is Stephanie Saavedra, S-T-E-P-H-A-N-I-E S-A-A-V—E-D—R-A. I am (indiscernible) and I've worked with a lot of tribes in the area. This is in regards to the lithium project of course. My concern is how much water is going to be diverted from California, Arizona and Nevada and Mexico to the actual lithium project? I've done some research and I believe it's 500,000 gallons to one unit of lithium. I'm not really sure exactly how efficient that is? That's one of my questions.

But I also have some other questions. In regards to any -- I understand that it's an experimental type of extraction that involves sorbent beads, and I believe there's going to be some drying ponds. And it would just be nice to know, or for the public to actually know, a lot

of the details about this particular project.

And when the California Energy Commission says that they're going to streamline the project, what does this mean? Is there still going to be environmental? Who's going to be in charge of making sure that the air, water, soil, and even the tribes in the area are going to be safe? Because according to the California Air Resources Board there's a type of testing for the air, and they call it some type of tube (phonetic), but it takes two weeks to actually get the results. So in the process of these two weeks is the public even safe? What type of safety procedures are in place?

There's quite a bit more questions. It's going to actually disrupt the water cycle and migratory birds. Just we, the public at large, would like to know more information about this particular project. We're in a drought. And we'd like to make sure that our water is ensured. There would probably be a rate increase. What is that rate increase? I mean, yes, lithium is a good thing, but as discussed by even Peter Dailey that zinc is far more efficient.

So if you folks can please help me to understand some of these various questions that would be great.

MS. MURIMI: Thank you.

Next we have Pascha. Please state and spell your

name. Give your affiliation, if any. And last name Nierenhausen, apologies if I have misstated your name. Please unmute on your end and you may begin your comment. That is Pascha, P-A-S-C-H-A, Nierenhausen.

MS. NIERENHAUSEN: Hello?

MS. MURIMI: Hello. We can hear you now.

MS. NIERENHAUSEN: Thank you for the public comments. My name is Pascha. P as in Paul A-S-C-H-A Nierenhausen, N-I-E-R-E-N-H-A-U-S-E-N from the Quechan Tribe.

I'm asking about Agenda 12, Item Number 12. You were discussing the matters of the megawatts and it was at its highest peak this past week. And I do believe it affected way down here in Winterhaven, California, and in Imperial County. Are you able to identify where those megawatts came from? Did they come from a lithium project? Maybe a Sonoran lithium project? How were those megawatts generated?

And it was pretty hot down here for Imperial County and for the Quechan tribe. And we were told that there was going to be a possible hurricane. And you were saying that the energy was not shut off, approximately at the same time you were saying that it was at its highest peak with the megawatts.

On the megawatts, are the people afforded any

type of public resource to understand what the megawatts are? And if I'm understanding that the megawatts are going to go higher, are the people afforded to know what the megawatts means in the heat?

And for my tribe we lost a lot of people from that heat, so I'm just a little concerned. And I'm just publicly asking will we, the public, people of California be afforded to know and understand what megawatts is for these types of projects and programs happening? Thank you.

MS. MURIMI: Thank you for your comment.

Next, we have Will Mao. Please state and spell your name, give your affiliation if any. Your line is unmuted.

MR. MAO: Hi, can you hear me now?

MS. MURIMI: Yes, we can.

MR. MAO: Okay, thank you counsel. Thank you (indiscernible). My name is Will Mao. It's W-I-L-L M-A-O. And I represent Eos Energy Enterprises. So on behalf of Eos Energy Enterprise we're honored and pleased to be selected for these grants.

We were founded back in 2008. And the sole purpose is to develop a non-lithium, long duration storage. As you heard earlier from Mr. Mike Gravely and also Dr. Gyuk and also Mr. Pete Bailey we're one of the few companies that has commercialized a zinc-bromine

technology. This is designed for long duration. And we're 100 percent manufactured here in the United States and our batteries are 100 percent recycled. So I'm actually calling from our factory here in the southeast Pittsburgh area as of today.

So once again, thank you for the opportunity. We look to serve California energy needs for many, many years to come. Thank you.

MS. MURIMI: Thank you for your comment.

Once again, for individuals, if you have any questions feel free to reach out to the Public Advisor's Office at publicadvisor@energy.ca.gov.

Chair, there are no more comments. I'll hand the mic back to you.

CHAIR HOCHSCHILD: Thank you. Well, I heard a couple of questions in there. I would request the Public Advisor's Office respond individually to the questions. I think one of them was about what is the portfolio of energy and where are the megawatts coming from? It's roughly 60 percent are from carbon-free sources, and we can get that breakdown to you.

And so, Dorothy, if you wouldn't mind responding to those members of public who had specific questions.

And then at some point, Commissioner Vaccaro, I think it would be great to work together on some sort of

public forum to better illuminate the process being used in the Salton Sea for lithium recovery from the geothermal brine and what's involved with that, how it differs from hard rock mining, how it differs from evaporation ponds in South America. I think there's been a lot of interest in that, so maybe we can figure out how to better eliminate that.

With that, let's turn to Item 15, Chief Counsel's Report.

MS. BARRERA: I'm raising my volume, there's nothing to report at this business meeting.

CHAIR HOCHSCHILD: Okay, thank you. Is that it? I think we are adjourned.

Dorothy, is there anything else that we need?

MS. MURIMI: No, Chair. There is nothing more on the agenda.

CHAIR HOCHSCHILD: Okay. Thank you everyone. We are adjourned.

(The Business Meeting adjourned at 12:14 p.m.)

REPORTER'S CERTIFICATE

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

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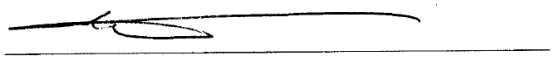
IN WITNESS WHEREOF, I have hereunto set my hand this 23rd day of September, 2022.



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IN WITNESS WHEREOF, I have hereunto set my hand this 23rd day of September, 2022.

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Myra Severtson
Certified Transcriber
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