DOCKETED	
Docket Number:	20-IEPR-02
Project Title:	Transportation
TN #:	234944
Document Title:	Transcript - 6-24-20 SESSION 2 Charging Infrastructure Funding Program
Description:	JOINT AGENCY IEPR WORKSHOP ON VEHICLE GRID INTEGRATION AND CHARGING INFRASTRUCTURE FUNDING
Filer:	Raquel Kravitz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	9/29/2020 3:53:13 PM
Docketed Date:	9/29/2020

BEFORE THE

CALIFORNIA ENERGY COMMISSION

In the Matter of:	)	
	)	
2020 Integrated Energy	)	Docket No. 20-IEPR-02
Policy Report Update	)	REMOTE ACCESS WORKSHOP
2020 IEPR Update	)	
	)	

JOINT AGENCY IEPR WORKSHOP ON VEHICLE GRID INTEGRATION AND CHARGING INFRASTRUCTURE FUNDING

SESSION 2: Charging Infrastructure Funding Program

REMOTE VIA ZOOM

WEDNESDAY, JUNE 24, 2020

9:30 A.M.

Reported by: Peter Petty

APPEARANCES

CEC COMMISSIONERS (AND COMMISSIONER ADVISORS) PRESENT:

Patty Monahan, 2020 IEPR Update Lead Commissioner
David Hochschild, Chair
Karen Douglas, Commissioner

CEC STAFF PRESENT:

Heather Raitt, Assistant Executive Director, Policy Development
Jonathan Bobadilla
Noel Crisostomo
Brian Fauble
RoseMary Avalos, Public Advisor's Office

CPUC

Clifford Rechtschaffen, Commissioner

CPUC STAFF PRESENT:

Carrie Sisto, Analyst

PRESENTER:

Mike Nicholas, International Council on Clean Transportation

PANELISTS:

Sara Rafalson EVgo
Matthew Nelson, Electrify America

PUBLIC COMMENTS:

Stan Greschner, GRID Alternatives
Kitty Adams, Adopt a Charger

INDEX

1

P R O C E E D I N G S

JUNE 24, 2020 9:30 A.M.

MS. RAITT: Good morning, everybody. I'm Heather Raitt, the program manager for the Integrated Energy Policy Report, or IEPR for short. Welcome to today's Joint Agency Workshop on Vehicle Grid Integration or VGI, and also Charging Infrastructure Funding.

This workshop is being jointly held by the California Public Utilities Commission and the California Energy Commission, and as part of the 2020 IEPR Update Proceeding.

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

Please be aware that his meeting is being recorded. We'll post a recording and a written transcript on our website. Also, today's presentations have been posted on our website and just to note that we will be posting an updated slide deck for Brian Fauble.

This workshop is being conducted in three parts and this is the second of three sessions. This one will cover Charging Infrastructure and Funding Programs. And then this afternoon is our third and last session for this workshop to discuss Scaling, VGI, and Charging Infrastructure.

We're doing a few new things to make the IEPR workshops more engaging. And so, for example, today we will have polls and we will use the Q&A function in Zoom with the capability to up vote on questions posed by others. So attendees may type questions for panelists by clicking on the Q&A icon at the bottom of your screen. And when you click on that Q&A icon you -- if you see another question that's similar to the one that you wanted to pose, you can just go ahead and click on the thumbs up to vote on it. And Zoom tallies up the number of votes on the questions and moves them up to the top of the list.

So if you see one that you -- looks like you wanted to ask, just go ahead and click on it or you can go ahead and pose your own question. We'll do our best to respond to all the questions but are unlikely to elevate all due to time restrictions.

Now I'll just go over quickly how to provide comments on today's material. There'll be an opportunity for public comments at the end of the workshop. In Zoom you can click the raise hand icon at the bottom of the screen to let us know that you'd like to comment, and if you change your mind you can click it again and your hand will go down.

For those on the phone not using the Zoom, just press star 9 to raise your hand and we will open up your line during the public comment period at the end of the session.

Alternately, written comments after the workshop are welcome and due on July 15th. And again, the notice provides all the detailed instructions for providing comments.

So with that, I will turn it over to Commissioner Monahan for opening remarks. Thank you.

COMMISSIONER MONAHAN: Thanks Heather.

And good morning, everybody. I -- I am really excited for this morning's discussion because all eyes are on California in terms of building out a robust charging infrastructure that meets the needs of passenger vehicle drivers and trucks as we electrify the goods movement system, and transit, school buses.

And, you know, there's no doubt that there is more money flowing into California for this purpose than any other state. And we want to make sure that we're doing all we can to share data, to learn what's working, to make sure that we have enough infrastructure to meet the state needs of having 5 million electric vehicles on the road by 2030.

So this transparency around data is something that we at the CEC and then, I know I speak for Commissioner Rechtschaffen at the CPUC, that we want to be as transparent as possible to each other, to other states, and to the world. This is how we build the market. So I am just very excited to hear what -- what's happening across the state with these different funding entities.

And I open the floor to other Commissioners from the CPUC, Mr. Rechtschaffen, or from the CEC, our Chair is here, Chair Hochschild, and Commissioner Douglas. You can just raise your hand if you want to speak and unmute yourself and speak.

CHAIR HOCHSCHILD: Thank you, Commissioner Monahan and thank you to Commissioner Rechtschaffen for you both -- for your incredible leadership and particularly grateful to Commissioner Rechtschaffen as well as the only name that's more difficult to spell than mine on a commission in California so let's keep it that way.

I just wanted to, you know, point out one of the interesting developments over the last few years is the ascension of electric vehicles as a major feature of our economy. And in fact, now to the point where it is the number one export from the state of California. And really, the role of infrastructure in that is critical, you know, as we build out infrastructure here and showcase that EVs can scale. That really creates a template for other states and other countries.

And so once again, you know, the model we're creating here has benefits well beyond the borders of our state and also for the electric grid. Again, we're at 63 percent carbon free electricity on retail sales today in California and that's onward to 100 percent and the role of

transportation of supporting that through intelligent charging protocols is essential. So thanks to everybody and all the stakeholders and look forward to today's conversation.

COMMISSIONER RECHTSCHAFFEN: Thank you, Commissioner Monahan and Chair Hochschild. And your name's not even close to mine so I don't even think it's a competition.

I'm delighted to be here. Looking forward to this workshop. I echo what Commissioner Monahan said about the importance of data and transparency. We have very ambitious goals for electrification, and they depend on infrastructure. We're behind in our infrastructure goals. Funding is critical, if not probably the most critical ingredient in moving forward. So I look forward to the discussion today, hearing about what we're doing at this state and where we need to go.

COMMISSIONER DOUGLAS: And, you know, I'll just briefly say I'm also looking forward to today's discussion, and good morning to my colleagues and looking forward to the workshop.

COMMISSIONER MONAHAN: Great. Well, thank you all.

We're going to turn the mic over to Mike, Mike Douglas (sic) from the International Counsel for Clean Transportation.

For anyone who doesn't know, the International

Council for Clean Transportation was the little NGO who discovered the big scandal with VW and emission control equipment. So part of the reason we have so much money for funding infrastructure here in the state of California is because of the work of the International Council for Clean Transportation.

Mike is an illustrious PhD graduate from the Institute for Transportation Studies at UC Davis. And he is going to share with us the importance of public funding on charging infrastructure.

So Mike, I turn it over to you. Mike, you're on mute.

MR. NICHOLAS: Sorry about that.

I'm not sure I could take credit for bringing down VW. And that was -- that was on particular --

COMMISSIONER MONAHAN: Well actually I would say bringing up VW because they're now leading on electric vehicles --

MR. NICHOLAS: Right.

COMISSIONER MONAHAN: -- so let's.

MR. NICHOLAS: That's right. Yeah, so it's all turning out for the best.

But we do a lot of work on electric vehicles and that's the, the team I'm in is the team looking at the market and the infrastructure side.

And I want to first thank the Commissioners for inviting me to talk on this very important subject, public charging. And it's actually, it's a tough question in the United States. And, you know, we all know we need more.

And so, if you go to the next slide.

So I'll do a brief overview of kind of where we're at. And since we are the International Counsel on Clean Transportation, I'll compare and contrast it with some international examples for charging infrastructure, public charging infrastructure and I'll do that in a couple different ways. Looking at just the numbers, and also just the business cases that we've seen in other places, highlighting the challenge that is ahead of us, and the need for funding.

So it's kind of, it's starting from kind of where we're at, you know, what challenges do we face, and then what sort of things do we need to go forward. So hopefully this sets up some good discussion.

So next slide.

So this is an international look at where we were at the end of 2019. And we see on the left side, we see the cumulative electric vehicle sales. Equaling, in the United -- in, sorry, in the world, equaling about 7 million vehicles. And the number of public electric vehicle chargers is on the right, and as we see that's at about 900,000.

And if you look at it carefully, you'll see the bottom wedge is the United States. So we have a fairly robust market, between one and two million vehicles. But you see the ratio of chargers is not quite as much as the other countries. And so why is this?

And go to the next slide.

So this is just that those ratios over time. So we see that everyone starts out at around, you know, two to four electric vehicles for -- per charger, and then over time, it generally trends up. But in the United States we see that we have 16 EVs per charger, per public charger. Sorry. But other areas are at around seven to eight electric vehicles per charger.

And so the reasons for this, I think there's probably two reasons. One is home charging. I think home charging is better in the United States. And two is it's a very difficult business proposition to have charging in the United States and to make -- to make money off it, to make a profit. So.

Next slide.

So this is a survey done by the Energy Information Administration. And they do a survey every couple years where they ask people about, you know, their washer and every electric appliance in their home. I think they look at gas as well. So the survey just recently added a question. It

says, do you park within twenty feet of a plug? And the good news is about half of Americans, and you see on the right side, but it says 48 percent of households, they park within 20 feet of an existing plug. And that actually is one reason why we can simply, there are a lot of people who can simply buy. Go to the dealer, they buy a car, they can come home, and they can plug in their car. And they might upgrade. They might do other things, but this is kind of a proxy for access.

But we also see on the left-hand side, there's about half of people who don't have access. And you see it's a little bit more difficult for renters. And you see I've highlighted those three wedges that are renters and there's, in apartments, it's especially acute. The larger five plus dwelling, kind of the bigger apartment buildings are the red portion. And then apartments that are one to four people or one to four units.

But also we see on the bottom those two shaded regions are the people who own their home and they don't have good access, or they couldn't go and buy a car today and plug it in. They would have to do something different. So just because you own your home doesn't mean you're going to have access and renters also have a disproportionate lack of access.

And so if -- I'm going to show these two bars again

on the next slide, but I'm going to show it for the current electric vehicle market. And so we see that that left side, the people who have no home charging is actually a very, very small number of people. And so you could say that there are about a half, quite a few people who don't have access who are not able to buy a car. So there's not equity in access to electric vehicles. And I think that's what we're going for. If we're going for these large targets, we're going to have to be able to include everyone and get people to be able to charge.

Another thing that this graph suggests is that public charging is not sufficient for people to just switch to electric today. And so home charging is -- if not a prerequisite, it's certainly an indicator of whether or not you'll own an electric vehicle, is access at home.

Another interesting thing about this graph is that more than half of people who have electric vehicles, they're using just Level 1 which is just your household outlet and not that many, not the majority upgrade to Level 2, which is the higher. Either a hard-wired unit like a -- just a regular charger.

Or another thing we're seeing which is quite interesting is a very, very large portion of people just installing a dryer outlet. And that's that kind of darker, or midshade blue bar. And there's people with existing

outlets as well. But what that indicates is a large number of Tesla owners, for which they don't have to buy a charger. Their charger that comes with the car simply plugs into one of these dryer outlets.

So kind of to summarize this slide, public charging isn't quite good enough and there's a lot of people who probably can't go out and buy an electric car today.

Next slide.

So, you know, with these realities we can come up with scenarios. And we have -- I can direct you towards a scenario that we did if you'd like to look at it later, but how much public charging do we need? And this was done in 2018. So we looked at, through 2017, and so we're making progress. The numbers will look a little bit different today, but we see the places where we expect the most growth in electric vehicles. We see the greatest need for charging and we only have about 10 percent of what we'll need by 2025.

And so there's a big problem. We know the problem but how exactly, who's going to be installing these chargers? How do we get there? And so I think that comes down to, why are people installing charging now, and what I'm loosely calling the business case. That's what I'll talk about next.

So next slide.

And this is about improving the business case. And I'll go into, maybe some more detail that we want, or more

detail than we might need, but that's, I think there's some interesting insights here that we can grab onto and see, you know, really why. You know, what can we expect and why we might need some assistance for funding and different policy strategies.

So next slide.

So there are -- there's a lot, even though I keep -- I have said or mentioned that the business case is not that great for charging in the United States because it's hard to sell electricity for a variety of reasons. Yet we still see we have 100,000 chargers in the United States. And so why are people doing that? We see a lot of what you could say are nontraditional business models where customers simply expect it's from a store, and they're demanding it, and they're -- likewise employees are demanding it.

It could be for employee retention and recruitment. So as you're going through and getting a job, I heard this from an HR person that they said one of the questions we've been getting is do you have public charging for my electric vehicle? And so all of a sudden the HR manager is talking to the president says we need electric chargers to attract more talent. So this is -- it's not a directly making money off charging, but it does nevertheless happen in the workplace. And it's a pre-tax employee benefit and there's also corporate environmental responsibility.

Another thing we can see is, for example, Tesla, they are promoting the sales of their vehicles through the Super Charger Network and when you sell a car your car can sell for more if you can -- if you can convince the customer that you have access to electric vehicles -- or electric vehicle charging. And so with the variety of strategies on this, including Nissan no charge to charge, where there's not their own network, but they give customers access to a large network. And also, there is a monetary benefit for customers who shop longer where they make more money on the customers who shop longer in the stores than they spend on the charging outside that they might give away for free.

And finally, there's some utility grid benefits, and it may be such that public charging is going to be the key to offsetting some of the vast renewable electricity resources that are coming out of the grid. And so these are -- these are coming up.

And finally, there's profit. Profit, as I've said, is a little bit difficult in the United States, but it does -- it may explain why that there's -- why there's more charging in Europe. And I'll go through this on the next slide.

And this is -- this is a slide and I think, it says three elements to this slide, and on the graph and I'll just point them out before I start explaining the graph. And this

is showing the gap between, or the equivalency of gas and electricity. And so there's three elements. One is in the red dots you see the current electricity price in -- for a region. And then you see also on that same line the current gasoline price which is on the X-axis. So California, for example, is at $3.00 per gallon just recently. And the electricity price is 16.7 cents.

And then the final feature of this graph, I guess you'd say, is where cars of different efficiencies where you would pay the same price to travel on electricity versus gas. And I'll go through just a quick example on that.

So if you look at the 29-mile-per-gallon line, and you're spending $3.00 per gallon, a dollar will get you about 10 miles. If you're spending $3.00 per, you know one-third of a gallon in a, essentially 30-mile-per-gallon car will get you about ten miles. And what it says is if you follow that over to the Y-axis if you spend 33 cents on electricity, that will -- $1 of electricity will also get you ten miles.

And so that's, this is looking at a conventional Nissan Versa versus the Nissan Leaf. And so they're the same size and, you know, it's basically conventional versus gas. The bottom line represents a plug-in hybrid where you actually have a -- the direct choice of plugging in an electric plug or going to the gas station. And there's -- it's a much different equation. You have to get about 20

cents for your electricity to overcome $3 per gallon of gas. In the United States, we're about $2 per gallon, making it even tougher other places.

But contrasting that to, for example, Norway you take that same Prius, that gap is not 3 cents between the price -- average price of electricity, it's 30 cents between the price of electricity and the price of gas in that country. And so I heard a -- someone from Oslo the other day and he said that public chargers, they make their money back in three years. And so if you're a charger operator and you make your money back in three years on public charging, that means that there's going to be a lot more public chargers.

And it's simply because of this value proposition. And also, if you're a customer, you're going to get a lot more customers who are lured into who don't have home charging that are lured into the market by, it's just a good deal. They wouldn't buy a hybrid because hybrids are too expensive. Electric cars are going to be much cheaper. I'm going to buy that and I'm going to depend on public charging infrastructure.

This very, very small market, it creates a problem for people trying to sell charging for profit. So it's a long-winded way of saying that I don't know if we can depend on the free market to solely to drive the charging market.

So next slide.

But all is not lost. We see that again, that 17 cent kilowatt hour average, that's actually made up of high-cost electricity and low-cost electricity. And this is where a time of use pricing, where we can shift charging to cheaper times of day where it's certainly less than 17 cents, smart charging with real time pricing signals, and even V2G in the future. It gives us the flexibility to give that the equity. Not only equity in access to people without home charging, but equity in price to at least do a better job of getting equals.

I'll go to the next slide.

But there's a lot of flexibility there. And the other thing that's dynamic that's happening, and I won't explain this, except to say that as you get more electric vehicles, the utilization goes up. So the business case improves over time. In the early market, you'll need a lot more support to get the geographic coverage; but over time, the hours used per day goes up as the market expands.

And next slide.

I don't think I'll go through this too much. This is supposed to be a confusing slide saying that we have a lot of work to do on standards. And there's a lot of things that need to work together and it's easy to say we need V2G or smart charging. But there's a lot of standards that need to work together to get from Point A to Point B, including

15118, OCPP, OCPI, and in the case of Europe, OICP. I won't go over those, but this is supposed to be don't -- maybe look at this one later.

So next slide.

Finally, what this means is we'll have to incentivize charging, especially in the early years. And I think I've given a couple different cases where it's very difficult right now in the United States, but we have an opportunity to tie money to the guarantee of open charging access so we can -- so people can freely charge among many different operators.

Data collection and smart charging requirements. I think these are some things we can leverage to take advantage of some of these things. There's grants. Utility, state, federal, and city grants. These all help buy down the cost of the initial infrastructure and make the business case a little bit better. There's tax credits, for example, home-charging tax credits are great.

Cap and trade money could be dedicated to charging and we have that in California, along with the low-carbon fuel center, which is LCFS where there's -- there are credits that can be applied to these -- to these tasks -- sorry, to charging infrastructure.

So and finally, I would say utility rates are very important. We need to focus on those to tailor them to

electric vehicles to get that cost down and make it a better deal for customers.

And I'd like to thank -- the next slide is just a wrap up. If you want to contact us or see our electric vehicle page, here's more info. But I'm looking very much forward to the next presentation and I'll pass it back to you, Patty.

COMMISSIONER MONAHAN: Thanks Mike, that was fascinating. I encourage my fellow Commissioners to join me on the virtual Dias. Please start your video and if you have questions for Mike.

I have one. This is a really fascinating presentation, by the way. Always good to have -- see what's happening globally. And I was in China before the Corona virus hit in full swing and was meeting with their, with DiDi their ride hailing company who is planning to do a big -- to invest in charging infrastructure through their Orange. They're calling it Orange.

And they're going to, like, actually send drivers to their EV chargers as part of the app. And I'm wondering, you know, now we're hearing Lyft is going to be going 100 percent electric by 2030. Have you done any analysis or thinking around charging infrastructure and ride hailing services?

MR. NICHOLAS: Yes. Actually, we have a paper on that. I didn't include that, but one fact is that we can

leverage what we've already put in the ground with the funding for fast charging and actually, it's happening. And that makes the business case better for the operators and we get utilization on existing charges, but it won't be enough for the ambitions that we have. So there might be a role for dedicated stations that only serve ride hailing. Because there is -- there is a bit of a conflict between the public and the ride hailing drivers. And so putting them all on the public network is probably not going to be possible.

Did that answer your question?

COMMISSIONER MONAHAN: Yes. Thank you.

And Commissioner Rechtschaffen, do you have a question?

COMMISSIONER RECHTSCHAFFEN: Mike, thank you. This is one of the most cogent explanations for why public charging -- private charging is the value proposition so difficult here.

Can I ask you a little bit about trying to entice the public into public charging stations. And at the PUC, one of the hard questions for us is what signals the owners of the fast chargers are sending to customers. And you mentioned flexible rates and time of use charging. And we're trying to imbed time of use principles throughout the rate structure.

But some of the public fast chargers are saying the customers don't -- they want a number them, and this is going

to include the ridesharing apps in this, they need to charge when their duty cycle calls so --

MR. NICHOLAS: Uh-huh.

COMMISSIONER RECHTSCHAFFEN: -- time of use rate that penalizing or has higher rates for congested period of time during the day won't work for them. So do you have thoughts about what price signals should be sent to the customers for public charging?

I see you have low, so I guess this is a two-part question. You're suggesting low introductory rates for [indiscernible, unstable Internet connection]. I assume that's -- are you talking about the customers who use that? Just a flat low rate and then the rest of the ratepayers subsidize that, or the subsidy comes from other sources.

And then I guess the second part of this complicated question is what -- how do you think about the rates that the public chargers should be charging, owners should be charging their customers?

MR. NICHOLAS: That's a really good question. And I think, I know that there's been some resistance to passing on the price information for time of use. But actually, I think that is -- that's one of the solutions to flatten some of the peaks. Yet yes, sometimes people need to charge at the -- you might not pass on the full cost, but having some sort of signal where you can push people to other times of day, I

think is the way to -- the way you have to go forward to get more utilization on the fast chargers. And so either, I think even though it's a little bit difficult, I think it needs to happen.

On the -- sorry, the question about the public charging, it was -- oh, what was the rates. So I think the low introductory rates, that was in reference to fast charging and some of the programs that have already been instituted by Southern California Edison where you have a rate, demand charge holiday for fast chargers. And I think those are really good ideas, but with the recognition that these will go away as the utilization goes up. And it's a -- it's a tough -- it's tough to get a fast charger started, and so I think that really makes a difference. And so focusing on those rates and getting that, I guess the motivation to even engage is important.

COMMISSIONER RECHTSCHAFFEN: Thanks.

COMMISSIONER MONAHAN: So Heather, are we -- I'm not sure if we're taking questions from the Q&A or whether --

MS. RAITT: Sorry, yeah.

COMMISSIONER MONAHAN: -- what's the next step?

MS. RAITT: Yeah. Sorry, I was having trouble unmuting.

I was going to say if we -- we have got Jonathan Bobadilla helping manage -- or moderate the Q&A from

attendees.

So Jonathan, would you like to go ahead and read a question for Mike from the Q&A?

MR. BOBADILLA: Yeah. Mike, there's a questions from P.K. Obernick. Does the access to a plug stat in your presentation assume Level 1, Level 2, or either?

MR. NICHOLAS: Yeah, that was just Level 1 and it was more of a proxy for electricity being nearby. And so the EIA was specifically access to existing household outlets. And the implication is that that was, yeah, Level 1.

And that is actually sufficient for about half of people and then half of people upgrade and I think that will be more the case when we have larger batteries in cars as Level 2 will become more -- more necessary.

MR. BOBADILLA: Okay. Thank you.

And then a question from Ed Pike. Thank you for your presentation, and have you seen any research comparing workplace charging versus multi-unit dwelling charging for increasing EV adoption?

MR. NICHOLAS: I haven't seen it directly compared. Yeah, so actually that would probably be a question for another panelist who works on multi-unit dwelling charging.

I think for workplace, the stats that stick in my head is around 10 percent of people would not have bought their vehicle, existing customers, if -- or maybe like

8 percent, if there were not workplace charging. And then there's other statistics that say it could be up to like 40 times, or 40 percent.

MR. BOBADILLA: Okay. I'm not sure how we're doing on time, but --

MS. RAITT: Yeah, I think we need to --

MR. BOBADILLA: -- we can save them for later. Yeah.

MS. RAITT: Yeah, I think we need to wrap it up. Unless the Commissioners have any other burning questions, we'll -- we should probably move on.

All right, thank you so much, Mike. That was really helpful.

So before we move on to the panel, we're just going to do a quick poll. It's part of our trying to work better remotely. We wanted to get a little bit of feedback from you all today.

So if you have a few seconds to just go ahead and read the questions there and answer. We'll leave the poll open for about 30 or 40 seconds. Just learning -- wanting to learn more about what is bringing you to this workshop today. Is it that you're interested in learning more about the topic? Or that you represent an organization that works on the topic? Or you feel strongly about it and want to share your thoughts? Or something else? So we'll give it another 15 or so seconds.

It looks like people are responding. That's terrific.

All right. I think we can go ahead and close that up, Harrison. Thanks.

All right, so it looks like we have people who are just interested in learning about the topic, and a lot of folks who are representing organization. And we have some that feel -- just wanted to share their thoughts. So that's just helpful feedback. It's a snapshot, just gives us an idea of where folks interests are. So thank you for participating in our poll.

So now we'll move on to the panel on charging infrastructure, and it's moderated by Noel Crisostomo from the Energy Commission.

And so, go ahead and take it away, Noel. Thank you.

MR. CRISOSTOMO: Good morning, everyone. Thank you for joining our workshop and I hope that this is an instructive day.

My name is Noel Crisostomo, again. I'm an air pollution specialist in the Fuels and Transportation Division at the Energy Commission, coordinating analysis and interagency coordination related to charging infrastructure.

California's modern charging infrastructure initiatives initiated in earnest over a decade ago in 2008, with the Energy Commission's Alternative Fuel and Vehicle

Technology Program, now known as the Clean Transportation Program, was succeeded by the California Public Utilities Commission's rulemaking in 2009 investigating alternative fuel vehicles. Most recently, commitments from EVgo in 2012 and Volkswagen in 2015, to invest in electric vehicle charging infrastructure. Each have generated billions of dollars of investment in charging, yet infrastructure is not pacing with the vehicles being deployed necessary to meet our near-term light-duty vehicle targets of 250,000 chargers by 2025, and on the road to deploying 5 million zero-emission vehicles by 2030.

The Energy Commission is analyzing the investment necessary to achieve these targets. And so we've assembled an expert panel to discuss a retrospective of the state's direct investments and partnerships in private companies implementing legal supplements, as well as the investor and utilities efforts to discuss lessons learned on the structures of infrastructure business models, public programs, and initiatives over the past decade to improve our understanding going forward of cost and benefits, intervention designs, and ensuring that we reach all communities with the infrastructure necessary to electrify transportation.

The way that we've assembled this panel is that I will introduce the speakers before the presentation in the

sequence shown here. I'll ask the Commissioners currently on the dais to hold their burning questions until all the presentations conclude. We'll then have moderated questions and answers from myself, and just first with questions from the audience. So please be sure to up vote the ones that are of interest to you.

With that, I'll -- I'd like to introduce our panelists. Starting with Sara Rafalson, senior director of market development to EVgo. Sara oversees the implementation of the energy settlement, executed in 2012 with the CPUC, as well as engagements to the Energy Commission to build the West Coast electric highway and other initiatives across the western United States.

Sara, the floor is yours. Please take it away.

MS. RAFALSON: Hi, everybody. Thanks, Noel, for the introduction. And thanks to the IEPR team, Heather, Quentin, Harrison, and others for putting on these workshops. They've been really great the last couple weeks and I know it's been no small feat to get the logistics going. So thanks again for having me.

Next slide. please.

So I was asked to talk about some of the different funding sources in California. And also since it's a VGI discussion as well, I will talk about some of the grid benefits of public fast charging.

So next slide, please.

A little bit of background on EVgo. We have 800 charging locations nationwide. In California, we have about 300 locations and 750 fast chargers, and we're 100 percent powered by renewable energy. And I love this stat, 80 percent of Californians now live within a 15-minute drive of an EVgo charger.

And at the last note I think is really interesting in light of the questions from Commissioner Monahan in Mike's presentation, but 75 million electric vehicle miles have been charged annually on our network historically, and one-third of those have come from fleets like ridesharing and car sharing, which lead to the need for more urban fast charging.

Next slide, please.

So I was asked to also talk about some of the impacts of COVID-19 on our charging network. And I will say first, a big thanks to the Energy Commission for helping to clarify the essential service designation for fast charging in particular. Even at the height of shelter-in-place in April, we still energized 27 fast chargers, so averaging just under one a day for that month.

But something we also launched is COVID Care, which as you can see, essential workers had a discount on the EVgo network and most of those were in healthcare, but also a large representation from the gig economy as well in food

delivery, fleet, and other services.

Next slide, please.

So Commissioner Monahan has set this up well today, and also over the other IEPR workshops. Just California's really leading the way nationally and globally. And for us, because of the perfect storm of public policy including really great programs from the Energy Commission like CALeVIP, which Brian will talk about a little bit later, we actually grew 40 percent on our network in California in 2019. And in addition to the work of the Energy Commission, we have rate reform which has been a really huge game changer for the EVgo network and will continue as well being something really important that other states are starting to follow.

Next slide.

So Noel mentioned the NRG settlement briefly. EVgo implemented this on behalf of NRG in partnership with the California Public Utilities Commission. And originally we were supposed to build about 230 fast chargers, but due to cost efficiencies, we are able to more than double that. So we've got about 530 installed to date. And with CHAdeMo projects, that will be about 562. So we're mostly done, just wrapping up a couple lingering projects.

One important thing also in light of the last conversation and some of the questions I saw come in as well.

So in 2017 we implemented an amendment with the CPUC to install fast charging to serve the MUD segment. Basically recognizing as -- as Mike was saying, that renters typically do not have access to home charging, let alone onsite parking sometimes. So we started to install high-power charging plazas located near multi-unit dwellings so that multiple apartment dwellers nearby could access those public chargers.

The other thing that I wanted to highlight here were some of our equal access charging hubs with different community-based organizations. So those were sites that we energized in places like San Leandro, Compton, Englewood, and others. And we then worked with community-based organizations to do education and outreach at those locations.

So, for example, near where I live in San Leandro, we had an education outreach event with Green For All right before Thanksgiving where we polled grocery shoppers because it was Thanksgiving and the grocery store was quite crowded, on EVs and also did tech demonstration at those chargers.

Next slide, please.

So I think this is weighing on a lot of our minds right now, both as a state, as individuals, and organizations. So I wanted to make sure to share where we are so far in terms of investing in priority populations. I think as a company, EVgo, you know we know we need to do

better not just in terms of siting our public fast chargers, but also in terms of hiring, and promotion, and community engagement. So that's something that we are doing as a company and looking inward.

And one thing that we're looking at doing moving forward as well is for any sites that go to Investment Committee, we're adding an environmental justice filter as we look at more investment. So a small first step, but certainly a lot more engagement that we all need to do as individuals and organizations to be better as we think about equity and access.

Next slide, please.

So I think Carrie will talk about this a bit in her presentation, but so as we look at the other programs that have come out so far, basically some of the utility investments, a very small percentage of those have been in the public DC fast charging space. And most of those have gone to the medium- and heavy-duty space and the Level 2 space.

The public DC fast charging space, the only large-scale program is a PG&E program that was approved at the end of May 2018. And that's about $22 million and then Southern California Edison had a small pilot as well in their Charge Ready 1 program. So I think this just shows why investments from the Energy Commission on programs like CALeVIP are

really critical. Especially as we look at filling in that charger gap, I think we're going to have a 3600 DCFC charger gap in 2025, according to the draft investment plan from this -- from the Energy Commission.

Next slide.

So Noel and Quentin asked me to talk about some of the other programs in the state that focus on fast charging. Again, I think, you know, we really appreciate CALeVIP, and it's been the first statewide program. Statewide in that they're tackling regional solicitations multiple times per year with a goal of having chargers across the entire state.

But one of the challenges of CALeVIP is that it sells out on day one, which I think is mostly with program design. That's a program design challenge. But here are two programs that are also first come, first serve, but don't quite have that challenge. And I think that's because of the, some of the program design elements that they have incorporated.

So for example, and I know that this is being discussed in the context of the CPUC work as well on the TEF this summer, but essentially the BAAQMD program has utilization targets, which are very achievable. You have to commit to a kilowatt hour throughput, throughout the duration of the contract term. And if you don't meet that throughput by the end of the contract term, you need to keep the stations open until you do. So I think that's a really good

example of a program that makes sure to have something that will beat out speculative bids and also make sure that the folks who are applying are able to execute so we can avoid some of the cancellations we may have seen with CALeVIP.

The other thing, too, is and Mike brought this up, some of the gaps we're seeing in urban markets. And I will say actually speaking on a webinar tomorrow with ICCT on urban charging. And people always say, what can we do to increase charging in urban markets? I think a lot of us on this probably saw the New York Times article about charging deserts in urban locations.

And I think the real thing is just 24/7 access requirements just don't work in urban markets, whereas you might see in a place like Sacramento, large surface lots. You just don't see those in places like San Francisco, Oakland, downtown San Diego. So having some sort of discussion on public availability. This is how BAAQMD does it. LADWP also has a requirement for the chargers to be open during business hours.

But given that a lot of those sites in urban locations have a gate that are closed from let's say 12 a.m. to 5 a.m., a lot of those sites have to be knocked out when you're -- when you're looking at supplying them in urban areas because of 24/7 requirements. So happy to talk more about that in questions.

And then LADWP also requires a lot of the utility work to be done upfront before applying. And then that is another way to raise the bar to ensure that you're weeding out some more speculative applications.

Next slide, please.

So I think Mike teed this up well, but the cost stack of DC fast charging is a lot more than electricity. We've got development costs, equipment costs, and operations costs, which you can see here, and certainly on the equipment and development side, investments from the Energy Commission are extremely helpful.

Next slide, please.

So here's a breakdown of some of the equipment and development costs.

Next slide.

And then we were just talking about some of the operating costs for DC fast charging, but I wanted to remind everyone that it's a lot more than electricity. So let's say, for example, in LADWP we're paying anywhere from, you know, 27 cents to a buck 30 a kilowatt hour for a charging station. We also need to pay in our operations and maintenance, for example, to ensure we have that 98 percent uptime. So if a charger goes down, we need to fix it. Also our 24/7 call center and customer support is an ongoing operations expense.

Next slide.

And last because we are talking about vehicle to grid integration, I wanted to just share that DC fast charging, even without price signals, is a solar friendly load. About 40 percent of rideshare charging takes place between 9 and 3, and then also personal use drivers similarly already charge midday.

So I think we can talk in light of some of the opening comments on this, and how to do better here. But I think this shows that DCFC is a great use case for avoiding solar curtailment.

And with that, my time's up I see. So looking forward to questions.

MR. CRISOSTOMO: Thanks, Sara.

That reminds me of an IEPR workshop from a few years ago in which LADWP described how they were unable to chase people off of fast charging because it's an elastic demand and people were, yeah, similarly charging during the middle of the day, integrating solar.

So transitioning to Matt Nelson, we'll hopefully hear some complementary feedback. Matt Nelson is director of government affairs at Electrify America. Manages engagements across the United States in the implementation of Volkswagen's ZEV commitments to invest in electrification.

Matt, thank you for coming. The floor is yours.

MR. NELSON: Well thanks for giving me the chance to talk today. It's especially nice to be in a dialog with so many old friends, so hello to everybody remotely. But this is -- this is fun, So thank you.

Next, let's go to the first real slide.

So Electrify America is the new kid on the block when it comes to public fast charging. Our first station opened just over two years ago in Chicopee, Massachusetts and it was the first 350-kilowatt ultrafast charging station in the United States. Featured liquid cooled cables, first UL certified use of those as well.

And it -- we've been growing pretty fast. We are moving -- we are in the middle of our third -- second investment cycle of a $2 billion total investment. And we actually just kicked off the planning of our third cycle of investment, which is $500 million. We welcome, actually, public input on that investment planning process and anybody that's interested in providing that input, feel free to go to our website and put in a submission under the submissions tab.

Next slide.

Well I mentioned that we only opened our first station about two years ago, we've grown up pretty quickly. We've been adding about six stations per week and currently have 438 stations open to the public with more than 2,000 DC

fast chargers. We've also, as of today, announced the completion of our first cross-county route from Los Angeles to Washington DC on Interstate 15 and Interstate 70. And it also announced that we will soon complete a second cross-country route from Jacksonville, Florida to San Diego.

And we're really just getting started. We plan to nearly double the size of our network in the next 18 months.

Next slide.

The -- I should have mentioned in the -- on the last slide, to put that in context, now 96 percent of Americans live within driving distance of an Electrify America station.

But we're also growing, specifically in California. At the end of the last quarter, we had 109 stations open with another 24 stations fully constructed just awaiting utility interconnect. And more than 50 percent of all the stations that we've opened, or designed, or permitted really, no matter which metric you look at, more than 50 percent of all of the station investments that we've made are in disadvantaged and low-income communities.

Next slide.

We've also strived to be the most technologically advanced charging provider. We have the advantage of being the newest so we should be very advanced. And we've concentrated on ultrafast charging, and specifically 350-kilowatt charging. For those of you who are not

electrical engineers, a 350-kilowatt charger has the capability of adding about 20 miles of range per minute of charging. So this is approaching the gas station experience. It's not exactly the gas station experience, but it's pretty darn close and we think that that's what's necessary to turn electric vehicles from the second, or third, or fourth car in the home to the primary vehicle. The vehicle that you use on long trips, the vehicle that you put serious miles on.

Electrify America also strives to be the -- we also strive to be the, a really extremely open network. So all of our stations accept credit cards, all of them accept debit cards and also you can pay by app. And all of the stations have both CCS charging capability and CHAdeMO capability, which are the two, what are generally considered the two nonproprietary DC fast charging standards.

Next slide.

I did want to spend just a moment on these nonproprietary standards. We think it's important to note that CCS is really emerging as the standard of choice in North America among automakers. So you see here basically every major automaker, both the old ones like GM, the new ones like Lucid, the foreign automakers like Kia and Hyundai, basically everyone has adopted the CCS standard and with the exception of Nissan.

But what -- how this is translating for us is we're

seeing the vast majority of charging the demand for charging is coming on the CCS chargers. With CHAdeMO charging events you see here they're representing less than 10 percent of our charging events at our stations. I should be fully clear, we have fewer CHAdeMO chargers at our stations than we have CCS chargers, but we don't think that's a factor in this because it's not like -- we've seen no evidence that are lines at our CHAdeMO chargers because we have fewer of them.

Next slide.

So policy is really important when it comes to EVs and most importantly, local and state governments can attract Electrify America investment by having EV friendly policies. Policy environment can really affect the cost of EVs, the cost of EV charging, and the ease of access to both. And the recent report that I -- that I highlight here is from Rocky Mountain Institute.

They actually found that soft costs are some of the largest and most unpredictable costs for EV charging development. The developers found that in the U.S., or that the authors found that in the U.S., the cost of building a station is three to five times the cost of the charger itself. And that's a much higher ratio than they see in Europe. And so they identified this soft cost issue as a real problem.

How does that materialize? At Electrify America

found that building a station in California, the exact same station with the exact same design, costs on average 24 percent more. And we believe that's a primary result of the regulatory environment. Permitting is slower in California. Utility interconnection is slower and more costly. Demand charges in some areas make ultrafast charging economically unsustainable in the long term. Building code requirements are more strict. And the regulations keep coming.

A recent weights and measure regulations will increase station hardware cost in California. Recent open access regulations will increase the cost of charging stations, especially in that case, on Level 2 chargers. And the proposed reporting requirements that are -- that are being considered increase operational costs. So bottom line, Rocky Mountain Institute is recommending that policymakers vastly reduce soft costs and we see the trend is kind of going in the opposite direction right now.

Next slide.

Let me do just a real quick deep dive on how this plays out with permitting. It's a really important one. And as you see here, permitting in California takes 59 percent longer than the rest of the nation and translates -- this translates to real impacts that we end up redesigning stations 30 percent more often. And though California actually, somewhat ironically, California has by far the most

ambitious and strong permit streamlining statute in AB-1236, but GOBiz has found that more the 80 percent of jurisdictions don't comply with it.

And our experience 100 percent matches that. In fact, you see here in the bottom left corner, the number one cause of delay for us is extended zoning review. And zoning review is supposedly prohibited under AB-1236, but it's the single largest cause of delay. And a number of folks have talked about challenges of building stations in an urban environment. With zoning comes parking count enforcement. And basically parking count enforcement, in our view, is the number one barrier to building stations in downtown areas. And especially on small plots like at gas stations and things like that.

Next slide.

So just a couple notes on best practices. So for us, we think it's really important to realize that this is a real estate business. So focusing on project development, focusing on whether a project is real for us is whether it has a lease or signed rights license agreement to the site. Our view is that programs that invest public money could really increase their time -- shorten their timelines and increase their success rate if they made a condition of award that a project have a signed lease or license.

Technology, I've mentioned this a bit so I'll be

short here, but bottom line, we think speed matters and we think that the nonproprietary standard of choice should be where the money is invested. Future funding will go furthest if it's spent on standardized future proof technology.

Third, certainty. When we plan our investments, the certainty of third-party money is a key consideration on whether we can include it in our planning. And oversubscribed programs create a massive amount of uncertainty. In contrast, a rebate structure or just a structure that has very high application requirements that deter over subscription are something to consider.

And finally, timing matters. You see this quote from Reed Hastings, the CEO of Netflix, at the end of the day our site host and our customers won't stand for us to wait on a waitlist. We just have to move more quickly. We open a station per day, and we will continue to do that.

So that's it for me. I think in the next slide you've got some contact information. But thanks for giving me the opportunity to chat about this and I look forward to questions.

MR. CRISOSTOMO: Thank you, Matt. I look forward to discussion in a few minutes.

But first, I'd like to transition to Carrie Sisto, senior public utilities regulatory analyst at the California Public Utilities Commission. Carrie leads the Energy

Division team overseeing utility programs and investment in transportation electrification and grid integration including charging infrastructures, rate design, and other incentives to encourage electric vehicle adoption in California.

Carrie, welcome and thank you for your participation in our workshop.

MS. SISTO: Thanks, Noel. And thanks to Matthew and Sara for some really interesting best practices for us to mull over and talk about once we get to the end of our presentation period here.

As Noel mentioned, I'm Carrie Sisto, I'm an analyst at the California Public Utilities Commission on the transportation electrification team in the Energy Division. And my presentation today is largely focused on the existing IOU light-duty vehicle, Level 2 charging programs. So those are all ratepayer funded efforts that have already received CPUC approval. And I just wanted to note that I'm speaking as the Energy Division staff, so any future looking statements shouldn't be interpreted as any CPUC directive.

Next slide please.

I'm going to breeze through this slide since you've already seen it basically once already this morning. But I wanted to start by explaining, as most of you are probably aware, that CPUC authorizes the investor and utilities that it regulates to spend ratepayer funding on programs designed

to accelerate widespread transportation as required under SB-350.

In 2016, the CPUC authorized the three large utilities in the state to spend about $219 million on light-duty Level 2 EV charging infrastructure mostly at workplaces and multi-unit dwellings. And I'll be talking more about this. Those programs are largely winding down these days, and I'll be talking through some data from those programs in later slides.

Also in 2018 to 2019, CPUC authorized the utilities to spend nearly $700 million on infrastructure to support medium- and heavy-duty vehicles, and/or fast charging stations. And the majority of that funding, particularly for the medium- and heavy-duty vehicles, is still available. In part due to COVID slowing down all of the utilities' implementation efforts.

Next slide, please.

I want to touch here on what exactly the IOU programs are covering, cost-wise. Historically, IOU ratepayer-funded programs tend to end at the customer's meter, as illustrated on the top row of this diagram. However, in California at least, the majority of the utility transportation electrification programs have fallen -- have covered the costs that are illustrated on the second and fourth row of the diagram here.

So each of the utility programs I'm going to discuss further in the next few slides, have the investment model that's illustrated by the bottom row. So SDG&E Power your Drive Program has the utility owning and operating the charging station. SCE's Charge Ready program covers all of the infrastructure up to the EVSE and offers customers a rebate for the charging station itself. And PG&E's EV Charge Network Program is a blend of both utility-owned and customer-owned EVSE.

Next slide, please.

This graph illustrates the cost differential across customer types for the programs that were authorized back in 2016, which are the only ratepayer-funded TE programs that focused on charging for light -- Level 2 charging for light-duty vehicles so far. These programs support the installation of EVSE at workplaces, multi-unit dwellings, and in some instances, for Southern California Edison specifically, public spaces at City Halls or country clubs.

You can see that regardless of the installation site type, the utility cost report is relatively similar across the different site type. But that SCE's programs brought overall lower per port cost across all segments.

Next slide, please.

This graph shows the cost per site on the basis of ports installed at each site. So most of these utilities

authorize light-duty vehicle programs that I'm talking about right now, required a minimum of ten ports per site unless the site was within a disadvantaged community. This graph's most important message that I wanted to highlight is that even though cost per site increased, based on the number of ports, the increased cost is not incremental based on the per port cost.

So this suggests, as Sara and Matthew highlighted in their presentations, the cost differential at sites is much more reliant often on other site specifications and infrastructure needs, such as the length of conduit needed, what type of material had to be trenched to make space, and then differing permitting costs and et cetera.

Next slide, please.

Here you can see what percentage of the utilities' light-duty vehicle program budgets were allocated to disadvantaged community. And I want to really highlight the specifications detailed at the bottom. So we put out a data request to the utilities to get this information. And PG&E and SCE both reported DAC percentages on a service territory basis. And SDG&E provided their specifications on a statewide basis.

And that's kind of funny because SDG&E was the only utility that was fully authorized to target DAC at the service territory level. And if you look at their service

territory-wide DAC finishing SDG&E's program spent closer to 40 percent of its budget in DAC.

But I think the point I really want to make with this slide is, as Sara mentioned in hers, her presentation and as you can see clearly in these results, that the statewide DAC definition isn't entirely appropriate for all programs and service territories. And we at the CPUC are working and listening to come up with a better interpretation or strategy to target different types of underserved communities because clearly setting a DAC focused budget threshold isn't equitable across all customers and customer classes.

Next slide, please.

So graphics on this slide are aiming to illustrate how the location of EV charging infrastructure and the utility rate available at each charging station can impact the need for incremental EV infrastructure and how EV mode can potentially impact the grid for better or worse.

On the top left you'll see a graphic from the CEC, kind of outdated, infrastructure needs assessment which they're working to update in compliance with AB-2127. But even then it suggested as Mike Nicholas illustrated this morning that the majority of personal EV charging occurs at home up to about 80 percent. And that's fine but you can see even in this kind of older illustrated graphic that if more place destinations in charging were available, we might see

EV drivers absorbing more of that midday solar generation.

The bottom graphic shows how even a relatively simple time of use rate signal, price signal better establishment fixed price signals that customers can interpret and figure out when to charge at times that align with lower cost grid operations. Or at least avoid times of high grid operational costs. Second shift EV load pretty dramatically. We heard on Monday that these simple kind of use rates might not be the best solution but it's a great illustration here of how price signals have an impact even when the customer is engaged in the more complex road management program.

I'd like to note that Eric Martineau mentioned on Monday from Gridworks who was a facilitator of our VGI working group. The final report of that will be out on Tuesday, next Tuesday.

We'll have some more concrete and actionable policy recommendations that could encourage EV charging at times that provides good benefits and how -- make sure that the value of the services those EVs are providing are actually returned back to the EV driver or the customer that's ensuring those services are provided to the grid.

And I think that's an interagency VGI roadmap we're working on. Monday and today in our discussions will really help employ the next steps in implementing those policy recommendations.

Next slide, please.

This slide illustrates what the utility side infrastructure, the parts and wiring up to the meter and the customer side infrastructure that goes into a typical make ready. And I'm running out of time so I might breeze through this slide so I can get to my conclusion one. But I wanted to highlight that. Historically the IOU TE program budgets have included all of these props but may not be fully covering the distribution and transmission upgrades necessary, kind of circled in the red circle here by the TE program budget. So there are some instances where we might be seeing upstream upgrade costs that aren't necessarily covered by a specific publicly-funded transportation electrification program.

Next slide, please.

I wanted to end by noting a couple of ongoing efforts at the CPUC that we welcome and encourage your participation in. We have a staff proposal that's open for public comments. But it's intended to help frame the next ten years of IOU PE infrastructure investments. The staff proposal incorporates a lot of information about some VGI working group that we had in 2017 as well as the one that's been ongoing over the past year or so. And it also directs the utilities to really leverage existing planning processes and engage more actively in ones that other state agencies to

develop ten-year investment plans for the infrastructure they foresee needed in their service territory to meet the state's goals.

And that's a huge list, not just for the utilities but also us state agency staff who are trying to align our modeling forecasting effort. So we really appreciate the time today to talk about that.

And then I just wanted to close by highlighting that the staff proposal also includes a plan to ensure the utilities develop and offer optional dynamic rates to all customer classes over the next five years as well as some strategies to better streamline utility interconnection processes which you've heard today already can be a barrier or add extra cost to third parties aiming to install or own charging infrastructure.

So I think with that given the time, I'll close. And I really look forward to our panel discussion and your questions.

MR. CRISOSTOMO: Thank you, Carrie, for your presentation. And great to help unify some of our efforts across the agencies with you.

Our last presenter is Brian Fauble, Energy Commission specialist in the Fuels and Transportation Division. I work with Brian in his management of CALeVIP program. For that, he was responsible for first of their kind charging

investments in the Clean Transportation Program including street side chargers and fast charge corridors. And now is leading our flagship California Electric Vehicle Infrastructure Project.

Brian, please take it away.

MR. FAUBLE: Thanks, Noel. And good morning, Commissioners and everybody, thank you for attending.

Next slide, please.

So California as everyone knows and heard has the goal of supporting 250,000 EV chargers by 2025, including at least 10,000 DC fast chargers. To address this goal, the Energy Commission decided that we needed a more streamline mechanism to really address that and provide funding for EV chargers.

So the California Electric Vehicle Infrastructure Project was just one of those mechanisms that we deployed. CALeVIP is an online interface at CALeVIP.org that releases multiple regional incentive projects that are deployed in a specific region and has requirements tailored to that region's specific needs. CALeVIP website also not only allows applicants and stakeholders to apply online to a streamline process, but it provides many educational resources on EV chargers.

Next slide, please.

To date, Energy Commission's CALeVIP has launched six

incentive projects totaling about 75 and a half million dollars, including partnerships that we've been seeing in the Sacramento and Central Coast Project. And our first project launched in December 2017 and concentrated on only Level 2 chargers. Next we grew up to fast chargers. And we since evolved to all of our projects having both Level 2 and fast chargers available.

Next slide, please.

In 2020, we still have three projects that will launch this year. We did have some delays because of all the circumstances we know of. But our next project, the Sonoma Coast Project, will be launching on July 8th. And we will have two more projects launching in the fall and winter.

If you look at the numbers, the previous slide showed $75.3 million. And these three projects alone will total $84.13 million. Because we have some great partnerships that I'll show on the next slide, those funding partnerships are multiyear partnerships as well that are anywhere from two to four years of funding.

Next slide.

As I mentioned, we have a very nice field of partnerships in all of our projects. So every project in 2020 has partnerships of direct funders that are also industry and local experts on their region and entered not just their financial contributions but expertise in their

region to help strengthen CALeVIP.

Next slide.

So CALeVIP has eligible costs of almost anything that's really it takes to get that charger in the ground. It's not a rebate just for the charger, it is installation and planning cost, it is any utility work, the panel, transformers, if you want to do energy storage. We require networking agreements and that is eligible cost. If you want to get extended warranties. If they want to build out for the future and do stub-outs as well or signage on the way finding signage to help get more chargers find on the highways to let people know that hey, you can pull out here and get some charge.

So there's multiple costs that are completely eligible. One of the big ones we really can't pay for is permitting costs.

Next slide.

So CALeVIP's evolution. We continue to make enhancements over time to better serve the public. CALeVIP has been seeing very high oversubscription rates recently and we've redesigned our rebates to allow more chargers to be deployed and still try to keep a high participation rate.

We are utilizing, as I mentioned, our project partners' knowledge of the region to possibly implement areas of focus such as in this Sonoma Coast Incentive Project, we

have an additional incentive for Level 2 chargers in unincorporated towns and also requirement of percentage of funds being vested in up sites in these rural unincorporated regions.

With the 2020 incentive projects, insulation checkpoints are being added to the review process to make sure the applications with reserved funds are effectively progressing. Staff is exploring additional checkpoint reviews for our 2021 incentive projects as well.

Other enhancements to the online application process are still be considered to both streamline the process but also to assure that the applicants are applying are strong site but are really ready to get to work.

Next slide.

So the benefits of CALeVIP, I mentioned, our streamlined application process that it is easy to navigate and allows for access to implement funding. The normal grant solicitation process is much harder for smaller mom and pop shops to actively participate in. CALeVIP's rebates are stackable with most other rebate programs allowing stakeholders to leverage multiple funding sources to cover as much as their out-of-pocket costs as possible.

CALeVIP provides multiple benefits from its line but also has been seen external benefits not originally in our sites. CALeVIP has been used as a carrot to encourage local

jurisdictions to update their EV charger curbing process. As Mark alluded to AB-1226 the EVSE permitting streamlining law. So we partnered with GO-Biz to help make this one of our items in consideration for selecting future project regions.

Our equipment requirements are also leading the way in terms of technology enhancements that provide benefits to public interaction as well as data collection and management.

Next slide.

The next few graphs will show data completed on CALeVIP applications. And I want to point out there are some specifics to this data so this is only to our Fresno County incentive project at this time. Again, the only project that has completed applications at this time. And that sample size is minimal at this time with 41 sites completed at 234 Level 2 connectors. But we will continue updating our data as time goes on and I'll speak more about that later.

So this graph shows the average project cost per connector for the three different market segments similar to what Carrie presented. We show public, commercial, multi-unit dwellings, and workplaces. The red portion shows the average rebate per connector that CALeVIP paid out compared to the gray portion which is the customer's cost share. I want to point out that the customers may have received funding from other stackable rebate programs as well to cover some of these remaining costs such as the San Joaquin APCD's

ChargeUp Program which is allowable rebate to stack with.

The important message from this graph is that CALeVIP was able to incentivize charger installations at roughly one-third of the cost. Also want to note that on our costs, I showed the list of all eligible costs. But our costs may not include 100 percent of the cost. Rebate applicants are only required to submit documents that really cover enough to get the rebate but we're seeing that that is well above what is being submitted right now.

Next slide.

This graph similar is showing cost for installations on the site level. It is separated by actions of a number of connectors. This graph can be helpful to -- for business owners to estimate how much inflation might cost them, such no mom and pop shop on the floor, they can expect a total cost of 31 and a half thousand dollars of out of pocket to about 19 compared to maybe larger business with more parking would want 8 to 10, $104,000 with all of maybe 65.

Next slide.

So this graph slide details Level 2 installations and CALeVIP's participation with disadvantaged communities. CALeVIP utilizes CalEnviroScreen 3.0 for the definition of disadvantaged communities. The Level 2 projects to date as shown on the graph or the bar to the left have rough totaled $2.3 million in total expenses and 57 percent of those, about

2.3 million was spent in DACs, or DACs, disadvantaged communities.

The graph on the right shows the relationship of CALeVIP Level 2 rebates paid out to DACs and non-DACs. So comparative, the first graph is total costs to get installations done. Graph on the right is the CALeVIP paid out. And again, showing that CALeVIPs paid out for Level 2 so far roughly $890,000 and 54 percent of that was in disadvantaged communities.

Next slide.

So mentioned we will be updating our data over time, and the Energy Commission launched an effort in March of this year to share CALeVIP cost data with the public. And so the link here is on the Energy Commission's website. Website focuses on our costs and has multiple graphs that the public can interact with. And for more future information on CALeVIP, feel free to join the -- or visit the CALeVIP website, you can subscribe there for information as well as the Energy Commission's block grant CALeVIP docket where you can submit comments anytime, view past presentations, or sign up for the LISTSERV there as well as visit the Energy Centers for Sustainable Energy e-mail.

Next slide.

And that's all I've got. Thank you.

MR. CRISOSTOMO: Thank you, Brian, Carrie, Sara, and

Matt, your presentation.

I'd like to turn it over to the dais first for any questions you have on this really great content.

CHAIR HOCHSCHILD: I had a question if it's okay. So this is maybe for Matt or for Sara. I'm just interested in how we can best advance standardization among fast charging community. I mean, it sounds like CCS is getting momentum but we still have Tesla, we have CHAdeMO. You know, at the end of the day, that does end up being stranded assets and extra costs and inconvenience.

And I'm just curious if you could expand upon the ways in which you think we can move towards greater standardization, specifically what role the Energy Commission and state could play in accelerating that.

MS. RAFALSON: Matt, do you want to start and I can go from there?

MR. NELSON: Sure. So from our perspective, we think it's important to recognize that the demand for one nonproprietary standard is growing, whereas the demand for the other standard at the moment is not growing. And recognize any funding requirements, recognize that disproportionate situation.

And so for instance, CARB's capacity credits in the LCFS program say that you have to have both standards but you don't have to have as many of -- you don't -- not every

charger has to be the same capacity or the same number. So 25 percent of the capacity credit chargers need to be each standard. So you could have a station that's say one CHAdeMO and three CCS and it would -- chargers and it would qualify for that program.

So that's one idea out there to consider is just not requiring every charger to have both standards. Both standards, by the way, do add significant costs and actually they add significant operational challenges because you're operating a piece of equipment on two different standards at once. So there is some downside other than the -- other than just the demand that I descried.

MS. RAFALSON: Yeah. And I'll just add just from a design perspective, right, having the ports on all different parts of the cars are really challenging when you're designing a charging station in addition to the cost. So having to angle the parking in the way that can serve for us, you know, because we're doing some Tesla add-ons adaptors at our sites as well. So having a station that can serve all those different ports and different locations is really challenging from a design perspective which I think is often overlooked.

But I would say one tangible action item and I think, you know, we're starting to talk about this, too, in the context of all the different infrastructure programs that are

being implemented across the country on Appendix D. But rather than having a requirement of a CHAdeMO and CCS per charger, having it per site. Because that also allows for more innovations in terms of power sharing and I think that's where the industry is going to be going in general.

COMMISSIONER MONAHAN: Sara, can I ask, where -- is that a state standard? What's the regulatory process for that?

MS. RAFALSON: Yeah. So basically most infrastructure programs and maybe Brian can talk about this from the CALeVIP perspective. But traditionally if you install a charger and if you think about maybe the chargers we have in Southside Park in Sacramento, for example. You have one charger and there's a CHAdeMO and a CCS on the charger. And that's a requirement for most funding programs.

But what we could do moving forward is rather than -- and that's -- I don't know what the regulatory process is, it's literally program by program, every single program we're involved has a different technical requirement, which is a challenge in itself. But having that requirement be not on the charger level but on the site level for a program like CALeVIP I think would be really beneficial, but also future utility investments as well.

COMMISSIONER MONAHAN: Go ahead, Commissioner Rechtschaffen.

COMMISSIONER RECHTSCHAFFEN: Okay. Matt, I had two questions for you and I had one question for Sara.

You mentioned in your long list of soft costs in California, open access reporting requirements is Electrify America opposed to the state's open access requirements?

MR. NELSON: No, we supported the CARB regulation on open access. But it does add cost. And I noted there that it adds -- it adds more cost on the L2 side. It's called open access but it's really a credit card reader requirement, that's the costly component of it. And for public L2s, that's a pretty significant cost increase according to the folks that are more focused in the L2 business.

So it's just one -- each of these standards and each of these regulations aren't on their own a problem and we haven't opposed any of them, I was just trying to point out that as these regulations stack, the cost of doing business in California is growing disproportionately to what's happening in other states. So it's getting more expensive to do business in California.

COMMISSIONER RECHTSCHAFFEN: And can you talk a little bit about what you charge customers, what you're charging at your ultrafast -- I guess they're all ultrafast, but what's your charging -- what's -- not charging, what's your cost, what's your price schedule or how do you price the services you're providing?

MR. NELSON: Sure. So we launched a single framework for pricing nationwide and so when we got started only two years ago, we wanted very consistent pricing. So we priced per minute currently. Our CEO has announced that he intends to move us towards -- towards per kilowatt hour pricing in the near future which will be simpler for us, it'll be easier to explain. So what I'm about to say I promise will be a simpler answer soon.

But the way we price right now is for a vehicle that's capable of up to 75 kilowatts, they price at a certain price per minute which is -- which is -- it varies state by state but it's about between 21 and 24 cents a minute. And then as you move up the power level tiers, we have a tier that goes up to 150 kilowatts and then a tier that goes up to 350 kilowatts, and those are priced a little higher because you're getting more power per minute.

And this is -- on top of that, you can -- you can join like our frequent flyer program called Pass+ and you get a little -- you get about a 20 percent discount on those prices. And then we have bundle agreements with automakers including Ford and Porsche and Audi and Harley-Davidson. And with those when you buy the vehicle, the charging at our stations comes for free, either on an unlimited basis or for a certain number of sessions. It's a little complicated, but I promise it'll get simpler.

COMMISSIONER RECHTSCHAFFEN: I would just highlight for my fellow Commissioners and others that this is going to be one of our challenge, the plethora of pricing options for the public by different operators and, you know, we have rules for utility-funded public charges, other jurisdictions do their different models in the private sectors. It's -- it's just an added burden, an added complication we have to all think through.

MR. NELSON: Well let me just clarify that --

COMMISSIONER RECHTSCHAFFEN: It's not -- I'm not criticizing you, Matt. It's interesting that Electrify America wants to have a uniform nationwide approach but, you know, rates are set differently in jurisdictions state by state otherwise so -- for electricity, not for -- not necessarily for gasoline. But it's just an interesting complication.

I'm sorry, go ahead, though.

MR. NELSON: Yeah, I just want to -- the original approach was to try to create that uniform approach. California is really a leader here you've allowed per kilowatt hour pricing before 22 states still don't allow it. And so because it's now allowed in California and it's pretty much kind of mandated by weights and measures in about two years, it makes sense to move it to a per kilowatt hour basis in California. That'll be a much simpler pricing. So

California deserves some recognition for changing its policy a few years ago to allow more transparent pricing and we're moving in that direction.

MS. RAFALSON: And if I could also just make a plug. So we get this question a lot and we actually recently put together a white paper on the cost SAC of DC fast charging which I -- I was running up on my ten minutes so I had to fly through it in my slides. But I would encourage everybody to read it, it's on our website.

But just a reminder to everybody that our operating costs are more than just electricity, right. And in addition to the price that we charge for drivers, we also need to pay for our call center. So we to in order to maintain 98 percent uptime which we have on our network, we need to pay for operations and maintenance.

So just a reminder while DMS is moving forward to having more standardized pricing and that includes regulations for fast chargers going into effect in 2023, we do need to remember the full cost SAC of DC fast charging.

COMMISSIONER RECHTSCHAFFEN: Commissioner Monahan, can I ask one more question? I know we have four questions in the queue.

COMMISSIONER MONAHAN: Yeah. Yeah, why not you and then I have a question as well.

COMMISSIONER RECHTSCHAFFEN: Sara, could you explain

the environmental justice screen that you said you're newly applying?

MS. RAFALSON: Sure. So I think that's mostly something that basically in response to the structural racism, systemic racism that we're all experiencing and thinking through that's really comes to the surface. Our executive team has really implemented basically a five-tiered approach to how EVgo can improve both in terms of our diversity in terms of hiring and promotion, community engagement, philanthropy, things of that nature.

But also we've launched an internal working group to look at how we set our chargers. So that's one idea that we are just starting to implement in the past couple of weeks. I think when we have more to say on it, happy to do so. But like everybody, we're looking inward right now on how we can do better on a lot of fronts.

COMMISSIONER RECHTSCHAFFEN: Thank you. And thank you implementing that new policy.

MS. RAFALSON: Working on it. Small step but hoping to do more.

COMMISSIONER MONAHAN: So I have a question. I think it's mostly for Carrie and Brian but actually Matt and Carrie may have things to say about this as well.

As they said at the start, you know, we're committed to data and transparency. And ironically, I used to work at

a job where we're looking naturally at data, it was really hard to get data on what things cost. And as a funder, I actually funded that Rocky Mountain Institute study because there was such a lack of data.

And so when I came to the Energy Commission, I thought oh, this is great, we'll be transparent with data. And then as we dove deeper into the data, it seems like, well, we -- there's different criteria that's being applied to different cost categories. And yet, I -- I mean, we need to be as transparent as possible, especially where -- right now, ratepayer dollars are being used or state funds are being used. And, you know, I'm getting to that point kind of hard.

So Carrie and Brian, from your perspective, how far apart are these data sources and what will it take where we could put on one website the data from the utilities and the data from the CALeVIP program and feel confident that we're accurately and transparently saying what's included in that data?

MR. FAUBLE: Sure. I can start. So for CALeVIP, I'd say the difficult with us is we don't have like a templated invoice that every applicant must complete an exact line item. They use their contractor's template. We try and break it down to say hey, we do want these items identified, but we're not forcing every single item to be in the same

format. And so CSE does a very good job at taking what they receive, asking for more cleanup, and then putting it into our filters and our table where we are.

The other aspect as well, as I mentioned, that similar to our grants, applicants are only really required to show their costs enough to cover their rebate amount. And again, like especially the fast chargers up to 75 percent. So we encourage them to include as much as their cost as possible, but there might be items that they're not going to include for whatever reasons, it's too difficult for them, they've reached their limit.

So exploring can we change move to a recommended invoice template that is either mandatory or just recommended, can we somehow encourage more of just please just give us every agency cost you have because that will help us more with utilities. They are the ones spending the money themselves versus the applicants, we have hundreds and thousands of applicants likely all going through different procedures.

MS. RAFALSON: And after that I think even though we regulate the utility center trying our best to develop more standardized templates for their programs, one thing we consistently hear from them is similar to what Brian was saying a lot of instances they contract out the majority of the construction and they get an invoice from the contractor.

So I think that it needs to be a more conscious effort to developing those requirements as part of the contract so that the people participating in the publicly-funded programs know what information they require to submit even if it's under some sort of agreement that we would only portray, sort of, anonymize aggregated information on a public website.

But I think those are the things we need to really be coordinated on because even if the utilities get bad information from a contractor, they slot it into different buckets of their -- of their budgets. So we might ask for what an EVSE costs but they might portray part of that cost as a meter cost in some separate bucket and we might not see the full thing portrayed as an EVSE cost, for example.

So I think really getting all of the agencies talking the same language. And I want to plug, I have a relatively new colleague at the CPUC, Zulayka (phonetic), who is trying to figure out this kind of concept and improve our data collection and coordinate it across utilities programs and then work on coordinating it across the agency programs as well. So I think, you know, we're trying. But it's hard when you've got so many cooks in the kitchen to make sure you're all talking the same language.

MR. CRISOSTOMO: And Commissioner Monahan, if I could jump in.

In preparing our suite of presentations for this workshop, we were careful in working with Carrie and the CALeVIP team to look at exactly the data parameters that we do have access to given this retrospective and the fact that as Brian and Carrie were saying, invoices are not recorded in a standardized way at this point.

And to emphasize what Carrie was saying around counseling the chargers which we had a workshop on last week, the ability to identify individual chargers that are receiving multiple sources of state funding as possible for the kind of mutual exclusion of charges receiving funding is really critical to understand how market interventions are affecting installation and then therefore utilization.

Mike Nicholas wanted to jump in on this topic as well.

MR. NICHOLAS: Hi, Noel.

Yeah, I was just actually curious if I was supposed to turn on my camera. But, yeah, so I don't have a specific question.

MS. RAFALSON: I guess I can just say that for some reason this summer we are getting a lot of data requests, including from various state agencies who we already have different recording obligations to.

So I would say, for example, we already report to the CPUC on the energy settlement. There's a great website about

the CPUC administers where you can get a ton of data on all the installations that we've done, the nearly 560 fast chargers we've installed under that settlement. And I know that Matt, EA already has to do some reporting to CARB. So I think when asked that we have for state agencies is many dig into what is already out there before we put more of an administrative burden on our teams. Because there's a lot of focus on reducing costs for deployment but at the same time, all these data requests that we're continuing to get do add a different soft cost that our teams have.

And if we're getting them from multiple agencies within California and then all of sudden we're getting them from multiple agencies and utilities in New York, these really add up in terms of staff time that we could be spending doing other things but also is really costly and duplicative for our team.

So just a plug for data that we already have out there and if you don't know where that is, happy to talk offline and point you to it.

COMMISSIONER MONAHAN: Thanks, Sara. And I feel that concern about all these different state agencies with different data requests and creating an administrative burden and as Matt said creating costs for working California. And I think we want to avoid that as much as possible

And the CEC is looking at publishing more data

through a web portal where we'll have data on fleet community sales from the Department of Motor Vehicles as well as where EV chargers are and is able to map that function. And we're trying to figure out ways to make this data more available to the world so that they can use it. We can use it, they can use it. And, you know, how to do this in a rational way that doesn't create an administrative burden, I hear that.

So should we do -- do my fellow commissioners have any additional questions or should we move it to the discussion, the facilitated discussion? Okay.

So Noel, are you facilitating?

MR. CRISOSTOMO: Yes. I just --

COMMISSIONER MONAHAN: Okay.

MR. CRISOSTOMO: -- wanted to give you a couple of seconds for anyone to jump at the last minute.

So, yeah, this will start our facilitated discussion with the panelists. We have looks like around 15 minutes for discussion among the panelists and then we'll try to bring in Q&A from the audience. So if you could chat those in and up vote.

So I want to start with Matt. Your -- and others to jump in on but the topic of soft costs. I'm not -- not data reporting but nonconstruction, non-EVSE costs that meets and understands how to reduce.

Matt had a staggering data point during his

presentation describing the relative higher cost in Europe -- or in California compared to what has experienced in Europe pointing that the equipment might be a small portion and building the infrastructure is three to five times the cost of the trigger itself.

As we currently don't have much site specific data on what is driving those costs but are trying to understand as Carrie was describing how the length of the conduit, the parking situation, building situation affects this cost, how can we best understand how to situate these charging stations and reduce these soft costs that are extremely variable?

The question is up to all panelists.

MR. NELSON: Well do you want me to go first?

MR. CRISOSTOMO: Yes, please.

MR. NELSON: So from our perspective, the biggest opportunity for California to address these soft costs is AB-1236 in proportionate.

We think that when you look at how many days that the permitting timeline takes and the amount of redesign that we have to do. Redesign -- no jurisdiction in the history of mankind has ever asked for a change that lowers the cost of a station. It's always a change that increases cost. That's a little facetious but it's not -- I have not encountered a jurisdiction asking us to do something that lowered our cost. And it often substantially increases cost. And so these are

things like aesthetic requirements or relocation or things that are supposed to be prohibited.

For those of you don't know, AB-1236 limits review to health and safety issues. And all of the things that drive up cost in the permitting process in California today are not health and safety related.

So that's the number one issue that I would point to. From the other things that do matter and do affect costs are some of the things you mentioned. We -- we build a lot of sites at big box stores, Target and Walmart. And I think it's always surprising to folks within a Target or Walmart parking lot, the difference in costs of connecting to the grid ranges by about between two and three hundred thousand dollars. That's a lot in the context of building a charging station.

So when we pick the northeast corner of a parking lot and go to -- we've picked that location after talking to the utility and after understanding the cost of running conduit and all those factors.

So that's a best practice that we do. I think pretty much everybody does that right now. But it is -- it does really matter.

So those are the two things that I would point to. One is permit expediting, and two is planning with the utility to minimize the costs to the extent that's feasible

with the site.

MS. RAFALSON: I think one thing I would just add there is so as part of the transportation and electrification framework, rulemaking that Carrie and her team have been leading, we've been talking a lot about improvements in terms of soft costs on the utility side and how we work with utilities. We've done a lot of work just internally with trying to streamline and standardize our timelines and how we work with utilities. But that's been a discussion in terms of some of the score cards and metrics. We actually just filed comments on that last week and that seems to have pretty broad support among parties is some of these improvements on the utility side.

Just one plug I want to make is that Southern California Edison published a flow chart with different timelines for engineering and review including basically saying if you submit this document this time, we will get back to you in 15 days. So I think having a flow chart like that for different facilities is a really good step and we encourage not just IOUs but public utilities to have that as well. And then once they submit and take that time to put together that flow chart and look at its planning, they can look how we can collaboratively cut down on costs on both sides and timelines as well.

So I think that is a really great example that Edison

has done that I think other utilities can follow and it will create mutual understanding among the charging providers and utilities on timelines and expectations.

MR. FAUBLE: And I'd add and kind of echo what Matt was saying also that the two is AB-1236 is good. It needs either some carrots or some teeth to it, though. CALeVIP is trying to be that carrot to incentivize regions to get streamlined so that public money can come to them. We also know other programs or private investments would likely go there if they knew hey, this is going to be an easy job compared to this is going to be a hard job.

And other aspects I'm seeing on our side in CALeVIP is probably we need -- we tried to do more education about that utility aspect where, you know, how much trenching are you going to have to do? The example I always gave when we came up with our cost transparency page, I visited a site in Fresno that installed ten Level 2s. And to comply with AB-1236, they put two over here in their handicap stalls and then eight on the other side of the parking lot to just be out of the way and best served.

That had a lot of trenching and a lot of conduit. And so looking at that site cost, that's definitely raised up because one, they either had to comply with 1236 and that was the best way to do it or also there might have been a lack of education about hey, you're going to run -- run conduit all

the way from the back of your box store above the roof and then down and you're going to trench the two location. So more education and just more carrots or sticks.

MS. SISTO: I'll just jump in. I will say I usually hear three consistent concerns and comments focused on the utility side of this effort and one is, you know, clearly wanting a more streamlined or at least expectable process so that once an application is filed or a site design is approved on the third-party side that they know what it will take, the time it will take, and the cost it might have to reach a conclusion where it is an energized site. So that's one.

The second is a concern about these other permitting issues and how -- how or whether the utilities need to play a role in improving that process. And I'm not clear that that's their best goal but I think that they can provide some sort of educational portion, especially if they're just engaging with local jurisdictions to provide some sort of best practices.

And then the final thing I would mention is that I hear consistently and I'm interested in hearing broader conversation either today or later about is whether it's more -- if it's a large benefit for the utilities to be issuing some sort of publicly accessible database where their grid they have excess capacity that could be utilized for

charging stations to be installed without having to necessarily go do a utility when you're looking at an area to determine where you might want the site of the facility versus just engaging with the utility one on one and having an actual dedicated point of contact for a site that you're designing.

I think similar to the conversation about soft cost, the utilities only have so many employees and it's hard for them to dedicate a whole lot of time to all the publicly accessible maps that have to be updated as frequently as possible versus becoming some sort of point of contact that can be available and reliable for the charging station operators.

So I think those are the -- we're trying to understand what's most important to focus on first. And not that we can't do both but that we need to pick -- probably pick a priority to move forward first.

MR. CRISOSTOMO: Great, Carrie. We do want to get to that point around freedom pact costs since this is the workshop both the funding infrastructure and grid stations. So I'll get to that in one series, after the next series of questions.

So Matt and Sara were talking about how -- with everything this is real estate business. It's less intuitive than say a gas station which may be open 24/7. And so when

you think about charging in the context of a nonregulated entity in which they're able to set prices based on the amenity that the site host might want to serve or perhaps a bundle with the sale of the vehicle and the implications of AB-631.

I want to hear some thoughts from Sara, Matt, and perhaps also Carrie in thinking through two things. First, the impact of rate design and how -- whether VGI impacts can be addressed with that context around the nonregulation pricing at this point. It sounded like from Sara's graph that people were already charging during the middle of the day integrating solar without explicitly seeing a time-of-use rate past directly to the user. And Matt described how his current pricing is designed to kind of reflect the demand of the vehicle as it's -- as it's needed.

And then, yeah, let's start there.

MS. RAFALSON: Yeah. I mean, I can start by saying that there's a lot of focus on public charging pricing. But as Carrie showed from the driving curb graph, most charging does take place still at home and overnight. Right? So I think when we think about DCFC charging and public charging as a percentage of load, I think we should always keep that into account.

Because right now we're still a sliver and certainly that's going to increase as we see the implementation of SB-

1014 which I believe starts in 2023. For example, the fee mile standard. And also as we change in demographics for EV charging and more and EV residents, for example, maybe buying or leasing an EV and relying more on public charging. But right now we're still a sliver of the demand for charging today and most of that is taking place at night or in the Level 1 or the Level 2 space.

So I would start with that as a caveat. I think the other thing is I want to just commend the CEC, there's been a lot of efforts on rates. We really like rates, TOU rates. Because even if we're not passing on that TOU signal to our customers, most of our charging takes place off peak. So it does really -- it is very positive. And I think, you know, we've seen instances where we've being paying several dollars kilowatt hours for some stations, right, in terms of charging costs. So a lot of the rate design improvements have been really beneficial.

I think the other thing I'll say, too, is that I think all of us being in this space, we get so excited about a lot of the great impacts and thinking about EV infrastructure as a DER. But I think we also need to think about how we can increase consumer adoption. And if somebody has a bad charging experience, they might actually turn in their car at the end of their lease and then go back to a gas vehicle.

So I think we need to think through at least some early stages of the market, how can we make things as simple as possible for drivers? We actually used to have different rates at different times of the days and we need to get back on it. And our plug scores and plug share comments reflected that.

So I think that's the only thing I want to say.

The other thing, too, is just human behavior. So right now any of you who drive an EV would have enough breaks in your Zoom calls to charge in a day, right? I think theoretically one of the best VGI use cases in addition to -- I did show that most public charging is happening during the day. But another great VGI use case is ideally when, you know, while able to go in offices again, is workplace charging. Right? So ideally that's where your car's going to be parked during the day. You're really not going to be using a public charger all the time during the day just based on consumer behaviors.

So I have a lot to say on this because it's been discussed a lot. But maybe, Matt, I'll let you -- see if you have anything else to add.

MR. NELSON: Well first of all, I would concur with almost -- I think everything that Sara just said. It's really important to emphasize that we're in a customer serving business. We are trying to convince the public to

abandon the technology they've -- they are familiar with since they were three years old. They know how to jump a car, they know how to get their oil changed, they know everything about it and we're introducing them to something new. And we're trying to convince them that this is going to be at a better experience. It's the only way we're going to drive EV adoption is if it's a better experience.

And one of the absolute keys is when you show up at a gas station, you know how long you're going to be there. You know -- you never get to a gas station and they say, hold on, we're going to slow you down today. Or even worse, hold on, it's $10 a gallon for the next 25 minutes. And if we were to do that to our customers, we would absolutely see a downturn in their satisfaction.

When they pull off and they're on a two-hour or three-hour long drive and they pull off to get a fill up, a refill of electrons, they aren't going to want to pay more than expected or wait longer than expected.

And so that's critically important to us as a customer. We call ourselves a customer centric business. We really have to think that through. And if the utility rates cause us to take a huge loss on that, we will take that huge loss before we will try to pass on those customers. That's the bad news.

The good news is we are managing with rates lower

than gasoline today. And with rate reform which the state is working on, that can be affordable. Right now it's not. We look at the demand charge environment in San Diego, gas and electric territory right now. We're paying way above $10 a gallon equivalent and we aren't charging our customers that because we don't think it's right.

But that's just something to consider as we think through these rate designs. We have to consider how we drive the public to adopt this technology.

MR. CRISOSTOMO: Great. Thank you, Matt.

Okay. Now we're --

MS. RAITT: Noel, this is -- yeah, this is Heather Raitt. Sorry, I was going to say I think we need to move on to the Zoom Q&A.

MR. CRISOSTOMO: Yes, let's move on to the Q&A. There's a number of really great questions around disadvantaged communities and utilization.

So Jonathan, depending on which he reviewed, I think he could really be wrong. So please ask away.

MR. BOBADILLA: Thank you.

A few questions came up on disadvantaged communities. One is, would it be appropriate to supplement with low and moderate income communities definitions to create an underserved community definition for transportation electrification investments? And also that there are some --

attendees saw differences between the CALeVIP investment in DACs and CPUC investments.

So it's open to the panel.

MS. SISTO: Yeah, I'm happy to start on that. I think that adding low and moderate income as a consideration would be a step forward but I still am not sure that that encompasses all of the equity aspects of how we want to support transportation electrification throughout California. So I think, you know, like for example we did approve a CP for a PG&E program that specifically targeting low and moderate income communities because while that's part of the DAC definition, it's not necessarily all of it. And the majority of the top quartile of DAC communities are ones that have much higher pollution burden and economic burden as a community not necessarily specific customer.

So I think that's one way of improving programs that are specifically outreaching to individual light-duty vehicle drivers, for example. Whereas for medium and heavy duty, it might make sense to continue focusing on those areas that have the highest levels of pollution.

So it's something we're working on and I think that feedback is good and I think it's a continued conversation that we're having through the test process and welcome anyone to continue that conversation with me personally and our team at the CPUC.

In terms of level of investment that the utilities have put towards DAC, as I've noted in the slide, there was some disproportionate, perhaps, reporting that happened. I think it didn't necessarily reflect the true level of investment that as I mentioned in San Diego service territory it said only 6 percent went into DAC because they used the statewide definition and San Diego service territory has very DACs on the statewide definition. So they were instead allowed to use the service territory-wide definition. And in that instance as I mentioned their investment in DACs was actually closer to 40 percent.

So I think that that kind of skewed the perspective there and again illustrates how the statewide top quartile of disadvantaged communities isn't necessary the best target to be focused on.

MR. FAUBLE: And non-CALeVIP, I'd say again that our data is from one incentive project right now, Fresno County which, you know, is heavily DAC.

And I also mentioned how CALeVIP saw some evolution. So our projects after the Fresno County in 2019, four projects went out. Each project had its own set of requirements where we try to aim to have at least 25 percent investment into DACs. But take, for example, Northern California incentive project and Shasta and Humboldt. Look at CalEnviroScreen, there's nonexistent DACs to that.

And so for that project, just for that project, we lowered what we set at DAC to 50 percent or higher. Still, there's not that many at that level, but we would allow that level to get our additional DAC investment or rebate for additional funds, but we were not going to commit to a minimum percentage because there's a lack of confidence that, you know, we're going to get inflations in that little -- that area.

Moving forward to 2020 projects, we've said, okay, let's not redefine DAC from CalEnviroScreen but let's add low-income communities as 15 -- AB-1550 defines. And so now we say our additional rebates for fast chargers and the Level 2s are eligible for DAC and/or low income to kind of spread that net more. And for the most part, again, we're trying to do 25 percent minimum investment. That can be raised within other projects as well if we see the need to maybe go to 30 or 40 percent sometimes that has not yet been done.

MR. BOBADILLA: All right. Thank you, everyone. There are more Zoom Q&A questions but we need to move on to public comment.

MR. CRISOSTOMO: So I wanted to thank everyone for joining and presenting, this has been an excellent discussion. I hope we're able to continue the conversation to IEPR team. Please accept verbal comments and thank you,

everyone, again.

MS. RAITT: Great. Thank you, Noel. And thank you, again, to our panelists, that was really very helpful. Thank you.

And you can go ahead and turn off your videos and we will move on to public comment.

So we are asking that folks limit your comments to one person per organization and we'll have comments that can go for three minutes.

If you're using the Zoom platform, you may raise your hand, use the raise hand feature to let us know you'd like to comment. And if you're on the phone, just press star 9 to raise your hand and you can press star 6 to mute or unmute your line.

And with that, I believe Mary (sic) Avalos from the Public Advisor's Office at the Energy Commission is available to help conduct the public comment portion for this session.

So if you're ready, RoseMary, go ahead.

MS. AVALOS: Yes. Hello, I'm RoseMary Avalos with the Public Advisor's Office. And we have Stan Greschner on the line.

Please unmute, Mr. Greschner. Hello?

MR. GRESCHNER: Can you hear me?

MS. AVALOS: Oh, yes.

MR. GRESCHNER: Okay.

MS. AVALOS: Go ahead.

MR. GRESCHNER: This is Stan Greschner with GRID Alternatives and the chair of the SB-350 Disadvantaged Community Advisor Group which advises both the CEC and PUC.

And I just wanted to comment on the last conversation that was happening around how you propose to look at defining disadvantaged communities. And I would just like to quiet Carrie, Brian, and, you know, both commissions to the equity framework that the Disadvantaged Community Advisory Group created a couple of years ago that helped answer this question of, you know, how we should be looking at defining the disadvantaged populations beyond just the CES, the CaliEnviroScreen tool which is a great tool but there, as folks noted, there is definitely and communities that should be added to it, including tribal communities, low-income communities, low-income families generally.

So just want to point folks to that resource. And, Carrie, with the -- for the PUC program, you have at the PUC the Environmental and Social Justice Action Plan that also define targeted populations, you know, that leverage the equity framework that the DACAG created.

So just wanted to point out those resources. We definitely see the need to expand this definition in the programs that we're creating. So those are great tools to -- or great frameworks to look at.

Thank you.

MS. AVALOS: Okay. Thank you, Mr. Greschner.

That concludes comments from Zoom and on the phone line. So thank you.

I'll hand it back to you, Heather.

MS. RAITT: Okay. Great. I think if we wanted to -- if the Commissioners wanted to make any closing remarks before we -- we break?

COMMISSIONER MONAHAN: Well, I just wanted to thank everybody for joining and the session has been really interesting. So just appreciate all the panelists for coming, advising us. And encourage folks to send in comments and actually provide as much as possible if you have specific policy recommendations that you think are needed in this space, please do send them our way because we want to know.

Thank you.

MS. AVALOS: Thank you.

COMMISSIONER RECHTSCHAFFEN: I would just have a big lunch, be a light lunch. You don't want to fall asleep but you want to have a lot of energy and fortitude for the next panel this afternoon.

Thank you.

MS. AVALOS: Hello, this is RoseMary Avalos with the Public Advisor's office. We actually have one more public comment, Heather.

MS. RAITT: Okay. Go ahead.

MS. AVALOS: It's Kitty Adams.

MS. ADAMS: Thank you for --

MS. AVALOS: Go ahead.

MS. ADAMS: -- recognizing me.

This is Kitty Adams from Adopt a Charger. And this is a really informative workshop.

A couple of things really stood out to me that I agree with. And I forgot which presenter was talking about all the different standards that are required to qualify for public funding. And it does actually add significantly to the cost of the project which is one challenge. But also I think that it stifles innovation.

When you're saying, you know, in order to qualify for fundings you need to have X, Y, and Z. Well, what we don't know is W. You know, there's -- we're not funding possibly Level 2 charging that's independent of ACCORD, you know, something that's very successful in Europe. So I just want to encourage more flexibility when putting together the requirements for these funding programs.

Another thing that was mentioned. I was very impressed by Mike Nicholas's presentation and he talked about access to, you know, 53 percent of the people are still charging at Level 1. And so it makes me wonder, you know, why aren't we somehow incentivizing Level 1 charging and

putting funding towards something that 53 percent of the people are currently taking part in?

The other thing I wanted to just highlight about -- I feel the pain on the whole permitting process and the length of time that it takes. And in my experience, the biggest factor has been the ADA requirements and interpretation of the ADA requirements. There's a lot of questions and gray area. And ultimately, you know, the permitting agency is responsible if for some reason they approve something that it could eventually be a liability in the future. So I would say that maybe we should revisit that.

And also, too, I really want to stress what's missing in a lot of these conversations is the consumer voice. I really think that we need, you know, the data point that is missing is why aren't people using the charging? So I think there needs to be an effort to, you know, maybe take a survey of EV drivers and find out is it too expensive? Is it access restriction? Is it just not the right type of charging for that particular location? So I wanted to kind of encourage more of the -- more focus on the EV driver experience in this.

Thank you.

MS. AVALOS: Thank you, Ms. Adams. There are no more -- go ahead, Heather.

MS. RAITT: Yeah. Thanks. This is Heather Raitt.

Thanks so much. We just -- we need to close out. And just want to remind everybody that we do have a different Zoom webinar ID number for this afternoon. So please join us this afternoon and use the webinar number that's in the notice and posted here.

And we'll look forward to seeing you at 1:30.

(Thereupon, the Hearing was adjourned at 11:45 a.m.)

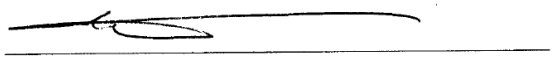
--oOo--

REPORTER'S CERTIFICATE

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

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.



PETER PETTY
CER**D-493
Notary Public

TRANSCRIBER'S CERTIFICATE

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

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

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

Myra Severtson
Certified Transcriber
AAERT No. CET**D-852