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BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the matter of:

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2020 Integrated Energy Policy)	REMOTE ACCESS WORKSHOP
Policy Report Update)	
(2020 IEPR Update))	

IEPR COMMISSIONER WORKSHOP ON

ASSESSING THE FUTURE ROLE FOR MICROGRIDS IN CALIFORNIA

REMOTE VIA ZOOM

SESSION 2: MICROGRIDS FOR RESILIENCY AND MICROGRID ECONOMICS

THURSDAY, JULY 9, 2020

10:00 A.M.

Reported By:
Martha Nelson, Cert. 00367

APPEARANCES

Commissioners Present

David Hochschild, CEC Chair

Janea A. Scott, CEC Vice Chair

Karen Douglas, CEC Commissioner

Marybel Batjer, CPUC President

Genevieve Shiroma, CPUC Commissioner

Staff Present

Heather Raitt, Assistant Executive Director, Policy Development

David Erne

RoseMary Avalos, Public Advisor's Office

Panel 1:

Qing Tian, CEC, Energy Research Development Division, Moderator

Rachel DiFranco, City of Fremont

Seth Baruch, Kaiser Permanente

Rosa Vivian Fernandez, San Benito Health Foundation

Page

P R O C E E D I N G S

JULY 9, 2020 10:00 A.M.

MS. RAITT: So, it's ten o'clock, so we'll go ahead and get started for starting the record here. Good morning everybody, 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, which we refer to as the IEPR for short.

Today's workshop is being held remotely, consistent with the Executive Orders N2520 and N2920, and the recommendations from the California Department of Public Health to encourage physical distancing to slow the spread of COVID-19.

The 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 website.

Instead of what used to be our normal full day IEPR workshop, we've broken this topic into three sessions over two days, to encourage participation. This morning's session is the second of three and addresses microgrids for resiliency and also microgrid economics.

Session 3 is today at 2:00 p.m. and addresses residential microgrids and emerging microgrid technologies.

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

We're working on making the IEPR workshops more engaging in this remote environment and we'll 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. And before typing a question, please check to see if someone else has already posed a similar one. If so, you can just click the thumbs up to vote on it and that will move the question up in the queue. The questions with the most thumbs' up clicks are up voted to the top of the list.

We'll reserve about five minutes at the end of each panel for attendee Q&A. Given the time restrictions and our very full agenda, we won't be able to elevate all questions received.

I'll now 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 each

session. Please note that we will not have time for panelists to answer questions during the public comment period. It's just an opportunity for participants to make a comment.

In Zoom, click the raise hand icon to let us know you'd like to make a comment. 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 9 to raise your hand. We will open your line during the public comment period.

Alternatively, written comments after the workshop are welcome and they are due on July 9th. And again, the notice gives you all the information about how to provide those written comments.

And with that, I'll turn it over to Vice Chair Scott for opening remarks. Thank you.

CEC VICE CHAIR SCOTT: Okay. Well, good morning everyone. Thank you so much, Heather, for getting us kicked off here today. I'm delighted to see you all.

We are joined, as you can see on the side here, with Chair Hochschild, and Commissioner Douglas, and myself from the Energy Commission. And also, President Batjer and Commissioner Shiroma from the Public Utilities Commission. So, I'm really glad to have you all back today.

I very much enjoyed our first conversation on Tuesday about assessing the value and role of microgrids. And I'm looking forward to this morning's conversation, looking at microgrids in terms of resiliency, and also both in terms of their economics.

Let me turn it to you all to see if you'd like to make some opening remarks and we'll go from there. So, let's see, I'll just go right down the list and start with Chair Hochschild.

CEC CHAIR HOCHSCHILD: Well, good morning. Thank you Vice Chair Scott, and welcome everybody. I just wanted to add; yesterday we funded another round of projects from the EPIC program, including many for energy storage. It was the largest investment we've made in Tribal energy projects. So, these were principally energy storage projects with our Tribes. And a really great testimony, I think, to the hard work of the PUC and the CEC staff, and all the stakeholders on this. So, very much in line with the discussions we're having this week on how to promote resilience. And I just wanted to acknowledge all the staff who worked together on that.

CEC VICE CHAIR SCOTT: Great, thank you. Let's turn to Commissioner Douglas.

CEC COMMISSIONER DOUGLAS: Well, I just wanted

to welcome everybody to this IEPR workshop, or join in my colleagues in welcoming everybody, and I look forward to the presentations.

CEC VICE CHAIR SCOTT: Sounds excellent.

How about President Batjer?

CPUC PRESIDENT BATJER: Thank you Vice Chair Scott. Good morning everyone, I'm delighted to be able to be here for the second part of the workshop, really looking forward to the discussion on resiliency. And I thank the CEC and Chair Hochschild for those great -- underscoring the importance of the award, grantee of the EPIC storage to the Tribal governments. This is just terrific. And very much look forward to the day. And I want to thank you again, Vice Chair Scott, for this terrific workshop. It's much needed and I hope we enjoy great participation again today, as we did yesterday. So, thank you.

CEC VICE CHAIR SCOTT: Oh, indeed. You are more than welcome, we're so glad to have you.

CPUC PRESIDENT BATJER: Absolutely.

CEC VICE CHAIR SCOTT: How about Commissioner Shiroma?

CPUC COMMISSIONER SHIROMA: Yes, good morning. Thank you so much, Vice Chair Scott and fellow Commissioners. Tuesday was very insightful. Hearing

these presentations on what is working, and why from microgrids. As I mentioned on Tuesday, at the CPUC we issued a decision in June for our Track 1 microgrid proceeding to comply with SB 1339. It was substantially focused on the investor owned utilities being prepared for the upcoming -- well, we are in the fire season. But for expected public safety power shutoffs. And we're now working on Track 2. So, I'm looking forward to hearing the speakers this morning on resiliency and economic considerations and, of course, this afternoon on increasing reliability during grid disruptions, as well as hearing about emerging technologies to extend islanding.

And also, I do want to do a shout out that our President Batjer swore in our Tribal Advisor, Ken Holbrook, yesterday, who will be advising us during many of our proceedings, including microgrids, on how to improve the outreach and the partnerships with the Tribal communities in California. Thank you.

CEC VICE CHAIR SCOTT: Thank you. We're so glad to have everyone here together this morning, on the dais. And congratulations on your new Tribal Advisor.

Let us now turn to our first panel. I will let the -- my fellow dais mates, if you'd like you can turn your videos off while we're seeing the presentation.

And we'll get that queued up. It's going to be a panel discussion on resilience impacts on the microgrid market. And it will be monitored by Qing Tian from the Energy Commission.

And so, Qing, I will turn it over to you. Good morning.

MR. TIAN: Thank you, Vice Chair. Good morning. And good morning, everyone. My name is Qing Tian. I work for the California Energy Commission. I'm a Supervisor at the Energy Research Development Division.

First, I want to welcome you to our 2020 IEPR workshop session on grid resilience. As you may know, there were multiple benefits microgrid technology can offer. Microgrid can help integrate renewables, most important in during an outage. Microgrid can achieve resilience by islanding from the utility grid.

Buildings and the facilities developed by microgrid can act as electrified oases. Where community members can take shelter, shout to the phone, get medical help, buy food, and fuel cars. Because of COVID-19 and the wildfire-related power outage, our critical facilities have been under extreme pressure. More and more people start to see the benefits of microgrid and want to explore the opportunity of deploying microgrid for critical facilities, such as

fire stations and hospitals.

Today, we are fortunate to have four wonderful speakers to go over this topic. They are going to share their knowledge and their insights on microgrids and they will talk about the resilience needs for the critical operation, especially under the current pandemic. They will discuss how the pandemic has impacted the operation on the microgrid market.

Each of the speakers will have about five minutes to provide their opening statement. After that I will invite our Commissioners and our guests to join the discussion and ask questions. There will be a Q&A session to address questions from our participants online. We encourage our online participants to have the questions in the Q&A. We will try to address as many questions as we can.

With that, I'd like to introduce our first speaker of the day, Rachel DiFranco. Rachel is Sustainability Manager from the City of Fremont. She helped develop and implement the city's Climate Action Plan.

Rachel, please take it away.

MS. DIFRANCO: All right, thank you Qing. So, yes, my name is Rachel DiFranco and I'm the Sustainability Manager for the City of Fremont. I've

been in my position for almost seven years, now. And I'm going to talk a little bit about a project that we have implemented over the past few years on a couple of our fire stations. And I want to touch on some of the motivating factors for us to do this project, some of the benefits that the project has offered, and then what's next for us in terms of pursuing additional microgrids in the future.

So, to start off, I'm just going to give you a quick overview of the project. We partnered up with a local clean tech firm called GridScape Solutions, based in Fremont, who pursued a CEC EPIC grant to install low carbon microgrids on critical facilities.

So, they reached out to us and asked if we were interested in partnering with them on this project. And looking at some of our critical facilities that could potentially support not only solar, but battery storage, and that these systems would allow those facilities to island from the grid. And the idea was to at least island from the grid for a three-hour period of time which is, you know, enough to cover a short outage with PG&E. But the idea was to also look at how could we island for longer, as well.

So, we had actually just come off of the tail end of working through what was called the Regional

Renewable Energy Procurement, an Alameda County-led group purchasing effort for commercial solar. And the city had installed solar on four other facilities, and these are all carport structures, including our police complex, our maintenance center, one of our community centers, and then our waterpark. And combined, that was about 1.2 megawatts or maybe a little bit more than that. Sorry, 1.4 megawatts of solar.

So, we had been familiar with the process of procuring solar and also looking at, you know, the option of purchasing versus doing a power purchase agreement for solar.

So, this project then came to us shortly after we had finished installing a few of those systems. And we said, you know, this sounds great. We can get solar on some of our facilities. We're already comfortable with the process of installing it. We have a third-party ownership. We did power purchase agreements for those other solar PV systems. And it sounds like this would be a really great opportunity for us to get solar on some of our critical facilities that we weren't able to the first time around, and be able to island from the grid.

If you can go to the next slide, Qing. So, we ended up selecting three of our 11 fire stations to

receive microgrid systems. And you can see on the map here that they're fairly disbursed between Northern and Central Fremont, and Southern Fremont. And these were some of our larger energy-using fire stations. Between, you know, about 65,000 and over 100,000 kilowatts a year. So, not huge energy consumption, but more than some of our other fire stations that are slightly more residential in nature.

You can go to the next slide, Qing. So, overall, as we were evaluating the project, we identified a number of potential benefits to the city, which we have seen in action. We actually started working on this project in 2015. The systems were installed in 2017 and 2018 and now have been operational for the past few years.

So, first of all, the systems protect critical facilities against power outages by having the battery backup for the solar PV systems. If those systems are to go down, we do have the stored battery energy to support our facilities. And, as I mentioned, we targeted at least three hours of islanding, but those batteries actually have the capacity to island for upwards of 8 to 12 hours. And we always keep about 25 percent stored energy in the battery so that we can island for a minimum of three hours at any given time.

We're also reducing demand on the grid. And this area of the grid does have quite a bit of demand. We have a lot of manufacturing, advanced manufacturing in Southern Fremont. So, you know, we're doing our part to reduce that demand on the grid.

We're increasing our resiliency in our community. And, you know, even though these fire stations did not lose power during the public safety power shutdowns in the fall, we did have, you know, the level of security that we needed to feel in order to make sure that, you know, if they were to go down we still would have at least three fire stations operational because we have these microgrid systems on hand.

We're able to reduce our utility bills significantly. And we also have reduced our greenhouse gas emissions of the sustainability manager. This is one of my key goals.

Furthermore, we supported a local clean tech firm to advance and innovate their product, so their microgrid controller is now, you know, a very robust and marketable product, and they have scaled from only a 6-person team to over 30 people through the work that they did on this project.

And if you just want to go to the last slide,

Qing, this is a couple of photos of our systems. And these are just aerials of the PV systems. And then, the top corner, where you can see all of the different boxes, those are the different components of the microgrid system, including the inverter and the microgrid controller, and the batteries. Thank you very much.

MR. TIAN: Thanks, Rachel.

Our second speaker of the day is Seth Baruch. Seth is the National Director for Energy and Utilities at Kaiser Permanente. He's in charge of the Sustainable Energy Program. Please go ahead, Seth.

MR. BARUCH: Well, great. Thanks so much and thanks for the opportunity to speak with you this morning.

So, as mentioned, I work on the solar, and fuel cell, and microgrid efforts at Kaiser Permanente. And my job has become more urgent since last fall, when three Kaiser hospitals and multiple medical office buildings were out of power for several days during the PSPS events last fall. Our most affected areas were in the North Bay. And that has really driven a lot of our efforts now, recently, to improve resiliency particularly at those facilities, but also looking more broadly across California.

A lot of this actually started with a project that was EPIC funded, as well as the Richmond Microgrid Project at our medical center there, in Richmond. And that was really the first time we used backup sources of power that were not diesel generators, and we had a solar array, and a 1-megawatt hour battery system that's providing additional facility.

But that project has generated a great deal of interest across Kaiser about the possibility of developing additional microgrids. But interestingly, the interest is coming a lot from the medical office buildings and less so from the hospitals. Because, of course, the hospitals have huge generators.

So, we have been looking at developing battery storage plus solar projects at a number of our medical buildings where the resiliency needs are more discrete. For example, a solar plus battery storage system to back up procedure rooms for many hours, and medical refrigerators possibly for many days.

We are -- and that's sort of been the thinking up until pretty recently. And now, of course, we have the whole COVID situation. And I am hearing great fears from my colleagues across the Kaiser network about the possibility of an extended PSPS event, combined with a potential surge in COVID cases where you'd need

everything, the medical buildings, the hospital buildings, everything all together.

So, we have really been, again, focused on fuel cell-based microgrid projects at facilities like, for example in Santa Rosa, who are going to really want as much full business continuity as possible for up to 24 hours -- I'm sorry, for 24/7, you know, essentially for many days at a time.

And so, we are -- we're also looking at improving resiliency in our San Rafael facility, in Vallejo, get all of the facilities that were deeply impacted by the PSPS event.

In addition, we are developing a screening tool that helps facility managers across the network address, sort of help prioritize which facilities are in most need of additional resiliency. For example, based on the critical services they provide, based on how isolated they are, or how far away other services might be. So, basically, accepting the consequences of extended power outage.

And then, finally, also partly inspired by our Richmond project, we are redesigning -- we're revising our design standards so that new facilities are, quote, microgrid ready. And that is to say that the new facilities are designed so that the critical care loads

are isolated and are connected to one panel so that you can easily provide backups, and install for a drop-in battery system, if you will.

So, between all of those efforts, we are very focused on resiliency at Kaiser Permanente and are grateful for the support that the state has provided for us because it has, actually, really accelerated our microgrid project development, and has helped crystalize and refine our thinking about how to develop microgrids. So, I'll leave it there for now.

MR. TIAN: Thanks, Seth.

Our third speaker of the day is Rosa Vivian Fernandez. Rosa Vivian is the President and the CEO of the San Benito Health Foundation. Please go ahead, Rosa Vivian.

MS. FERNANDEZ: Thank you. Good morning. So, I will focus on the why. San Benito Health Foundation is a federally-qualified health center. We are a migrant and community health center. We're celebrating our 45th anniversary this year. And we provide medical, dental, vision, WIC, and other social services.

We are located in San Benito County, which is about 1,390 square feet, and we service a population of about 9,000 people that are dependent on our services.

So, we looked at the vision. So, why did we

embark in this project? It was to ensure that our vision of having a safe and healthy community that would have access to care, regardless of the environmental or other emergencies. And this became very important to us as we looked at it in 2017.

So, the next slide, please. So, you know, when disaster strikes we all know that we have -- may have severe damage to infrastructures, and an impact on healthcare access. And we saw this firsthand in 2017, September of 2017 when Hurricane Maria struck Puerto Rico and we had 3.4 million people affected.

We were one of the clinics that provided assistance to 26 sister clinics that did not have power. And as a result, there were people who died because they did not have the appropriate medical assistance, and some of the supplies were damaged, and they were not able to get the supplies necessary because of the power and communication issues.

So, the leadership of our board, after experiencing this and working with our sister clinics, our board had a mission to not have this happen in our community. And we wanted to have --

The next slide, please. We wanted to limit our damage by having a microgrid that would be available 24 -- would provide power 24/7, for seven days a week.

Now, we do have a generator, but we found out that even with a generator when you need diesel, everyone needs diesel and it may be a difficult item to access. So, we wanted to make sure that we get alive the solar power and have the diesel generator as a backup. We also have a one month's supply at hand of any items that we may need in order to continue providing services in the event of an emergency.

So, we invested about $1.7 million in the microgrid, and $1.5 million in modernization of the facility. So, during this period of time we did both.

The next slide, please. This again, the mission and leadership of our board of directors, we were fortunate that during this time there was a presentation by Green Power at the Rotary of San Juan Bautista and Mynt Systems, and we were able to partner with both Green Power and Mynt Systems to make this vision a reality for us.

And the modernization, along with the energy has well prepared us for today as we face COVID. We've been able to continue to provide services, have the necessary supplies that have to be duplicated in order for us to provide services, and also to move us into telemedicine access, which requires power. So, in a community health center we have very vulnerable supplies. We also have

equipment that is vulnerable to power outages. So, we want to make sure that those systems are stable and that also the community's able to come into our building and access our power supplies if they need to, in the event that they don't have this available.

So, the next slide, please. Okay. So, what is in the future? We were able to complete our project in August, and we are benefitting of it today. And our future project is to look at the San Juan Bautista, the historic community of San Juan Bautista in order to assist the community in having a city microgrid with broadband access that would help us bear any future emergencies. We're building a teaching health center and a sustainable healthy living community, where we would have access to housing for our staff. And just setting new standards on healthcare access and community wellness, and utilizing the resources that are available. One of our patients clearly said the resources that are available from God, which is the sun.

So, that's where we're at today and we look forward to our future.

MR. TIAN: Thank you, Rosa Vivian.

Now, I'd like to introduce our last speaker of the day, his name is David Victor. And David is a Professor at the School of Global Policy and Strategy at

UC San Diego. Prior to joining UC San Diego, David served as a Director of the Program of Energy and the Sustainable Development at Stanford University.

Please go ahead, David.

MR. VICTOR: Great. Well, thank you very much, Qing. And thank you all, everyone, for participating in these terrific panels.

There are many areas where California is leading and the rest of the world is now following, and the development of microgrids is one of those fantastic examples.

I'm a Professor at UC San Diego. The lab that I run does a lot of work on reliability and the business models around microgrids. We try to model that quantitatively. As I can just say as an analyst, one of the hardest things to do is actually quantify the benefits of reliability. We now all know, and thanks to PSPS we are palpably aware of the benefits of reliability. But we need to be able to quantify this and understand this economically. And so, I would urge us all to continue to invest in that kind of knowledge because it's very important for us to figure which kinds of microgrid configurations work best under different circumstances. We just heard some of them are going to be diesel. Hopefully, more of them are going to be

renewables, and fuel cells, and a variety of other things.

I've been asked to talk on this panel about resilience impacts. I've been asked to talk about the other big hit to resilience, which has been the pandemic. And how should we think about the pandemic and its potential impacts on the microgrid market, and what does that mean for us here in California.

And we do in our group a lot of work on the global energy system. And the first comment I'd like to make is that globally the impact of the pandemic has been a huge hit on investment. Investment globally in the energy sector was expected to go up about two percent this year. Right now, I'd say we're on track for about a 20 percent decline, maybe more than 20 percent.

But there's a huge difference between the investment impacts on oil and gas, and other commodity-exposed industries, and more regulated or, frankly, in a lot of the world's state-owned industries, which is in particular electric power.

So, that's my first point is the reason that the electric power sector in much of the world has not been as hard hit as oil and gas, and other commodity sectors, is because of the stability that comes from regulation.

I think that means that the CPUC actions in this area are going to be very important. The EPIC kinds of grants that were just announced are very important. Because, frankly, a lot of the world is feeling poor right now. And when you're poor, even though there might be good investment to make, people are not going to make discretionary investments in capital-intensive activities. You see that in the automobile market and a variety of other areas right now.

So, we should not expect the private sector, and people thinking about the investments on their own logic, including public agencies, to go forward and make big investments to the same level in microgrids, given the shock that everyone's pocketbooks have had right now. And I think the government, and there's a lot of different views about the right role of government, but this is an area where there's very important government action to help stabilize that market.

The second is about stimulus spending. I want to just mention very briefly that we are, you know, in the middle of spending like drunken sailors on economic stimulus and that's a very, very important activity. When you compare the spending on stimulus this time, compared with 2009, there's a completely different world.

2009, depending on how you count, up to 15 percent of stimulus money went into clean energy projects in one way or another. This time around the number is much, much lower, especially in the United States. But that may be changing and we're starting to see that in some of the different packages that are emerging in Washington, and so on.

So, the second point I'd like to make is we should have an elaborated program around shovel-ready, or wire-ready, or wire cutter-ready microgrid projects that can be rolled into a stimulus package, and we should make sure that our delegation in Washington is ready for that, to put in the right language.

Because this is an area where we have a big interest and, frankly, the rest of the country with a couple of exceptions, like in New York, aren't doing as much and they won't be as lined up as we are in California about being ready to invest more with things that can generate jobs, and also generate more reliability through stimulus spending.

The third thing I want to say and the last thing I want to say is about supply chains. We need to do some stress tests. I think this is an important function that maybe a variety of California agencies can do. Let's do some stress tests on the capacity of

microgrid investments to have all the gear lined up when it needs to be lined up.

We saw in the renewables business big shocks as the Chinese economy shut down, and then it started reopening, but then the European economy shut down, and the American economy shut down. Then, we've reopened the United States. We're now in the process, in the kind Swiss cheese way, of shutting down again.

This has created shocks in the supply chains. And I mention this because microgrid projects, especially the complicated, the most interesting, and sophisticated ones require a lot of different gear and technology to be put together in sophisticated ways. And that means in the modern economy supply chains, and we need to understand better how those chains might be shocked, how they might be shocked in the future especially as there are more shutdowns going into the fall and into next year, so that we're not inadvertently harmed by that process here in California, even as we try to stabilize our microgrid investment market and do more with microgrids. There's certainly the potential there and it's enormous. Thank you very much.

MR. TIAN: Thanks David.

Now, I'd like to invite our Commissioners and our guests to the discussion, to ask your questions.

Please take it away, Vice Chair Scott.

CEC VICE CHAIR SCOTT: Okay. Well, thank you so much for that excellent and informative panel. I would like to ask the panelists, so Rachel, Seth, Rosa Vivian, and David please turn your videos on, and my fellow dais mates will as well, so that we can have a discussion.

I have a list of questions, but let me start -- I see Chair Hochschild's got his hand up, so let's start there.

CEC CHAIR HOCHSCHILD: Thank you Madam Vice Chair, and thanks to all the panelists, a really terrific overview. I just had, really, a comment for Rachel. So, I actually dedicated the Fremont Fire Station Microgrid when that ribbon-cutting happened a few years ago. And one thing that I had not realized until I went there, which is I think true for diesel generators everywhere, which this one was replacing, is that in addition to the pollution you get from operating the generator during blackouts and when it's needed, there's actually -- you know, you have to do a monthly cycling to keep the generator in shape. And so, that's an ongoing maintenance expense and source of pollution, as well, for all generators. And it's really another benefit, I think, of the clean microgrids is that they are, you know, basically no maintenance and don't

require that cycling. And that wasn't something I had really appreciated until I was on site.

But I was just especially gratified to see the fire department do this, and I know others around the state have done so, just because we are in a situation where we're really relying heavily now on emergency services in ways we've never had to do so, so much before with the threat of blackouts, and forest fires, and pandemics. And so, I just really wanted to recognize the path-breaking leadership of the Fremont Fire Department and all the good work you guys are doing. So, thanks everybody.

MS. DIFRANCO: Thank you. Yeah, I think there's --

CEC VICE CHAIR SCOTT: President Batjer -- oops, sorry.

MS. DIFRANCO: Okay. I was just going to --

CEC VICE CHAIR SCOTT: Let me let you respond.

MS. DIFRANCO: -- see if you want me to comment quickly.

CEC VICE CHAIR SCOTT: Yes, please, and then we'll turn to president Batjer.

MS. DIFRANCO: Okay, great. So, with the diesel generators in particular, you know, they still sit there as a secondary backup, and they still do have to fire

regularly for the testing. And I actually see one of them fire from my office every day -- or, every week. And so, it is, you know, definitely a reminder that we do want to taper off of fossil fuels.

And one of the things I didn't get to mention is right now the city is actually working on a fleet electrification study. But as part of that we're looking at opportunities, when we think about electrifying our fleet how do we support that EV charging infrastructure, and looking at distributed energy resources, like microgrids to help support that EV charging infrastructure, and also offer additional resiliency at those facilities.

And the hope is that eventually, you know, these battery backup systems can completely replace those diesel gen sets.

CEC VICE CHAIR SCOTT: Okay, President Batjer, please.

CPUC PRESIDENT BATJER: Thank you. Sorry to have interrupted what Rachel was saying because that was a very important point that you just made. Glad to hear that you're working hard on electrification of your fleet, and further resiliency. It sounds like Fremont's really leading the way innovatively and that's terrific.

I did have a question for David. Very

interested in your comments regarding the stimulus spending. Thank you for pointing out the first tranche, which was so bad in so many ways. But at any rate, that it was much lower than 2009 in terms of the investment in clean energy.

You mentioned that we should be shovel-ready, and wire-ready, et cetera. Have you had some thinking, I mean because this is here and now upon us. Hopefully, we'll have another tranche. How would you suggest, in terms of we, the regulator, or just all of us, how do we push for that? Because these are important investments and even the getting ready is expensive.

MR. VICTOR: Yeah. So, getting ready is expensive, although our definition of expensive, our baseline for expensive has just changed. So, I think first of all there's a lot of criticism to go around on the first round of the stimulus package. But, you know, the system was bleeding heavily and you need to stop the bloodshed first, so that's understandable.

The action really is right now, what would I do? I would make a list of projects, plausible projects, so that you have a discussion that's focused on real projects and potentials. I would identify what's holding them back and in particular I'd identify places where there could be regulatory co-action. So, it's one

thing for there to be -- you know, like in the first track, the first fork that you've done on the IOUs in microgrids. It's one thing to have a set of orders and recoverable investments, but that can only go so far.

So, I think a combination of private investment, regulatory fast tracking such that the California delegation in Washington could be handed a set of talking points around what are the attributes of wire-ready microgrid projects. What are the mechanisms by which we can reduce the sticker price of those, such that money goes further with action there?

And I think we're going to want to do the same thing in the state because the state, of course, is in a very different position because we can't run deficits the way Washington can. And so, in the case of the state we're going to want to do this with an eye to where and how with stability the private sector can invest in a whole range of energy projects that don't require, don't put them on the state budget.

CPUC PRESIDENT BATJER: Thank you. Thank you.

CEC VICE CHAIR SCOTT: One of the questions that I have for you all, this is Vice Chair Scott, and then I'll my question and then we'll turn to Commissioner Shiroma's question, is two things. I really was struck by the savings that we saw in the City of Fremont and

others show, but then combined, Professor Victor, with your statement that in these times where it's a really tight budget, even when it makes sense to make this kind of investment people may not be making this kind of discretionary spending. So, the types of investments that the state and others make in this space really do help move these projects forward in a good and smart way.

So, I don't know, there's a question there a couple of folks want to opine on that a little bit.

The other thing that I was thinking about, Rosa Vivian mentioned it, and we talked about it a little bit on Tuesday is the fact that diesel generation is so much the backbone of our emergency services. And especially within the healthcare system that's hugely problematic, right. We all know the health impacts of diesel particulates. And so, it really is important. I think the solar with storage, or the other components that help us back out of the diesel generation, especially in backup power for healthcare services.

And so, I'd love to get some insights from you all on how you think that's going. Seth mentioned it as well, I think how is it -- and then, all of the sudden there's renewed interest at different types of facilities at Kaiser than you had anticipated

originally. How is that you're talking to folk in a way that they can hear you and understand the importance of both wanting to include a microgrid, but also wanting to have these renewable, you know, pollution-free, greenhouse gas-free components to it?

I'll just let you all jump in. Yeah, Professor Victor, please.

MS. FERNANDEZ: Thank you. So, again, with the diesel there are a lot of problems. In our observation it doesn't run 24/7. And that's something that people think, okay, I have a diesel generator, it's going to run. You have to turn it off in that 24-hour period of time for two hours, to get it serviced. So, those are the realities of what happens in some of these systems. So, what you think you have as a guarantee is not going to guarantee, and it's not good for the environment.

For us, you know, our board saw this as an investment in the future, so it was something that was more plausible for us to provide access and true access and dependability to our community. And we did have some modernization of the building that actually resulted in decreased energy use which, in turn, helped us with infection control, and preparation for COVID. Not just from the capacity to have additional supplies and ensure that those were safe, but that we didn't have

touch points throughout the building, we decreased our energy. We walk into a building and the lights -- into a room and the lights turn on. And so, there's a lot of different efficiencies that we built into the system.

But it is an investment that for us we still have not seen the financial savings, but we see the benefits of peace of mind when we hear that there's going to be a power outage, and we don't have to worry where we're going to take our vaccines, and our supplies, and what our equipment is going to do because of that.

MR. BARUCH: And this is Seth. I can just sort of build on that a bit. So, we are looking at -- so, the diesel generators are obviously quite problematic. They're expensive, polluting, requires a lot of infrastructure, storage tanks, that kind of thing.

So, we're looking at this, we think that we have -- you know, you have your bigger generators at the hospital, smaller generators at the medical office buildings, or MOBs, and we think that we can replace the smaller ones with solar plus storage. And, in fact, each time a generator reaches end of life we ask our colleagues around the network to, you know, do an evaluation as to whether batteries are a way to replace those generators and not have to have them be replaced

with diesel.

At the larger hospitals, they are required by code. And we've been getting some interest from regional leadership to explore the possibility of having, for example, a fuel cell be almost like a primary power source. So, if the grid were to go out for an extended period of time, you'd have the fuel cells operating, and assuming that the gas grid is not affected, and then the diesel as sort of the backup to the backup. That would enable us to do surgeries and elective procedures, for example, during a PSPS event. Because if you only have one source of power, the diesel generators if the grid is not available, you're not going to do anything other than, you know, emergencies. And if you have the power out for a week or something, that's a lot of scheduled surgeries and procedures that have to get rescheduled, or possibly aren't rescheduled, so there's a health impact there.

So, that's one example that we're looking at as a possibility for providing the redundancy, if you will, for diesel generators until there's some change in code that allows technology, like a gas generator, or a fuel cell to be the primary backup, or the sole backup.

MS. DIFRANCO: If I have some time to comment, as well, you know, I think the reality of a lot of local

governments is that we are planning out our infrastructure improvements and then in two years CIP cycles. And so, the challenge is, you know, as we're identifying some of our facilities that need improvements and that we need to replace, you know, old, faulty diesel generators, you know, our public works department is saying, okay, we've got to get this diesel generator replaced. They put it in a budget. And then, we start to really unravel these new, potential technology opportunities with microgrids. Meanwhile, you know, they have the budget to replace a diesel generator, but they don't have the budget to actually install a microgrid if we are only looking at those upfront costs.

If we're looking at long term savings, you know, there are no long term savings to putting in a diesel generator, but there are long term savings to putting in a microgrid. Because we can, you know, reduce our demand. We can use lower cost energy generated on site, rather than from the grid.

So, the challenge for, you know, me and for colleagues of mine in these lulls is really to look at how can we actually define those long term savings up front, and how can we look at the money that we would have spent for something to solve one problem, and

redivert that into an investment into a larger cost project that actually serves multiple benefits. And that's something that, you know, I'm constantly trying to work through with the City of Fremont.

MR. VICTOR: Yeah, just a very quick technical point. I agree with what others have said. There's just a world of difference between short term outages and longer, half-day and beyond. And I think that's where Rosa was headed with her comments.

On the half-day and beyond, I think what I'm struck by is that we don't know. It could be the batteries are the solution for that. Diesel has been the solution actually in a lot of microgrids. Natural gas is the backbone fossil fuel and not diesel. Or, it could be hydrogen. You're going to hear in the next panel from Mac McQuown and Jorge Elizondo about a hydrogen microgrid.

So, I think we need to recognize that we need to continue to invest in a variety of options for the multi -- for the very long duration outages precisely because we don't know.

MR. TIAN: Vice Chair, this is Qing. And just a reminder, we have about three minutes left, so I think we can take a few more questions.

CEC VICE CHAIR SCOTT: Okay, great.

Commissioner Shiroma was next.

CPUC COMMISSIONER SHIROMA: Thank you. Thank you everyone, very interesting. A comment and then a very quick question.

I was serving, in 2009, on the Sacramento Municipal Utility District Board, and we applied for one of those stimulus energy grants and were awarded over $150 million, approximately. We did this in partnership with the Sacramento State University, with the Los Rios Community College District, and also the State of California Department of General Services. And it was geared at that time towards enhancing our AMI, you know, smart grid, and providing for a Smart Energy Center at CSU, also training for future energy workers at the community colleges. And then, helping the State of California upgrade some of their systems.

So, yeah, I mean these are the kinds of things that are needed absolutely, Professor Victor.

Okay, so my question is -- oh, by the way, the CPUC, we are having a workshop, we're aiming for late August, on alternatives to diesel. Because we want -- we really want to delve deep into what alternatives are there that could be ready for the 2021 fire season. Right.

My question is simply this that has the

California State Association of Counties, if anybody knows, expressed an interest in sharing best practices on microgrid development, or providing a platform for helping cities and counties, and nonprofits in terms of economic development. You know, that side of things. Is there an interest? Is there query developing at CSAC?

And if no one knows, that's okay. We'll ask CSAC directly. Thanks.

MR. VICTOR: I don't know. But can I just say the AMI program in the last stimulus which was one of a handful of big energy successes, is a very good model to have in mind when you think about microgrid here.

CPUC COMMISSIONER SHIROMA: Yeah.

CEC VICE CHAIR SCOTT: I see a question from Commissioner Douglas, so we'll take that, and then we'll turn to the questions that I believe Qing or David will be reading from Q&A. Commissioner Douglas, go ahead.

CEC COMMISSIONER DOUGLAS: Thank you, Vice Chair Scott. So, very quickly, I think this is for Rachel, although others could step in. You know, to the extent that you've described a lot of the issue as upfront cost, you know, in terms of making the choice as to whether to invest in a microgrid system versus diesel, you know, generators, is this the sort of thing that

something like a low interest loan program could make a big difference in? Are you aware -- I guess I'll just stop there. You know, do you think something like that that just addresses the upfront cost, but has a repayment stream would move the needle in decision making in local government?

MS. DIFRANCO: It could. You know, I think we -- I have seen, at least in my area more local jurisdictions taking advantage of things like on-bill financing with PG&E for energy efficiency improvements. And so, looking at, you know, what are those structures that do work well to help moving the needle on some of these bigger upgrade projects that we may not have the capital to do. Especially now that cities are struggling in the face of COVID, I think any support that we can get whether it's, you know, financing, or grants, or you know, other type of assistance is definitely useful.

And I would suggest, you know, maybe reaching out to some of the communities that haven't done these projects and that, you know, are really in need of them and may be struggling even more financially than some of the Bay Area cities. You know, looking into the Central Valley and figuring out, you know, what would help them move the needle and then trying to devise something

accordingly.

CEC COMMISSIONER DOUGLAS: Makes sense, thank you.

CEC VICE CHAIR SCOTT: Great. Thank you so very much. We're going to transition to about three quick questions. It's going to be kind of the lightening round that will come from our audience. We're trying to have some good engagement with our audience during the Zoom. So, Qing, will that be you or will that be David Erne. So, I'll let you ask two or three questions. We have about four minutes for those and then we'll transition to our second panel for the morning.

MR. ERNE: Hi, this is David Erne --

MR. TIAN: David --

MR. ERNE: I'll be reading the questions.

MR. TIAN: Go ahead, David.

MR. ERNE: This is a broad question to the Panel. So, your projects, have you done any cost comparison where you've looked at energy storage, battery energy storage versus other forms of non-diesel energy storage, hydrogen or natural gas, as examples? So, I wonder if you can comment on any cost comparisons you've done for those?

MR. BARUCH: We haven't done any analysis.

MS. FERNANDEZ: We initially looked at it, but

the battery was more cost effective at the time.

MS. DIFRANCO: We did not look at other alternative storage technologies. But as I'd mentioned, you know, we're in the middle of the electrification study which is supported by the Bay Area Air Quality Management District. And that is really helping us to dig into what are the upfront costs and long term savings options for, you know, backup, storage, and distributed energy resources that could support our electrification of our fleet and also, then, support electrification of facilities in the future. So, that's what we're studying right now and we should have some really good savings numbers to share with the larger public probably in the next six months.

MR. VICTOR: And we can share offline. My group, Ryan Hannen (phonetic) in particular has been doing a lot of actual modeling of this. And the answers are enormously sensitive to the goal. If it's short term, you know, frequency support, a variety of other things is one set of solutions. Longer term, a very different set of solutions. It's really very impressive how it varies by the problem you're trying to solve.

MR. ERNE: Thank you. The next question is also for you, Professor Victor. In the value of service studies that the IOUs do they see a much higher values

per avoided interruption for business industry than for residential. Are there ways to make sure that there's a greater focus on residential communities associated with this?

MR. VICTOR: Well, those studies reflect reality. Businesses have a higher interruption cost. And, of course, it depends enormously on the kind of business. You see variation in business, as some businesses are extremely sensitive.

We run on our campus a 47-megawatt peak microgrid, and the big chunk of the value proposition is reliability. Because if you have an electron microscope and then suddenly, you know, the power goes out it's a catastrophe for you and the research business. So, I think that reflects reality.

This was the source of my comment early in the beginning of my talk. I think we need to actually understand better what the real residential value proposition is, in particular for long duration outages. When we look at the existing literature we know a lot about short duration outages. But residences aren't that affected by shorter duration outages because as long as their freezer doesn't thaw, we're okay and we can adjust periodically. It's when you get to the freezer point that that's a problem, and that's

precisely when the data get really thin or nonexistent.

MR. ERNE: Thank you. The last question was directed to Fremont, but I actually think it's appropriate for all three of the microgrid developers or owners. And that is looking at critical loads within your facility and how did you assess which loads or is it all loads that are the most critical?

MS. DIFRANCO: So, that was a question that came up early on in the project design for us. And, you know, GridScape was really trying to design what are the specific critical loads within the fire station facilities. And the fire station, you know, personnel and admin said all the loads are critical because, you know, we have staff who are onsite in the facilities all the time. You know, we need to have everything up and running. And those facilities may become their own EOCs in a larger emergency.

So, we weren't able to separate out critical loads from maybe less critical loads at those facilities. But I think in a larger project we definitely would try to do that.

MS. FERNANDEZ: So, for our organization all loads are critical. In our observation sometimes, some of the services get reduced. However, we wanted to ensure that all -- that we would be ready for any

emergency, including the fully functional dental department that uses quite a bit of the energy with all of their instruments and so forth. So, we did not -- we wanted to ensure that we reduce the energy consumption to the level that we could, but that we would have the entire building accessible.

The one comment I did want to make about housing is that housing is critical to us. In a future development we will have housing. In terms of the need for housing it's critical, but also there are individuals that are at home that need oxygen, that need dialysis, that need things that require energy and they don't have those -- if those facilities are not there, they're lives are in jeopardy.

MR. BARUCH: Yeah, actually, Rosa that's a great point. We've been looking more at how to help our members with at-home needs, oxygen, dialysis or whatever it may be to help ensure that they can deal with a situation where the power goes out. So, yeah, we're paying attention to that as well.

And I guess I'd sort of echo what David said about, you know, all loads are critical loads. But I think that, you know, we look at, when Kaiser looks at a facility, you know, obviously you've got the hospital, there's the emergency room, the operating room,

sterilizers and all that. In a medical office building it's procedure rooms, it's like medical refrigerators. And then, you know, things that can -- or, equipment that can be damaged, so they're attached to a UPS or something like that. You know, those are loads that need to be shut down orderly. And so, you know, in a sense of a short duration power outage with a solar plus storage system to help ensure that the integrity of the equipment, and patient safety, you know, if procedures need to be wrapped up, that we would define that as a critical load as well.

MR. ERNE: Okay, thank you. I think we wrapped up our time.

CEC VICE CHAIR SCOTT: Well, thank you, David, very much for reading some of the questions from our participants. I'd also like to say thank you to Qing, Rachel, Seth, Rosa Vivian, and David for joining us today. We really appreciate you taking time to share your information with us. I thought the presentations were fascinating and informative.

What we'll do now, I will hand this back over to Heather. If you were just on our previous panel, you are welcome to turn off your video and continue listening. My dais mates and I are also welcome to turn off our videos and continue listening to the next panel.

So, I will hand it over to Heather.

MS. RAITT: Thank you, Vice Chair. This is Heather Raitt. Just before we go on to our next panel, I'd just like to take a moment and ask attendees to please click the raise hand function in Zoom if you plan to make a comment during the public comment period. This helps us plan for that better. So, if you could let us know now, when we open -- at the end of the session we will have a public comment period. It will start about 11:40. And so, if you're on Zoom, you can click that raise hand button. And if you're on the phone, just press star 9 and that will let us know that you'd like to make comments.

So, with that, then we can go ahead and turn to the Panel on Economic Considerations of Microgrid Development. And it is moderated by Jana Ganion from the Blue Lake Rancheria. And so, Jana had a little bit of technical trouble but, hopefully, her line will stay constant with us. But if we lose Jana, we have David Erne as a backup.

And so, one other thing I just wanted to let everyone know before we jump in is that we've had a slight change in the order of speakers. So, it's listed here on the slide, the order of the speakers, which is just a little bit different than what is on the meeting

schedule that is posted on our website.

So, with that, Jana, please go ahead and start your panel. Thank you.

MS. GANION: Thank you. I'm going to do a quick sound check.

MS. RAITT: We hear you just great.

MS. GANION: Terrific. So, good morning. Thank you to the Commissioners, President Batjer, and all the attendees for joining this discussion. I'm sorry to join only by phone. Our internet crashed here in Humboldt County about a half-hour ago, which is a small case study of rural broadband reliability.

I'm Jana Ganion, Sustainability and Government Affairs Director for the Blue Lake Rancheria Tribal Government.

And with me on this panel are Kiran Jain, General Counsel for the Oakland EcoBlock Microgrid Project. Juan Macias, CEO of AlphaStruxure. Mac McQuown, Proprietor of the Stone Edge Farm Estate Vineyards and Wine. And Jorge Elizondo, Microgrid Engineer and Cofounder of Heila Technologies. I hope I've pronounced that correctly.

So, after my opening remarks, each panelist will make a crisp, three- to four-minute presentation, and then we'll take questions from the dais. Please hold

all questions until the panelists have finished their presentations. Thank you for that.

My experience with microgrid economics is centered on the design, build out and performance of the microgrids at the Blue Lake Rancheria. There are more details in the slides and the workshop materials, but in the interest of time and because of the phone-only link, I'm going to just summarize here.

The Tribe has two microgrids in operation. Both are behind-the-meter, solar plus storage, with legacy gen sets as backup. One's at the community scale and one's at the facility scale, and both can seamlessly island from the grid.

The projects have been funded, since we're talking about economics, by a mixture of R&D grants such as EPIC, incentives such as SGIP, and Tribal Government investment.

So, a little bit about the Tribal investment rationale. Essentially, the Tribe has invested in microgrids because of the considerable stack of benefits. We have achieved improved continuity of operations across the community. So, reliable energy is a cornerstone of any community and the microgrids have proven this value many times over. Most recently in the PSPS events of last year, when the microgrid supported

pretty fair to say lifesaving critical services for about 10 percent of our rural region.

They allow us to achieve rapid decarbonization of both the energy and the transportation sectors, incorporating more solar energy and using that solar to power electrified transportation is part of the Tribe's strategy to achieve zero net carbon emissions by 2030.

We have cleaner energy and less tailpipe emissions, which are lowering the pollution in the community and improving health outcomes. The microgrids reduce the cost of the electricity by about $200,000 a year. The Tribe then tracks and reinvests these savings into other projects to create a positive feedback loop.

So, we're continually increasing resilient, climate smart infrastructure with more controllable costs.

Microgrids are economy enabling and capacity building investments at their core. The Tribe has forged new partnerships, including with the engineering teams at the Schatz Energy Research Center. And the microgrids have generated more than power for us. It's generated new jobs, new expertise, and new financial and operational strategies for the Tribe.

So, microgrid economics more broadly are reliant on site specifics, and if islanding will be a feature,

obviously the cost and the availability of onsite power generation resources.

One of the lessons learned in our rural environment is that over the system lifetime, economics depend on the capacity that's available. So, are there local experts, integration engineers, medium- to high-voltage electricians, IT and fiber experts, warranty technicians that can cost effectively help run the system? Are they available 24/7 for emergency response?

This is particular important in rural, and remote, and under resourced or disadvantaged communities where this capacity may not yet exist, where out-of-area vendors increase expense, and where building local expertise, whether it's internal or outsourced takes a lot of time.

And lastly, related to that, if one of the goals of the microgrid deployment across California is speed, fast screening, and segmenting of the California grid for climate action and reliability, it's worth looking closely at which entities have the expertise and resources to deploy at speed safely, and ideally with coordinated, equitable benefits across the wider grid ecosystem.

So, for more on how we value microgrids, let's hear from the panelists. It's my pleasure at this time

to turn the floor to Kiran Jain, General Counsel for the Oakland EcoBlock Project, and former Chief Resilience Officer for the City of Oakland, who will discuss insurance and risk reduction elements for microgrids. Kiran, the four-minute floor is yours.

MS. JAIN: Thank you, Jana. So, the Oakland EcoBlock Project is a community scale, sustainability retrofit to demonstrate efficient block scale energy and water systems. The research project is funded primarily by the California Energy Commission to show the benefits of using economies of scale to conduct energy and water efficiency retrofits in a neighborhood of houses, and potentially commercial, to reduce carbon emissions and develop a standalone microgrid of electric generation, solar electric rooftop panels, and storage, flywheel, or batteries.

Go to the next slide. These are some of the partners on the project. In addition to UC Berkeley, we are also working closely with the City of Oakland and their resiliency office, as well as NASA and Stanford University.

The next slide. So, this is what we envision. This is the existing situation of homes in a neighborhood in West Oakland.

The next slide. And here is what we are

proposing to do. The EcoBlock design includes advanced efficiency measures, a solar powered microgrid, shared electric vehicles, and a new approach for coordinating these on the scale of a city block. The main idea is that by combining and standardizing technical components and by creating a cooperative or trust, which we'll get into, with the right financing structure investments like these can be made affordable for everyone.

The next slide. The benefits enjoyed by the participants include reduced utility bills and reduced carbon footprint. The goal is to eliminate the natural gas bill, reduce the water bill, and substantially reduce the electricity bill, improve comfort in one's home by improving insulation and reducing leaks, update appliances and fixtures, and lack of electrical interruptions in the next power outage.

The project goal is to explore a path towards rapidly reducing climate emissions from energy upgrades, and reducing gas appliances in these residential retrofits, and developing a resilient electric microgrid that can provide power during outages.

The objective is to build a successful demonstration project in the next four years. Obviously, COVID-19 is impacting our timeline. And creating a blueprint for replicating ecoblocks in

Oakland and other cities around the world.

The next slide. This also includes nighttime storage. And, as I mentioned, electric vehicles and street lighting. As you can see, there are home level improvements as well as block level improvements. And from an economics perspective, one of the challenges that we are facing is around insurance, and block level, specifically block level liability and property insurance.

For this project to work, we need these improvements to run with the land. So, from a governance perspective we're looking at a community trust in the form of a modified HOA. But this has implications on the type of insurance we can get and the cost of such insurance. Right now, the figures that we are getting are around $30,000 a year, if you can imagine, which the cost will be borne at the block level by these individual homes.

So, we're looking at options and interested to actually hear if there's anything being done at the state level around insuring community microgrids. We know there's companies like Aon that are getting into this business, as well as a concept called Microgrid as a Service, that also has insurance as part of that overall package.

But one of the challenges we are facing is that because this is an emerging market, the insurance industry is lagging a bit in kind of understanding how we could scale these types of microgrids. So, from our perspective, having an insurance solution will also help out with project economics and we think it's a very important and critical part to making sure we have a successful EcoBlock Project.

So, I'll just stop there.

MS. GANION: Thank you, Kiran. Now, we'll turn to Juan Macias, CEO of AlphaStruxure, to discuss investment elements of microgrids. Juan, the four-minute floor is yours.

MR. MACIAS: Perfect. Can you hear me okay?

MS. GANION: Yep.

MR. MACIAS: Oh, perfect. Great, thanks. Really appreciate the opportunity and wanted to share with you a little bit about the evolution of a business model and introduction of a new business model which follows a story and an investment strategy by Schneider Electric that began ten years ago with the development of microgrid control and software platforms that would enable the deployment of microgrids interfacing between the load, the utilities, and optimizing the integration of these distributed resources.

Schneider's been doing this for the last ten years, building out experience of about 300 microgrids around the world. In the last couple of years we really zeroed on what the barriers were in this space and zeroed in on capital, the complexity of these systems, and the risk management of our customers.

And this is what led to the creation, together with The Carlyle Group, of AlphaStruxure, which is the company that we started in 2019. And this company is about delivering decentralized digitized energy systems with no capital up front by the client.

So, if you could advance to the next slide, I'll share with you a little bit about that.

So, what we're talking about here and, you know, it's very pertinent to this discussion and Tuesday's discussion, you know, the drivers of the marketplace, right, whether it's resilience, or sustainability commitments, the pressures on energy costs of our clients. And the pressures on capital which now, in the COVID environment, the liquidity pressures really, really get highlighted.

Segments that we look at really is across the board, right, whether it's C&I -- there was some discussion earlier in the day about fleets, anywhere from last-mile delivery fleets, to municipalities,

electrifying fleets, school bus fleet electrification. We've talked today, earlier, about hospitals and hospital systems, both at the centralized level as well as all the decentralized facilities that those have. In California, the growth and the size of the food segment, you're well aware of, and so all those segments there. And then, larger infrastructures such as ports and airports.

So, in an energy as a service model we bring together, on the right-hand side, a variety of generation resources that are designed in such a way as to meet the specific needs of the client. And those are designed and contracted through a long-term 15, 20, or 25 year agreement with the client, a PPA that can either be a capacity charge, a volumetric charge, or a combination of capacity and volumetric. So, this is all done and constructed with zero capital expenditures to the clients.

I would also highlight, because some of the other folks who presented mentioned it, on the lower, right-hand side of the microgrid picture you have that in many of these projects that we work on and fund, we not only include the microgrid and have the ability to include the microgrid, but we have the ability also to facilitate the funding and the deployment of other

elements that are tied to that electrical infrastructure. That could be in an EV fleet. It could be the EF chargers as part of the package. Or, it could be the actual buses themselves, in some projects that we are working on.

If you can go to the next slide, please. So, you know, the complexity of these projects go from very simple, single-asset CHP. And here, what I wanted to highlight because we've had a lot of discussion on diesel, you know, today there's also options available on the marketplace that haven't been deployed widely yet, around fast start natural gas engines that can replace diesel engines, that can be a full load in 45 seconds, and really deliver a 90 percent NOx reduction. So, we can actually deliver those types of solutions with no capital to the client.

And all the way to very complex solutions. So, you go from the left-hand side of, you know, 2, 3, 4, 5 million to the right-hand where you're at a several hundred million dollar project. So, we have the ability to cover the whole spectrum of solutions.

The next slide.

MS. GANION: Juan, I'm sorry I'm going to interrupt and say that you have about 15 seconds.

MR. MACIAS: Okay, then go to the next slide.

Some recommendations very quickly and I'll go to the last slide, and some of the key barriers. Number one, eliminating the departing load charges. This is a significant barrier for the industry that can represent on a range of 14 -- or, 1.4 to 2 cents a kilowatt hour. So, this is a significant element. It's been talked about in the session. And other recommendations that you see here in terms of right of way and multiple party ownerships. So, addressing some of these could both accelerate and remove some key barriers.

MS. GANION: Okay, terrific. Thank you for that.

And now, we will turn to Mac McQuown, Proprietor of Stone Edge Farm Estate Vineyards and Wine, a naval officer, a financier, and entrepreneur who will speak to private investment in microgrid. Thank you, Mac.

MR. MCQUOWN: Okay, can you hear me?

MS. GANION: Yes.

MR. MCQUOWN: Maybe the video, too. Stone Edge Farm is 16 acres west of the Old Town of Sonoma. We have three homes on the 16 acres. Our objective in our microgrid is to be independent of the utility grid 24/7, 365. We utilize hydrogen from rainwater, and the power comes from solar panels. The marginal cost of our power, our energy is zero. And our storage is

predominantly hydrogen. We don't have that completed, yet, but it will be very shortly. And we will produce enough hydrogen in the summer months that we can get through the winter and have sufficient leftover that is a sufficient margin for error. And it all comes at zero marginal cost and zero carbon footprint.

I don't really -- the control system is kind of the heart of it. We have 20 distributed energy resources that are controlled by Jorge's, Heila Technologies' controller, which he will speak about in a minute.

And I think I don't need to say anything more. I think it can be turned over to Jorge.

MS. GANION: Terrific. Thank you, Mac.

Jorge Elizondo is a microgrid engineer and Cofounder of Heila Technologies. Jorge has developed microgrids across the country, including the one at Stone Edge Farm, and will speak to lessons learned and other considerations. Take it away, Jorge.

MR. ELIZONDO: Thank you, Jana, for the introduction. Can you hear me well?

MS. GANION: Yes.

MR. ELIZONDO: Perfect. Excellent. So, I'm going to be talking about, you know, the Stone Edge microgrid, dovetailing on what Mac just described.

So, if we can go to the next slide. Stone Edge Farm is a very special project because it's not only a microgrid, it has a full vision for sustainability, encompassing food, water, and energy. It's a beautiful place in Sonoma. So, it's a very special kind of project.

Go to the next slide. In the energy aspect, it's also not a typical microgrid because Stone Edge Farm was built as a living laboratory. So, we wanted to test a lot of different technologies and manufacturers, and you can see the list here on the left. Definitely not diesel. A lot of people have been talking about diesel. And one important mandate that we had was let's not put any diesel and try to figure on how to deal with this.

And we have tested a lot of different type of battery systems, including fuel cells, lithium-ion, and other technologies. We also have used hydrogen systems and this is just to -- we identified some gaps in the technology of what we needed to achieve long-term sustainability and bridging the gap for seasonal energy storage, and we are doing that through hydrogen.

We also wanted to avoid stranded assets. I think that's, you know, one of the main problems with microgrids and that's the other problem with this, and

Jana mentioned this is, you know, a lot of the microgrids don't perform as expected, and that's a big problem for the economics for the project, right.

We also control loads. And loads is a very important aspect of it. When you're designing a microgrid, if you can't reduce your consumption that has a lot of impact on the economics. So, a lot of people try to oversize the solar, and put in a lot of batteries. But if you can just reduce consumption, the numbers look much better from the start.

On the right side you have the capabilities of the system that are related to the control. And that's the part where I work more. And the concept here is value stacking. And so, we can connect it to the grid and do some economic dispatch so we have savings of the energy. We could provide ancillary services. We have the full capabilities to do that. We're going to do that because, you know, you have emission problems.

But we can also island and reconnect seamlessly. And that's very important because that drives the resilience.

Can you go to the next slide? So, resiliency has been key in this project. We have operated, you know 24/7 off the grid for the last six months. And during the PSPS events of 2017 -- well, you know, in the

PSPS in 2019 we were off the grid and providing value added to the three houses inside the microgrid, but also to the neighbors. Because, you know, they were going there to store food. They had water because this area gets water from wells. And we charged EV cars.

So, if we can go to the final slide. And we have learned a lot of lessons from here. The first one is that in our experience modularity of microgrids is key. So, I see a lot of projects that, you know, they have a fixed design and that's the only way you can do. But if you can grow your microgrid over time you can reduce upfront costs, and you reduce the stranded time for equipment.

If you have a diverse vendor ecosystem is also reduces cost because that drives competition.

And one of our challenges was actual interconnection. That's why we ended up going off the grid. If we can't simplify the interconnection projects, I don't have to talk about that, it could be -- you know, it could drive innovation much more. Thank you.

MS. GANION: Thank you, Jorge.

So, thank you to all the panelists for those great presentations. We'll now turn to the Commissioners and executive leadership for questions.

CEC VICE CHAIR SCOTT: Okay. Well, yet another set of intriguing and interesting presentations. Let me ask our panelists, Kiran, Juan, Mac and Jorge, please turn back on your cameras for the discussion, and also my fellow dais mates please turn on your cameras for the discussion.

I always have a whole list of questions, but let me pause and see if one of the other Commissioners has questions that they'd like to ask. Yes, Commissioner Shiroma, please.

CPUC COMMISSIONER SHIROMA: All right, thank you. So, I also want to do another shout out for another workshop that the CPUC team plans to hold, also in August, and that is overall, you know, for our Track 2 proceeding. Which, for some of the issues and recommendations brought up by some of the speakers, we can provide another opportunity to give us your viewpoints, ideas, and so forth. So, there is that.

My question is one of those public/private partnerships, for anyone who wants to answer this. Is there a role for entities like the CPUC and the Energy Commission to play in catalyzing private capital for funding of microgrid projects? You know, maybe it is insofar as providing, you know, regulatory certainty. But does anybody have ideas, you know, on that sort of

role?

MR. MACIAS: Yeah, Commissioner. Hi.

CPUC COMMISSIONER SHIROMA: Hi, Juan.

MR. MACIAS: You know, in some of the grants that are issued, right, if you take a -- we spoke about fire stations, right. I think there's a way that you can package up those grants to where they're not for one specific, but maybe for a fleet, right. And if you have in a particular county or whatever the right jurisdiction is, if the grant could be targeted as a fleet, then you have a much more interest in a substantial investment package that can be deployed. Right, I think that's an example of something.

I think some of the rules in terms of multiple party ownership, right, the way -- you know, removing some of those barriers I think are other accelerators that can be done.

The rules and regulations around a jurisdiction, a municipality's ability to procure an energy of service solution, and to be able to contract that is another.

MS. JAIN: I would add, Commissioner, that there's other tools potentially in the state's toolbox, right, that the CPUC can be working with. I'm thinking of the infrastructure bank, you know, potential wrappers, investment incentives as well.

I also think that, you know, first loss protection could be important here for some of these infrastructure deals and that's where the state could step in.

Last, you know, I think the California Earthquake Authority, if I recall, you know, was set up in response to insurance companies, you know, with earthquake. Could we be expanding the powers there to think about microgrids, a more resilient infrastructure as well, so the insurance question can also be answered.

MR. ELIZONDO: If I can jump in, quickly. I think mainly on the ground in proposing microgrid projects across the state we have seen that, you know, some regulatory challenges really make it very hard to get investments to projects. In particular, you know, as Juan was saying, you know, right of way limitations. That's -- if we could usually connect several projects together, I think the economics will look much better. But there are still limitations to be able to do that.

MR. MCQUOWN: I have one comment that I'd like to put out, and it is the following. We set out to demonstrate some ideas and experiment. We didn't really have an overall ambition along any kind of economic lines. We also wanted to be a teaching place. We've had 68 interns, from 14 universities across the nation

be here for three to six months each and learn about what we're doing. So, we've restricted none of the intellectual property.

And we have tried a whole wide variety of things. And I think the crucial conclusion I come to is that when all things are said and done, hydrogen is going to be the crucial component of energy production and storage.

CPUC COMMISSIONER SHIROMA: Thank you. Thank you, everyone.

CEC VICE CHAIR SCOTT: Yeah, that's fantastic. This is Janea Scott. Actually, I had a follow-up question for you on the hydrogen. And just if we could hear a little bit more about hydrogen and how it's integrated into your microgrid. And Jorge, both you and Mac mentioned it a little bit in your microgrid, but I'd love to hear a little bit more detail.

MR. MCQUOWN: Go ahead, Jorge.

MR. ELIZONDO: Sure. So, you know, one of the mandates for the microgrid was exploring ways in which we can achieve sustainability year round, 365. And, you know, the technology, the viable technology was well developed and is well developed. You know, and the solar energy from the day to the night was not that much of a challenge. You know, there's some challenges

there, but it was not that hard to do so we could -- you know, in the summer it was very easy to just go off the grid or be completely independent from the utility, or even provide energy. But trying to do that in the winter proved very hard. Either you oversize your solar a lot, because then you have to curtail in the summer, or you have to find ways to bring energy from the summer to the winter. And that's where hydrogen is being used at the moment. We have produced hydrogen in the past. We also use it, by the way, for transportation, so there's many uses that hydrogen can have.

There were three staff that were driving cars, hydrogen cars, and fueling from the hydrogen produced at the microgrid. Well, one of the things we wanted to achieve is this summer to winter challenge.

CEC VICE CHAIR SCOTT: Great, that's really helpful to know. I saw that you had the fueling and I wondered if it was also going into some of the hydrogen cars.

A follow-up question I had for Kiran was on the insurance. So, you mentioned that it's been a little bit of a challenge to get the insurance for the connected community, and could you tell us a little bit more about that?

MS. JAIN: Yes. And I should preface, you can

get insurance for almost everything, right. It comes down to the cost and the economics, and whether or not it can pencil out. And because we're focused on a low to moderate income neighborhood in West Oakland, one of our challenges is we want the payments to be at or lower than what is currently being borne today by the neighborhood.

And so, one of the issues that we've come across is with insurance costs being very high are there other vehicles or other business models we should be looking at, right, to kind of make the insurance pencil out. And so, you know, I mentioned microgrid as a service, so like companies like Ennera I think are in this space.

But I also think there's things that we could doing maybe, potentially at the state level if we want to really think about scalability as how do we manage that insurance cost. And maybe it's pooled risk or, you know, thinking about just different ways that we probably haven't spent too much time. So, we're kind of just pushing the conversation to the front and would just also appreciate feedback the panelists have on that, as well.

MR. ELIZONDO: I think that's a very good point. I think insurance, it's a challenge, and I think it will

have to be tied to performance warranties, and safety standards and things like that. But definitely insurance will play a role in making microgrids economical.

CEC VICE CHAIR SCOTT: Thank you for that. Commissioner Shiroma had another question, as well?

CPUC COMMISSIONER SHIROMA: No, just wanted to say that one of our microgrid team members at the CPUC interned at Mac's Stone Edge Farm, and then also we had a chance to tour with Mac and Jorge. And as Mac says, you know, all are welcome.

Of course, we are in the COVID environment now, so this all happened pre-COVID. But I do thank Mac and Jorge for that opportunity.

CEC VICE CHAIR SCOTT: Great. Do we have other questions? I might throw in one more which is back to Kiran, I think. I think it's really exciting, and maybe also to Jorge and Mac, to see microgrids being integrated into communities and businesses that are already there, right. So, I think retrofit's not quite the right word but, you know, it's being retrofit into existing structures, existing buildings and businesses. And I think that's a really important component.

And if you have any lessons learned or things that you'd like to share with us there, I think that's

just incredibly important for when we think about how to roll this out more broadly in California. Because it's not always going to be able to be a new build, or new businesses, right, and we're going to need to be much broader than that to get where we're trying to go on these clean energy goals. So, I'd love to hear a little bit more about integrating it into businesses and neighborhoods that are already there.

MS. JAIN: Yeah. No, thanks for bringing that point up. I mean we, you know, in the Bay Area particularly we have a lot of old housing stock and it's inefficient from an energy perspective. And so, being able to tackle like this issue and if we can, you know, create close to a net zero neighborhood, then I think we can take those technologies and those learnings and apply them more broadly.

But I agree that we are talking about, you know, climate with existing buildings, and that's a challenge and I think part of the opportunity here for all of us to really think through what are the building code changes, right, what are the zoning codes. Like is there other ways that we can pull regulatory levers to make this more seamless and more economical at the same time.

And so, when I talked about the governance

structure that's one way to be thinking about it. You know, with these community trusts, if you will, can also produce community ownership of an asset. And I think that's another piece of this that we could probably get into in a different conversation.

MR. ELIZONDO: In our experience, it was a bit of a challenge to -- and Mac can talk about this as well that we spent a lot of time rebuilding the electrical infrastructure to be able to have a microgrid. So, that was actually before the microgrid was built and maybe several months were spent upgrading the wires so that everything could be connected together, and we could have the power to go from one side of the property to another. So, it was not trivial.

Definitely, new construction, greenfield projects have an advantage there, where you avoid these extra costs, right, because it's put in since the beginning.

I'm not saying that -- you know, one of the advantages of designing a microgrid when the building's already is that you can have energy consumption data, so you can design it much more precisely. So, you're you don't end up over sizing your systems or under sizing, both which have, you know, economic implications.

CEC VICE CHAIR SCOTT: Great. I do actually

have a whole list of questions that I can keep asking if my fellow Commissioners don't have any. Okay, let me maybe ask one more and then we will turn to -- over back to David Erne, who will read some of the questions from the Q&A.

One of the things I think both Jana and Jorge mentioned as they were speaking is sometimes the microgrids aren't performing as expected. And I'm wondering, so this panel is about kind of the economic considerations of microgrids. I'm wondering if those performance things impacted the economics in an unexpected way or if it was just kind of kicking the tires, and doing a shakedown run on some of the technology that was newer. But I think Jana's still on the phone, and Jana or Jorge could you speak to that a little bit, please?

MS. GANION: Sure, this is Jana. I'll speak to it a moment and then turn it over to Jorge.

You know, microgrids are not simple and they -- I think one of the lessons learned from implementing our own is that the testing, and the commissioning and the fine tuning of the performance of them, not only operationally, but financially as well takes a while. We built the hard infrastructure of our microgrid, our community scale microgrid in a very rapid fashion,

probably 18 months. And as we were just talking about, this is overlay onto an already built environment.

So, we did have the load data, which made that easier, but we had to do a bunch of work to get it to coordinate and integrate with all the existing infrastructure and the new smart technologies.

And so, I guess when we talk about economics, coming at it from a behind-the-meter owned and operated system, the testing, and the commissioning, and the refinements of these complicated systems, and a lot of them are new technologies, and kind of demonstration scale projects, it's significant. And it shouldn't be and it has a cost to it. And so, we can get into the details later, but I would just put that out as a large lesson learned.

Jorge?

MR. ELIZONDO: I'm in complete agreement there. Yeah, I think this -- you know, commissioning the system and then forgetting about it, and think that you don't have to do any O&M, it's a mistake. I think that has to be considered a power system and the long term implications. And having a system that doesn't perform as expected can have a huge economic impact.

If you are, for example, curtailing your peak consumption and your microgrid is down for a day, you've

lost an entire month, right, because you don't have the peak for that day. You have your microgrid for resilience and it goes down during the blackouts then, you know, you don't have it, right.

So, the economic implications are very big and it's a very important aspect of microgrids and something that should --

MR. MCQUOWN: If I could add there, yeah, that's one of the ways in which companies bringing in energy or service solution contractually obligate themselves to design to a system performance, guarantee that performance, backs up that performance, and also take ownership of that complexity and that risk.

MR. ELIZONDO: Exactly. So, energy services is one of the most important solutions there, high end performance warranties.

CEC VICE CHAIR SCOTT: Well, this is great. This has been absolutely fascinating.

I know that we have a couple of questions that will come in through the Q&A, so David Erne will read those for us. David, please go ahead.

MR. ERNE: Thank you. So, I'll ask a couple combined, in the interest of time. And these questions are for Mac or Jorge and they relate to the hydrogen. So, one question is how are you using the hydrogen? Is

that a gas turbine or some other technology? And then, have you evaluated the cost of the hydrogen you'll be using relative to dollars per kilowatt hour?

MR. MCQUOWN: Well, let me tackle that, David. First of all, hydrogen comes from rainwater and from solar panels, energy, so the marginal cost of hydrogen is identical to the marginal cost of electricity, which is zero on zero, respectively.

The hydrogen also has a very big benefit in terms of storage. We can store an awful lot more energy in the form of hydrogen than we can in the form of batteries. We do have, of course, a lot of batteries, too. I think we have about a dozen different batteries. But they're mostly buffers, with a couple of exceptions.

So, the real key to hydrogen is its cost and its ability to be stored for an indefinite period in large quantities. You know, four or five hundred kilograms is a pretty easy arrangement at 3,000 PSI. And that's all current technology, nothing fancy.

MR. ELIZONDO: Yeah, and just addressing the first part of the question, we use the hydrogen in fuel cells, so it has much higher efficiency compared to just burning the hydrogen. So, you convert hydrogen into water and electricity.

We're seeing, you know, relatively high

efficiencies for a fuel cell in the 60 percent. It's still lower than a battery. So, if you just want to store for a short period of time, you're better doing it in a battery. So, that's why we're going to store from the day to the night in hydrogen, right. But in long term storage, you can store hydrogen without, right, very negligible loss compared to batteries that self-discharge. --

But the components for doing this, that electrolyze here in the fuel cells, they are still on the expensive side. But as Mac was saying, you know, the marginal costs are zero. So, it's an infrastructure finance problem, right.

I think that it only will keep getting better and it will keep getting more economical as it evolves. So, I think it's important to be ready when that happens, right.

MR. ERNE: Thank you. So, I think we're running low on time for the public comment period, so should we move over to that, Vice Chair Scott?

CEC VICE CHAIR SCOTT: Sure, that sounds great. Let me say thank you so much to Kiran, Juan, Mac and Jorge. This was yet another fascinating panel. I really appreciate you taking the time to share your knowledge and expertise with us this morning.

What we will do now is transition to public comments. So, you are welcome to turn your videos off while we do that. And I will turn it over to Heather to kick us off on the public comments, please.

MS. RAITT: Thank you, Vice Chair. So, this is Heather Raitt and we're ready to go to public comment. And folks who are attending, please go ahead and press the raise hand icon if you have any comments that you'd like to make. And if you're on the phone, you can press star 9. And we have RoseMary Avalos from the Public Advisor's Office with us today to help go through those comments. So, go ahead RoseMary.

MS. AVALOS: Okay, thank you, Heather. I will first call on folks using the raised hand feature in Zoom. Allan Schurr, your line is open. Unmute yourself, please. You'll need to unmute on your end, Allan.

MR. SCHURR: I think that's working now, right?

MS. AVALOS: Um-hum. And spell your name?

MR. SCHURR: It's A-L-L-A-N S-C-H-U-R-R, from Enchanted Rock. Thank you very much for the opportunity to provide comments in the IEPR workshop today. I actually stated my career as a CEC intern many years ago, so it's great to address you on this subject.

My comments are intended to shed some light on

readily available alternatives to diesel backup generators that are cleaner and quieter, as Commissioner Hochschild described on Tuesday, and that can be cost-effectively scaled today to address several of California's energy challenges simultaneously, especially resiliency.

We are a developer, owner, and operator of resiliency microgrids for the last ten years. We provide them under an added service model, much like Juan was describing. And we have approximately 400 microgrids at nearly 200 sites, all operating today in island and grid-synchronous mode. The longest operated in island mode for about 49 consecutive days.

These are ultra clean, commercial systems using 100 percent private capital to support hospitals, colleges, water pumping, grocery, manufacturing facilities. I think businesses that would be considered critical infrastructure today.

Our experience let us to enter the California market last year, where we know we can provide the same kind of approach in the midst of growing risk of outages due to PSPS events, which was as mentioned on Tuesday can last up to five days, and definitely have an impact on the health and safety of millions of Californians. And, of course, the pandemic only makes this worse.

We're engaged already in commercial activities in the state and we're a party in the CPUC microgrid proceeding, which we intend to continue to do so in Track 2, and elsewhere, because our unique business model can reduce the proliferation of diesel backup generators, the subject of so much discussion today.

We simultaneous address the limiting shortage of long duration resource adequacy. And it's this combination that makes the business model unique. But there are multiple state energy policies that can be improved, which in some cases they create a disincentive to adopting cleaner and more affordable, long duration resiliency solutions.

For example, for mission critical facilities like data centers, current state policies make diesel backup generators the obvious default for onsite resiliency. As many know, in Silicon Valley there's nearly a thousand megawatts of new diesel generators planned for major providers like Amazon, and Microsoft, and most are on the CEC docket itself for small power plant exemptions. Most of these, even in emergency use only, still require testing and operation that emits significantly more local air pollutants in the surrounding communities.

Another example, of course, is wildfire risk

mitigation. Even after accounting for all the wire solutions like vegetation management, and undergrounding utilities, we'll still rely on PSPS events for years to come to reduce the risk of ignition.

But to address PSPS resiliency, microgrid solutions could provide long duration power outage protection for even entire communities. But they are stymied by current policies that result in significant generator purchases of diesel units, or rentals by utilities, large businesses, and even small gasoline generators purchased by individual households.

MS. AVALOS: Thank you.

MR. SCHURR: These circumstances could be addressed by much cleaner resiliency --

CEC VICE CHAIR SCOTT: Mr. Schurr, Mr. Schurr, this is Vice Chair Scott. We have a three-minute limit for our comments. But if you could please submit this excellent information to us also in writing, to our docket, we will make sure to read it all through. Thank you so very much.

MR. SCHURR: I'll do so. Thank you.

MS. AVALOS: Okay, thank you, Vice Chair. The next commenter is Claire Broome. Please state your name and affiliation for the record, also spell your first and last name after you unmute yourself. And go ahead.

MS. BROOME: Thanks Commissioners and public advocates. My name is Claire Broome, C-L-A-I-R-E B-R-O-O-M-E. I participate as a representation for 350 Bay Area at the Public Utility Commission. I'm an Adjunct Professor of Public Health.

My comment is that the panel is designed to address the economics of microgrids and I was struck that there was no mention of the major economic benefit to the grid of avoiding long distance transmission costs. So, microgrids, in addition to being wonderful for resiliency, are inherently local facilities established on the distribution grid. Therefore, they do not need to increase, in fact they reduce burden on the long distance transmission system.

If you use the transmission access charge as a measure for that that means power that is generated and exported for load outside the grid is two to three cents per kilowatt hour cheaper than power which needs to use the long distance transmission grid.

Secondly, as the PUC considers costs, at this point there's no explicit value for resilience. So, I would suggest that as we move toward more production level microgrids, we need to explicitly value resilience, and there's various approaches to that.

Finally, I think all of us are aware of the

technical challenges, but I'm really pleased that the panelists highlighted the regulatory challenges. And I think the CPUC, I hope Commissioner and Shiroma and others will own the potential that the CPUC could pay real attention to flexibility. You have heard that there are problems with interconnection, which I know the proceedings has on the agenda.

But the over-the-fence rule and the departing load charge are also major issues. Now, much of your regulation pays attention to keeping the utilities whole, the investor owned utilities. I think it's really time to put at least equal value on attention to the environment, to resilience for our communities, and to having a power system which is focused on distributed generation and clean renewable energy.

So, I look forward to your creativity and flexibility. Thank you very much.

MS. AVALOS: Thank you, Ms. Broome.

The next commenter, Chuck Rosselle. Your line is open, you may speak.

MR. ROSSELLE: Yeah, my name is Chuck Rosselle, C-H-U-C-K R-O-S-S-E-L-L-E. I represent myself as a member of the California Alliance for Community Energy.

My comment is I -- phase one of the 1339 proceeding addressed the emergency needs for microgrids,

and that led to a series of utility driven, top down planning and implementation projects. These projects addressed critical PSPS concerns, but did create some concerns for local counties, Napa and Sonoma in particular.

Today and Tuesday have highlighted the importance of early planning and identification for shovel-ready projects. It seems like several of these projects that have been presented today demonstrate a successful model by integrating municipal utility resources coupled with university and CCA resources where available to create fully capable, local planning and management capability.

I believe we are missing an opportunity by not putting more effort and resource into supporting the development of standalone local capability for organizing, managing, locating, integrating and planning the critical municipal and commercial microgrid facilities which are necessary for the future.

I'd appreciate any response and if anybody believes it's appropriate. Thank you very much.

MS. AVALOS: Thank you, Mr. Rosselle.

Okay, we'll move on to Mehdi Ganji. You may need to unmute. There you are.

MR. GANJI: Good morning. I really appreciate

the opportunity to share my comments and also appreciate the CPUC and CEC working on the commercializing of the microgrid in the State of California, which makes the State of California an interested market for the microgrid technology.

What I would like to share with you guys is that we cannot ignore the role of utilities as an entity who is supposed to reliability, cost effectively, and safely operating the power grid in developing microgrids, and not even considering their communication and control requirements.

And the same time, developing a microgrid business model is challenging at this point. Unless we don't offer granular resilience and microgrid incentives and rebates, building a microgrid is not going to be cost effective.

As a result, we can use this resilience, and microgrid incentives, and rebates as a tool to make a business case for microgrid, at the same time helping the utilities' communication and control requirements to be met. So, it's going to be a win/win situation for both parties, utilities and microgrid developers, owner, and operators. Thank you.

MS. AVALOS: Thank you, Mr. Ganji.

And I'd like to remind the phone users to use

star 9 to raise your hand and star 6 to mute and unmute your line.

Are there any other commenters? Please raise your hand. Okay, I have Jean Woo. Go ahead and unmute your line. And please spell your first and last name.

MS. WOO: Hi. I'm sorry, I'm just making a comment that we didn't get the spelling or the organization for the last speaker. My spelling is J-E-A-N W-O-O and I work for Custom Power Solar.

MS. AVALOS: Okay, thank you.

Okay, that concludes comments. I'll now turn the mic over to Vice Chair Scott.

CEC VICE CHAIR SCOTT: Okay. Well, thank you very much all. This was, I thought, an excellent morning panel. Also, I was remiss in not thanking Jana Ganion for her terrific moderation of our previous panel. So, thank you so much for that, Jana. Again, my thanks to all of our panelists and folks who helped to make this morning session so wonderful.

If you'd like to submit written comments, you can see right here on the top of your screen when those are due, July 30th, and how to submit those.

And also, just a reminder to folks that we will pick up for the third and final session of our

Microgrids Workshop at 2:00 p.m. today.

Let me just, fellow dais mates, if any of you would like to say a concluding remark, quickly turn on your video so that we know Yup, let me turn to Commissioner Shiroma and we'll go from there.

CPUC COMMISSIONER SHIROMA: Thank you. I just express appreciation for all of the panel speakers and the folks who typed in questions, and the folks who made some of the comments. And I just wanted to say, you know, in our CPUC proceedings departing load isn't about keeping the utilities whole. Because, after all, the Commission has general rate cases and we've approved budgets for the IOUs that they are using.

It's about the customers who remain behind, who aren't able to leave, who aren't able to garner the benefits of a microgrid or what have you. And so, we're constantly looking at balancing how customers' bills are handled. And a lot of the customers who cannot leave, you know, many of them are from low income communities. So, I just wanted to clarify that.

Thank you. Look forward to this afternoon's workshop.

CEC VICE CHAIR SCOTT: Thank you so much. And I see Chair Hochschild as well.

CEC CHAIR HOCHSCHILD: I have no comments. I

just wanted to thank all the stakeholders and staff, that was terrific.

CEC VICE CHAIR SCOTT: Excellent. So, this part of our day is adjourned. I will see you all at 2:00 p.m. for the Residential Microgrids and Emerging Microgrid Technology. Thanks so much everybody, see you at two o'clock.

(Thereupon, the Workshop was adjourned at 11:58 a.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

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I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified transcriber.

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.

Barbara Little
Certified Transcriber
AAERT No. CET**D-520