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BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:

2020 Integrated Energy Policy Report Update (2020 IEPR Update)	)	Docket No. 20-IEPR-04 REMOTE ACCESS WORKSHOP

IEPR COMMISSIONER WORKSHOP

ASSESSING THE FUTURE ROLE FOR MICROGRIDS IN CALIFORNIA

REMOTE VIA ZOOM

SESSION 1: ASSESSING THE VALUE AND ROLE OF MICROGRIDS IN CALIFORNIA

TUESDAY, JULY 7, 2020

10:00 A.M.

Reported by:

Martha Nelson

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P R O C E E D I N G S

10:01 A.M.

TUESDAY, JULY 7, 2020

MS. RAITT: Good morning everyone. Welcome to today's 2020 IEPR Update Commissioner Workshop on Assessing the Future Role for Microgrids in California. I'm Heather Raitt, the Program Manager for the Integrated Energy Policy Report, or IEPR for short.

Today's workshop is being held remotely, consistent with Executive Orders N-25-20 and N-29-20 and the recommendations of the California Department of Public Health, to encourage physical distancing to slow the spread of COVID-19.

Instructions for attending or participating in the meeting were provided in the notice and include both internet and call-in options. The notice is available on the Energy Commission's webpage.

Instead of what used to be our normal full-day IEPR workshop, we've broken this topic into three sessions over two days in an attempt to lessen technology fatigue and encourage participation.

So this morning's session is on assessing the value of role -- assessing the value and role of microgrids in California. And on Thursday, July 9th, we'll have the second session, starting at 10:00 a.m., to address microgrids for resiliency and, also, microgrid economics. Session 3 is also on Thursday starting at 2:00 p.m. and addressing residential microgrids and emerging microgrid technologies.

This meeting is being recorded. We will post a recording and a written transcript on our website. Also, today's presentations have been posted on our website.

We're working on making on the IEPR workshops more engaging in this remote environment and we will be using the Q&A function in Zoom with the capability to vote on questions posed by others. So attendees may type questions for panelists by clicking on the Q&A icon. Before typing a question, please check to see if someone else has already posed a similar one and, if so, you can click the thumbs-up to vote on it and that will move the question up in the queue. Questions with the most thumbs-up clicks will be up-voted to the top of the list.

And then we will reserve five minutes at the end of each panel -- or at the end of the panel for attendee Q&A. And given the time restrictions, we're unlikely to elevate all questions received. Also, given the packed schedule today, we do not plan to raise attendee Q&A to the two presenters before the panel.

Now I'll go over how to provide comments on the material in today's workshop.

There will be an opportunity for public comments at the end of the session. On Zoom, click the raise-hand icon to let us know that you'd like to make a comment. And, if you change your mind, you can click it again and your hand will go down.

For those on the phone not using Zoom, press star nine to raise your hand and then we will open your line during the public comment period.

Alternately, written comments after the workshop are welcome and they are due on July 30th. And, again, the notice gives you all the information for providing written comments.

And with that, I will turn it over to Vice Chair Scott for opening remarks.

Thank you.

VICE CHAIR SCOTT: Hi. Good morning everyone.

And thank you so much, Heather, for your opening remarks.

I am just delighted to be here this morning and spend a little time talking about microgrids with folks in the midst of our transportation-focused IEPR. As you all know, microgrids are one of the tools that will help the state get to our 100 percent clean energy standard in the most efficient and equitable way possible. I think that we have some really good experience to share with you from various communities across the state, low-income communities, rural communities, our military communities, really, communities all across the state of California. And I look forward to hearing more information from our panelists later today about that, and over on the Thursday as well.

And I also just want to say, welcome so much to our colleagues from the Public Utilities Commission, and also from the Independent System Operator. We are so delighted to have you join

us this morning.

And what I will do is you can either raise your hand physically or virtually and I will be delighted to call on you to see if you have a few opening remarks before we kick off our panel.

Maybe I'll start with my colleagues at the Energy Commission.

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

And I just wanted to say that, obviously, 2020 has already proven to be a year of biblical-scale challenges from a, you know, pandemic to a recession, and we do face the prospect of further PSPS events. But it's also, I think, highlighting some great success in terms of the collaboration we're seeing between the agencies, particularly between the PUC and the Energy Commission, on innovation. And that's really what I'm most interested in today, is looking at lessons learned from the microgrids that we've installed in Native American tribes and fire departments and other sites, as the Vice Chair mentioned.

So I just wanted to, in particular, thank

Commissioner Shiroma for her terrific leadership on this issue, and President Batjer, as well, for your ongoing leadership as we help the state prepare for the PSPS events that may come in the months and years ahead and help us build resilience.

VICE CHAIR SCOTT: Great. Thank you, Chair Hochschild.

Commissioner Douglas, yes, please.

COMMISSIONER DOUGLAS: Well, just as a brief welcome, I guess, and quick opening comment, you know, it's been really interesting watching microgrids move from being a really good idea that was, you know, expensive and hard to implement and challenging and seeing the EPIC program, in particular, through funding a number of demonstrations with really great partners who found ways to solve technical challenges, to solve integration challenges, to solve, you know, to figure out the economics of microgrids and to see us now in a place where this is such an important tool for the state as we move forward to address a whole series of challenges, resiliency, reliability, and finding better ways of integrating renewable energy and storage in

these very robust systems.

And so, you know, I have, in particular, been working closely with a number of tribes, some of whom have implemented microgrids. I've had an opportunity to learn quite a bit about some of the Department of Defense microgrids, toured the San Diego State one, of course, which a number of the Commissioners, maybe every Commissioner on this workshop, has done.

But it's a very exciting topic. It's definitely something whose time has come. And I'm really excited to take part in this workshop and dialogue today.

VICE CHAIR SCOTT: Great. Thank you so much, Commissioner Douglas.

Let me turn to our friends at the PUC.

President Batjer, would you like to make some opening remarks?

PRESIDENT BATJAR: Thank you, Vice Chair Scott. Very, very briefly, because I think we have some really important ground to cover. And my esteemed colleagues on this virtual dais have already, you know, spoken to important issues that we're going to be exploring today, and then on Thursday.

I really want to thank my fellow Commissioner, Commissioner Shiroma, who is my partner, or I am her partner, she is the lead on microgrids and the resiliency proceeding. And she did a magnificent job for the Commission and for all of us by re-scoping the proceeding last December and included the very important topic of resiliency and expedited the decision, which some folks know that our processes at the PUC are somewhat archaic and time consuming. So for us to re-scope and expedite a proceeding from December to June is extraordinary. And Commissioner Shiroma did that with the eye toward such an important situation of PSPS and the upcoming wildfire season. So hats off to Commissioner Shiroma and the terrific staff at the PUC.

And I'm really looking forward to the workshop and learning more. I am concerned that this wildfire season we will see a lot of diesel generation used to ensure the resiliency. And we have to get to a cleaner and quieter form of resiliency backup power. And so I'm really looking forward to those ideas and thoughts from the experts and our staffs because it's so very

important.

So I really want to thank Chairman Hochschild and Vice Chairman Scott for including me the discussion today, I'm honored, so thank you very much.

VICE CHAIR SCOTT: Oh, well, thank you and welcome.

Let's turn to Commissioner Shiroma to see if she has some opening remarks.

COMMISSIONER SHIROMA: I do. Thank you, Vice Chair Scott.

It seems just like yesterday that Chair Hochschild and I were on the dais in San Francisco, holding our, I guess you would call it, kickoff workshop on microgrids. And here we are today.

So I'm pleased to join everyone on the dais, on this virtual dais. I often times thought that the California Energy Commission has really mentored all of us on how to put together these workshops and hearings and what have you that include your sister agencies and has everything run so smoothly. Thank you so much for the opportunity to learn more today.

We finished the Track 1, as President

Batjer alluded to. The staff, along with your staff at the Energy Commission, really did a herculean job and we've come a long ways.

Now we are heading into our Track 2 phase to meet all of the requirements of Senate Bill 1339. And Jessica Tse will be outlining all of those, the accomplishments, and then also looking ahead on the microgrids proceedings so, of course, stay tuned.

I do look forward to hearing from the panels today and, also, on Thursday. And, again, thank you to the Energy Commission for hosting this workshop. I look forward to engaging all the panelists on these important issues.

Thank you.

VICE CHAIR SCOTT: Great. Thank you and welcome.

And let's see if we have opening remarks from our colleague, Neil Millar, from the California ISO?

VICE PRESIDENT MILLAR: Good morning and yes. Thank you.

VICE CHAIR SCOTT: Um-hmm.

VICE PRESIDENT MILLAR: I would first like to thank all of you for the opportunity to

participate in today's session. These are very important for us to have the opportunity to really understand and learn about the different flavors of microgrids that are evolving, both in terms of making sure that our existing processes are adequate for accommodating them, for managing their interconnection and their relationship with our systems, as well as further exploring what opportunities there are to take advantage of these resources and include them in our planning efforts.

So thank you very much for the opportunity to participate and we're looking forward to some really interesting material.

VICE CHAIR SCOTT: Great. Thank you and welcome.

VICE PRESIDENT MILLAR: Thank you.

VICE CHAIR SCOTT: So we're delighted to have everyone here.

And with that, I am pleased to introduce our first speaker, Jessica Tse from the California PUC, and she's going to provide an update on efforts to implement Senate Bill 1339.

Jessica, it's all you.

MS. TSE: Hi. Good morning everyone. I

am from the CPUC's Energy Division on the Resiliency of Microgrids Team. And as previously mentioned, I'm going to quickly share with you some updates regarding SB 1339.

Next slide please.

So in September of last year the Commission initiated a rulemaking to design a framework to facilitate the commercialization of microgrids. And as you see in front of you here, these are the specific actions that the Commission must take to address the statutory requirements by December 1st of this year, first, developing microgrid service centers to meet state and local permitting requirements, developing methods to reduce barriers without cost shifting, developing guidelines that determine what impact studies are required.

Next, we have developing separate large corporation rates and tariffs, as well as forming a working group to codify standards and protocols.

Last but not least, you see up there, is developing a standard for direct current meeting in Rule 21 to streamlined interconnection process, as well as lower costs for those

applications.

Next slide please.

So this proceeding is separated into three tracks. First, we have Track 1, where, as previously mentioned, we're really focused on developing fast tracking near-term strategies and actions that we can put in place in time for this year's wildfire season outages. Just last month, those actions and strategies were voted on and became the Decision 20-06-017. And I will go into more details in the upcoming slides.

Track 2, we're going to be focusing more on accomplishing the broader policy goals of SB 1339, so a really deeper dive into the regulatory barriers, the financial barriers, technical barriers and so forth.

And then last but not least, Track 3 will be for the ongoing implementation of all of the SB 1339 requirements.

Next slide please. Great.

So now, into the details of Track 1 or short-term actions. The first topic area of that we've addressed is prioritizing and streamlining interconnections applications for resiliency projects.

What we've done. The Commission, we directed the IOUs to develop preapproved single-line diagram templates to streamline interconnection. These templates are used or can be used by eligible projects for the fast track interconnection process.

We've also directed the IOUs to provide specific technical criteria that are used to determine when field inspections are necessary so that it can help developers construct their projects in a way where it minimizes the need for field inspections versus when virtual inspections may be applicable.

And then last, we've also directed the IOUs to increase their staff to their interconnection and distribution teams for faster processing for all projects.

Next slide please.

So the second topic of Track 1 is modernizing tariff to maximize resiliency benefits.

First, we've allowed energy storage systems to import from the grid in events of PSPS events, but not export. Two, we've removed the storage sizing limit for large NEM and paired

storage.

Next slide please.

And then the last topic area is sharing information with local and tribal governments. So the goal of these actions I'm about to describe to you is really to empower local jurisdictions for the better understanding of utility infrastructure, weather events, grid operations, so that local and tribal governments will be better positioned or in a position to make informed decisions on where to focus their resiliency planning efforts, their capital investments, and pre-event operations.

So what we've done is directed the utilities to provide these type of data by having face-to-face county-level workshops.

We've also directed the utilities to prepare a resiliency project engagement guide, so answering questions such as: How does one even start to engage the utilities on such projects? Where are the best practices for a successful project implementation?

Next slide please.

So as part of this sharing information with local and tribal governments, we've also

required the utilities to have a dedicated distribution planning team for the local and tribal projects, so thinking about it as a one-stop resource.

I want to quickly note that this is for SCE and SDG&E only. Separately, PG&E proposed and we approved the Community Microgrid Enablement Program. There's significant overlaps and I will go into more detail in upcoming slides.

Last but not least, we've also directed the utilities to develop a data portal for local jurisdictions to provide more information to support these projects, for instance, map layers of high fire-threat districts, electrical infrastructure, weather-related information, to help inform their projects.

Next slide please. Great.

So now we're going into PG&E resiliency strategies.

So in addition to the short-term action items that I just described, the utilities were also directed to submit proposals for immediate implementation of resiliency strategies. For PG&E, the Commission authorized infrastructure

upgrades at multiple substations to interconnect generation in the event of an outage. You may be familiar of their name, the Make-Ready Program.

Two, we've authorized the deployment of temporary diesel generators for this year's wildfire season. You may have heard the name Temp Gen or Temporary Generation Program. As the name implies, this is a short-term localized solution until the transmission and distribution system that is -- is hardened. Unfortunately, when we were looking into this, there were just not any plug-and-play alternatives. But we are doing everything we can to transition away from diesel generation to alternative clean backup power.

In fact, just a real quick plug, we do have a diesel workshop coming up next month, so more on that. Look out for more information on that coming from us soon.

Next, we also authorized PG&E to provide technical and financial support for community requested microgrids. So this is similar to the action items that I just described earlier. So this program, you may have heard the name, Community Microgrid Enablement Program, CMEP. I

do want to note here that as part of this program, there is a one-time fund that will be made available to help defray the costs of special facilities or distribution system upgrades.

Next slide please.

So for SDG&E, the Commission authorized the procurement of a local area distribution controller, which is a proprietary software and hardware solution, to enhance their microgrid operations.

Next slide please.

All right, so, really, that was really quick but those were the actions we took in Track 1 to achieve microgrid commercialization and towards resiliency. So we started to address the statutory requirements and we're going to continue to work on meeting those requirements by December of this year. So for more details, I do want to highlight that the Commission put out a scoping memo last Friday, if you would like more details on the schedule of activity, so definitely a lot more to come before the end of this year.

And I think that's it for all of my

slides. Thank you.

VICE CHAIR SCOTT: All right. Great. Thank you so much, Jessica.

Let me see if there are any questions from my fellow dais mates? If so, now's a great time to ask Jessica. Okay, I'm seeing shaking heads on all the ones that I can see.

So thank you so much for your excellent presentation. We appreciate that very much.

MS. TSE: Thank you so much.

VICE CHAIR SCOTT: And we will go on -- glad to have you -- to our next presentation, which will be from Mike Gravely at the California Energy Commission.

Mike, take it away.

MR. GRAVELEY: Well, good morning again. I'm Mike Gravely. I'm a Senior Engineer from the Research and Development Division. And I want to cover a brief review of our experience and active participation in microgrids.

Next slide please.

The R&D Division has three main funding sources right now. The EPIC Program is, by far, the largest, about $130 million a year. We have a Natural Gas Program. And we also have a Special

Fund Program and one of the programs under that is the Food Processing Incentive Program. And they also have funded several microgrids.

Next chart please.

This Commission and the R&D Division has a long history with microgrids that go back almost a decade. We were looking at the early stages of research and just connecting renewables to storage to generation to the grid so that you could switch back and forth and not shut down the grid, not shut down the customer. We then shifted, when microgrids became more popular, we shifted to more integrated microgrids and working on controller technology and being able to perform different functions and being able to isolate from the grid successfully and reconnect. And then we've shifted now to where we're focusing a lot on commercialization.

One of the things I failed to mention earlier, our R&D Program ultimate goal is to bring products to a commercial success. So in this microgrid area, we're trying to do research and prepare knowledge with the ultimate goal of microgrids being a commercial product that people can, literally, buy and choose as they need and

at a price range that's affordable for the people who want to use them.

Next chart.

We are fortunate to have a considerable amount of money invested. We currently have over 45. And we have another four to five microgrids that we'll be awarding over the summer in that area. It's a very popular research topic. It's addressing a lot of energy challenges. Resiliency is probably the most important area. But, overall, just understanding how microgrids can help industry, communities, and customers is an element that we are doing a lot.

We are a public program, so everything we do is shared, all of our technical results are shared, and so one of our goals is to get that information out, so today's workshop will be part of it. You will be hearing today from several of the awardees that are on this list.

Next chart.

So we also have the benefit and the value of a wide variety of microgrid applications. So critical facilities are always one of the most -- one of the top of the list of people needing microgrids, military bases and ports, community-

scale information, so -- and also industrial. And then what's not shown here is that many of these microgrids are in low-income and disadvantaged communities. We have a large support from the Native American tribe community. So we're doing our best to evaluate these microgrids to determine where they apply the best and where they provide the economics so that they don't require government support to maintain them.

Next chart.

So if you take a lesson learned -- well, we covered two areas, the site level, and then the policy level. So if you look at the site of a microgrid, a customer who wants a microgrid, many of the current microgrids you'll hear today that we have would not have happened without the government funding, the research funding we did. But a microgrid is a complex engineering process, so it's not a simple thing you just go take it and plug it in. It's not a self-running system. So customers need to take the time to plan properly. What do they really want the microgrid to do for them? What services, what value, and what cost it is, and is it worth their

investment?

Once they've made a decision they need to do proper engineering analysis so that the system is properly integrated. They can get their permitting and their interconnection requirements. So, again, it takes technical expertise to do that. And most of these microgrids are designed to operate 15 to 20 years so that the owner also has to make that decision of how they're going to do that.

As I mentioned earlier, we have three types of models for ownership, that's utility owned, a customer owned, and a third-party owned. And each one of those scenarios has a different way that they would plan their future maintenance. But as far as the customer is concerned, proper planning, proper execution, and proper maintenance are critical to the microgrid being successful.

Next chart.

If you look at the program level throughout the state and throughout the country, obviously, we're here today and there's a lot of people participating because microgrids have a huge potential to address different issues in

California and the country and, also, to help us meet our future policy goals.

However, it is also understood today, and we will talk about this in some of the future sessions today and on Thursday, about the business case and understanding exactly why someone made a decision and what the value they're getting from it is.

It's also good to understand, you know, some people think that the grid should be a microgrid but, realistically, microgrids don't fit everywhere. And so part of the question is: Where are microgrids to best fit and where do they provide the value that makes the most sense?

Also, I mentioned that different ownership models make a difference in how you handle. And, today, they're starting to shift to things like power purchase agreements to make the financing easier for the customer in those types of environments going forward. Most of the microgrids that we have, the 45 microgrids we have, we have some utility owned and operated microgrids. But the vast majority of our microgrids, over 90 percent, are customer owned or third-party owned microgrids, so that's where

a lot of our experience lies.

Also, just understanding how microgrids can manage the energy, can handle separation, can handle wildfire, PSPS events, and other things is another case for us just to understand. One of the areas we get is, you know, what is the value for reliability? What is the value for resiliency? What is the value for clean air? Those are things that we have to work on to find a way to put an economic value so you can make these business cases.

And, also, today's meeting and Thursday's meeting will help us understand, is there a role the government and regulation can play to help define these questions and to help microgrids end up in the places where they're the most valuable?

Next chart.

So this is a very wordy chart but I'll summarize it very briefly. For those of you who have microgrids that are not currently funded by the CEC, you've seen our list. We have a mapping system that can tell you where they are and how they relate to disadvantaged communities, low-income communities, wildfire zones. We would like to add the microphones that are --

microgrids that are not part or not funded by the Commission. But understanding from researchers, we have, as we said, about 45 microgrids, my understanding is about 80 to 100 microgrids are active in the state of California, so we would like to get -- we have about half and we'd like to get the other half so we can share that information and learn from those systems also.

So there is a request here for those of you online and those of you who know of microgrids if you will be happy enough to share you location with us and a little information, then please respond to what's on this page and we will be glad to include you. That will be a public database that will be on the Commission website for anybody to view in the future.

Next chart.

And with that, I am ready for any kind of questions from the dais that you have, and then we'll transition to the first panel.

Commissioner Scott?

VICE CHAIR SCOTT: All right, that sounds great. Thank you so much for your excellent presentation, Mike.

I also want to echo Mike's call for the

data on microgrids. So please do make sure, if you've got some information on the microgrids that are not funded by the Energy Commission that you could share with us, to send it to Mike and his team.

Let me turn to my fellow dais mates and see if anyone has questions for mike?

It looks like Chair Hochschild, yes, please.

CHAIR HOCHSCHILD: Yeah. So thank you, Mike. And, also, thank you for your ongoing work over many years getting us to where we are today.

One of the things I'm interested in is the prospect of finding a useful second life for electric vehicle batteries. So what we're finding now, we're about three-quarters of a million electric vehicles have been sold in the state of California. And we have, you know, many more coming, 18 electric vehicle manufacturers in the state. EVs are our number one export from the state today. But what we're finding is that when the range of the battery gets down to about 75 to 80 percent of the nameplate rating of the battery, people want to swap it out; right? And so -- but that battery still has a very long

potential second life before it needs to get recycled.

And I'm just curious, do we have any microgrids so far or in development that you're aware of that are using used EV batteries? And do you have any thoughts about this? Because it seems to me it would meet a couple needs, including, potentially, reducing the cost of microgrids and, also, reducing the waste stream. And I'm just curious if you've given any thought to that or have any insight?

MR. GRAVELEY: Yes, sir. So I'm happy to say that we actually do have a project that is using second-use batteries in microgrids. We have a grid funding opportunity where there were two grants awarded last month and two more to be awarded tomorrow. I'm not sure which one of those four they are but one of them actually does have -- is, in fact, applying second-use batteries to microgrids. And the other projects are looking at to assess the value, the duration, of second-use batteries. So I think most people feel that there's an opportunity to get, depending on your particular use profile and things.

So I do think we will find, in the future, that some of these second-use battery research will give people a portfolio of how the vehicle battery works. And I agree, if we reach 5 million vehicles on the road, based on our goal, there will be a lot, in the future, of these batteries.

And so, yes, sir, we are evaluating one specific project. And then we're also evaluating batteries and comparing it to other batteries so we can have an understanding of how does that technology fit for microgrids? And it's very likely that it will be a popular solution in the future.

VICE CHAIR SCOTT: Great. Are there other questions from my fellow dais mates?

Oh, yes, Commissioner Shiroma, please.

COMMISSIONER SHIROMA: Thank you.

Thank you, Mike, for the excellent presentation. You did a call-out for folks who have got operating microgrids to send in their information so that the Energy Commission can become a clearinghouse for what's happening across the state of California and I definitely support that effort.

Do you also foresee that the -- Commission will become a clearinghouse for best practices, for a sharing of microgrid technologies, models, where there is a sort of one-stop look-see on your website for folks who are interested in the state of the state of microgrids, small and large? Do you foresee that that would be something that you're already doing or that it would be a next step?

MR. GRAVELEY: So, fortunately, you will hear on Thursday from one our researchers, in fact, that is doing a CEC-funded project to develop a publicly-available easy-to-use microgrid tool. It's supposed to be available before the end of the year online. And so that's from LBNL that's actually developing that. And so we are developing a tool and we are making available to the public. And it's supposed to have people go through and help them evaluate, at any level, whether a microgrid will fit their needs and what it would cost and what their variations or variabilities are.

So we are in the process of working the alpha version of that model now. They expect to make the online available before the end of the

calendar year. And so that will answer one question.

And the second thing is we do envision having some technology workshops, not just IEPR workshops, where we just share the results of our different projects. And we have our microgrids talk about what's working and what's not. So we envision end of fall having just, basically, a technology transfer workshop.

So we're trying very hard to get the information out. But, yes, we have taken on that role. They've been working about 18 months on that model. And it's -- oh, I'm sorry, it's actually EPRI, not LBNL that's doing it. And so the model, again, we envision it being useful and we will be taking feedback from customers as they use it. So we have a two-year maintenance effort on it so that as the people use it, we can modify it if it's too hard to use or whatever.

So I think, to answer your question, we hope before this year is up to have a tool available. And, certainly, your office and staff will be actively involved as we do the wringing out of the software.

Thank you.

COMMISSIONER SHIROMA: Excellent. Glad to hear. Thank you. Thank you, Mike.

VICE CHAIR SCOTT: Thank you. And I think I saw everyone else shaking their heads when I asked about questions.

So I will say, thank you so much, Mike, for your excellent presentation.

And I will turn it back to Heather.

I'll do a reminder for my fellow dais mates, while the panel is presenting, if you'd like to turn your camera off, that's fine, just please remember to turn it back on when we get back to our discussion part.

And as the fellow panelists are on their way, it's time for them to turn on their cameras. And I will turn it to Heather to provide additional instructions.

MS. RAITT: Great. Thank you, Vice Chair.

This is Heather Raitt. And before we start the panel, I'd just like to ask people to click the raise-hand function in Zoom if you plan to make a comment during the public comment period.

So at the end of this session, at about

11:30, we'll open lines one at a time for those who have raised their hand. So, in Zoom, you can click the raise-hand icon. And if you're on the phone, you can raise your hand by pressing star nine. And so if you can go ahead and do that now, that helps us plan for the public comment period. And if you change your mind, you can just press that raise-hand icon again and it will lower your hand.

So with that, I will go ahead and we can get started on our panel. The panel is on What is Working and Why for Microgrids: Design Considerations and Operational Lessons Learned. It's moderated by David Erne from the Energy Commission. And Qing Tian from the Energy Commission will help moderate Q&A from attendees. So we'll have a series of short presentations.

And so, David, if you could go ahead and start your panel please? Thank you.

MR. ERNE: Great. Thank you, Heather.

So, again, I'm David Erne. I'm from the R&D Division within the Energy Commission. Today's panel is, actually, probably the most technical of the panels for this microgrid workshop. We brought together some different

perspectives on the design and operation of microgrids from the end user, the developer, and the aggregator perspective. And all of them have had a focus on critical facilities, so that will be a theme throughout -- facilities and operations, and that will be a theme throughout the presentations.

We have four panel members. They'll each give about a five-minute introductory comment period, and then we'll follow that with questions from the dais, and then public Q&A.

Before I introduce the panel members, and I'll have them all go one after the other, I'll reiterate Heather's comment, which is if you have a question, use the Q&A function. Please use the thumbs-up feature if your question is already in there because that will help raise it to the top and Qing will be able to curate those better for the public comment -- or public Q&A session. And then, separately, use the raise-hand function if you want to make a comment at the end of the workshop.

So our four panelists, all bringing different perspective, we have, first, John Griffiths of ConTech, who has a fair amount of

experience with healthcare facilities with a variety of sizes and styles.

Next will be Vipul Gore from GridScape Solutions. His service offering has brought microgrids together for a variety of critical facilities, including fire and police stations, shelters, et cetera, so he'll talk about his design philosophy and structures for that.

Next is Mick Wasco, who is from Marine Corps Air Station Miramar, where they've developed a microgrid for the broad facility there. And the interesting aspect about that one is they're utilizing landfill gas as part of the generation portion of that microgrid, so he'll talk a little bit about that as well.

And last is Jessie Denver from East Bay Community Energy where they're developing their strategy for how they, as the CCA in the community is looking for their role and approaches for them for supporting critical facilities and microgrids.

So those are four panelists. And I will turn it over, first, to John Griffiths, who will provide his healthcare perspective.

MR. GRIFFITHS: Good morning. Can you

hear me? Am I on video?

MS. RAITT: We can hear you, John, but your video needs --

MR. GRIFFITHS: Yay. Good morning.

MS. RAITT: There we go.

MR. GRIFFITHS: Sorry about that.

MS. RAITT: Thank you.

MR. GRIFFITHS: Fantastic. Well, good morning. Nice to meet everybody virtually.

And thank you, David, for the introduction.

So in my five minutes, I'd just like to run through -- you know, most of my perspective here is going to be, you know, focused on healthcare and, really, my sort of entry into a microgrid experience was through the CEC-funded microgrid project at Kaiser Richmond, which is hosted by Kaiser.

So with that, could I have the next slide please?

As David mentioned, you know, most of my business perspective is through healthcare designing, delivering, and helping facilities operate it. I'm also a consulting member of the Hospital Building Safety Board. And as we talk

about, you know, design considerations and lessons learned, also, I wanted to, a little bit, talk about here is a proposed electrical power systems, that we're taking lessons learned from these projects at the Hospital Building Safety Board in helping -- (clear throat) excuse me -- how can we apply those to future electrical -- future, more sustainable power systems for hospitals?

So the approach we're taking is, firstly, a hybrid approach where we utilize alternate power systems, very similar to the Kaiser Richmond program where we have -- and I'll talk about that in a later slide in a couple minutes, where we're using energy storage and/or fuel cells to supplement the traditional backup power system, and this is for the essential power. And then, ultimately, we can, on other traditionally more medical office buildings where they either have very small emergency power systems, just for life safety, or not backup power systems.

And we're looking at supplanting the traditional -- or providing emergency power system where, certainly from the market we're seeing, or operations, we're seeing a big desire,

particularly -- and, again, mostly this is driven from the PSPS where they have medical refrigerators and some basic functions that they either -- they use power or power systems, they have to offsite the medical -- the medications. And, hopefully, if we have energy storage, the microgrids, they're able to operate the building to keep basic systems going but, also, hopefully, to even provide basic medical services.

So can I have the next slide please?

So, you know, doing that has a lot of advantages and, you know, from an essential -- traditional essential power system in a healthcare environment, which is typically a diesel generator. You know, I know you all know this, but we utilize -- we are able to utilize renewables. We have a generator. It's a very expensive asset. It is -- the only time you get value is in an emergency power outage. The hospitals and healthcare facilities, they're in a very difficult financial position before COVID-19 and probably even after. So any grant funding available would be a huge advantage for them. And fuel deliveries in a PSPS, certainly, that is a major challenge.

And something I'd like to talk about is noise and exhaust. You know, diesel generators, the traditional systems, again, with the long outages, certainly from my clients here, that's something that can -- if we can provide solutions so we don't have a five-day diesel generator working in an urban area would be a huge advantage to the community.

Next slide please.

So that's all fine but there's a lot of challenges delivering this, particularly in healthcare, which is, you know, first, it's institutional inertia. You know, healthcare is highly regulated, probably rightly so. You know, it's delivering essential services. So there's a lot of barriers and challenges we need to overcome. And there's risks. You know, in California, construction is very risk adverse. There's a perceived capital expense, complexities, cyber security, so many challenges that we need to overcome.

But backing up, and I can talk about that later in design considerations and lessons learned, you know, representing the Hospital Building Safety Board, you know, we engaged in

setting up a White Paper Committee to develop that so we can expedite adoption of microgrids.

So if I could have the next slide please?

So that's a lot of pictures, a lot of pics, but this is a quick overview of the Kaiser Richmond microgrid. So, very simply, I don't know if any of you are familiar with this project. Personally, I feel, personally and professionally, very proud to be associated with this. This is providing renewable power in a disadvantaged community. And it's one of the only critical access hospitals in the area, so, you know, thank you to CEC for making that happen.

So very quickly, this comprises of a 200 kilowatt solar array on the roof that serves a 1-megawatt hour lithium-ion battery in the basement. The parking structure, and I'll talk about that later, is in the city jurisdiction. And then that then feeds the power into the hospital, which is under OSHPD hospital jurisdiction. So this is able to provide -- you know, offset the normal power usage and demand response in normal situations. But in an unfortunate event where we use utility and

existing emergency power systems, we have islanded this project. And I know, David, you were on the site when we did that.

So that is adding a very high level of resilience. And if that unfortunate situation happened, you know, we can operate the life safety branch, which is the highest level of acuity in the hospital for, you know, a particularly extended period of time.

So next slide please.

Oh, so I'm trying to get everything in five minutes. So this is a quick graphic, just showing how, you know, over the three years that we've had this system set up, you know, as we tune the system, we are able to generate, you know, pretty appreciable kilowatt hour savings. But we're also providing financial savings to the facility through demand response.

Next slide please.

So that's it. I think I'm under five minutes. And queue, probably, the next presenter.

Thank you.

MR. ERNE: Yes. Thank you, John.

We'll go ahead and move on to Vipul, who

will go next.

MR. GORE: Hi. This is Vipul Gore. Let's see if you can hear me. Okay. Can you hear me and see my presentation?

MR. ERNE: Yes.

MR. GORE: Okay. Great. Thank you. Thank you all. Thanks for the conference today. I'm deeply honored to be presenting in front of the Commission and this audience.

You know, as a citizen of California for a long time, you know, California is far ahead in making more decisions in the policy framework for our clean energy future. And I really thank and appreciate the work of the Commission, California Energy Commission, CPUC, and CAISO is doing in making this a reality for us, as well as our future generations.

A quick introduction to GridScape, we are a startup, community startup based in Fremont, and we've been in business for about six, seven years. We have a very longstanding relationship with California Energy Commission. We have been the recipient of several EPIC-funded grants. That has enabled us to build our microgrid technology and commercialize it. We are on a

path to commercialize our microgrids. And I'll present the things we have done so far, what, you know, (indiscernible) we were provided and some challenges there. Okay.

Next slide. Thank you.

So this is our critical facility microgrid network. We have about five microgrids in operation. They've been operating for about two or three years now, especially in the City of Fremont where we have fire station microgrids. That was originally EPIC-funded/CEC-funded project that finished in 2018-19. We have another 15 in the design and construction phases. And we plan to do more than 50 microgrids by 2021/2022. As you can see, our focus, really, is into small and mid-size critical facility systems, businesses that have, you know, critical resiliency needs. And we cater to a different, a very, you know, very different working goals. So starting from government critical facilities, like fire stations and police stations, all the way to residential communities, food processing plant, and a grocery store. So we intend to get all our systems deployed to each one of these, you know, more modular and a scalable product-

centric focus.

Next slide.

Now these are the pictures of some of the microgrids that we have already deployed. As you can see, there are some of the fire stations. Some of them are grocery stations and so on and a few of these have been operating for several years now and we have good operating experience on those microgrids.

Next page.

Our goal is to kind of take a product-centric approach to microgrid systems. So, traditionally, microgrids have been custom designed and, you know, call it each different types of distribution, and that's not scalable, so we took a different approach. Our technology and systems are based on more of a product-centric approach but in a modular and a scalable fashion, so you could actually scale the microgrid or make it modular. And then it's mainly software driven. So we standardize on the hardware, the interfaces, and then, you know, provide the differences for different type of verticals based on the software, and we've been quite successful in doing that over the last

five, six years.

As you can see in the bottom of this chart here, our Version 1.0 is kind of a 20-foot container option back in 2016-17. And then we went to the modular kind of approach. And then we did more box-type design that we are deploying now at several locations. And every time we did that we were able to achieve about 30 to 50 percent cost reduction, not just on the product but, also, in terms of deployment and standardizing interconnections and designing and all of that.

Next slide.

This kind of like shows the whole design and operations of our microgrid. The lower half of this slide shows how the PV system and the load, whether they are critical load or EV chargers that are kind of connected in the microgrid, our box, as you can see in the middle, is where the battery system and the control resizing is connected to a cloud system. That connects to different parts of the network, whether it's a utility back office or what have you.

And the idea here is to kind of provide

two modes, both grid time and off-grid. In the grid-time mode, it can provide energy savings, demand charge reduction, and all those community services, grid services. And when there is a real even of microgrid, that's a PSPS event or an outage, then the system can safely select from the grid and provide continual clean power to the facility for, you know, whatever time it is designed to do that.

And the next slide.

So here are some challenges and opportunities we see in terms of kind of how we, you know, have been deploying the system.

So the first challenge we see is private financing. And this is essential for commercialization. Our focus is small critical facility microgrids. They are very difficult to finance fully with private financing. So my recommendation and suggestion is to continue investment programs, establish the value of resiliency whether it is a microgrid tariff or displacement cost of fossil fuels. Create new ancillary grid service revenue for cluster of microgrids.

CAISO has a good program where you can

actually have a large, you know, let's say energy resource or storage resource where you can actually provide grid service on it. But, you know, we need to be able to be creative in kind of supporting our cluster of continued grant projects. And the big point here is that, you know, prioritize subsidies for smaller projects because larger microgrids projects are financeable and do not need subsidies. But smaller projects, like fire stations, typically, they really need subsidies right now in this market until prices drop.

Secondly, challenges trying to deploy, I had a long conversation with CPUC on this. And I'm proud to see -- happy to see the work they have done in terms of SB 1339. You know, the time it takes to connect and the permit process, you know, standardized design and building codes, they have standardized the interconnection process and so on.

A third important point I'd like to make is awareness and decision making. A lot of critical facility operators, you need a lot of education in terms of importance of microgrids. And so, you know, develop some market outreach

and awareness programs.

I think point number two there is important, to actually promote a data-driven approach. We have all the data. We know exactly where we can get energy savings, where we can get good solar production. If that data is provided to companies, you know, then we can actually figure out what sites best benefits and are financeable-possible, bankable, in terms of energy savings and resilience. Further, building code development and, you know, and so on, and standardized community microgrid.

And the final point I would like to make is cost to deploy. The material costs, batteries and PV, they kind of go up and down. You know, kind of over long period of time, it goes down. But, you know, because of the tariffs and market uncertainty, we have seen the prices fluctuate. And that kind of, you know, creates a problem for companies like us who are trying to deploy several of these microgrids. So the idea is to promote a product-centric approach and, you know, try to figure out a way to standardize and decrease and stabilize those prices.

Next slide.

And that's it. I think that's what I wanted to present. I'll be happy to answer any questions for me in the question and answer session.

Onto the next, okay?

MR. ERNE: Great. We'll move on to Mick.

MR. WASCO: Hi everybody. I'm going to present on MCAS Miramar. Hold on. I'm starting my video here. I work for Utilities and Energy Management at Marine Corps Air Station Miramar in San Diego. I've been doing energy there since 2012. And this installation microgrid has been my entire career pretty much.

Next slide.

So a bit of history. I'm going to talk about the installation microgrid today. But in 2012, we also studied or started a parallel path where we were doing research/demonstration microgrids in which we completed a 100 percent renewable microgrid for our building, which was solar and battery storage with no spinning generation, just for the record. In 2016, we successfully demonstrated that. It took $3 million and quite a bit of effort to get that done. And I consider that a huge learning

experience for what we're doing in the bigger installation microgrid project which, make no mistake about it, was a capital investment from the Marine Corps for mission assurance and resilience.

So the $20 million microgrid supplemented existing onsite renewable resources. So you can see, we get about -- or the details are on the next slide but we get about half of our electricity from landfill power. And that's unique through a power purchase agreement. We also have about 1.7 megawatts of PV on the installation at this point.

The microgrid project itself was a $20 million investment that, essentially, built a central power plant that enables us to island all of our critical loads. And so when you see that airfield there, the entire airfield is powered by the microgrid system. And we have the flexibility, with all of our resources, to choose what sections of the base get powered. But in terms of capacity, the power plant is designed to carry out all airfield operations.

In addition, we have some other resources that are being integrated. As part of a CEC EPIC

Grant that was awarded a couple years ago, we will be installing large-scale battery storage and, also, a robust demand response control mechanism within the microgrid as well.

Next slide.

So here are all of those DERs by the resources -- or by the numbers. And it's a bit complicated because everything's kind of in motion right now and the battery storage EPIC project is still in design. The power plant is finalized and in commissioning. And that landfill power has been going on for -- since 2012. So everything is a work in progress. There are some other assets in the system, such as a vehicle-to-grid demonstration that's being done with the CEC as well. A lot of those assets are just opportunities for us to research these ideas and concepts later as part of demonstrations.

But, you know, the main focus of the microgrid at Miramar is for resilience for the Marine Corps to ensure that we can carry out our mission at all times given any state of the country. And that requirement is actually for 14 days.

So next slide.

Very proud to state, and I got very lucky to do this webinar after the fact, but we had our first couple of successful island tests for the entire operation just a couple weeks ago in June. So this has been insanely exciting for me. My entire career has led up to that moment to see these things actually work. And so this screenshot, you can see all of our power plant assets, as well as our landfill power, contributing to powering the entire installation at Miramar.

So if you remember a couple slides back of that aerial view, that's over 500 facilities, pretty much like a small city. I wouldn't be surprised if the loads were the same as the hospital but -- because, you know, it is not a very big base. You know, our average load is only eight or, you know, nine megawatts. But in terms of complexity, there's certainly a lot of variability with different types of buildings and different types of missions going on.

So during that testing, we were able to do some stress tests that are very interesting. We simulated losing landfill power and, also,

losing diesel generation, and so I can talk about those technical details at length, but I'll, rather, give opportunity for questions later. I'll just clarify that on this page, you have to recognize that our system is still in commissioning and there are some datapoints that are not accurate or not complete yet.

For example, the PV bar on the right shows -- doesn't show any values but that's because the meters are currently not linked. But all of those PV systems were operating and contributing to the grid as well.

The bar next to that, that says, "Loading," is waiting for our future battery to get integrated into that DER set.

Now if you'd go to the next slide?

So just more comments about what it takes to make this happen. I think what I bring to the discussion today is just not sugarcoating any of this microgrid stuff. It's taken a very long time, very difficult to implement, especially at an installation scale. All of the tenants, remember, there's 10,000 people at MCAS Miramar that had to be affected by just one day of testing to have a base-wide outage and all of

that coordination, especially with all the different team members.

And, you know, the future of microgrids is definitely not to be understated with -- we now have a new microgrid operator who is going to be operating the system full-time. So in terms of economics, there's a lot of interesting conversations to have about Miramar and the microgrid as it relates to economics in the future. We are not intended to island ourselves all the time. It's meant as a backup system. But all of our investments have been made to try and support the local grid and to try and do so as cost effectively as possible.

So I'll leave it at that, and you can go to the next slide, and then I'll finish up.

MR. ERNE: Great. Thank you, Mick. I appreciate it.

And we'll now move on to Jessie. Jessie, you're still muted.

MS. DENVER: Great. Can you hear me okay?

MR. ERNE: Yes.

MS. DENVER: All right. Perfect. Well, thanks so much for inviting EBCE to the

conversation. A quick overview of who we are.

East Bay Community Energy is the load-serving CCA program in Alameda County. And we will also begin serving the City of Tracy in neighboring San Joaquin County in 2021. The structure of EBCE is that we're a Joint Power Authority whose members include 14 cities and the County of Alameda itself. And we are governed by a board of directors that's made up elected officials from each of our JPA-member communities.

Next slide please.

So over the last year, EBCE has been working with these local government partners to determine, when there is a major grid outage, where will people go? What will they need from the cities and the county? And will the critical facilities be ready. So these facilities range from EOCs, fire and police departments, rec centers, schools, libraries, which all serve critical functions of ensuring that the community has light and security, warm places to sleep, food and drink, communication, medical support, and general people to help the community in response to a major grid outage.

And so over the course of the last year we've been working with these local government partners to identify what critical facilities they have and what those loads at those critical facilities are that need to be met by solar and storage.

And I should mention that we're also collaborating with Peninsula Clean Energy, who is the CCA serving San Mateo County on this project. So together we've developed an initial portfolio of almost 500 facilities in 26 cities across the two counties, Alameda and San Mateo County. And we worked to score those 500 facilities to prioritize facilities that had a lower hazard exposure and a higher service value to the community. So what we looked at was were facilities in a fault or liquefaction zone? Were they susceptible to flooding and other types of hazards? And also looked at how easy was it for the community to, for example, walk to a particular facility to be able to get these services.

So from that prioritized list of about 425 facilities, we worked with our technical consultant, ARUP, to actually size solar and

storage systems to meet the critical loads at these priority sites. And we're currently determining the best path forward to deploy these system at scale across such a large portfolio.

Next slide please.

So to that end, in May, we issued a request for information to gain industry insight on the following sections of the RFI. Section one was the value of aggregated procurement. There's been a number of regional bulk procurement efforts over the last 10 to 15 years for solar in the Bay Area on public facilities. And they've resulted in system deployment but not at the scale and within the time frame that we need to do so today. So we really wanted to figure out how this could be done more efficiently and the role of the CCA in helping to expedite that.

Section two of RFI was on preferred procurement pathways and I'll cover that in the next slide.

Section three, we asked industry to give us some feedback on foreseeable challenges with the approach of issuing an RFP for such a large portfolio of facilities across so many

jurisdictions. We also asked the industry to provide us feedback on potential challenges with existing PV systems. Some of these critical facilities have deployed solar through power purchase agreements, and so we would need to retrofit those systems with battery-energy storage. So what are the legal and kind of contractual challenges associated with that?

And next slide please.

With regards to the procurement models, these are the specific options that we outlined in the RFI. So we're all very familiar with the traditional PPA model, and that was Option A. And we asked for feedback on these other options, including Option B, which is where the CCA would actually fill the role as the central PPA counterparty. The other options included a public sector partner purchasing the project outright and/or the public sector issuing a bond to be able to fund these projects.

So what you can see here is that the industry feedback we received, and we did receive 18 responses to the RFI, overwhelmingly, the preference was for this Option B, the CCAs being the central PPA counterparty.

And so the CCAs are currently discussing how we would do that and how we would develop a standardized kind of PPA contract that we could negotiate with each of our local government partners and then sign with the project sector industry partner. And the intent here is to reduce complexity of negotiating contracts.

Next slide please.

Just to wrap up, some of the other areas that we received feedback from the RFI included the best practices and improvements of aggregated procurement, really standardizing what the systems do across the entire portfolio, ensuring that we have early buy-in from our public partners, so really getting that top-down approval for participating in this project to ensure that when industry bids on this, the projects will get built.

The industry did indicate that they really felt that, from the perspective of customer acquisition, the CCAs having the central role of organizing the portfolio of projects would result in time savings.

And there is this value of the CCAs in providing some of the upfront site and

development work which industry indicated they'd be willing to reimburse the CCAs for doing. And this, in turn, would lower their risk of projects not being viable.

And then, from the perspective of existing solar PV systems, there will be challenges with addressing those existing PPA contractual relationships and retrofitting those system with battery-energy storage, so we're trying to figure out what that looks like.

And then other foreseeable challenges, from the industry's perspective, include potential COVID-19 delays, IOU interconnection. Some felt like they might have some supply chain delays. And then just the public site access constraints, again, tied to COVID.

So next steps for the CCAs is we're determining internally how the CCAs can fill the role of being the PPA counterparty across this portfolio of sites with our local government partners. And we'll be bringing out partners together over the next couple months to discuss that in more detail and get some commitments around the procurement next steps. And we tentatively aim to issue an RFP for the portfolio

of sites later this year or into early 2021.

Thanks so much.

MR. ERNE: Great. Thank you, Jessie.

So that completes all our panelists, so I'll turn it back over to the Vice Chair, if there are any questions from the dais.

VICE CHAIR SCOTT: Okay. Thank you so much to David.

I want to say thank you to John and Vipul, Mick and Jessie, for a fascinating and informative panel.

Let me ask both the panelists and, also, my fellow dais mates to please turn on your videos so that we can have a group discussion together.

And I have a few questions but let me open it up and see if some of my dais mates have questions they'd like to start with? Okay. Everyone's a little shy.

Oh, yes, please, Commissioner Shiroma, go ahead.

COMMISSIONER SHIROMA: All excellent presentations. Thank you to each of our panel presenters.

Well, here's my question, and you can

choose to answer it or not answer it. We've got our track two proceeding underway. We just issued a scoping memo last Friday on it. Lots more to follow. But for each of our presenters, if there is one specific thing that takes top priority from your perspective that the CPUC should focus on within our Track 2 rubric, what would it be?

MR. GORE: Well, I can go first.

Yeah, thank you, Commissioner Shiroma. So, yeah, interconnection challenges still remain a challenge for us. I think that's very important. There was a lot of, you know, work done in the Track 1 interconnection but I think that still remains a challenge for us.

And you asked for one but I'm going to give you two.

The second one is a financing challenge. You know, we still need to make sure these microgrids are financially reliable and bankable. For small sites, you know, challenges remain the financial.

Those are the two things. Those two things make my -- I don't like to see that (indiscernible) at this right now.

MR. ERNE: Vipul, can you elaborate on some of the challenges with the interconnection that you still experience?

MR. GORE: It's -- so we've been having -- so that's a great question.

So prior to SB 1339 activities, we had a lot of challenges. I mean, you know, interconnection would take us 9 months and 12 months, you know, and so on, really long. After 1339, the pain has reduced. We have some -- some of these, the processes are streamlined. We have, actually, the right people we are talking to who they took an action for teams to standardize the design and it's a back and forth discussion we are able to break and is all very good. I'm in the midst of three of four of those discussions with SCE, PG&E and SDG&E right now as we speak.

But, still, I think there are headwinds. You know, sometimes it just takes a long time for us to, basically, make a point and get going.

And the way I always compare it is it's not every -- a residential interconnection takes like a week or ten days to interconnect. Then you've got any like fire station or a police

station for it to connect, this could take six to nine months, and that's the problem. We have to figure out a way to get a standardized design and just get it one very quickly. And that's what I'm -- we are hoping that it should look like.

MR. ERNE: Thank you.

And I think, John, you wanted to make some comments.

MR. GRIFFITHS: Yeah. Well, thank you, Vipul. I would second that. Yeah, certainly, a number of projects I'm involved in that the interconnection sets the critical path.

And the other side is, you know, in terms of delivering these projects, I think, Mick, as you said, these are challenging projects to deliver until we get more used to that. And I think, if there's a way we can find to simplify the interconnection so the effort that teams put into the interconnection, getting the projects interconnected, can then focus on delivering value, you know, choosing better design, optimizing the controls. It's sort of reinforcing that point.

But I think it's -- you asked that, what's the one thing? And I would certainly

second that.

MR. WASCO: I could add some different points.

You know, for me, the interconnection was not too much of a struggle. So it's very interesting that everybody has different perspective.

For me the -- I have two real main things.

We've been developing our project for nearly a decade. And at this point, to kind of kill two birds with one stone, one of the questions online was talking about departing load charges. And the reality is, is that I have no idea how the economics of our microgrid system is going to work in the future. We designed and built it to support the grid and levelize our load with the utility and become a better, easier customer. And there's currently no tariff or economic opportunity to do that.

And the other thing I would comment on is just policy. And I definitely agree with the goals of a cleaner and quieter resilience. But at this time, we are just trying to achieve resilience. And in the Marine Corps, our

requirement is 14 days. Our system has the capability of running 21 days, just off the resources that we have onsite, thanks to renewables.

And the fact of the matter is, is that is because we have diesel and natural gas, although it is currently the most clean diesel and natural gas that could even be built, it's still sort of looked at as not a true microgrid in the state of California. And that's my challenge, is that I have tremendous opportunity to use clean natural gas to be a better customer of SDG&E, support the grid, and provide complete and total resilience to the military, but there is zero economic incentive to do that because our departing load charges potentially cancel out any benefit that we have of just the minimal use of peak shaving with natural gas.

So in general, those are my biggest things, economic opportunity and not having technical policy against a certain technology because microgrids should not be curtailed to a certain technology by policy at this point.

MR. SCAVO: So this is Janea Scott. I'd like to throw in a question here which is, all of

you have mentioned, at one point in your presentations, that's it's difficult to overcome the institutional inertia and that there's a lot of education that needs to be done around microgrids. And I was wondering if you were willing to provide some insight onto either, whether it was a data, a datapoint that was most compelling, or what it was that was most persuasive to the folks that you are working with to get them to want to build a microgrid and go down this pathway with us? And I think that's important as we are looking towards the commercialization of microgrids, like Mike Gravely mentioned a little bit earlier.

MR. WASCO: I could go first on that because it's the easiest for the military. It really starts with leadership and buy-in from the customer. You can't have a technology or an outside stakeholder trying to achieve something for an entity. They have to want it themselves.

And so I think having that project championed within the organization is the solution to following through on these projects for me. And that's, for us, been our commanding officer on the installation has had full buy-in

into our microgrid program for the last decade. Even though that military officer changes over every two years, it's really easy to continue that continuity.

MR. GORE: I can go next. So, yeah, Vice Chair Scott, for us, you know, the thing that really caught attention of the interconnection piece process is utilize containerized design. I mean, that's our approach, this clean, standard box design that we are going to deploy in all the locations, that's simplified and that caught attention with all the people who were addressing the interconnection study and the whole process.

You know, from their perspective, every time there is a different design, they have to kind of see how this is going to destabilize the grid or, you know, what is the impact on the grid of the distribution? But if you have a standard design, you know, same type of factory systems, same power level, same type of way to connect and disconnect, that simplifies a lot and I think that caught attention from a design perspective.

MR. GRIFFITHS: So can I, may I, say -- try to -- make sure I answer your -- could I try and answer your question?

I think, was your question here, why -- what overcame the institutional inertia? Is that the -- I think that was your question.

VICE CHAIR SCOTT: I was wondering what it was that convinced the person to say, yes, okay, you can go ahead and build this microgrid?

MR. GRIFFITHS: Yeah. Well, truthfully, I think it was -- there was a CEC grant, well, great, that's awesome, I think, being perfectly frank. Just thinking about one and I need little bit of time to think about that.

And I think the other point is leadership within organizations. I think Bernard Tyson before he passed away, you know, he was a big advocate, you know, at Kaiser for more sustainable solutions. And I think, you know, we're delivering microgrids at different organizations but I think, you know, it's great that California is providing that leadership. But I think there's also place at corporate leadership to challenge because it's -- you know, if an organization comes to an engineer or somebody and says, well, I need backup for this PSPS, the default solution, okay, diesel generator, here you go.

But I think that maybe corporate leadership, you know, and it's great that the Marine Corps are doing this, is -- I think that has a place in driving this, as well, at a state level.

I don't -- anyway, that's maybe a slightly different perspective that may help.

MS. DENVER: And I'd just add that, in addition to the top-down leadership buy-in, that having the technical support for these organizations, like that that's coming from the CCAs right now, is really helpful because cities and counties don't have staff who have the bandwidth or the knowledge and expertise to be able to move these projects forward. And they don't have the funding to be able to hire a third-party consulting firm to do that work for them or to issue bid solicitations one off of each other.

And if we're trying to achieve economies of scale and try to get these systems on the roof and in the ground quicker, that is this new goal that the CCAs are seeing themselves being able to fill as being able to provide that technical assistance back to our customers to enable them

to achieve these resilience goals as they've been working so long to achieve.

MR. WASCO: I second that because at MCAS Miramar, we've been partners with the National Renewable Energy Lab in Golden, Colorado for nearly a decade. And we wouldn't have done anything that we've done without their support the entire time.

Other military bases around the country are using national labs and much of them are gaining success in the microgrid arena just by having their technical support.

VICE CHAIR SCOTT: Great. Thank you.

Are there other questions from my dais mates?

Yes, please, Commissioner Douglas.

COMMISSIONER DOUGLAS: So, briefly, on of the obstacles to microgrids that was discussed was just permitting challenges. Can you maybe describe a little more what some of the complexities can be once you've got a project that you're ready to build?

MR. GORE: So let me understand the question properly, so can you please ask the question again? I'm sorry, Commissioner.

COMMISSIONER DOUGLAS: It was actually, I think, in your presentation. You raised permitting challenges as one of the challenges in front of microgrids. So I was hoping you could explain a little more about what some of those challenges are?

MR. GORE: Yeah. So in the permitting process, you know, it's very new to the cities that, you know, we are deploying these new microgrids. But they know how to permit a diesel gensets very easily and there are lots of cases and, you know, of resilience that they can rely on. But many are deploying solar and a storage system together. You know, there are challenges about how it is going to get connected, where basically, you are going to draw the service panels and all of that. And so I think from the city process, you know, there are some questions.

Not -- there -- I have not seen too many of electrical, you know, permitting questions, but I've seen sometimes, you know, structural, procedural, those types of questions a lot.

So get a standardized way. And the city permit AFJs (phonetic), they know that, you know, these are going to be deployed in this manner and

there's awareness, then the permitting process can go faster.

COMMISSIONER DOUGLAS: Okay. Thank you. And then I also --

MR. GRIFFITHS: And could I --

COMMISSIONER DOUGLAS: Please.

VICE CHAIR SCOTT: Yes, let's go to John, and then we'll go back to David.

MR. GRIFFITHS: Okay. Thank you. Sorry. I was just trying to be polite.

You know, from a healthcare perspective, the permitting, just by the nature of their essential specifics, is that it's many layered. You know, they all right regulated by OSHPD, which is OSHPD which, you know, has been very proactive in starting to adopt these standards, but then there's the NFPAs that, you know, they reference.

And the other challenge is we have, at the federal level, CMS. So for hospital, if you have a microgrid connected, to get licensed you need to meet the federal standards. And so there's a multi-layered agreement to get to where, ultimately, you can permit the project. But if it's a licensed hospital, there are some

other challenges that need to be overcome.

But, you know, the process has started, so it's -- I'm laying out, probably, not necessarily the solution. But, you know, I think time is not on our side. You know, Mick saying 21 days, you know, we've gone from 72 to 96 hours and the healthcare facilities are looking for backup power for five days. So you know, we have to work on that somehow.

COMMISSIONER DOUGLAS: Right. And let me just do a super quick follow up on that, especially in the hospital setting, because I know it is extremely challenging and, also, extremely valuable in terms of the use case.

You know, aside from, say, getting an EPIC Grant, what are the -- what kinds of incentives might really move the needle? Could it be low-income loans? Could it be programs that help on rate? You know, what makes the most sense for healthcare providers specifically?

MR. GRIFFITHS: That's a really good question. I think just one of the barriers we've come up against are a lot of them are not-for-profit, so, you know, the PPA model works well. I know Kaiser and other healthcare providers have

adopted that.

Yeah, I think the other side is education. And then maybe I'll say a different point.

One is, I don't know, funding that because, you know, there's a lot of people and healthcare operators, decision makers, are very busy. And to ask them to do something that, potentially, they're unsure of, then put them at -- that they see as a risk, I think investing in education.

But just a small point. We did a presentation at Kaiser Richmond and it was for the California Society of Healthcare Engineers. And usually we get about 10 or 12 people who attend. We were -- the room was packed. We had to turn people away. And I felt really proud that they had showed up.

So I think there's an interest that these are the guys that, you know, engineers, operators, work in the boiler rooms day in, day out. So I took -- that was in the evening. They took their time out off their own back to come in, so I see there's interest, so we can educate them because they have a place in making

decisions. Is it a diesel generator or is service/storage? So --

COMMISSIONER DOUGLAS: Right.

MR. GRIFFITHS: -- it may be just, you know, an idea, education.

COMMISSIONER DOUGLAS: And I keep threatening to ask the last question but I have one more, just from what you just said, and that is have you done an analysis of the performance of the microgrid, you know, compared to diesel generation? Because, of course, diesel generators, you've got an upfront cost but you've got this ongoing maintenance issue, you've got to buy fuel, you've got to make sure the fuel is fresh. It's not like you can set it and forget it.

And, also, you know, microgrids, if they're in place, should be better. They should be a lot better. But is that your experience and observation? Is that something that would resonate?

MR. GRIFFITHS: I think so, yeah.

Oh, Mike, do you want to answer that?

MR. WASCO: No. No. You can go first. I'll just add on. I didn't mean --

MR. GRIFFITHS: Sure. Yeah.

MR. WASCO: -- to interrupt you.

MR. GRIFFITHS: Yeah. Sure. No. No. I think it's that value proposition. And I, you know, I've recently been involved in a large medical office building in Marin. And we actually have to quantify the costs, the ongoing costs in there. They're fairly, fairly large in terms of value.

One thing that I could throw out which, I think, in the PSPS is noise and exhaust Because I'm trying to make sure this is relevant to your question. But if we see generation -- you know, if they're all bets you can -- don't meet the local noise ordinances and, also, Bay Area Air Quality.

So, again, COVID is going to have more immune-compromised people, but I think that's a value that, when we look at it in dollars and centers, is I think there's going to be a lot of, at the end of this PSPS season, I'm not sure, but there's going to be a lot of unhappy people with 500 kilowatt diesel generators parked in their parking lot next to a residence. How do you quantify that value? Because, you know, if

they're not well executed, these are other kind of, sort of, let's say intangibles but things that will come up that microgrids and solar plus storage projects, that's not an issue in.

Anyway, I've gone off on a bit a tangent, so hopefully that that was informative. I better leave it to you, Mick, before we run out time.

MR. WASCO: So all I was going to say was that, in my mind, the more likely situation for microgrids in the future is to have all of these assets participating together.

You know, the comment in the beginning, I'm really working off of that, that we're trying to make resilience cleaner and quieter, not clean and quiet. I think part of the challenge is, taking part in a 100 percent renewable microgrid earlier in my career, I know technology advances every day but, still, the difference between doing 100 percent renewable and a mixed DER system, like what we have, we have a specific reason for every single type of technology that we have in our microgrid. And it all pays dividends to have those different technologies.

Per electrical engineers at the National Renewable Energy Lab, we couldn't have a

microgrid to successfully have resilience for our mission without diesel. And so I think the technical solution is, you know, something that the engineers can figure out and the value for the renewables is most definitely there.

You know, especially for the military, it is not good to rely on diesel fuel. So there's an obvious benefit to having natural gas generation and, also, to have PV and onsite landfill gas generation for us. I know that MCAS Miramar is extremely lucky to have those resources onsite. But make no mistake about it, we are leveraging as much as possible of our onsite resources but absolutely need the diesel to make our system work to meet the mission.

COMMISSIONER DOUGLAS: No, I think that --

VICE CHAIR SCOTT: No. I know that --

COMMISSIONER DOUGLAS: -- I think --

VICE CHAIR SCOTT: Oh, go ahead.

COMMISSIONER DOUGLAS: I'm sorry. Just super briefly.

You know, you guys did really great leadership work with 100 percent renewable microgrid. I think a lot of people in the state,

though, you know, unfortunately, sort of think they're in the 100 percent diesel backup mode. And so it becomes the question of, you know, what are the benefits to you of losing less diesel and more renewable within this --

MR. GRIFFITHS: Um-hmm.

COMMISSIONER DOUGLAS: -- system that --

MR. GRIFFITHS: Yeah.

COMMISSIONER DOUGLAS: -- you know, for larger users most likely still includes some diesel. And that's where that tradeoff is kind of interesting.

MR. GRIFFITHS: Yes.

MR. GORE: If I could just make one comment, Commissioner Douglas?

I was evaluating multiple hotels for replacing the diesel gen set with onsite battery and solar system, and the economies did not work out. You know, like they should last -- they should last three months. The cost of the generator is one-time cost but it was cheaper than actually putting the PV in and the battery. I hope that going forward, you know, the prices come down and it becomes economical. With smaller sites, they're still a challenge.

MS. DENVER: And I would add that --

VICE CHAIR SCOTT: I'm going to take one last word in. We'll just do one last comment in from Jessie. I know this is so exciting to talk about. We could talk for many hours. I think our 90 minutes has gone by so quickly. But let's hear from Jessie. And then we had said that we would take a few comments in from the audience, as well, and so Qing has those teed up for us.

So, Jessie, and then we'll turn over to Qing please.

MS. DENVER: All right. Great. Thanks.

I would just add that, you know, right now there is a focus on PSPS events but we still are looking at the potential for a major earthquake. And if there were a major earthquake, that the natural grid -- that natural gas grid could be down, according to the Lifeline Council, for up to 30 days. And the roads would be closed which would inhibit the ability for diesel fuel to actually be delivered.

And when we're talking about critical public facilities, like shelters, libraries, fire stations, you know, some of these facilities, cities and counties don't actually own diesel

generators at these sites. They have contracts with diesel generator providers. And there's no guarantee, for example, if there was a hurricane happening at the same time on the east coast, that the diesel generators would actually be delivered to these sites.

So, you know, thinking about the scale of the site and the appropriate combination of technologies, you know, for libraries and community centers, schools, the solution that is onsite renewables with battery energy storage does work because of these other factors.

I would also encourage the state to consider what the value of resiliency is because, as somebody noted earlier, for some of these smaller systems, like a 5 kilowatt system or a 6 kilowatt system at a fire station, the economics of that can be kind of hard. And if you then factor in what the value of that resiliency is, separate from a traditional return on investment, then that kind of helps get decision makers over the line in thinking about what is the value of an avoided loss of life? What is the value of social continuity and security because you have lights on at a sheltering location and there

isn't crime that ensues because there are no lights or -- you know?

And San Francisco had looked at this through their resiliency work, so there is kind of the start of that effort. But I would also encourage kind of what is the value of that resiliency so that that can start to be considered by decision makers in addition to the kind of traditional return on investment that everyone looks at for project deployment.

VICE CHAIR SCOTT: Great.

Let me turn it over to Qing to ask a couple of questions. I think we have about five minutes, so let's do that, kind of in a lightning round way. And then we'll open it up to the public comment.

Qing, take it away please.

MR. TIAN: Yeah. This is Qing. And we've got a lot of interest from the online participants, so we probably will not have time to go through everyone of them. I will have to distill the information, you know, in terms of what's most relevant to our panel.

So first question, I think we have a lot of interest on the, you know, how can we use

microgrids to help address PSPS events?

And there were a number of questions on how, for the existing microgrids, how long can these microgrids provide power during a PSPS event?

And what kind of resilience duration have you or will you consider for microgrid design to help address PSPS? As you all know, PSPS events are expected to be days, not hours.

MR. GORE: I can go first, Qing. Thanks for that question.

See, in our case, the way we design our system is we design it for 24-hour resiliency. Now it's a function of the size of the battery, the critical loads and all of that, so we carefully design that system and tell the customer that if you, basically, get you know, it has to be financially viable first. If you get this size of a battery, you could schedule your loads to this level. And, you know, lest just say you have 50 percent production spoken and all of that, then you would get a 24-hour, and then we work backwards. That's how we design our systems.

MS. DENVER: And for the systems that

we're sizing the solar and storage to meet critical loads at the public critical facilities, those are for a 5-day grid outage or a 120 hours.

MR. GRIFFITHS: Yeah. If I could just add, yeah, from my, not design, but from my clients, it seems to be five days, the desire to have backup power, let's say, designed for.

MR. WASCO: And I'll --

MR. TIAN: Mick, is there anything you want to add?

MR. WASCO: Yeah. On the military side, I think it's a little bit more stringent. The Department of Defense is calling for 14 days. And with our system, in particular, given the onsite resources and available fuel on the air station, we suspect, given the usage of all of our disparate DERs, we can run for 21 days without an external fuel supply. But if the natural gas pipeline goes down, if the landfill power goes down, that time frame starts to diminish.

But our goal in operation is to have the most flexibility as possible, so that's why we are implementing the demand response control capability that we think will give us about one-

and-a-half megawatts worth of control across the air station.

And I think that when you're talking about days, not hours, there's so many different contingency operations and so many things to consider anyway that it's very difficult to plan and design for those outcomes.

You know, before we were looking at microgrids and we were looking at PSPS events, now all of a sudden there's COVID and there's another thing to consider. And it's interesting that you never know what's going to be thrown at you. And I guess our perspective is to just make everything as redundant as possible for the most amount of flexibility.

MR. TIAN: Yeah. Thank you very much. Yeah.

So another thing I want to find out is, you know, for our Fremont Microgrid Project and, also, Richmond Microgrid Project, actually, we started the project about six years ago. At that time, you know, we don't even have a PSPS. So things are evolving as we are, you know, moving along.

And I also -- here's a second question

and it's about the -- you know, about optimization.

So how many of these microgrids optimize electric and thermal loads? Vice versa, what are just electric load?

MR. GORE: Yes. Sorry. I was --

MR. TIAN: How about Vipul?

MR. GORE: Yeah. Quick --

MR. TIAN: Can you take this one?

MR. GORE: Yeah. Quick, quick response to that one.

So in our case, what we do is we start with electric. We look at the thermal loads. If the thermal load -- you know, again, I'm talking about small to midsize facilities. They're not large facilities. If that thermal load is loading up, then we load it. But if it is a little bit larger, you know, let's say 25 percent in electrical therms of the total electric load, then we try to offset that. But normally we don't consider thermal loads in our projects to keep the costs low.

MR. GRIFFITHS: So --

MR. WASCO: You know, I --

MR. GRIFFITHS: Go ahead.

MR. WASCO: -- I can just add that our system, in terms of electrical optimization, in island mode the system, basically, uses all the available generators in the power plant. And we've proven that we cannot island with only natural gas engines. We need at least one of our diesel engines. And when the system is stabilized we integrate the landfill power.

The landfill power, in terms of electrical, has its challenges in that the gas has problems with the electrical output. And so we need spinning reserve online for integrating those renewables, just in case they go down. They're less reliable than the generation assets in the power plant. But those renewable sources greatly reduce the fuel, obviously, in island.

And our system, when grid connected, operates entirely off of economics. So if natural gas is needed to supplement a landfill generator dropping offline and causing a peak for our installation, then the natural gas will be used and the diesel won't be used because it's not economical.

MR. TIAN: Okay. Great. Thanks Mick.

I want to save the last question for

Jessie.

How does the CCA coordinate with utilities, for example, PG&E's Community Resource Center, which serves as a similar purpose during a PSPS event?

MS. DENVER: So that's a good question. Right now we've been coordinating more directly with our local government partners on sizing the sites that they have, that they've identified across their different hazard mitigation and energy response plans as needing to serve the community in time of great outage.

We are on email communications with PG&E who's identifying community resource centers where they are deploying resilient centers but we are not informing that particular process, so they're a little bit -- but they are definitely separate efforts that don't really have a lot of crossover. The sites are not necessarily interconnected to each other.

MR. TIAN: Okay. Okay. Thanks Jessie.

So we are close to the end of the panel, so I would like to wrap up our time for Zoom Q&A.

I'd like to turn the meeting back to our Vice Chair Scott.

VICE CHAIR SCOTT: Okay. Well, thank you so much. I appreciate having a chance to get some questions from the audience through Zoom, so thank you for facilitating that for us, Qing.

I also want to say, thank you so much to our panelists for what I think was very interesting and data-rich presentations. As you can probably tell, we could ask you questions for the rest of the day but we won't. All right, so --

MR. TIAN: Thank you.

VICE CHAIR SCOTT: -- thank you so much for being part of today's discussion.

What we're going to do now is transition into the public comment. So, panelists, you are welcome to stay with your videos on. You are also welcome to turn your videos off if you'd like.

I would like for my fellow dais members to please keep their cameras on as we listen to our public comment.

And I'll hand it over to Heather Raitt, who will walk you through how to do that and get that part going for us.

MS. RAITT: Thank you, Vice Chair. This

is Heather Raitt.

I would just like to remind folks, if you -- I see a couple hands up. But if you did want to make public comments, go ahead and click that raise-hand icon now, or press star nine if you're on the phone. And we are fortunate enough to have RoseMary Avalos with us today from the Energy Commission's Public Advisors Officer, to walk through the public comment process for us. Thanks so much.

Go ahead, RoseMary.

PUBLIC ADVISOR AVALOS: Thank you, Heather.

I'm RoseMary Avalos with the Public Advisors Office. And I'll first call on attendees using the raise-hand feature on Zoom. Please state your name and affiliation for the record. Also, spell your first and last name after you are un-muted and before commenting. And, please, do not use speaker phone feature when talking because we won't be able to hear you clearly.

And now I'll move on to A.D.

You're un-muted. Go ahead and make your comment.

MS. DETRIO: Hello. This is Allie Detrio. Name is spelled A-L-L-I-E D-E-T-R-I-O. I'm with the Microgrid Resources Coalition.

First, just wanted to say thanks to everybody for the great presentations today. A lot of really great questions in information.

Since I know we're pressed for time, I just want to underscore one major point, even though I have several things I would love to comment on if there were more time. Departing load and standby charges are the single largest financial barrier to microgrid deployment in California. All non net-metered systems are subject to these charges. You heard the folks at Miramar where they don't even understand the full economic impact of their microgrid because of the departing load charges and how detrimental they are to the overall cash flow and economics.

Exempting microgrids from departing load charges is the single most impactful thing the State of California could do to accelerate the deployment of microgrids across the state. You could consider it a form of economic stimulus that the state can implement without having to spend any money.

Modernizing standby charges so they're more fairly calculated based on real-world circumstances is also something that really is important, as well as really evaluating interconnection costs and looking to standardize a lot more of those costs when we're looking at systems that are not net-metered systems.

So I just really want to stress that to all of the participants here, that removing some of these financial barriers will result in California becoming much more resilient much, much faster.

Thank you.

PUBLIC ADVISOR AVALOS: Thank you.

I just want to remind phone users to dial star nine to raise your hand. And are there any other comments? Please raise your hand. I'm going to give a few seconds to allow people on the phones, just in case they want to dial star nine.

Okay, Tanya, your line is un-muted.

MS. BARHAM: Hi. I just wanted to publicly comment. And I think throughout the presentation, several of the presenters sort of touched on this, as we better match load shape to

the capabilities of our different energy assets in a microgrid portfolio, and obviously, when you've got a nice big, you know, canvas, like a military base, you've got more diversity in the generating assets and storage assets that you can deploy, but as we look at more deployment of clean assets for longer durations, several of the presenters sort of alluded to the importance of the ability for loads to better match those storage and generation profiles.

I've raised this in other forums before. But I think, as we start to move these microgrids into smaller and smaller assets portfolios or aggregations of buildings, it's going to be very important that we have smart interoperable connected loads that are able to respond to either grid signals or to signals from a microgrid controller in a standardized way that will help reduce the cost of implementation for these systems.

I know we're at the very high level right now, looking at general microgrid interconnections. These are big projects. There's a lot of specialized engineering. But, you know, I'm hearing many communities that are

looking at 2045 goals. One of their big deals is electrification of loads by 2030. And in the state of California, that's a massive lift in ten years to electrify all end uses.

So while we're doing that, I just want to have, on the record, that we should really be thinking about smart communication, command, and interoperable open standards that can be used for smart loads to better match them with clean storage and clean generation in our asset portfolios.

PUBLIC ADVISOR AVALOS: Thank you, Tanya. And we'll move on to -- yes?

(Off mike colloquy between Court Reporter and Public Advisor Avalos)

PUBLIC ADVISOR AVALOS: Okay. Go ahead, Tanya.

MS. BARHAM: Thank you. My name is Tanya Barham. I'm with Community Energy Labs. Yes. T-A-N-Y-A. Last name is spelled B, as in boy, -A-R-H-A-M, as in mother, Barham.

PUBLIC ADVISOR AVALOS: Okay. Thank you, Tanya.

And we'll move on to Sharmila Ravula.

Your line is un-muted.

MS. RAVULA: Hi. This is Sharmila Ravula. I'm representing the Emerge Alliance, which works on DCE standards. The name is S-H-A-R-M-I-L-A, and last name, Ravula, R-A-V-U-L-A.

There are two different aspects I would like to just put on the public record.

One is, since we're looking at microgrids at a community scale, as well as at the site level, for the community microgrids, one thing that I think would be great to explore in terms of these proceedings will be how you could encourage front-of-the-meter coupling of solar and storage and having community-scale systems support low-income neighborhoods and DAC communities on the residential and commercial level because that is of high priority for the State of California.

And the other point that really needs to be explored and that has been brought by multiple presenters today is the financing. So one thing that could really help the challenges of financing is looking at options where the CCAs and IOUs could potentially own these assets so that it makes it much easier for these microgrids

to proliferate.

Thank you.

PUBLIC ADVISOR AVALOS: Thank you, Ms. Ravula.

Are there any other comments? Please raise your hand. And if you are on the phone, dial star nine. Okay, I have commenter A.D.

Go ahead. Your line is un-muted.

MS. DETRIO: Hi. This is Allie Detrio again. Since there doesn't seem to be a lot of comments, I would like to make one more.

I was the one that asked the questions about microgrids, including electric and thermal loads and optimizing both types of energy sources. And I think it would be really beneficial for all stakeholders to think through how clean fuels can play a role in microgrids because optimizing both electric and thermal loads can result in really significant efficiency gains.

And so when we were looking at the loading order and looking at how we can, first, reduce overall demand and really optimize these resources, thinking through how we can optimize the use of clean fuels and integrate electric and

thermal loads, those are really important things to also consider with microgrid deployment. I know most of these here seem to focus on electric-only but we can gain significant efficiencies through optimizing electric and thermal loads.

PUBLIC ADVISOR AVALOS: Okay. Thank you, Allie.

I have Tanya. Your line is un-muted. Oh, I'm sorry.

I'm going to move on to the phone line. And I will call the last three digits of your phone number. It's 682. Go ahead. Your line is un-muted, 682. Okay.

All right, we're -- that concludes the comments that -- from those on Zoom and on the phone. And we'll go ahead and hand over the meeting to Heather.

MS. RAITT: Thank you, RoseMary.

Actually, if we want to just go ahead, Vice Chair, and move on to closing remarks?

VICE CHAIR SCOTT: Absolutely. And I think I may save my closing remarks for the end of the day on Thursday, after we've had a chance to hear from all of our panelists, but let me

turn to my fellow dais mates and see if anyone would like to make a closing remark today? And that -- I'm not seeing any hands raised.

Oh, Commissioner Shiroma, please go ahead.

COMMISSIONER SHIROMA: Okay. Thank you. I just wanted to thank everyone. Thank you, Vice Chair Scott.

And check out our scoping memo that was issued this past Friday. It is pretty high level, certainly, but I think that a number of the points that were brought up by not only our panel members but also by some of the commenters today will be addressed and covered in our Track 2 proceeding. And while there's not a date set yet, we do also intend to hold a workshop on alternatives to diesel.

And, again, for the 2020 fire season, we have a reliance on diesel because, at the utility scale that we were addressing, the parties participating in that proceeding did not bring in alternatives, readily available alternatives, as Jessica Tse said, you know, a plug-and-play. But in this workshop, we do hope to hear about whether there are viable alternatives for 2021?

Thank you. Thank you, Commissioner Scott.

CHAIR HOCHSCHILD: I just wanted to --

VICE CHAIR SCOTT: Great.

CHAIR HOCHSCHILD: -- add my thanks to Vice Chair Scott for all of her work on this since last year, and Commissioner Shiroma, and just to say that, you know, there are a suite of activities that simultaneously help us adjust to and survive the consequences of climate change, including microgrids which, you know, can help keep the lights on and, also, help prevent climate change from getting worse. And so this is really in that sweet spot of reducing emissions but also building resilience and reliability.

And what we're doing in California is very much a template for other states. I think we're all mindful of that, so the stakes are high for that reason as well. So I just really wanted to thank all the staff and the stakeholders and look forward to the ongoing discussion in the days ahead.

VICE CHAIR SCOTT: Yes, President Batjer.

PRESIDENT BATJER: Hi. Thank you, Vice

President -- Vice Chair, excuse me, Scott.

I want to add my thanks to the presenters today and the commenters. I took a draft of notes. I found this extremely informative. So thank you so much for putting this together and bringing such rich presenters to us today.

There's much to be done. And as I said earlier, my concerns have been very much focused on the very near-term in terms of the backup generation for not only energy but also our tel-cos (phonetic), all of which right now are planned to be diesel, nearly all.

So -- but thank you. David is always the optimist. And I always appreciate his optimism, that we are making our way through this suite of (indiscernible) opportunities for a clean future.

So thank you all very much for all your hard work today. Appreciate it.

VICE CHAIR SCOTT: You are welcome. Thank you all so much for -- oh, I see Neil waiving also.

Neil, please go ahead. You're on mute, Neil.

VICE PRESIDENT MILLAR: Thanks for --

VICE CHAIR SCOTT: There you go.

VICE PRESIDENT MILLAR: -- catching that. Thank you. Besides that, thank you of the opportunity to listen and learn quite a bit more about the cost tradeoffs people are having to make on balancing these additional resources and capabilities while also providing the redundancy and resiliency they need. I think that's helping us clarify the situation when we're looking at where there's potential for microgrids to be playing a larger role, so that really factors into some of our thinking.

So I do want to thank you for the session and the chance to participate. Thank you.

VICE CHAIR SCOTT: Thank you. You are more than welcome.

So it is wonderful to have all of you here today. I want to thank our participants, our very informative and robust panelists. Thank you to my dais mates, as always, and to our fantastic IEPR Team who helps make these run so smoothly so that we can spend our time getting all of this excellent information.

I just want to remind folks that our next session is on Thursday, July 9th. It starts at 10:00 a.m. We will have the third and final

session for the microgrids workshop on Thursday, July 9th at 2:00 p.m.

And you can also see on your screen here in kind of -- it's in the middle of my screen but it may be in the top right of your screen, where the written comments are. So we are always delighted to hear from people in more detail. There was a call for data from Mike Gravely. Microgrid is not funded by the Energy Commission. And we heard some other calls for data, as well, so please do send that information to us at the written comments. And you can see, right here on your screen, how to do that.

And with that, thank you so much everyone. We are adjourned until Thursday at 10:00. I'll see you then. Thanks guys. Bye-bye.

(The workshop concluded at 12:03 p.m.)

CERTIFICATE OF REPORTER

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

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 29th day of September, 2020.

MARTHA L. NELSON, CERT**367

CERTIFICATE OF TRANSCRIBER

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

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

MARTHA L. NELSON, CERT**367

September 29, 2020