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CALIFORNIA ENERGY COMMISSION

STAFF WORKSHOP

In the Matter of:	) Docket No. 19-IEPR-06
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	) STAFF WORKSHOP RE:
2019 Integrated Energy Policy	) 2019 California Energy
Report	) Efficiency Action Plan
	)
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CALIFORNIA ENERGY COMMISSION (CEC)

SOUTHERN CALIFORNIA REGIONAL ENERGY NETWORK

COURTYARD BY MARRIOTT LOS ANGELES

901 WEST OLYMPIC BOULEVARD

LOS ANGELES, CALIFORNIA 90015

TUESDAY, APRIL 30, 2019

10:00 A.M.

Reported By:
Troy Ray

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Brian Samuelson, California Energy Commission

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PANELISTS:

Garrett Wong, City of Santa Monica
Tyler Masters, Western Riverside Council of Governments
Laurel Rothschild, The Energy Coalition
David Jacot, Los Angeles Department of Water and Power
Erin Brooks, Southern California Gas
Lujuana Medina, Southern California Regional Energy Network
Alejandra Tellez, Tri-County Regional Energy Network
Ted Bardacke, Clean Power Alliance
Russell Bayba, Build it Green
John Perfitt, Los Angeles Better Buildings Challenge

I N D E X

I N D E X (Cont.)

P R O C E E D I N G S

APRIL 30, 2019 10:04 a.m.

MR. KENNEY: All right. Thank you everybody for coming out today. We are here in Los Angeles, and we are very glad to be here to learn from all of you today. I'm Michael Kenney with the California Energy Commission, working our Efficiency Division. And we've come down here to learn about energy efficiency initiatives happening in the L.A. Region as we work towards this new 2019 California Energy Efficiency Action Plan.

So today we're going to be going through what the plan entails, how it's different, and combines together the initiates that we've been working on. We're going to hear from the South Coast Air District. We're going to have a panel on local Government action, a panel on building decarbonization, a panel on energy efficiency impacts from regional energy networks and community choice aggregators, and then a panel on multifamily buildings and energy efficiency.

So, we're here to learn about what successes you all are having in the energy efficiency field, what challenges are associated with those successes, what best practices can you share, not only with those in the room with you, but that we can take back with us and incorporate into our report, and what recommendations do you have, both

for us at the State and to those who you work with locally.

We've done three of these workshops across the State so far. We've been to San Francisco, to Redding and to Fresno. And across all of these we've been tailoring the focus of the panels and the panelists on what that region offers. And so we've talked about industrial and agricultural energy efficiency, and other sorts of rate-payer program issues.

So, today we've tailored it the best way we saw fit, and if there are topics that we don't cover today that you would like to learn about, that you see on other agendas, the recordings for our prior workshops are going to be available on our web site. And the links of those will be available on our slides.

Tomorrow we'll be in San Diego. So if you feel like driving a little bit further south, there will be another workshop tomorrow at the San Diego Public Utilities Department. You can talk to us if you want more information about that. We'll be covering similar topics, but with different speakers. We'll also be having an Industrial Energy Efficiency Panel.

So, as I was saying, we do have the docket open. We have questions within the workshop notices that, hopefully, you all have seen. We would greatly appreciate responses to those questions in the fields that you feel

most comfortable answering. So that's available at the link there. And if you'd like to comment, as well as what you hear today on the panels and through the presentations, it will all help us build what we hope to be a really great action plan.

The docket will be open until 5:00 p.m. on Wednesday, May 15th, at which point we really need to start working on the action plan, so we won't be fielding as many public comments.

We anticipate the report to be available as a draft in the late summer with adoption in the fall. So, keep your eyes peeled on our Listserves for -- as more information for that action plan becomes available.

And before I hand the mic over, I'd like to just give a big thanks to L.A. County and Southern California Regional Energy Network for putting us up in a great place, and we look forward to a great workshop. So, thank you, L.A. County.

And Bryan Early is here to give some opening comments on behalf of Commissioner McAllister.

MR. EARLY: Thanks, Michael.

Bryan Early. I work for Commission Andrew McAllister, who is the lead Commissioner of Energy Efficiency at the California Energy Commission.

First off, I just want to echo the thank-you

comments to L.A. County and SoCalREN for hosting us.

So, I believe Michael is about to talk about like the statutory obligations that led to this workshop, but from a broad sense, we are working with a lot of very ambitious goals that we know we have to achieve in order to get to our greenhouse gas reduction targets.

So we have a goal to try to double energy efficiency state-wide by 2030. We're working under a goal to try to reach carbon neutrality by 2045. And we know that existing buildings offer an enormous potential to help us achieve those targets in a cost-effective manner.

Obviously it's a tough nut to crack. It's something that we've been at for a while. But, you know, we're required to by law, but also it makes sense for us to have a refresh and to really think through what are the strategies that are going to potentially actually get at that.

California is a big state, and so we thought it wise to hit the road and hear from the communities where this change has to happen. So, big thanks to Efficiency Division staff for putting this together. I know it was really difficult and we're near the end now.

I also wanted to thank all the panelists who took time out of their day to come. And really encourage -- I look forward to the conversation today, but I really

encourage you all to submit formal comments into the docket. It really helps us to write the report when we see everyone's main points sort of like distilled in that format.

So, looking forward to the conversation today. Again, thanks for everyone for putting this together. And let's get started. Thank you.

MR. KENNEY: Thank you, Bryan.

So, I'll start by giving a brief introduction into what this action plan is that Bryan kind of alluded to, what statutorily is driving what we're hoping to do here today.

So, some of you, maybe all of you are familiar with Assembly Bill 758, passed all way back in 2009, which directed us at the Energy Commission to produce this Existing Buildings Energy Efficiency Action Plan. So, a set of strategies focusing on the residential, public and commercial building sector, to improve energy efficiency just generally. A 10-year roadmap to just improve efficiency across the sectors, focusing on existing buildings.

Subsequently, in 2015, we had Senate Bill 350 pass, which told us to achieve a doubling of energy efficiency by 2030, and expanded our scope beyond just those limited existing building sectors, to now look at

agriculture, industry, new construction. So it brought in what we needed to be studying in terms of what would be effective strategies to improve energy efficiency. And we needed to understand what the magnitude was the efficiency savings coming from all of those sectors, what programs are driving those savings. And so that in 2017 came out in a report, Lead Commission Report you can find on our web site.

And so these two reports are obviously very linked. They're all about pushing more energy efficiency. So we took the bright idea to bring them together into a single action plan, as well as bringing in some newer policy drivers. So, also within SB 350 we have the energy equity components, the low-income barrier study. And last year we had the clean energy and low-income and multifamily buildings. So reining in these energy equity pieces to understand the lengths that need to be happening, you know, across energy efficiency.

And then with Assembly Bill 3232, which is having us assess where we can go in the future with building decarbonization through our building stock. So it was an opportunity for us to kind of retool our efforts and to bring all these new pieces together under one umbrella, and hit the road and hear from all of you about what we can do in terms of recommendations, best practices, strategies.

So we're going to be updating the efficiency targets that we set out in 2017, trying to really get a firm grasp on what's happening agriculture industry, topics like Conservation Voltage Reduction, which are also allowed under our calculations, and to make new policy recommendations, and to really disseminate information around the state about how we're going to achieve these lofty goals of doubling energy efficiency, reducing the greenhouse gas emissions from our buildings, and making sure everybody's brought along for the ride, and that we're not leaving folks behind.

So the way we've kind of designed this is very similar to the way we laid out the Existing Buildings Action Plan, as I'm sure you've all memorized. So we have these guiding principles that are really keeping us focused, which is, we want to make things market centered.

We need to make sure that all our recommendations maintain our liability. That all the savings that we calculate are quantifiable. We don't want to just arm wave. We need to have grounded numbers. The programs and recommendations we make need to be scalable.

We need to work amongst both the state agencies in Sacramento, but across the State with local governments and other jurisdictions. So that policy coordination piece, which is a big part of this roadshow series that

we're doing, is key. Whatever we then put out in this report, we also need to keep within the focus of cost-effectiveness. And so that's going to mean a lot of different things to a lot of different people, but the point is that we're being clear about where we're coming from with our recommendations and why we think they're cost-effective.

And making sure that we don't forget about non-energy benefits. That includes, you know, indoor air quality, comfort, things that may sell energy efficiency better to a consumer, but that aren't necessarily quantified as well as they should be.

And so, those guiding principles then just lead us into these goals which tie right into our policy drivers, of doubling energy efficiency, expanding energy efficiency access in low-income and disadvantaged communities, and decarbonizing our buildings.

So, that's just generally what the action plan is going to be built as, and we'll be writing it out, as I mentioned, over the next few months.

I'd like to pause and allow any questions about this process before we jump into our first presentation of the day. And if I should -- this is actually a good time.

So, the way this is going to work, is if you have a question come up. We're going to have a microphone, so

that way the folks who are called in can hear you, and we can make sure that it's captured on the transcript. So if you do have a question, just come up to the front and we'll get you a microphone.

And that will also hold for the panels. At the end of each panel we have today, there will be an opportunity for those in the audience and on the phones to ask questions. So, again, just come up to the front, you know, line up in an orderly fashion, and we'll hand you a microphone to ask your question.

So, with that, are there any questions? If no, they we will move on to our first presentation today, which is a presentation from South Coast Air Quality Management District. That's Kelly Gamino.

MS. GAMINO: All right. Thank you, Michael, for the introduction. My name is Kelly Gamino and I'm an Air Quality Specialist at the South Coast Air Quality Management District.

And so I will kind of go over, just overall background on the District, what we do there, as well as some of our energy efficiency efforts and incentive programs that we've instilled there, and also, just kind of moving forward what we'd like to do in the District.

So, a little bit of background. I'm not sure how familiar everyone is with the South Coast Air Quality

Management District. But we're the local air pollution district, and we cover urban portions of Los Angeles, Riverside, San Bernardino, and we also have all of Orange County in our jurisdiction. We're mostly in charge of stationary sources, and that includes regulations for them. We also have air quality plans, and those are in order to meet the National Air Quality Ambient Standards. And so we have various plans that happen to meet each of these standards. In particular, are areas known for its ozone and PM 2.5. So those are kind of major focuses.

Also, we do permitting and inspections on buildings and different businesses throughout the area. And so for those we have inspectors, we have a whole engineering and also compliance and enforcement division that handle those. And we also administer over 100,000, millions of incentive funds annually.

And so that includes a lot of different funds, if I could clarify. It comes from our kind of revenue streams, our internal special funds, but it also comes from, you know, managing some of the bigger programs for the state.

So, for example, for the CARB, or California Air Resources Board, we do manage their Proposition 1B and their Carl Moyer Programs, which are big incentive funds for mobile sources, in particular, heavy-duty diesel

trucks, to kind of get them newer and in compliance, so that we also help out our emissions in the area.

So our challenge here in Los Angeles is kind of depicted in the two pictures. You can definitely see from the 1950 photo behind me, through 2017, kind of the difference in just the ambient look. A lot of that is the ozone that you will kind of really see as smog.

And so, contributors to that are not necessarily -- ozone is not directly omitted. It is kind of directly related to precursors. And for us, NOx, or nitrous oxides are the biggest kind of focus to get our ozone standards. And so we've made significant progress so far to try and get the emissions in line, but there's still a long way to go, and make sure that we meet all of the standards with the EPA. And we do that in collaboration with the California Air Resources Board.

So some of the national standards that we need to meet and the deadlines associated with them are identified in the table behind me. And so each one of them has progressively stricter timelines and emission levels. And so for each of the standards we are required to, you know, make our due process and make sure that we try and meet all of these goals by the date in the attainment year.

My group is also in charge of whenever we are working toward those attainments, there's a lot of policy

and kind of required paperwork that needs to be submitted along. And so we are in charge of putting all of that together and show attainment demonstrations to both the State and the Federal Government, to show them our progress so far, in a much lengthier, wordy process on paper.

And so, in addition to the photos, you can see there's also a downward trend in our ozone and PM 2.5 in the jurisdiction that we do have. And so we're very proud of how long it's gone, how low the numbers have gone, and also all the work that has been done through staff at the South Coast throughout the years. But there is, you know, always room for improvement, especially since we're out of attainment for a few of those standards, so especially for the ozone and the PM 2.5.

And so you can see the line there, and the dash is actually the standards. And we've gotten close for several pollutants or into attainment for several pollutants, but these are still kind of the outstanding ones that I just wanted to show.

So the major roadmap that we have at the District is called the AQMP, or the Air Quality Management Plan. Our latest version of this was released out in 2016 -- actually, I think it was adopted by our Board March of 2017, although it was dubbed the 2016 AQMP.

And in there we have just background information,

as well as updated, you know, where we are with our air quality, and also where we would like to be. And so what we have in there are concrete control measures, and those identify the way that we plan to get into attainment for these standards. So we have regulatory measures that get us there.

And so in planning we're in charge of adopting and passing all of the regulatory updates for businesses to comply with as far as for their engines or for their flares or different types of emission sources that they have.

We've also in this AQMP focused a lot on incentive programs. That is because not all of the sources that are emitting emissions here in the basin are under our jurisdiction of authority. A large contributor not only to the criteria pollutants, but the GHGs is transportation.

And transportation's a major factor in our area with, you know, two of the largest ports. We also have a lot of corridors and, you know, freeways that we have to manage with passenger vehicles. And so all of that contributes. And so we have incentive programs to help us get into compliance for -- that aren't necessarily something that we can directly regulate.

Others are also quantifying some of the co-benefits from some of the State plans. So the CEC, any kind of energy efficiency, or also, the State California

Air Resources Board have programs geared towards GHGs. And what we have to do is also quantify what the local benefits of that are. And so the way we do that is that we associate some of the NOx and PM 2.5 reductions that are associated with those GHG programs, and try and make sure that we incorporate that into our roadmap.

We also have a whole department focused on advanced technologies. And so the Technology and Advancement Office is in charge of incentivizing and having programs to really get things commercialized that will help us in the future. And also, of course, just outlining some of the other mobile source reduction efforts that are out there.

So, just to show you visually, you can see the amount of emissions that are stationary versus mobile. So to the point I was making earlier, it is a big contributor to our emissions, and not something that we can directly control.

And so, with that we have some lofty goals in our 2016 AQMP. The bar chart you can see is kind of business as usual, with all the existing regulations that we have, including the ones Michael mentioned, and also others that help us get into, you know, get into cleaner air, but not necessarily all the way that we need to go.

The orange bars are where we have to go in order

to meet some of our standards. And so you can see that we need, in addition to what's already in place and interjectory to happen, we need additional 45-percent and 55-percent reductions in order to be able to attain our NOx and, therefore, our ozone standards.

So, just to clarify. I know I've been talking a lot about NOx and PM 2.5, but just to clarify, they are quite different from the global GHGs, and we do always try to focus and incorporate the GHGs into all our programs, to make sure that we get kind of the best cost-effectiveness, and also the most reductions on both fronts that we can, but they are separate.

And so some of the regional pollutants and programs that we focus on don't always get to incorporate global emissions. And so I just wanted to highlight that here, but also mention toxics are another focus of our jurisdiction, and make sure that locally a lot of our residents are protected from toxics.

So since we're talking about energy efficiency today, this is some of the energy use in the basin. This is based on our 2012 emissions data. And you see, even for the amount of emissions, it's relatively the same. For transportation it's almost 60-percent of our energy use in the basin. And then we do have other sectors within our jurisdiction, but that is the major source.

So, in our 2016 AQMP we have five control measures that are focused more on energy efficiency. I personally work on the Energy and Climate Change Initiative, so the first three. And those are where we try and get some of the co-benefits from the programs that are happening, including SB 350, Title 24, and other programs like that.

We also have ECC-03, which is right in the middle. That one is our own incentive funding that we have been trying to release and get energy efficiency programs happening in our jurisdiction. And in addition to that, we will talk a little bit about some incentive funding that we recently awarded this past year.

The next two are also for commercial, multifamily, and then another big source of emissions locally are restaurant. So the cooking, and not just at your home or residence, but also commercial at fast food or other sources, are something that definitely contribute to our emissions. And so we're looking into newer technologies to try and get those technologies, you know, energy efficient, reducing combustion and saving us some NOx emissions, too.

So, from AB 1318, that basically a mitigation fee. And so our jurisdiction, or our District also does get settlement funds, mitigation fees and other kind of permit

revenue. And with that we try to redistribute them back into emission reduction programs.

And so in his case it's out in Coachella Valley, and it was in a power plant that was going to be built. And so they actually gave us mitigation funds, and with those funds we were able to turn it around into a request for proposal, and be able to issue funds to that local jurisdiction. And so a local homes and businesses were able to get energy efficiency, whether it be insulation or weatherization, to be able to, you know, close the envelope in some of the existing residential homes, as well as solar projects out and nearby that power plant.

And so we have about 30-percent of the funds going to environmental justice areas out there, which is also another focus in addition to making sure we quantify all the co-benefits and increase the GHG reductions with energy efficiency. We also try and maximize the amount of money going to environmental justice areas.

And so with that over 100 -- over 1,000 homes were weatherized, and also about a dozen solar projects throughout that area were conducted. And there's a few, just kind of representative examples and photos there, but there were definitely more than that.

So, in January of this year, which wasn't too long ago -- all of last year was spent basically evaluating

about 90 different proposals that we had received. We had $61,000,000 of incentive funding from our other mitigation fees and settlements that we were releasing out. And we were able to fund 26 mobile and stationary projects with that money. And so from that we were given additional consideration to any projects that were able to incorporate GHGs, of course, the environmental justice areas.

And so just to pull out some related projects that we just funded, the energy efficiency ones below are listed, and the number is parenthesis is actually the number of projects that we have there. So there are about 13, including commercial water heating. We'll have an incentive program with Southern California Gas on that.

Very excited about a technology demonstration for residential fuel cell application, and that includes solar. And so they'll be doing that on a resident -- a new home that will be constructed, and we can kind of see how the fuel cell is used in a smaller application.

Overall energy efficiency retrofits and weatherization throughout the Coachella Valley and also in the San Fernando Valley are being issued. These will hopefully not only get some emission reductions, but also kind of outreach and education to the public. Get residences really thinking about, you know, the amount of energy they're using. It not only helps them, of course,

on their bills, but once they're kind of knowledgeable of what's happening, they're also able to also to further some of our other programs, and kind of just get a good understanding of maybe what our agency is doing.

So, on top of that, we also larger fuel cell applications and microgrids. Some of those, I think two of the three are at universities that we'll be working with. Residential -- I'm sorry. Restaurant cooking equipment is also, like I mentioned, a large sector that hasn't been controlled yet. We started of course with the low-hanging fruit and the bigger sources, and so now we're really getting into smaller sources.

And so we have about five or six technology demonstrations that are going to be happening to try and get those cooking sources down. And I think they have different types of equipment that they'll be upgrading and testing out for us, to see if they can get that combustion level down and really increase the energy efficiency of those.

And another one is also multifamily. I know there's a whole panel on this in the afternoon, so we'll be talking about that, but we're also working with another kind of administrator who will be doing multifamily energy efficiency programs, and hopefully going toward electrification. But as an overall, at the District we are

agnostic. We do not incentivize or trek over gas, but whatever we can do to reduce combustion is really what we're looking for to help us with the NOx problem.

And just a little background. We are currently in-house working on the NEAT tool, the Net Emissions Analysis Tool. And so basically this is a very user-friendly tool that they're working to get released also to the public, not just internally, although it originally started for policymakers, to kind of get an understanding of what will happen when you start replacing certain technologies in a home, right now, it's residential, and going to another type of technology.

And so there's a very small screen shot, but it is adaptable. And so you're able to kind of show what you would like to do in whether it's space heating, water heating, just overall, you know, using electric vehicles as maybe an energy source, solar panels. And so it has all of these different features and technologies that you can swap out and show what might be cost-effective, or might hit the most homes that you're looking at with doing this to.

And so we're really excited about this tool. It's been in process for over a year. And they're finally at the point where they're going to be doing some testing of it and releasing it to the working groups. And so we're looking at some release in the summer or fall of this year.

But definitely keep posted to our web site and see if you could find this, because it's actually very interesting to see the cost-effectiveness of the electrification, and just, you know, lower NOx combustion there.

So, just to wrap it up a little bit. You know, energy efficiency is identified in the 2016 AQMP by the control measures I focused on, as well as some of the incentive funding that we've been issued. And so we're very excited to try and get energy efficiency kind of more in the forefront than what it's been in the past and move forward with that.

And so, with the projects that were just awarded in January, those have been divided up to different departments within the District, and they've been, you know, have started to progress. And we hope in the next few years to get some emission reductions on there based on these projects. And whatever we do get, we hope that they're, you know, enforceable, quantifiable, and able to be submitted for our State Implementation Plan, which is one of the requirements that we have to do to show just the emission reductions in our area.

Also, we are working on stationary source incentive programs. Right now, the larger ones are mostly mobile because transportation is just a large factor for emissions that's been the focus. But we also have a large

interest in stationaries, and if that is our jurisdiction that we have in the area, and so establishing some very structured guidelines for that will really help us. And in the future when we have another solicitation for funding, it's easier for us to kind of divvy up that money with that guidance that we'll have.

Of course, new incentive programs as we get additional funds. Our goal with the 2016 AQMP is to raise about a billion dollars a year to be able to fund all of these kind of goals and projects that we want to do.

And so we'll keep working toward that, and also maximizing the GHG and criteria pollutant benefits hopefully in the area, with our GHG energy efficiency programs looking at all types of emissions to kind of maximize the most bang for our buck in emission reductions cost effectiveness.

So, with that, I hope I didn't talk too fast and everything made sense. And I'm willing to take any questions, if there are any.

MR. PERFITT: I had a general, kind of stupid question -- I'm sorry. I always was interested in how AQMD interacts with -- and maybe there's none, but maybe you can explain it to me with the cap-and-trade and some of the incentives there for trading pollution credits and so forth.

MS. GAMINO: So, as a district in general, we do definitely follow it. I'm the Climate and Energy Group, and so I do policy with those. And so I'm in charge of kind of following where it goes, and making sure that we stay kind of up-to-date. But our upper management, our executive offices is very interested in all of that and climate change.

And so we do follow it, but as far as interaction, per se, there isn't as much as I would like. Basically, the cap-and-trade is under the California Air Resources Board. They manage all the options and the revenue funds when they give them for the GGRF projects.

What we have asked is the State to also quantify some of those co-benefits. And so, they have an interactive tool where they're shown projects that have been done through this day, and you can kind of look at where they are and what they're targeting. But it never really took it to the next step for us in letting us know maybe what some of the NOx reductions are with those, or some of the PM reductions, that maybe we could, you know, really get an understanding for, quantify them, and, hopefully get them to help us meet some of these attainment standards.

So, we do follow and we try and quantify those, but we don't necessarily have a large interaction. And of

course we, we are also doing several projects where we do additional co-funding.

So that would be a good example of, you know, someone has received maybe a large source of funding from the State, cap-and-trade money, but they still need a little bit more for whatever it is. Sometimes they're not allowed to spend it on barriers.

So for energy efficiency, a lot of time -- maybe residential, the homeowner doesn't have the, you know, the extra funds to maybe reinforce a roof for his solar panels. Or, you know, they're not able really to fuel switch because of some regulatory requirement.

And so what we're able to do is we're able to give kind of incremental cost increases to get that project to then be able to, you know, maybe go from, you know, just weatherization, to also maybe replacing the water heater and helping some of the combustion emissions go down.

And so some of that co-funding, we have a project with Build It Green, who I know is in the panel in the afternoon, and they're actually the low-income weatherization program. They were the administrator for that. And so we gave them additional funds to also go in and look at some of the water heating and convert some of that to solar thermal water heating instead.

And so that's kind of how we play in, you know,

the cap-and-trade projects, but it's not really a direct, direct, you know, collaboration.

Okay. Thank you so much.

(Applause.)

MR. KENNEY: Okay. So we're now going to be moving on to our first Panel of the day. This is on Local Government Energy Efficiency Action. It's going to be moderated by Brian Samuelson from the California Energy Commission. And I'm going to pass it over to him.

MR. SAMUELSON: Okay. If Garret Wong, Tyler Masters and Laurel Rothschild can come up.

Okay. Again, my name is Brian Samuelson with the California Energy Commission, and I'm going to be moderator for this topic. First off, I'm going to introduce our guests. We've got some bio from them.

Starting off with Garrett Wong is a Senior Sustainability Analyst for the City of Santa Monica. He leads policy programs and projects in climate action and adaptation, energy efficiency, renewable energy and electric vehicle charging.

Garrett is the City's liaison to the local Government program known as Westside Energy Partnership. Through the partnership he has implemented energy efficiency projects and has saved over 2,000,000 kilowatt hours, over $200,000 in utility costs, bringing the City

over 150,000 in energy rebates.

Garrett is also the 2019 Chair of the Local Government Sustainable Energy Coalition, which represents local government interests in California's energy future.

Next we have Tyler Masters is a Program Manager at the Western Riverside Council of Governments, a joint powers authority consisting of 18 cities, the County of Riverside, the Eastern and Western Municipal Water Districts, the Morongo Band of Mission Indians, and the Riverside County Superintendent of Schools.

Tyler's main responsibilities include the development of the operations of Western Riverside Council Government's energy programs, including the Regional Streetlight Program, Western Riverside Energy Partnership, and a 20/20 launch of Western Community Energy, the subregion's local electric service provider.

Next we have Laurel Rothschild. She is the Vice President of the Energy Coalition, a California based 501(c)(3) non-profit, with over 45 years of experience designing and implementing programs and strategies that transform energy use and empower communities to take action.

Laurel has over 13 years of experience in passionately working with local governments and communities promoting energy efficiency action.

So thank you for joining. We'll go ahead and start the questions. Now, there isn't any order of who wants to answer first, just when you feel like answering one of the questions, go ahead and answer.

So we'll start off with the first one. What energy initiatives are you proudest of in your jurisdiction, region, district, travel territory, et cetera?

MR. MASTERS: I'll go ahead and go first. I made contact with both of them at the same time. I'm -- thank you, Brian, for the introduction. I'm happy when we can put in what the purpose of our agency's in -- is in our bio. That's helpful, so I don't have to explain what the COG is.

But the energy initiatives that I'd like to kind of mention, more specifically, the ones that were mentioned in the bio. The programs that we work on that we're really, that are near and dear to our hearts. Our Regional Streetlight Program is one that's great.

We were able to aggregate interest from 11 jurisdictions within Western Riverside County to purchase their streetlights back from Southern California Edison, retrofit them all at the same time to LED technologies, saving, you know, 19,000,000 kilowatt hours within the first year, and in 2019-2020, we're looking at seeing that

savings, and saving the cities and their residents over $70,000,000 net all project costs over 20 years. So a $70,000,000 savings, 19,000,000 kilowatt hours saved is, we believe, a huge success for our subregion.

We also have a property assessed clean energy program that we'd like to kind of talk about. It started within Western Riverside County, and then we rolled it out to statewide. And we're seeing about, there are about 91,000 projects that we've financed. Energy efficiency, renewable, water conservation and seismic projects, to over 2,000,000,000 in energy financing for those.

We're looking at about 1100 gigawatt hours savings annually on that for about 200 -- a quarter-of-a-million GHG time reduction, emission reduction offset kind of with that program. So, those are a couple of the things that we like to mention on some of the energy initiatives that we're happy to promote within our subregion.

MR. WONG: I should have gone first.

So the city scale, we're, you know, we're much smaller than the area that Tyler covers in the COG. But we, being a city, we tend to be at the -- sorry, at the mercy or the benevolence, I guess, of our utilities, in kind of what energy efficiency programs they are able to offer. And so we do our best to offer them and promote them to the community.

We try to leverage their resources to support our green business programs. To provide benefits to green businesses that -- or businesses that want to become green, by showing them how to connect with those programs that they may not be aware of from Southern California Gas or Southern California Edison Company.

But we've also benefitted from participating with our local government partnership and the regional energy network to really dive deep into implementing energy efficiency projects on the municipal side. And that's where my focus has primarily been.

Before, my predecessor before, we tried to do energy efficiency projects pretty much ad hoc. It wasn't very strategic going, identifying projects and implementing them, funding them. But then we started to consider, how do we do this in ways that can be better streamlined, or at least better implemented?

Because from a government side perspective, you tend to spend a lot of time in bureaucracy, which may not be a surprise to many people. But regardless of whether you have one project or 10 projects, you're pretty much going to apply the same amount of bureaucracy to each.

And so, we try to aggregate, like Tyler had mentioned, aggregate projects across multiple portfolios, or multiple buildings within our portfolio and -- to do

that kind of streamlining. To do the bureaucracy once, but have 10 times the impact.

So, that's what we're doing for lighting. We did a lot of streetlights. We're doing a lot of outdoor lighting still in parks and parking structures, and what's where our energy is being spent right now.

MS. ROTHSCHILD: So, first off I just want to say how wonderful it is to be sitting on this Panel next to two people that I've known for many years, Garrett and Tyler, who are fabulous leaders working in energy efficiency in their regions and the cities. So, I just want to acknowledge that.

I do also want to just mention my name's Laurel Rothschild. I'm not Laurel Hunt. So I won't be speaking about LARC. I will be speaking about The Energy Coalition and some of the work we do in mostly Southern California. We do do some work in the northern region, but I think since this is a Southern California workshop I'll focus on that.

As a non-profit, you know, and we're kind of an environmental consultant group, we work mainly on programs that focus on action in public, in the public sector, local governments.

Some of our largest programs is we're the implementer for SoCalREN, a public agency program. You'll

hear Lujuana this afternoon, from L.A. County, probably speak a bit about that program, but I'm going to touch on it now. That program covers a very large region. It's Southern California Edison Gas Company territory. It's rate payer funded energy efficiency dollars.

And, you know, I want to say, I'm kind of probably most proud of the work that we've done in that program over the last several years because of just the reach of the program. We're working right now with 122 different public agencies since the program launched in 2013.

And, really, that program had been focused -- you know, I've been working in energy efficiency for time, and with the focus of local governments. And, you know, Santa Monica, I can speak, you know, working with them for many years. And, you know, everyone's been promoting energy efficiency, but, you know, looking at local governments to be a leader within their own community, you know, they're, sometimes they're not focused on their own operations, they're focused on the community side.

And so, when they started looking at their own operations, there's a lot of barriers to, you know, actually identifying and moving projects forward. And through this program we've been able to overcome a lot of those barriers, offering those direct resources to these

local governments and other public agencies.

And we've achieved over 60,000,000 kWh in first-year savings, above-code savings through this programs. And it's just, you know, I have to say from being within this kind of region and working with these different partners, it's kind of a unprecedented level of savings we've seen. So, I just wanted to touch on that program.

And then we also work with the local government partnership programs and work closely with Southern California Edison and So Cal Gas, doing also energy efficiency outreach in the communities, and there's been a lot of great work there. I'll stop there for now. Thank you.

MR. SAMUELSON: All right. Thank you.

I'll move on to the second question. And with the second question there will be three follow-up questions to that.

So, how do those initiatives address energy efficiency?

MS. ROTHSCHILD: I'll just step in and continue.

Okay. So the -- on the SoCalREN public agency program it's rate-payer energy efficiency dollars, so it's very much focused on energy efficiency. And, essentially, what we're doing through this program is identifying measures within public buildings and infrastructure and

identifying ways to move those projects forward. So, bringing together the financial resources, whether that's incentives or there are financing options.

And then going through, supporting through the procurement side on identifying, you know, the contractors and getting that approved through the various channels. Bringing together the stakeholders to make it happen.

Public agencies especially have a lot of different stakeholders that they work with to make these projects successful. And then supporting actually through construction, to ensure that energy efficiency, as it was designed in the beginning, is actually what's installed in the end.

MR. MASTERS: Energy efficiency. So, one of the things that I didn't mention in the first question that I kind of want to mention in this as well, is our partnership with Edison, the gas company. It's our Western Riverside Energy Partnership, or REP for short. And how REP is, we consider a resource in Western Riverside County to kind of connect the dots with all of the energy resources.

Our subregion doesn't have a lot of energy managers or the energy expertise, so we use this partnership to promote energy efficiencies within municipal operations, and then also lead by example in the community, getting those sustainable best practices out to community

members through marketing and outreach initiatives.

So, for us, we really want to, you know, pun intended, we want our local governments and the community member to REP their savings, so that we can continue providing these energy efficiency resources and capturing the energy savings.

The partnership since 2010 has, you know, in addition to the other savings that I mentioned earlier in the last question, has saved about 16,000,000 kilowatt hours saved. And just to give you kind of a context on what that means is, you know, we have a couple of cities that have five full-time employees, like city clerk, part-time city manager.

So energy isn't on their top priority, but as we can support them through the partnership and through our other energy programs, and help them to quantify these savings, and, you know, for them to be project economic as well, makes a lot of sense for our conservative subregion. But that's why, you know, our partnership and our partnership with the Edison, the gas company, are really important. The gas company, we've had a couple 10's of thousands of therms saved since 2013, since we've entered the partnership with them as well. So, that's my response.

MR. SAMUELSON: The first follow-up question would be, how do they benefit low-income or disadvantaged

communities through energy efficiency or other means?

MR. MASTERS: So, a lot of the hours that I was mentioning, we really want to get out to our community members and lead by example. One of the things that I do like to mention actually for our streetlight program, is we're identifying streetlights and LED retrofits and, you know, saving cities money.

We quickly identified that streetlights within our subregion, because we've been growing so fast so recently, a lot of our subregion to promote development, developed a lot of special districts, light and landscape maintenance districts, community services districts, CSD's, you know, A, B, C's, 1, 2, 3's -- that last one was a joke. But a lot of, you know, financing acronyms to promote growth, streetlights were a piece of that. So, essentially, all residents pay for these streetlights. So, part of the program is actually benefitting the residents after retrofits have occurred.

The $70,000,000 that go back to local governments actually are going back to these special districts and back to residents, all residents, not just low-income, not just disadvantaged communities, but they, you know, they all pay into these special districts similarly, so they all benefit from projects, such scalable, regional projects, like the streetlight program.

MS. ROTHSCHILD: Yeah. I would just like to echo exactly what Tyler just said. Because when you're working within these regions, you know, these are the -- you know, the projects impact the communities that they're working in. You know, especially streetlights probably the most visible as well.

So, you know, with these different energy efficiency programs, there's, you know, a lot of times these local governments, especially have a lot of attention on how to serve, you know, these disadvantaged communities. And so I think that just highlights the reason why it's important to have investment in local, local programs that are run by local governments, because that's just something that, you know, local governments are in place to have attention on, and make sure they're serving those communities. So, I just want to highlight that.

And then with the SoCalREN program in particular, just to touch on, it's something that the program itself has always, you know, looks at where we're offering our services as a focus on targeting and working alongside communities that are considered disadvantaged or public agencies working within those communities, and offering even additional and enhanced services in those regions. And so we're even launching some additional programs this year, or actually, just last month -- or this month --

we're still in April, that are actually focused on those regions in particular, going beyond energy efficiency and looking at a fully integrated package of, you know, distributed energy resources, energy storage, solar and electric vehicles, et cetera, so specifically for those communities.

MR. WONG: One of the programs that we've been able to take advantage of to provide direct benefits has been the Direct Install Program provided by the utilities. It's a seasonal program, and we -- when it does come available for our territory, we try to go door to door, primarily to small businesses who can take advantage of these programs but otherwise wouldn't know about them necessarily if they did not get that direct contact.

So, we really try to be physically present in the community and be a clearing house of information. So that way people can, again, understand where the resources are and how to take advantage of them.

Tyler mentioned street lights. We also, as I mentioned before, have done streetlights as well, but I think it's important to talk about the non-energy benefits that streetlights bring to communities, right. It shows that, A, that you're committed to investing in the community and improving it. It improves safety, obviously through visibility. Just increase the general

attractiveness of the neighborhood when people are able to see better at night and feel more comfortable being outside.

So, there's a lot of benefits that those kinds of projects can bring to the community, if it's not direct energy efficiency savings.

MR. SAMUELSON: Okay. Thank you.

The next follow-up question would be, how do they address the needs or concerns of those most impacted by environmental hazards, such as air pollution?

MR. WONG: I'll be bold and say that energy efficiency does not necessarily get at that, but being a local government and looking at other things that are not just energy efficiency, we are looking at, you know, full decarbonization of the community, which includes looking at things that combust. So, it's our vehicles on the road and it's buildings that we still occupy, right?

And so we've done a lot of work in terms of really trying to accelerate the adoption of electric vehicles through programs and projects and building out infrastructure. But the next, area of the next frontier for us is going to be electrification.

I'm really -- you know, there's a lot that's being done in energy efficiency, but we need to look at how can we electrify our buildings to avoid the combustion

issue within the buildings. I know I'm speaking to the choir, but just for the record, combustion in buildings, you know, generates a lot of indoor air quality issues that can be hazardous to health, particularly to young children and people who are sensitive.

There's a lot of safety issues with combustion. And it's one of those kind of sticky sectors that will be very challenging as communities move closer and closer towards achieving carbon neutrality.

MR. SAMUELSON: All right. Thank you.

The third and last follow-up question is, what long-term energy efficiency goals are you hoping to achieve?

MR. MASTERS: This might be a little bit of a wet blanket answer, but just meeting California's already ambitious goals I think is a really good start, especially for our subregion. We are -- you know, California is a leader in energy and energy efficiency, and we have a number of these, you know, goals that our cities need to meet.

Whether -- you know, whatever our city's political standings are with energy and energy efficiency within my subregion, it's diverse, I'll say, but at the end of the day, there are certain energy efficiency goals that they need to meet.

So, from WRCOG standpoint, from a regional government agency standpoint, is providing the resources to meet those needs and to get them, you know, cities, our cities, our numbers, provide that value, get them in compliance, and to, you know, meet things like AB 32, SB 350, so that we're making sure that we're all moving forward together across, you know, for -- across this political and jurisdictional lines. That's our purpose.

MS. ROTHSCHILD: Yeah, exactly. I think to get to our -- the ambitious California goals, there's a lot that still needs to be done in understanding how the dots can be connected, so these, you know, programs and efforts and people already out there doing this work actually can deliver what's needed to reach those goals. Because I can tell you right now, there's still a lot of barriers.

So, one is just the thought about, you know, we have to do a lot more than what we're doing right now. I can tell you that much. And I think we've come a long way in even, you know, the time I've been working in energy efficiency, but we have to, you know, quadruple 10 times that to get to where we need to go.

And I think it's -- we've been doing a lot of work that still focuses -- incentivizes for a lot of the low-hanging fruit, and focusing on these larger customers, and there's still a lot of opportunities for smaller

communities, and also just projects that are going to be more expensive to get those deeper savings.

So, you know, figuring out how to get there, and I think that's the goal of one -- you know, the programs we're working on right now is, is how to get there and really achieve these impactful projects and deliver high savings to the communities, not just focused on the largest customers, all across. Integration.

MR. WONG: That's a good segue. Thank you.

I wouldn't say so much goals, so much as a vision that we are trying to articulate, and it's beyond energy efficiency. Because, you know, the rate and pace at which we're going, even on the municipal side, as Laurel mentioned, is not enough. We're not going to meet the State goals, we're not going to meet the goals of the Paris Climate Agreement through the rate and pace at which we're doing energy efficiency.

We can't just spend a year identifying and developing a project at one facility, to get it implemented over the next two years. That's not accelerated action. That's not the rate of change that we need to see.

And local governments and communities and many people don't think of energy efficiency in isolation, like I only want to do energy efficiency, and this is the only project I'm going to spend my time and effort on.

We want whole, completely redone, smart, resilient, connected buildings that are grid responsive. That are low carbon and healthy and are affordable. And so to meet those needs, we need a whole new set of tools really, to kind of really break open the idea of what it means to break down silos.

You know, this is the energy efficiency action plan, but how does it interrelate to getting electric vehicles and buildings, getting solar on those buildings, and getting resilience in those buildings? That's the problem set that local governments have. So we can't look at this in isolation.

We have to integrate, we have to aggregate, we have to find partners, and we have to think of ways to do wholesale replacement, basically, and renovation and improvement of these -- of our building stock. And really figure out ways to deliver it and implement it and finance it in a way that is streamlined. In a way that helps reduce the upfront costs that people and property managers have to bear for those five-person cities who can't manage anything else but running their city.

We really have to think about how we really address for the really marginalized and disenfranchised community and property owner. Because if we're not designing for those solutions, we're going to really kind

of glom on to those, those smaller wins that we can get with the one big project, or the one leadership city, or the one, you know, leadership COG, but it's not going to be widespread success.

MR. SAMUELSON: Thank you.

Question three, do you have or support any local ordinances in place, such as Cal Green, REACH codes or a local benchmarking program? If so, how are they helping you -- helping your reach your energy efficiency goals?

MR. WONG: Did you want to go first?

UNIDENTIFIED FEMALE SPEAKER: Okay. Excuse me one sec. Garrett, could you hold the microphone, sir, since we're having trouble hearing?

MR. WONG: Sure.

So, Santa Monica has had in place our local REACH code for the past several code cycles, primarily focusing on the residential new construction.

Last -- in 2017, Santa Monica passed what has been called the world's first zero net energy residential new construction ordinance. And we were, we're essentially three years ahead of the statewide ZNE requirement, but we're actually requiring what's called Energy Design Rating of Zero, where by the State code, buildings in 2020 could achieve somewhere between an EDR of, let's say like 20 to 35, I think on the climate zone.

So, we've been piloting essentially this code in Santa Monica for the past two, a little over two years now. And we've had over 130 projects. We've seen about 640 kilowatts of solar, which are either planned or installed on those facilities.

We're -- haven't had many issues outside of having to deal with some affordable housing complex that has different height standards and different setback requirements based off of zoning, but we're dealing with that.

But it's been, it's been what we would call a success. There hasn't been any significant pushback. There hasn't been people who said they can't build the building, or there hasn't been people who said that it's pushing it beyond affordability. People are designing and meeting the code that's been set forth. And so, so, yes, it's been a success.

And we're really looking at, again, the next code cycle to look at moving beyond just zero net energy, to kind of thinking about zero net carbon, right? Because if we -- we're now in a new paradigm where most of our grid electricity's almost 100-percent renewable. We're being served by a community choice aggregation program. And so once we've essentially decarbonized all things that are electric, what are we left with? We're left with natural

gas.

So, how do we look at either requiring the most stringent efficiency out of natural gas, or phasing it out entirely by requiring all electric construction? That's the question that we're trying to address in this next code cycle.

MR. MASTERS: Are your -- are the REACH codes voluntary or mandatory?

MR. WONG: They're voluntary for local governments if they want to use them as a tool to advance their climate goals. They would then become mandatory for any project within the jurisdiction. There are ways that you can create -- I'm sorry. Let me back up and -- so there's two pathways now in the Title 24 Code. You can build a mixed fuel home; you could build an all-electric home.

So that, it depends if the local jurisdiction wants to say, you know, the bar is really high for mixed fuel, and the bar is really, you know, at code for all electric, then people can choose. Or you might set the requirements so high that they're unachievable, let's say, on mixed fuel, and then that kind of forces people to go all electric. Or you can provide options, right?

MR. MASTERS: So maybe I should have gone first this time. We did a number of years ago, WRCOG did

investigate and assess the ability and see if there was interest out there within Western Riverside County to develop some REACH codes. We did have a city that developed a couple, took it to their council as a voluntary REACH code and it still didn't pass, unfortunately.

So, for what was a great success for Santa Monica remains a challenge for us. And our members, you know, asked us to look more into trainings and things of that nature, to get caught up with the current, with the current building codes, and not so much focusing on the REACH codes, which at a staff level we wanted to do, but were, you know, unsuccessful a number of years ago.

So, we would, you know, be interested to hear some of these best practices, and see how something like that could occur within our subregion definitely, but it did remain, unfortunately, a challenge for us.

MS. ROTHSCHILD: I'm just going to actually step out of the, talking about the SoCalREN public agency programs for a second, and touch on, there is an agency we're working with in Northern California, City of Brisbane, population of about 5,000. And they're actually in the process of developing a benchmarking ordinance for their city.

So, I just want to highlight that because it's, you know, it's a small city, obviously, but they're putting

this, you know, investment, and it's actually through their local air quality management district, you know, grant there and developing this ordinance for energy and water. So, just wanted to highlight that, regardless of the size of the city, you can still take action.

MR. SAMUELSON: Thank you.

Number four. What advice would you give to local governments seeking to do more related to energy efficiency?

MR. MASTERS: So I'll start here, and kind of echo some of the points that my colleagues were making, some of the last -- during some of the last questions.

Working together, whether you are, you know, whether it's a small jurisdiction, whether, you know, their political climate's a little different than their neighbor's, sometimes irrelevant, working together to meet some of these energy efficiency goals, to achieve some of these wholesale and -- these wholesale abilities in terms of developing programs, economies of scale is huge for the subregion.

I think in Southern California, in general, working together is something -- you know, there's the SoCalREN, there's large CCA's that occurring. Lancaster is now reaching out to other cities to provide certain opportunities. There are other COG's. We're working with

Coachella Valley Associated Governments and San Bernardino Council of Governments to look at REN development as well. So coming, moving forward together where interests are aligned definitely makes sense. We've learned a lot from Santa Monica as well.

So, single cities moving forward together and sharing best practices in public settings like these, regional collaboratives like the ones that Santa Monica leads at the LGSEC, chairs at the LGSEC, I believe, is a great help to everybody, so.

MS. ROTHSCHILD: Yeah. And just sitting on this Panel we have a representative from a council of governments, we have a representative from a non-profit that focuses on implementing programs, and we have a representative from a local government. All of us work closely in energy efficiency and we work together. So, like I said, we interact and we coordinate.

No one should ever reinvent the wheel, just like as Tyler was saying, you reach out and find others. And if you want to know how to take action, then you should be speaking with other local governments on what to do and learn from them. And, of course, always push the envelope, and if you want to push the envelope, you know, speak with a city like Santa Monica.

So, I just want to emphasize that. That's a

place you should look. And I'm sure Garrett going to speak, tell you how you can get involved.

MR. WONG: So, I'll try and stick to two bullet points. The first I would say is to think about energy efficiency efficiently. And as I mentioned before, there's a lot of bureaucracy in local governments to get projects done. And if you're going to -- if you're already planning and thinking about doing multiple projects, I would recommend doing them altogether.

There are services out there who can provide you a whole portfolio of energy efficiency and distributed energy projects, and other kind of building improvements as a service. And if you're able to conceive of that portfolio and really bring together all the different stakeholders to make that happen, you'll be able to really expand the impact that your project can have, and the reach that you will have in building a much larger and diverse portfolio.

Again, we have to go through essentially the same bureaucracy, you have to push the same amount of paper to get a contractor approved and selected and working on a project, whether it's a $1,000,000 project or a $10,000,000 project. So, you might as well work on the $10,000,000 project.

The second bullet point is to consider your blind

spots. And by that I mean, that there are -- you know, the Energy Commission and the Public Utilities Commission are really the ones who are writing the rules for the energy efficiency game. And local governments don't really spend a lot of time considering how those rules impact their ability to implement programs or projects, or achieve any of their other community goals as it relates to energy or energy resilience or distributed energy resources.

And so we -- I represent the Local Government Sustainable Energy Coalition, and we represent local governments in these arenas. And I think it's really important to state just how important and significant the impacts that these, that these proceedings that the Energy Commission and the PUC have over energy efficiency, right?

So, right now, we're about to see, essentially, what could be the dismantling of existing energy efficiency programs, and we're kind of reaching a cliff where we really don't know what's going to come in 2020. And the reason being is that we're kind of throwing out the baby with the bathwater.

We're saying that we want to have a higher cost-effectiveness for program design. We want to have, you know, greater, we want to have more third parties, because we think third parties can deliver better than local governments, I guess, is what the -- you know, is what

we're supposed to infer from what's coming out from the Public Utilities Commission.

And so, I think -- this is advice for the, for both of you -- commissions, actually. I think what tends to get lost is that we become very myopically focused on dollar per kilowatt, you know, dollars spent versus kilowatt hour achieved, but we really lose people in the process.

And it's really people that are going to get those projects done, that are going to sustain and implement those programs. And if we don't value people and the other benefits that investing in energy brings, then we're not going to meet the goals, because the goals of California rely on people making these things happen. And the more that we hamstring them with rules and regulations that are not beneficial to those programs being done well, and building capacity, which is really what's necessary, then I think it, you know, we're missing the point.

And so, again, the Local Government for Sustainable Energy Coalition, we try to represent as many diverse perspectives of local governments and non-profits who support local governments and for-profits who support local governments.

So this has been a shameless plug for joining us as a member, but I can't speak highly enough about the work

that we do and the importance that it has. Because if you have climate action goals in your community, and they rely on energy efficiency or DER or wild -- or protecting your communities from wildfire, from wildfire issues and the like, you need to be considering what impacts the regulatory arena has on your ability to get those things done.

MR. SAMUELSON: Okay. Thank you.

I'll move on to question number five. What have been your main challenges in rolling out those initiatives, and how do you -- how do these challenges differ between the building sectors?

MS. ROTHSCHILD: So, I'll just quickly start in saying, looking at the SoCalREN specifically. So, the Southern California Regional Energy Network is administered by Los Angeles County, and I mentioned, you know, someone will be speaking later to that.

But I think, you know, it was a new strategy that started in 2013. And so I think there is a lot of challenges in getting that up and moving, mainly because it was new, it was a new strategy, and I think Los Angeles County has done a fabulous job in showing, in proving out, along with the other RENs, that you can have a local government administer these energy efficiency programs successfully. So -- but in doing so, there's this, it's a

learning curve in just understanding the regulatory environment.

And, you know, I think something that Garrett was touching on, understanding how they're evaluated and what -- how to prove out what's deemed successful is just, it's a steep learning curve. And to understand that and navigate that, and still delivering a quality program to, you know, a large region in different communities is challenging.

So, I'm speaking, you know, broadly across probably any sector. My focus has been mainly on the public sector, so I'm less experienced on the others. But I think that's just one of the largest areas and challenges.

MR. MASTERS: I would, I'd like of piggyback on that response, and kind of state that the one, you know, the one-size-fits-all approach hasn't ever really worked for us. Localizing, you know, working with members, working together, developing more localized energy programs that work for your community members, your residents, your commercial, your community -- your communities.

I like to mention, even to my members, that no one knows, no one knows your residence like you, the members. So, really tailoring, you know, having general regional energy programs, but tailoring those to the communities that they would work best in.

Santa Monica has great, you know, great green building programs that only they would know how that would work. And their REACH codes are brilliant, are great. So local -- using somebody's resources and using -- and developing those for your localized subregions, whether it's you and your neighbor or, you know, at a more regional level, I think is really important. So using those programs and kind of, you know, developing them and marketing them and providing that outreach at a more specific community level is really helpful.

MR. WONG: Santa Monica has about 80-percent of its residents living in apartments. So, the typical bread-and-butter energy efficiency programs really aren't going to work for those people. And it's challenging when you think about what has to happen for a building that's a multifamily building, just from a decision-making process, to get anything done, an investment in a project.

You know, it's a small city into -- of itself, where people have to negotiate, well, what am I investing and what am I getting out of it? Who's going to get the benefits and who's going to have to pay into the project, and how does that, how do those savings and dividends and liabilities get distributed amongst the units?

Right now a lot of governments in California are focused on seismic, so there's not a lot of air time and

air space for people to think about, well, how about we also do energy efficiency. And so, people are already going to be taxed from, you know, just the energy and time that's going into, into making their buildings seismic, seismically safe, which is important, but when do you think the next time they're going to want to do a massive project that saves energy, or a massive project for renewable energy or electric vehicles? It's not going to be for a very long time.

And so, the challenge for us is to think about, how do we provide value in this space? How do we make it easy for people to say, yes, to these kinds of projects, without having people to do all their research, to apply to 10 different programs to piece together the whole building retrofit? How can we play a role in that space to make these kinds of things easy for people to say yes to?

And how do we do it for, you know, a small apartment complex or a small condo complex? These are -- there's 10's of thousands of them, and they don't necessarily matter much on an individual scale, but when you start to aggregate the demand and you aggregate the load and the impact, it's significant.

So, how can we rethink the way that we design and deliver programs that are really all-encompassing and turn-key in their approach? So what's what we're trying to

think of next.

MR. SAMUELSON: Thank you.

Now we are at our final question. What can the State of California and the Energy Commission, in particular, do to support you in that work?

MR. MASTERS: Is this where we ask for money? I say that jokingly, of course.

So, I -- this is the final question. I'll kind of end maybe with a story. I was at a planning director's committee last week where there was actually talk about resiliency, climate resiliency and these wildfires, and the fear, the concern that these wildfires are going to cut off communities. You know, if they impact the grid, they cut off the transmission line from a community, then the community's going to down. We're going to have brownouts.

So they're looking at, the number of cities within our subregion are looking at opportunities for things like solar gardens, microgrids is interest. Planning for things like this, you know, given that the amount of wildfires is not decreasing, unfortunately.

So, planning for that, those situations where maybe some folks are going to get cut off. Having microgrids -- you know, cool centers are only so helpful if the electricity is being provided to them. If they're cut off, then things like microgrids could, you know, could

kick up to support that. And I love that AQMD had a pilot program on microgrids that I'll be very interested to hear more about as that rolls out.

But I think from the statewide perspective, opportunities to plan and implement -- to plan projects like these on a citywide, regional level is, would be great, see resources towards that. But, also, maybe with an eye to the future for implementation of projects like these, as well as, you know, supporting these at the regional level, where applicable, as well at the COG or regional level, I think is really helpful. Again, achieving economies of scale and bringing together multiple stakeholders in one room.

MS. ROTHSCHILD: Okay. I'll give two answers. So, the first one a bit more broad, and the second one very specific.

So, the first is, I'll just say, you know, bringing words like integration, resiliency, into the conversation, and thinking about it every time, and not limiting it to just energy efficiency or, you know, kWh and therms saved. You know, just a broader discussion of really what are, what's the problem and the -- and what are we trying to solve.

And so, that's -- and, also, more coordination probably among the different bodies that are focused on

this, CEC, CPUC and others. You know, I don't know if there's any PUC representation here today, so just something to comment on. Yeah.

And then the second would be -- you know, this is going to be very specific. So, you know, one of the things that we're focused on and working on is benchmarking. And I know the Commission's very focused on benchmarking and, you know, with the California Benchmarking Mandates in place now.

We are also on the ground working with local governments especially, making sure that they're complying with these ordinances. And one thing is not just compliance, but also, how do you take action, and how do you use this information? So, you know, there is these requirements now that you're uploading this information using ENERGY STAR Portfolio Manager.

And one thing that happened with the change in the regulations that came out is the interpretation by the utilities, on the investor of utilities in this case in particular, is to set up that system to exchange the data. They actually removed the feature to actually see cost data in the exchange. And Tyler's probably aware of this, because we've spoken about this.

And so, it's something very minor, but because they interpreted the regulations as that not being a

requirement, they're no longer providing that information in the exchange of data. And with that, that limits actually the value of the tool at the end of the day. Because these jurisdictions, that when they see their data on the ENERGY STAR Portfolio Manager platform, they're no longer seeing the cost associated with using that information. And these are people that don't have access to the energy bills that their facilities are using. So this tool is the only way that they're having regular access.

So, I think what I'm trying to say is, maybe just increasing that coordination, communication, and assuring that, you know, when things are interchanged, that you actually all have aligned goals in making this information useful and helpful for these different building owners at the end of the day.

So, the ask there would be maybe a clarification on that, on that regulation. That that wasn't the intent. Thank you for listening to that.

MR. WONG: I'm going to make you regret asking that question.

The solar, the California Solar Initiative did a lot to really expand the adoption of solar and drove down the costs. It was very simple to get a rebate. You just had to tell the State of California or your utility, you

know, how big was your system, what components did it comprise of, and then you got a rebate.

The Clean Vehicle Rebate project, all you have to do is submit your make and model and prove that you bought the vehicle, and you get a rebate.

The SGIP Program, Self-Generation Incentive Program, you just have to provide information of what you bought and how much capacity do you have, and then you get a rebate.

Energy efficiency is a whole other story. It's starts with the Energy Commission, who has this database of energy efficiency ratings, and it goes through a whole scientific study and industry analysis of figuring out what is beyond code, what is in the market, what's out of the market, what's cost-effective?

And then that gets translated by the Public Utilities Commission and the utilities to determine, well, what measures can we incentivize? And then those incentives are then put into, to, essentially, like a yellow pages of ECM's, energy conservation measures.

And then you have to go and find that ECM to see, can I replace this light and get an incentive? Because if I can, then maybe I'll go create an application, but I have to do a study. I have to count the lights. I have to find an engineer who can tell me how much I'm going to save. We

might apply for on-bill financing. That's another application. But then we have to get preapproved, so we have to have an inspector come out.

Then once we get preapproval to go do the project, then I've got to go get my contractor to go do that. So, that's -- I already talked about that challenge.

After the project's done, I submit an installation report. It gets inspected again by someone from the utility. Then we have to make sure that there was enough influence by the utility to say that this project was pushed and encouraged by the utility to happen.

And then we might get, we'll get a rebate I think eventually, but maybe so much time has passed that either the rebate has changed or it's gone away, because DER changed. And then after we get the rebate we'll get the on-bill financing check as well.

So, that's what we go through to make energy efficiency happen. It's a much more simpler system to do, to take out a light and put in a new one, than it is to install solar, than it is to install a battery system, than it is buy electric vehicle and install electric vehicle charging station.

But for some reason, energy efficiency has this whole other system, and bureaucracy that's created to really focus on a strange definition of what's cost-

effective. And there's a whole lot of pile on of people and paper to qualify something as cost-effective.

And I didn't even mention the monitoring and evaluation that has to happen, and then the surveys that come out afterwards from the, from both Commissions to say, we saw that in 2016 you did this project. Are you satisfied with that project? How would you rate the experience that you had in heading this project?

I will rate SoCalREN and my local government partnership with high marks, because they actually do all of that work for us. But if it wasn't for that work, we wouldn't have to have the need for these kinds of systems and people.

And I'm not saying that you don't need to be here, but, ultimately, we're all trying to work ourselves out of a job, right, so that energy efficiency is passé, and that's it a part of, part of just who we are and what we do. But we're really making it hard on ourselves.

To say that the State has goals and we want to achieve them, and to put this system in place, to make it happen, sounds really counterintuitive, and that's what we're left with. And it's really disheartening from a local government perspective to see the way that the energy efficiency industry is getting dismantled.

And, again, we don't know what's going to happen

come 2020. I imagine there will be some lost year or two in which no projects are really getting done or implemented, because people won't really know, well, am I still -- if I start a project now but it gets completed in 2020 or 2021, will I get an incentive at the end of the day? Who is it going to count towards? Will it be cost -- will it be counted towards our cost-effectiveness or the next implementer's cost-effectiveness portfolio?

And so, I hope that the Energy Commission and the Public Utilities Commission consider the grand impact that all these ideas and systems really have on their -- as a logic model, to say, if we really want to drive energy efficiency, how can we make it easy, and how can we support people to do it?

I think those are the primary questions that need to be asked, rather than trying to be -- it almost seems like you're trying to avoid some litigation by saying, we have to approve all these different ways that it's cost-effective, or else we're going to get sued. And so, that's what I'll just close with.

Thank you for asking that question, and I'm sorry that I had to -- that you had to suffer through that. And you, being the representative of the Commission right now, just sitting here on the stage. But not a lot of people know that's how it gets done, but that's how it gets done.

And not everyone has people like a Tyler or a Laurel, and we're just starting to see another REN come up in the tri-county area.

And so, these are people who know what's happening right now and know how the system works. And it's really all just about putting consultants and people in place to figure out how to deal with the system. And it's just not very efficient. So, I hope the Energy Commission considers how it can do energy efficiency efficiently?

MR. SAMUELSON: All right. Well, thank you. That was the last question.

So we do want to see if there's any questions from the audience, and if we'll bring a microphone to them.

MR. SEVERANCE: Hi. Bruce Severance, Mitsubishi Electric, Climate Policy Analyst.

I've been working for some time trying to put my head around how we can go from 11,000 houses a year, which is about the max that Energy Upgrade California can handle doing deep retrofits, to 500,000 houses a year, which is a 50-fold increase in volume, in less than five years, which is what we have to ramp up to in order to meet SB 100 climate objectives.

I've worked in electric vehicle development. I have a pretty good understanding of that market. To me, it

seems a lot easier actually, to change the entire fleet of passenger vehicles in a 10-year period of time, given how quickly that technology is evolving and infrastructure's going on.

And to me, the elephant in the room is how do we decarbonize buildings and change the business and financial model completely in order to do that rapidly. And I really appreciated the comments. I mean, you guys have clarified the problem.

I wanted to ask if any of you are familiar with the inclusive finance pilot programs that have been going on in southeast, and how successful those have been at reaching low to moderate-income families and rental properties. And it's completely changing how we do energy efficiency, and its ability to the social justice piece and actually target those families first. Are you guys familiar with this model? No? Inclusive financing?

It's a tariff on-bill model where you're qualifying the property to go cash-positive, rather than looking at the loan qualifications of the resident, and because you're qualifying the property, you can do it with a rental and a landlord.

And if you're sure to go cash-positive sufficiently, you guarantee the renter that their immediate total utility bill will go down by 10-percent. And after

the tariff on-bill is paid off on an on-bill finance model, their utility bills do down by 30-percent, because that sells itself. They're achieving 40- to 90-percent acceptance, and they spend very little on marketing and administration because the program sells itself.

There are some constraints that kind of force it to max out at around a $12,000 scope, but, to me, it's something that could really revolutionize the volume that we're able to achieve. And given that 45-percent of the total households in California are rental units, and you were saying 80-percent in Santa Monica, it just seems like that's like the hardest segment to reach because of the, you know, investment catch 22 that exists, in terms of who has to pay for it.

So this model is able to offer something to everybody, and it came be done either where the utility is, you know, going after green bond financing and able to actually hire the contractor directly to assess the property and streamline that process, where the individual resident really doesn't have to do much.

Or it could be handled like an ESCO, but in the residential segment. And to me, it's a -- you know, Homes Hummel is an economist in the southeast that's really revolutionized this. And when I met her I thought, wow, this is the smartest person in the room. She's really, you

know, amazing at problem solving that chicken-and-the-egg, catch-22 problem with rentals and LMI market, specifically.

So, I'm happy to share that with you if you guys haven't seen that information. I've got a lot of reference on that.

MR. LE: Hi. Minh Le from L.A. County. I want to connect the dots between the first presentation and your panel here. And kind of point out that, you know, given the pareto chart, where there are opportunities for GHG emissions reductions, et cetera, and especially NOx and SOx on transportation electrification, the working energy efficiency is actually necessary because of deferring electrical infrastructure upgrades that's going to be necessary for TE.

So, if we go more and more towards, TE, transportation electrification, we're looking easily at a 50-increase in local loads, okay. The grid will require significant infrastructure upgrades.

You know, we in L.A. County on our county facilities, see that as multi-million-dollar transformer upgrade projects in order to outfit our sites for EV charging stations. And I think you saw that as well in Santa Monica, where you're looking at a multi-million-dollar transformer upgrade.

And so, it's so important to actually re-double

our effort around energy efficiency, so we can defer those, those infrastructure upgrade costs that will sure to be passed on to transportation electrification.

So, I don't know if anyone -- Garrett, you might be able comment on what you saw in Santa Monica as you looked at EV infrastructure and the costs associated with upgrading infrastructure.

MR. WONG: So, yes, that is an issue. We're kind of -- it is one of those things where it's like you're pulling the thread of the sweater and you -- it's really unfortunate for the small residential or commercial project that wants to install an electric vehicle charging station, and then becomes responsible for having to upgrade the transformer in that back alley. And then is subject to requirements of undergrounding all the electrical, and then the project just doesn't happen.

So, yes, that is an issue. We're looking at electrifying Santa Monica's Big Blue Bus, and that is a tremendous amount of load that we're looking to bring into Santa Monica.

Thankfully, Edison has a clear interest in electrifying all things and building the infrastructure, as was pointed out before. It's where they're making a lot of their money, and nowadays, since we took the retail side of their business. And so, you know, they have no problem

building that infrastructure, but in such compact and dense areas like Santa Monica, the question is, where?

And they're not cheap and they are very invasive projects for operations that need to be kept running 24/7. We have to run our bus system. And so, yes, reducing and managing demand is key to helping avoid and mitigate some of those costs.

Unfortunately, still at the distribution level, we just don't have the KV lines actually to support some of the growing demand that's just going to come anyways. So, regardless of whether we're going to save energy or not in a certain neighborhood, by virtue of installing electric vehicle charging stations, we're just going to need to upgrade the lines anyways, unfortunately.

MR. JACOT: I'll -- David Jacot, Los Angeles Department of Water and Power. I'd like to respond directly to that point, Garrett, and then -- but at the same time build on what Minh said, with a specific example of how efficiency can help that situation.

And this is why I don't think efficiency's going away in the near term or the long term. When you look at how much electrification has to happen, especially in transportation, to decarbonize the California economy to AB 32 targets by 2050, we need all the efficiency we can get, to get as much out of the existing infrastructure.

Knowing that we're still going to have to build a ton more of infrastructure, both in terms of distribution and renewable supply and storage, it's huge, massive, basically doubling the load with all the electrification that's on the table.

A good example of a real, a great example from City of L.A. of how we've leveraged energy efficiency to increase the infrastructure capacity, or to repurpose infrastructure capacity for electrification, is the Streetlight Program. We retrofitted all the LED streetlights in the city, 183,000 high-mast, another 90,000 mid-mast and decorative, from the old technology to LED's. And reduced in a lot of cases, fixture head loads from 1,000 watts to 350, 400 watts.

Well, what that did -- you know, obviously, we didn't rip out all the wiring and rewire it with smaller-gauge wiring, we left all that in place. So, by taking over half the load off the system, we've now freed up that capacity in that existing, distributed system across the entire city, with thousands and thousands of miles of wiring and power poles and light poles, et cetera, that we're now putting electric vehicle chargers on selected poles, and using that infrastructure for that purpose specifically for electrification.

So the point is, that's a positive, it's a nice,

positive story, but it also in a very compact manner tells you how efficiency, regardless of all this, you know, stuff with the CPC and the IOU's about cost-effectiveness and influence and et cetera, et cetera, is actually a resource for the infrastructure to enable the decarbonization of these various sectors, uptake of those on the electric grid, which while reducing the investments that need to be made in the grid to handle it.

MS. BIRD: Thank you for your comments. Any more questions? Nothing on WebEx? Okay.

Thank you, Brian and panel.

MR. SAMUELSON: Thank you very much.

MR. WONG: Thank you for sharing your --

MS. BIRD: Thank you.

(Applause.)

MR. KENNEY: All right. A big thank you to our first panel of the day.

So I'd like to mention at this point we're going to be breaking for lunch. And I want to remind everyone to please sign up on the sign-in sheets that we have available outside the door. We, you know, want to make sure that we can be in touch with you in the future.

And we'll be back -- okay. So, for lunch we're going to break for an hour. So I think it's about 11:50 right now, so, 12:50 we'll be back here. So for folks on

the web, we'll be back at 12:50.

(A recess was taken from 11:48 a.m. to 12:55 p.m.)

MR. KENNEY: Okay. So we're going to go ahead and get going for the afternoon session. People are still trickling in, but they will fill out here in the next couple of minutes.

All right. To kick off the afternoon we have our second panel on Building Decarbonization - Opportunities and Challenges. Eddie Rosales from the California Energy Commission will be moderating, and I'm going to pass it over to him.

So, take it away, Eddie.

MR. ROSALES: Hello everyone. Good afternoon. Thanks for joining us. So this is Panel 2. We're going to be discussing -- this is Panel 2. We're going to be discussing Building Decarbonization today. We've got two panelist experts with us today. I will introduce them very shortly.

Just by way of centering us, on this Panel we're using the term, the concept, building decarbonization in kind of broad way. We're going to let our sort of panelists guide us in the way they're approaching it and they're stalling for it, and the way they define it. Obviously, we all work in the same space, but we all have different missions, obviously, and different roles.

So the way we are sort of generally filling in for building decarbonization is, how we decarbonize the building sector as a whole, to some degree, even at the building level, both on thermal site use, but also for source use, GHGs that are produced also from source generation. So for us it's both site and source.

But I'm obviously conveying a very policy-centric point of view, right? So, anyways, that's just, that's just to help orient us in terms of the idea and the concept. Like I said, our panel experts are going to guide us through some more technical steps, and so I'm going to welcome those views.

So with that in mind, I'm going to go ahead and introduce them. I'll start with David, David Jacot, Director of Efficiency Solutions for LADW -- DWP. David is a mechanical -- has a Mechanical Engineering Degree, and a Master's in Urban Planning. David oversees all aspects of LADWP's EE offerings, strategies for customer programs and customer program adoption. He has 18 years of experience with system design, modeling and managing energy efficiency programs.

Welcome, David.

Second panelist, Erin Brooks. She's a Regulatory Policy and Reporting Manager for So Cal Gas. Erin's responsibilities include managing energy efficiency and

low-income policy and strategy efforts, including reporting, EM&B, and support activities. She has been with So Cal Gas since 2016.

Prior to that she was with Kenny and Company, and energy consultant, O-Navigant (phonetic). She has experience with energy efficiency solutions and enabling innovation in the energy efficiency marketplace. Erin has a degree in Industrial Engineering and Operations Research.

Erin, thank you for joining us.

So we've got a list of questions, the same -- I've got a list of questions, similar to the format we had in Panel 1. And I will, I'll ask the question, obviously, you guys will provide your answer and fill in, and it might, depending on your responses, I might do a, choose to do a follow-up or not, and then continue on.

So, we'll start with maybe just a very sort of framework question, and then each of you guys could fill this. How does your organization define and approach building decarbonization?

And, David, we can start with you.

MR. JACOT: Okay. So, defining and approaching building decarbonization. I'm glad you opened it up to start, because I was going to take it in that direction, to talk a broader context about decarbonizing buildings and their operations.

It's a multi-prong approach. We have, we run energy efficiency programs that help our customers reduce site usage, which reduced GHG back at the source when it's natural gas or other fossil fuel generation.

We have also within the system an aggressive move to decarbonize the generation side, and that's by policy and by state law. So that's another branch of it.

And then the third, when it gets to, really into the weeds, we've got the customer side for building decarbonization, there is the move to do some shifting of traditionally natural gas end uses to electric end uses.

But I think it's important to keep all three of those in perspective, and the relative contributions to the overall greenhouse gas picture in the State that those comprise. And I'll leave with this, just for that, just for that context.

So, as of 2016, cars reporting shows that the electric power sector generates 16-percent of GHG in that inventory. Buildings, commercial, residentials, about 12-percent, and that is basically the onsite natural gas consumption. And transportation is 41-percent and industrial is 23-percent.

So my point is, you know, as we look to balance those various strategies, all of which are important, all of which add up into the grand total of where we're trying

to get, to decarbonize the economy by 2050, and a decarbonized grid by 2045, they do warrant certain levels of prioritization given on the relative opportunity present in each of those sectors.

MR. ROSALES: Thank you, David.

Erin.

MS. BROOKS: Sure. Thank you. I think -- I mean, really echoing David's point. So, Cal Gas approaches decarbonization in basically two of the three ways he talked through.

The first is through our energy efficiency offerings, to ensure that our customers are using energy in the most efficient and effective way possible.

And then, secondly, is we are now exploring decarbonization of the pipeline, so from the supply side that Eddie mentioned earlier. We just filed an application with the CPUC for a renewable gas tariff. We're also released, you know, a vision statement. The company would like to integrate renewable gas into our pipeline for end uses, so that we can reduce the carbon content of natural gas, and still deliver efficient energy to our customers.

MR. ROSALES: Great. Thank you.

So, okay. So I'm going to drill down one level from the framing question. And, Erin, maybe we could start with you this time.

What actions are you taking to help decarbonize buildings? In your case, maybe it's a much more larger regional footprint. So, can you speak to us both on, maybe on the program, or even if you want to specify a project. Can you fill us in?

MS. BROOKS: Yes. I'll talk, I'll speak about energy efficiency programs. We have -- we heard from the panel before lunch, that we have really aggressive State energy efficiency targets. SB 350 is doubling energy efficiency by 2030.

I'll say for So Cal Gas, the goals that were set by the Public Utilities Commission for each of the individual investor-owned utilities increased substantially in 2018 and in the future years. So Cal Gas's goal from 2017 to 2018 more than doubled. And I'm happy to report that as of tomorrow, when we report officially our numbers for 2018 to the Public Utilities Commission, will show that we more than met that goal.

So, in 2018, So Cal Gas saved over 51,000,000 net therms, which is really the equivalent of about 500,000 metric tons of carbon dioxide, and removing around 60,000 passenger cars. And that's in a single year, and that's something we're really, really proud of.

Because, again, meeting those really aggressive goals is taking a lot of new approaches, and requiring

innovation from our third parties that will keep using programs, as well as us just shifting our mentality away from what has worked in the past to what is really going to be helpful moving forward.

So we are continuing to do things, like implement our really successful partnerships, one of which we're really proud of is with LADWP, and I'm happy to be sitting here with David today. Something that we at So Cal Gas, as a gas-only utility, realize that the efficiency value proposition to our customers is really much valuable when we have an electricity and a water integration.

So we partner with other municipal utilities in our service territory, with Southern California Edison, as well as Metropolitan Water District and other water agencies, to offer this comprehensive solution portfolio to our customers. So that when they decide to make any upgrades, it's not just on the gas side, it's not just not on the electricity, but a comprehensive offering so that it's simple, and we can target those much deeper energy savings.

MR. ROSALES: Thank you.

MR. JACOT: And I'll actually jump right in to building on that last part about our partnership, because it's really so important to both DWP and So Cal Gas. Because what it does is, number one, presents our joint

customers within the overlap of our service territories with a one-stop shop, which makes it so much easier to participate in all the efficiency measures available offered by either organization at one time through one point of contact. That's number one, customers first.

Number two is that it's a double whammy on the GHG reduction when we do it that way. Because their end-use gas energy efficiency is greenhouse gas at the site. Their end-use electric savings is greenhouse gas reduction at the source.

As we decarbonize the generation, that will tamp down. There's -- I'll talk about some other things in the future, and I made some comments in the previous sector -- panel I'll probably build upon.

But at the moment, you know, the way things are laid out and, you know, the way we're progressing, you know, steadily towards decarbonization of the grid, but we're, you know, we're about 36-percent per hour for DWP. We're planning to be 60-percent by 2030, and 80-percent by 2035, '38 or so, and then achieving the full decarbonization by the statutorily mandated 2045. So, that partnership is key to helping advance, accelerate, so we can get more of those savings now. That's one thing. And that's also what we're doing with the grid.

Then, as far as our own energy efficiency,

where's it electric, electric energy efficiency, both inclusive of the gas company programs and everything else we do, we're investing heavily, $200,000,000 a year, bringing in about four to 450 gigawatt hours of affirmed savings every year, and those are cumulative. And with that we're keeping our consumption flat, even as load grow due to climate change, electrification, population growth, et cetera.

MR. ROSALES: And then one step down from that question. I'd like to ask both of you guys about building design. So -- and I approach this both, you can approach this -- and I approached the question, but you can also choose to answer whether from a new construction perspective, and existing building's perspective, maybe the difference residential and commercial.

What kind of -- what types of projects are best suited to help us achieve maximum decarbonization and, you know, or maybe you're in the planning stages for that. Can you help us, fill us in, where -- how you guys are tackling those issues?

MR. JACOT: Sure. So, I think the first, you know, again, contextually, the scale here. You take the built environment and the built square footage, and then you compare that to what's built new every year, and it's about 100 to one. So, you know, every year you're building

one-percent more than what was already existing.

The vast majority of built, built environment, built, you know, comprises the building market. So you've got to look at it in terms of, you've got a lot of retrofit opportunity, which is difficult. You've got a lot of -- you've got a little, you know, some new construction opportunity, which is easier because you can design it properly from the start.

So, you need to be doing both, obviously, and there's another thing that's tied up in this on the new-construction side, it's there's also the ability for codes and standards to come in, and advocate for or make specific changes and requirements that drive things further towards decarbonization or away from decarbonization.

Us, as a utility, we track those. We participate. We help pilot ideas for analysis, but we're not the policymakers, we're not the decisionmakers. We do want to stay close to the conversations that are happening there so we can do our own program planning, and have that feed into our potential studies for what's achievable.

MR. ROSALES: Erin?

MS. BROOKS: Sure. So, with regard to our program offerings, we offer support for new construction for both commercial and residential, and that is in the design phase of those projects, to ensure that, again,

they're incorporating the best practices of energy efficiency, meeting all codes and standards that are applicable to that construction type. And those programs have been fairly successful. They're in the midst of transitioning to a more statewide approach, so instead of being offered at a local level in Southern California, they should be offered continuously throughout the State, regardless of the utility service territory. So, that kind of transition will happen over the course of this year and next year.

But I wanted to focus also on the existing buildings, and the work that we're doing is really focused a lot on emerging technologies. So, ensuring that the technologies that customers can adopt are the most efficient in the marketplace. That they're in stock when they need to go and, you know, replace their water heater, et cetera.

Right now, we're going a pilot with the CEC on a gas heat pump water heater, which we're doing five test sites in Southern California. The test should be finished sometime this summer. But assuming it all goes well, that kind of technology can really be beneficial to our existing customer base, to get the most efficient water heating possible using their existing infrastructure.

So, those kinds of research are really important

to bring those technologies not only to market, and then have them be able to be incentivized within the portfolio to encourage greater customer adoption. So that's a really great focus for So Cal Gas.

MR. ROSALES: And for the benefit of the audience, are those residential or commercial buildings?

MS. BROOKS: Those are residential buildings, single-family homes.

UNIDENTIFIED MALE SPEAKER: Thank you.

MR. ROSALES: Okay. Let's talk about barriers now. There's barriers of all different sorts. So, again, I'll let you select which one maybe comes to your mind or which one you think is maybe the most challenging, or maybe the one that still exists, but has some clear solutions that we just haven't reached for yet.

So, what are the, what are those key barriers? Are they policy or are they technical, and how are you overcoming them, or how do you believe they can be overcome?

MR. JACOT: Well, I'll take this opportunity to kind of dive into the elephant in the room, which is the decarbonization of end uses within buildings. Because I think we know, we're pretty familiar with the supply constraints, the transmission distribution constraints on utility scale renewables, siting them, storage, some of the

challenges with distributed storage and distributed renewables, et cetera.

So, in the spirit of, you know, the panel title, I want to specifically drill into the opportunities and barriers on, essentially, taking natural gas end uses in buildings, and we're talking primarily residences and small businesses, and converting those to electric.

You know, from the standpoint of a single fuel electric fuel utility, like us, like Edison, like SMUD, like most of the munis, on paper it's all revenue offsite. You know, it's all -- you know, we're not losing anything, we're gaining customers, we're gaining load, but some of the barriers come into how much load and where, and is the system optimized to handle that? So we have to think about that.

But I think more fundamentally, going back to customers first, is how do we present these options to customers? You know, these -- what are the products out there? Are the products at scale? Are they affordable or are they boutique and cost $10,000 a piece? What's the supply chain distribution? What's the optimal performance? We look -- so this is a technical barrier.

We look at what's currently available in heat pump technology for space heating, water heating in the U.S. In other words, what the distributors are used to

carrying, what the installers are used to installing. And it's low, it's 3.2 co-efficient of performance, which means it's three times better than electric resistance, you know, three times more efficient than electric resistance. And by the way, we're staying a long way from electric resistance. We have no interest in promoting electric resistance, because we don't want much flow.

And then the other thing is that we now know that there are very high technology, high-performance heat pumps in Japan and Europe, 5.0, 5.7, 5.5 COP. That means they're five times more efficient than electric resistance. And if it's 5.7, it's almost twice as efficient as what's currently commonly available in the U.S. So that's a -- it's technical but it's really a market barrier of that.

There hasn't been a market for that high efficiency heat pump technology, and so there hasn't been, you know, a supply chain for it either. So that's one thing. So, you know, what are we pushing our customers to switch to?

And we don't want to invent a half-efficiency measure in a broad way, and then find out, well, there's this other thing that's twice and good, and nobody's done it, and now you're locked in for 20 years until the current ones burn out. So that's one thing.

The other big issue, the other big barrier to

mass electrification of end uses in the home is, what happens to the bill? And, you know, there's been a lot of studies done on this. Some studies show very little impact; other studies show a lot of impact. I personally believe it's almost going to come down to a house-by-house basis, or at least you might, you know, you might have 100 typologies. It's not going to be two, it's not going be by climate zone. It's going to be a lot of individual cases as to what happens.

But to wrap this up, you know, I could launch, I would follow what SMUD's doing. SMUD's got a $13,000-per-home rebate to go full -- electrify everything. I would do that tomorrow. Here's what happens though. Let's play this out.

I do that, I take out their -- you know, we dispose of their natural gas appliances. I put in all electric. Next month they get their bill. They're combined gas/electric bill used to be 200. Their electric-only bill is 350. We got a big problem, us, the electric utility.

We've got a really big problem if that's the result that comes out of that retrofit project. Because the customer's going to be screaming to give them their gas appliances back, and we're going to be stuck in a position where, you know, it's going to be nightmare.

So we're extremely cautious. And anything that we'll come out with in terms of those types of programs, and we are looking at programs like that, but it's got to work for us cost-effectively, and it has to work for the customer. If it doesn't work for the customer and ram it down their throats, it's going to be a disaster. It's going to be a disaster for the customers, it's going to be a disaster for us, and it's going to be a disaster for the decarbonization movement.

MS. BROOKS: Yeah. And I think this issue about affordability is really critical. You know, I'm so happy that the CEC is having these workshops around the State, because it really is different, depending on where you are, right.

David talked about how the efforts that are happening in Sacramento are full swing ahead, probably well received, but here in Los Angeles we have a completely different set of customers and completely different economy.

You know, we were fortunate to hear from Garrett earlier this morning about how new construction in Santa Monica with these REACH codes has not impacted affordability. And I will say this as a Santa Monica resident, that that is not the case through the rest of Southern California. That we have a very low-income

population.

Over a third of the So Cal Gas customers are eligible for rate assistance, which means they're at or below 200-percent of the federal poverty lines. That' around 2,000,000 customers. That's a lot of people. And to make significant changes that would potentially really impact either their monthly bill or the infrastructure in their home, or disrupt the kind of lifestyle that they lead, is not to be taken lightly.

So this policy barrier about, you know, ensuring that we're trying to focus on this, you know, very valuable end state, which is decarbonization, but through a single pathway, which would be electrification is, really needs to consider the full impacts to not only customers, but to the State overall.

And if there are ways that we can get there using existing infrastructure, through an NG decarbonizing pipeline or otherwise, making things much more efficient, that's really -- I mean, energy efficiency is still first in the loading order. It's still very important, and we still continue to push that, so that we can make sure that the impacts to everyone are as minimal as possible.

MR. ROSALES: Thank you.

David, let me ask you a much more practical question, kind of related to the barriers you were talking

about, market barriers just right now.

So if I'm a building owner, a residence or a commercial, small business, what are some of the more promising practices you've seen with respect to measures for water heating or space heating, and how have those customers, as far as you know, how have they reacted to it from a positive or negative perspective as well?

MR. JACOT: Sure. So, first off, to this point we have not offered an incentive for natural gas end uses to migrate to electric end uses, electrified end uses. We have traditionally offered -- we have always offered incentives to go from electric resistance to heat pump or higher, you know, higher co-efficient of performance. We have not yet offered anything on that side.

But I'd back up and say, you look at the average home and there's generally -- in a small business, there's generally four applications for natural gas, water heating, space heating, cooking, food prep, and laundry. And so those, so it becomes complicated. And to the point of, you know, a customer wants to do this, it breaks down into, okay, how much of that do you want to do, and what's available in each of those spaces?

And there are heat pump water heaters available, heat pump space heating, but, again, what's standard in the U.S. is decades behind what's standard in

Japan and Europe, and I would not want to aggressively promote substandard equipment just to make that fuel switch, when we really need to be focused on developing those supply chains of the better stuff. That's number one.

And then on the other two, with food prep, induction cooktops, not build crummy electric resistance ones, but induction cooktops have -- or have become the choice of gourmet chefs worldwide, especially in France, they've embraced it.

The problem there is, induction cooktops are considered a boutique item, so you're not talking the $600 stove swap out, you're talking a $10,000 Viking or Sub-Zero or something like that. So it's boutique. So that's another market, market supply chain problem that has to be overcome before it's really worth promoting to that particular end use.

I'm not overly -- I know there's heat pump technology for dryers, clothes dryers. I don't know what there in washers. I don't think those are nearly as advanced as the heat pumps on space and water heating, but I could be mistaken. But the point is, you know, it becomes a very complicated question.

The customer goes, I want to fully electrify. Okay. You got this, you got this, you got this, you got

this, and maybe this that all use gas, and what you want to electrify it to on the electric side is at various stages of market uptake, and it's a staging issue. If you early adopt you wind up locked into something. It's like -- I'll leave you with this analogy.

You know, when first glass screens came out, coming out of CRT's in 2002, 2003, cathode ray tube, big, enormous, 500-pound T.V.'s. Plasmas came. The plasmas were all the thing. You can come up, drop $20,000 on a 60-inch plasma, and they're junk. You know, within three years they were, you know, getting much better.

A couple years later LCD came out in earnest. And now you're -- you know, eight years, nine years ago, when I still -- when I got the 55-inch LED that I still have, I paid 1,600 for it. And now that's down to like, you know, 800 or 700 or 500 or whatever. But the point is, you know, you're going to burn your early adopters. If you burn your early adopters, nobody's going to follow.

MR. ROSALES: Good point.

Erin, I don't know if you want to approach this. I think you probably work with a lot of association groups and maybe some of the trade groups. You know, what's your -- what have your ears picked up in terms of the way they responded to decarbonization efforts, or what questions are they, do they have for you as a gas utility?

MS. BROOKS: I mean, really, the issue that we've come across, like I said, is this issue of consumer choice and of affordability. I mean, people want to make the right choice, but want to make the choice that they won't really have to think about, which is why energy efficiency is such a great proposition, because it encourages them to utilize their existing technology, their, you know, their existing homes, in a way that is less impactful to them, right. But it's harder to encourage people to make an upgrade when they don't need to, right.

The opportunity exists when your washer breaks and you need a new one, we hope that the most efficient one is installed. Or when, you know, your water heater breaks down, you're not going to wait for somebody to come and switch out your electrical panel, and come and then install a heat pump water heater, which requires a different space requirement. You might require, you know, infrastructure upgrades in your home or your building. Those things are real, and those issues are things that we hear from our customer base.

It's interesting about the chefs and their perspective. We have a food service test lab in Downey, which is close by, and we have a lot of chefs that come out and test the most efficient, new cooktops. And decide, you know, if they want to make a purchase of a new, efficient

gas fryer or a range, or otherwise.

And we hear, you know, mixed reactions on -- from the chef themselves on whether induction will meet their needs or not. We still hear that they prefer natural gas, or that might be -- for instance, between France and, again, Southern California, but we're constantly working with them to make sure that they're having, you know, that their input is received, and we're providing them with the best possible options.

The last thing I was going to say -- sorry, I have baby brain on my mind. But I wanted to talk about more of the issue of, like I said, this approach for what will work for some places, really needs to be replicated throughout the State.

So, again, it is really great that the CEC is looking at a regional approach, or at least getting input from different regions, in order to establish State policy. Because I think that that's very important, knowing that California is really diverse and has a lot of different kinds of customers, different kinds of climate zones, different needs, that really all need to be taken into consideration.

MR. ROSALES: Thank you.

So, a lot of the information and responses you guys have made are really informative and illustrative of

the fact that there's -- decarbonization's a very tricky point. A lot of different touch points. You guys work with lots of different customers who have different interests, especially when it comes to, when you're getting down to the nitty gritty, when you're talking measured tradeoffs. Obviously, chefs are going to have a different interest than, you know, building owners of multifamily properties.

Counting them altogether and related to all that is, I want to ask you about your outreach efforts for the programs.

And, David, again I'll start with you. So what outreach are you performing to inform the public about the benefits and successes of your decarbonization programs? How are you spreading the gospel?

MR. JACOT: Well, so we don't have anything formally launched with fuel switching incentives yet. You know, I'm sure we will at some point, but we don't currently. So I'll get to that one here in a bit, because we are doing a lot of upfront groundwork on that.

Across our energy efficiency programs we have, we work trade allied networks, recognized vendor networks. We participate in a lot of community events. We have folks at conferences all the time. Also, the neighborhood associations we attend in earnest and promote the programs

we have, and how to apply and how to participate in the benefit the customer can receive.

We have our partnership with So Cal Gas, where we're combining efforts on about 16 or 17 joint programs so we get the message out. As a multi-resource opportunity, gas and electric, gas, electric, water, sometimes gas and water, for hot water measures, and we do that.

We've got community groups, community-based organizations throughout the city, about 21 or 22 that we provide grants to, to carry the messaging forward at a really grassroots level within their communities, about the opportunities for efficiency, and other things that we want them to convey as well. So, we use those for outreach.

Now, what we're doing to lay the groundwork on the building decarbonization through migrating natural gas end uses to electric end uses, we've partnered with SCE and SMUD on a building electrification potential study, specifically focused on space and water heating. It was out of scope to look at the laundry or the cooking side, but, you know, the big, those big end uses. And that has been completed and published. It's public.

And it kind of sets up, you know, what appears to be doable within what timeframe, and it gives scenarios. You know, the typical potential study, low, mid, high, extra high, business as usual, and what each of those

scenarios looks like when it's played out.

So, we're analyzing that information, looking to, you know, take that forward into what, like I said -- and this is where we'll get into offering programs. What's the, you know, what's an appropriate incentive for the benefit we're receiving, but also based on what we see the impacts to the customer to be. And looking very carefully at that cost issue, and also the community, the customer-choice thing.

And one thing we have to be careful about, I know Edison's -- you know, it's no secret in this room. It shouldn't be a secret. Edison's gotten pretty aggressive on this. SMUD has gotten pretty aggressive on this. We are taking a more cautious approach. We see, you know, we're involved. You know, we'll be rolling out similar programs, you know, tweaked to be appropriate to the economics and the weather, the climate and our customer base. So we're not going to be not doing anything, but were not going to be as loud about it, and I'll tell you why.

You know, we're a municipally-owned utility. We're a political animal within one city. And so, we don't have -- Edison can fall back on the shareholders. They're doing it for the shareholders. We don't want to look like, you know, we're greedy and taking away customers choice and

hurting our customers through higher energy bills. Right, do you see how that take -- that goes south pretty quick, too.

If we get out with a SMUD type program, and I'm not knocking the SMUD program, the numbers show me that their climate up there makes it come a lot closer to bill parity. It doesn't here because of the climate is milder. But if we run a program like that, and like I said, it turns into a disaster from elevated energy cost, and taking away the customer choice, it's going to make Department of Water and Power look very greedy.

And so we're taking a light touch approach to how we engage in this, and a cautious, a cautious, conservative approach, but not an obstructive approach. That's the key is, we do the outreach. We get -- we'll develop the programs, we'll put them out there. We'll talk about them. We'll help customers. You know, like I said, it's going to be case by case to see if it's really going to work for them or not. And that's how we'll go down the path of the outreach and get the programs up and running.

MR. ROSALES: Thank you.

Erin?

MS. BROOKS: Sure. So, all of the outreach methods that David talked about we have in place as well. We're also really starting to get more aggressive on

utilizing social media, and trying to reach customers in a way that we haven't before. But we also heard from our local government partners, some of them earlier this morning, which is another way that we outreach about our programs.

We also partner with other agencies, in addition to the electric and water utilities in our area, such as the Air Quality Management District. As you heard from Kelly this morning, they have rebates for air quality improvements, and a lot of those can be paired with our energy efficiency rebates to increase that value, too. So we jointly promote those offerings.

Yeah. And so the outreach, we're really trying to spread the word. The message that we focus on though hasn't yet been on decarbonization. What we've found -- we're looking at testing that kind of messaging. We found really what resonates with our customers is lowering your bills and the incentives available.

And so when we're talking about not only our mass market energy efficiency programs, but also our low-income offerings, we're really spreading this message of adopting energy efficient technology, and making these purchases will really help you manage your energy consumption, which results in lower bills, and also just the reduced consumption itself results in lower energy costs.

So, that's the kind of messaging that we've been most communicating to our customers, in order to promote our programs.

MR. ROSALES: Thank you. And next question, I'll start with you as well.

So, you know, I appreciate that you guys obviously have different processes. And, David, you guys are, your organization is still thinking of exactly, you know, how to maybe fine-tune any program, any public program.

But can you touch on how you go about -- excuse me, how you go about evaluating your success, whether it's on a metric, you know, overall lowering of decarbonization over a period of time, maybe on a quarterly or annual basis, or, you know, you go about cleaning up the amount of energy that's being consumed or delivered.

So, can you give us an idea of how your organization has also thought about that, just the overall evaluation of decarbonization within your organization?

MS. BROOKS: Sure. So for So Cal Gas, I mean, we are always evaluating the success of our programs, mostly, again, on the energy efficiency side. So, understanding which programs are delivering the most impactful efforts, dedicating more budget to those, finetuning the ones that are least cost-effective. You know, there's a whole host

of issues around the standard cost-effectiveness test that we're all subject to, but it is real, right.

If we're treating energy efficiency as the resource that it truly is, and as important as it is, we want to make sure that rather than encouraging just more use of electricity or gas, that we're actually encouraging customers to reduce their consumption.

Part of that, again, is through improvements in energy efficiency in new construction and existing buildings. We've seen a decline over the past 10 years or so of about 14-percent of gas consumption relative to our residential customers, just from energy efficiency improvements.

And that, you know, when we have a growing customer class, growing population, to see that decline in energy consumption is really a testament to how successful energy efficiency is. And so, so, again, so we evaluate based on cost-effectiveness, based on just straight metrics achieved with regard to the therm savings.

But we also look at different metrics of success for things like, how are we impacting customers in disadvantaged communities or in hard-to-reach areas? What kinds of customers are participating for the first time, who've never participated before? And those are all relatively new tracking that we've been doing, but it's in

conjunction with all the other utilities as part of our CPUC reporting.

So, that gives us a greater insight into our portfolio, rather than just the standard, did you meet your goal? Was it cost-effective? Because there's a lot of things that we're trying to achieve with this single portfolio, and having that visibility is going to allow us greater, the greater ability to fine tune and really effectively target these program offerings for our customers.

MR. ROSALES: David?

MR. JACOT: Yeah. So, I definitely agree that the cost-effectiveness calculations have gotten a bit unwieldly. I'm not a big fan of the TRC, the Total Resource Cost test. I'm much more interested in the program and administrative tests. How much benefit is the utility getting for investments it's making, because that's what's directly comparable to infrastructure investments.

As far as evaluating the success of any building decarbonization programs we run specific to fuel switching, you have to keep two things in mind I think. The two metrics that matter is the GHG -- it's kWh and GHG.

GHG reduction net across what it was before and what it is after electrification. And kWh, and there's two ways to measure that. If you've got kWh growth that you've

got to figure into your load planning, because it wasn't on the grid before, but also versus an existing equipment baseline.

So we'll look at the kWh savings that we'll get from, say, electrifying a gas water heater to heat pump. There's no direct baseline in kWh on the gas side. There is a GHG baseline. There's not a kWh baseline. So we'll look at electric resistance as the baseline. Because in the absence of policy or market interventions to drive to that high-efficiency heat pump, if they were going to electrify, electric resistance would be what they would get. So, big, virtual, virtual kWh savings there that will be important to quantify.

But the GHG really is the name of the game. You know, we're not -- you know, nobody would, I don't think utilities would be in the business of doing fuel switching from gas to electric end uses just to pump up their kWh claims, versus a virtual electric resistance kWh baseline, you know. That's an accounting trick that will help our -- you know, it will help us make our goals. It will help our savings look big. But that's not the point of what we're doing here. We're trying to decarbonize the economy.

So it's going to be more important to evaluate what is the net impacts that are happening when it was gas fired, you had the amount of gas consumed, plus system, you

know, upstream, fugitive emissions, things like that, that will part of that side of it.

Then you'll look at the electrified side, and just say, okay, well, let's go back to the generation source. And as long as -- you know, the more carbons in the generation source, the less favorable that's going to look. And in some cases currently, it's upside down because the site source conversion, depending on how much of the upstream, fugitive emissions you consider on the gas side.

So there's a lot of -- the point is, there's a lot of factors there, but I think GHG, when it comes specifically to the value, you know, to the State climate goals in applying the particular measure, among many, and it's an all-of-the-above type approach to decarbonize the economy. But the measure we're talking about is switching natural gas end uses to high-efficiency electric uses, the key metric is, what's the GHG balance between those two.

MR. ROSALES: Thank you.

So I've got one final question, but before I get to that one, I'm going to do a quick pause and check to see if there's questions from the audience here or on the WebEx.

So, does anyone got a -- have a question from the audience, we can field it now. Okay. You've got one

question here.

And, Jerry, you'll let me know if there's any WebEx questions. And -- okay.

MR. YEDOYAN: Hi.

MR. ROSALES: Hi.

MR. YEDOYAN: My name's Diana Yedoyan. I'm with the Los Angeles area Chamber of Commerce. So, obviously, building decarbonization is an area of concern for us, just because of the wide gamut of industries that we represent.

At last month's CPUC workshop on building decarbonization, the conversation leaned very heavily on the full electrification approach. And I want to thank this Panel for being a little less one-sided, and taking into account affordability and the one-size-fits approach is not going to work specifically here, again, in Southern California and Los Angeles, and all of those different aspects that go into just our climate and our diverse city.

And, you know, there are some businesses, such as manufacturing and the restaurant service industry, that technology just either isn't available for them to make the transition, or it kind of doesn't fit the needs of those industries.

So, my question is, if there are available technologies that can achieve meaningful emission reductions, should they also be incorporated into the plan

and conversation around building decarbonization?

MR. ROSALES: Do you want to field that one?

MR. JACOT: Yeah. I mean, absolutely. You know, I think everything should be on the table. I mean, I think, including the one we're talking about, but everything should be on the table. Because I think there's always a tendency to, especially among policymakers that aren't necessarily expert in the field, to want to look for that silver bullet or two. And then drive them through as, this is the end-all, be-all that's going to fix everything.

Or we're not getting enough uptake in energy efficiency, get rid of the incentive programs, get rid of the marketing. It's all about financing. We've just got to get financing out there. I lived through that one in my prior IOU life about 10 years ago. You know, it's not either or, it's and.

So, yes, I'm a big believer in a portfolio approach, as long as everything you're doing is moving the needle towards the ultimate goal, that decarbonization goal. And some will move it a long ways, and some will move it a little ways, but you don't want ones that are moving it the wrong ways.

MR. ROSALES: Erin, do you have anything to add?

MS. BROOKS: No. I mean, I think David covered it well. I mean, we have a goal, right. Decarbonization

is so important. Climate change is real. We've seen the impacts. We know that this is something that California is primed to take a leadership role in, and paving that way for other states, other countries, and it has to be working with all of our available options.

MR. ROSALES: Thank you.

Any further question? Is there any other questions from the audience? One more.

MR. SEVERANCE: Thank you. I heard a presentation from George with So Cal Gas. George's last name has escaping me. He's -- what's the name?

UNIDENTIFIED FEMALE SPEAKER: George Minter.

MR. SEVERANCE: "Minter." Yes. And I was really impressed with his discussion of renewable natural gas and the development of that infrastructure. And I've read varying reports about the amount of, you know, resource materials required to create enough gas to power our economy. And it seems like there's differing views on that. That we, you know, we have enough resources in the State to meet about a fifth or a quarter of all the gas demand that's projected by 2050.

And so it seems like there's a real place for renewable gas. And he was talking more on the heavy industrial side and commercial side, and creating an infrastructure for that, and keeping, you know, a sizable

portion of the gas infrastructure. You know, upgrading that portion of the infrastructure, at least.

To what extent do you feel that electrification might make sense in the long run, provided that fuel costs, you know, aren't adverse to that transition happening? And do you imagine the gas company ever doing something as radical as investing in offshore wind to generate hydrogen or getting into completely different pieces of the game, so that all your chips aren't just in one basket?

UNIDIENTIFIED FEMALE SPEAKER: Please state your name for the (indiscernible).

MR. SEVERANCE: I'm sorry. Bruce Severance. Mitsubishi Electric.

MR. ROSALES: Thank you, Bruce.

Erin, do you want to start with one?

MS. BROOKS: Yeah, I'll try. So, unfortunately, the whole renewable gas and the, you know, potential investment in offshore wind and things like that, are a little outside of my scope, but I'm happy to get you more information afterwards.

But what I do want to convey is, at least I hope the gas company isn't saying, do not go down this pathway of electrification, right. We're just saying, there are multiple options here at play that should be allowed to have, you know, a level playing field, so that there are

different pathways for people to achieve the same goal.

So when it comes to things like, we are working with UC Irvine on a power-to-gas demonstration. They've been having this in place for several years now, where they take excess electricity and store it in our pipelines as hydrogen. So, when you're talking about offshore wind, maybe that's a potential there for this existing pipeline storage.

But when we're looking at things like availability of RNG in state, I also don't have any of those numbers here or off the top of my head, but we are already at all of our compressed natural gas stations offering renewable gas to -- for the transportation sector.

So, it is, that load is growing, and we are continuing to want to invest in that, so that our -- again, so we are decarbonizing the pipeline as another avenue to help reach these goals.

MR. JACOT: Obviously, I can't speak directly to any of the gas companies' specific questions on that, but I'd throw in a couple generalized points.

We have -- so one place where we're starting to start thinking, as an electric utility, more like a water agency or a gas company, is that we need to figure out how to store our commodity. You know, gas has reservoirs and tanks and underground caverns. Water has similar tanks and

dams and whatnot. Electricity typically has none.

So we start -- need to start thinking more in those terms. And so, I think you'll see some cross-pollination between those various ideas. The idea of soaking up excess solar generation with electrolysis to generate hydrogen, and then use that hydrogen through fuel cells to generate back electricity. The offshore wind, again, to do the same thing.

The gas company's thinking of taking that hydrogen and injecting it into the pipelines to reduce the amount of carbon in there, and I know they're figuring out what that ratio can be. I don't know what it is.

We're thinking about how we'd do the fuel cell, or, you know, you could -- we're probably not going to combust it, but you could use a fuel cell to generate the clean electricity.

So, point is, the things you're talking about now have more than one market, right. If you're just thinking in terms of injectable hydrogen to gas company, but now you're thinking about, you know, now we're thinking about how we have to have so much storage to handle the intermittency issue, as we move towards higher and higher levels of renewables on the grid. And that is a technology that could serve both our utilities as well. That's one thought.

The other high-level thought I had was, and this is where you've got to put it out to the market and let the market come up with something within parameters of what you want. This is what I want to see ultimately, these are the guardrails, come up with something. You know, the economist community would generally say, a carbon tax would be much more efficient than cap-and-trade, but you can't get it politically.

So, you know, whether it's efficient or not is moot if you can't do it, if you can't get the policy in line behind it. So, you throw these options out there and you see what the market does. And so, you know, that's the supply side, the utility scale supply side option.

And then to finish my thought on the demand side option, which we were talking about with building decarbonization. Again, you throw the options out there. You price them at a level. You incentivize them at a level that makes sense for your needs. If that level is insufficient to move the market, so be it, until the market conditions change that you can increase the incentive or the subsidy, or the costs come down to where your current incentive is enough to cover it.

But, you know, I always get nervous about these dam the torpedo, full speed ahead, you know, one size fits all, this is what we're going to do type of thing,

initiatives, they inevitably fail. They fail big, and they generally take down, you know, whoever was promoting them. So, not a productive way to get to that end goal we're trying to get to.

MR. ROSALES: Thank you.

Bryan?

MR. EARLY: Thanks. Bryan Early, California Energy Commission.

David, as LAWDP thinks through, you know, how fast and if it's going to move in terms of fuel substitution. I'm wondering, do you feel that you are getting a policy driver from the State to sit down and have a conversation with the gas company, in terms of targeting where the electrification would take place, to alleviate any sort of, you know, system cost -- from the perspective of system cost for the gas company arises, this whole conversation of, you know, strategic or targeted electrification, if there are areas where we're going to have to make an investment?

And I know there obviously is not a platform place for that conversation to happen, but I'm wondering if you could sort of expand, from your perspective, on where we're at now, and what might be helpful in terms of those policy pushes.

MR. JACOT: Well, you know, we're not

policymakers at the utility. We try to influence in the best interest of our organizations and our customers. And in that, you know, in that scheme, we love to participate in those discussions as they come up.

There hasn't really been, to my knowledge, a very cogent, all-encompassing, comprehensive, logical and strategic layout of everything that needs to be talked about, and an appropriate, logical order in which to talk about it and talk about it with who to get to these things. And I know that's a far bigger question than anybody in this room, because it involves everything in this room, and a lot of people not in this room.

So, you know, that's kind of a long way of saying that, you know, I have not, you know, seen that type of coordination discussion effort, but I would welcome it if it were to be begun. And, further, it doesn't have to completely, 100-percent polished before it starts.

I think it's something that we can build, we can build a discussion from the ground up, as long as we keep having, you know, be conscious of having, you know, the sufficient stakeholders and viewpoints and major players be constructively included as parts of those discussions.

MR. ROSALES: Thank you.

So, let's continue on. Let's wrap up. Last question, maybe a minute or two, so it's going to be really

brief. So, it's going to be about how we can help you.

So, the question is, what areas, what critical areas, or just even areas, where you need help from state agencies, like CEC plus others? And I don't know if you've thought about that, but if you have an answer, you know, can you share it with us.

And we'll start with you, Erin.

MS. BROOKS: Sure. So, I mean just to echo David's last point, I mean, the CEC can do a great deal of good by engaging these conversations, even, again, before we necessarily have a firm direction, to make sure that we're considering all that we need to consider.

If I can have a wish list of any other state agencies and what we can -- what kinds of changes we can make or how we can be supported, there are a lot of things. One example is, there's, right now we have this California Solar Initiative. It's legislated that it's going to end, the incentives for solar water heating are ending next summer. We're looking at pursuing an extension of that through the legislature.

So, if any lawmakers are listening, it would be great to extend that deadline after next summer, because, again, solar water heating is another great way to help decarbonize existing buildings.

Other things we're doing, is we're working with

the Senate Bill 1440, and looking at, again, the biomethane and renewable gas options. So those are just a couple of ideas.

MR. ROSALES: Thank you.

David?

MR. JACOT: Oh boy, I can probably get myself in a lot of trouble with this one.

A couple thoughts. On the CEC side, we really need a concerted effort to bring high-efficiency heat pump technology, that we already know exists in other countries and other continents, into the marketplace here. Assessing, you know -- I'll give you a quick example.

There's high COP, you know, five-plus, that runs on C02 as a refrigerant. That presents a lot of benefits. It's non-flammable. The GWP, Global Warming Potential of C02 is 1, whereas most refrigerants are 500, 1500, 2000. So -- but there's some technical challenges. It's very high pressure. But those types of things, you know, those technical things, the CEC could really help through the emerging technologies and case studies, which we're part of, by the way.

Help prime, you know, the market, and start the process to get the product in place and the distribution chains in place. And also working with the industry -- I'm glad to see Mitsubishi Electric here. I had a great

conversation with one of the contractors under Mitsubishi up at the Building Decarb Coalition Kickoff Meeting in Oakland last fall. And he's very interested in it and he's actually doing it, and having to take on those barriers of availability and unfamiliarity one by one. So that's a big one on CEC's side.

Also, again, we're not policymakers. We help advise. We're very happy to be part of the process, but, you know, when it comes to new construction, Title 24 has, you know, has always been the gold standard of driving the next generation of what the technologies are. So that's a CEC role as well.

And then the one place where I'll tread a little lightly, but maybe not lightly enough, over on the CEC IOU side, whatever's going on over there, and Garrett Wong talked about that up here, as an interested stakeholder, whatever's going on over there that has energy efficiency perceived to be a death spiral and gone in five years, whatever that is, needs to stop. That needs to get fixed. This is crazy.

I mean, Minh and I -- Minh keyed it off, and I jumped in, too. Energy efficiency is a key foundational prerequisite to decarbonizing the economy in a way that's technically feasible and affordable, safe, and not going to have our customers riding in the streets with -- coming

after us with pitchforks and torches.

So, energy efficiency is not going away, regardless of whether certain factions think it can be cost-effective or can't be cost-effective based on some arcane test that doesn't make sense anymore, or that the customer didn't have influence in it.

Last soap-box item on that one. The way I run my programs at LADWP, I don't care if the customer would have done it anyway, I care that the customer did it right. I only know the customer did it right if they participate in my QC process.

My incentive is not to get the customer -- not necessarily to get the customer to do the project. The incentive is to get the customer to come through my QC process, so I know the savings. I have a reasonable level of confidence that the savings will actually materialize, and thus I can build them into my integrated resource planning. That's what the incentive is for.

Now, if it gets the customer, it gets their attention to do it, and they wouldn't have otherwise done it, that's great, too, but I'm not going to throw out the incentive and not do the QC, you see. So, the point is, the incentive helps buy down the transactional cost to the customer to run through the QC process, which Garrett Wong also very eloquently laid out as being, you know, at times,

somewhat capricious and somewhat onerous. I'll stop there.

MR. ROSALES: Thank you, David. Good points. Fair points. Thank you for your time, Erin, David. Thank you. Appreciate it. That concludes Panel 2. Thank you.

MR. JACOT: Thank you for having us.

(Applause.)

MR. KENNEY: All right. Thank you, Eddie, and to our panelists.

So now we are preparing for our third panel. So this is covering what is happening currently within the Regional Energy Networks and the CCAs. So, panelists, feel free to come on up and join me on the stage. I've just got to swap out some batteries, so our voices can be heard.

Al right. Do we have Ted in the audience? Does anybody know if Ted has stepped out? Well, we'll just have to carry on.

So joining me up here we have Lujuana Medina from L.A. County, representing Southern California Regional Energy Network. Lujuana is responsible for managing and operating the SoCalREN's Energy Efficiency portfolio. She also leads policy and grant development regarding energy efficiency, economic development and electrification of transportation.

Over the past 14 years she has worked in a variety of capacities in the energy policy field. Before

joining the County of Los Angeles, Lujuana served as -- yeah. Ted, come on in.

Before joining the County of Los Angeles, Lujuana served as a Regulatory Manager for SoCalREN. Under ICF Consulting as the Energy Efficiency Policy lead for Southern California Gas Company. As a regulatory case manager in the Power Procurement Department for Southern California Edison. As a Generation Resource Planner and Utility Finance Supervisor for San Diego Gas and Electric.

Also joining us is Alejandra Tellez from the County of Ventura, presenting the Tri-County Regional Energy Network. Alejandra is the sustainable -- Sustainability Officer for the County of Ventura. She manages the local government partnership, the Ventura County Regional Energy Alliance, which is the County's local energy efficiency clearinghouse office for training seminars, project identification, technical project support and energy planning for municipal governments, school and community college districts and special districts, and small commercial businesses.

So in partnership with the Counties of Santa Barbara and San Luis Obispo, she oversees the Tri-County Regional Energy Network, which provides residents a direct-install program and training, assistance and energy code coach services.

And finally we have Ted Bardacke with the Clean Power Alliance. Thank you for joining us, Ted.

He's Executive Director for Clean Power Alliance, Southern California's new, locally-operated electricity provider for 32 communities and approximately 1,000,000 customers across Los Angeles and Ventura Counties.

Ted brings a unique background to the organization that includes broad experience in the public sector, renewable energy planning, sustainability program design, customer service, journalism education and non-profit leadership.

He came to the Clean Power Alliance from the Office of Los Angeles's Mayor Eric Garcetti's office, where he was Director of Infrastructure and Deputy Director of the Mayor's Sustainability Office.

So, thank you all for joining me here today.

So what we're going to talk about, what interesting, engaging and challenging things you all have experienced in implementing energy efficiency, and even more broadly, looking at some building decarbonization.

So, first I just kind of want to start out with a way to kind of introduce what you guys are working on. What are your organization's energy efficiency goals? And that doesn't necessarily have to include just the state mandated goals. Like, what are you trying to achieve and

how are you going about it? So, Lujuana, we can start with you.

MS. MEDINA: Yeah. So, I think for the County of Los Angeles, and under the auspice of the SoCalREN, we actually do have similar objectives as a State. We hope to double our energy efficiency targets. We also hope to reduce in all our facilities the GHG emissions, provided the (indiscernible) facilities. So we hope to, you know, incorporate more building carbonization -- decarbonization approaches within our county facilities.

But also under the SoCalREN, we also hope to achieve more cost-efficiencies within our portfolio. We are big advocates when it comes to incorporating innovative strategies that reflect non-monetary incentives. And then we also hope to reach a greater portion of disadvantages communities and hard-to-reach customers, as you -- you know, I think Erin made a good point about being in Southern California, we have a very diverse community, which includes a lot of immigrants. It includes a lot of non-primary English speakers. It also incorporates low to moderate income level communities.

So these are kind of like the high-level objectives. I think another thing we hope to achieve is more comprehensive clean energy options. You know, currently the CPUC is tied, and I always say, tied to a

more restrictive silo implementation for their DERs. But I know they also believe that comprehensive solutions are the way to meeting SB 350.

And so, we hope, as a local government agency, to kind of incorporate a more comprehensive solution.

MS. TELLEZ: Yeah. With the Tri-County REN we share the same goals with SoCalREN, the hard-to-reach and the disadvantaged communities. But one, you know, the one thing, that there's always those people who don't fit into the right definition of what's hard to reach CAC, so we're trying to reach our underserved customers.

So it's all those that don't qualify for the low income. They're just a little bit above, yet don't have money to participate on the programs. That's what we're trying to reach, because that is a big, that is a big population in our counties. We're not considered low-income, so they don't qualify for the programs. So we're kind of in the middle, so we're trying to hit that middle audience that kind of gets ignored. That they don't have the extra income, they don't qualify.

So, we do do hard to reach, disadvantaged, but the underserved population, and also the State goals in our individual county goals, but just targeting those customers that, just that need that extra incentive to participate in the programs.

MR. KENNEY: And, Ted?

MR. BARDACKE: Hi. Thank you everyone for joining. I'm sorry I was a minute late. You guys run a tight ship here. Yeah, 15-minute intervals, I guess, for the wonks in the room.

So, I'm just going to tell a little bit about clean power lines, just to level set, and then I'll talk a little bit about what -- you know, how we see efficiency.

So we launched, started operations in June of last year, serving about 30,000 non-residential customers in unincorporated L.A. County, South Pasadena and Rolling Hills Estates.

We just completed in February enrolling every residential customer in our service territory. So that turns out to be about 925,000 customers -- and I can show you the bruises if you'd like -- into CCA service across -- and its unincorporated L.A., unincorporated Ventura, and 30 -- and 29 cities across those two areas we range from. Ojai in the north to Whittier in the south. And we go from, you know, Santa Monica, Malibu, Manhattan Beach, all the way out to Claremont, and kind of everywhere in between.

We have a, currently have a participation rate of about 96-percent. So, four-percent of our eligible customers opted out. So, we think we have a pretty good

value proposition there.

We -- tomorrow, I start -- we start serving load to our remaining 100,000 non-residential customers, also across the remaining 27 cities. So we're in the midst of, you know, startup, rollout and all that stuff, from -- we are now the largest operating CCA in California, aimed to serve about 14,000,000 gigawatt hours of load annually. Even the phone is scared of that number.

So, it's a very diverse territory. It's -- socio-economically, demographically, politically. You know, I have -- I'm the only CCA where I have member agencies where there's a majority, if not unanimous, Republican members on the city council that chose to join us. So we're also a little bit of a microcosm of policymaking for energy procurement in Southern California.

The one other thing that I'll note, and this gets into a little bit of how we think about energy efficiency is, at least among our residential customers, about 250,000 of them, are on the 100-percent renewable energy, Zero-Carbon plan today.

So that was a -- they were enrolled in that and chose to stay, and they were enrolled in that rate based on the choices that their cities made for the default. We have three rate options. So, we -- you know, that's a lot of renewable energy. That's a lot of intermittent energy.

And so we really think about efficiency from the point of view of, how can we reduce consumption in the times of the day where it's really important. That it's not, it's no longer about kilowatt hours across the board. Not every kilowatt hour saved is valued equally in my organization. And also with, you know, coming residential time of use default, it won't matter -- they won't be valued equally by the customer either.

And so we think about energy efficiency from a load-shaping and risk management perspective, to try to keep our procurement costs down and energy costs down for the consumers. And I can get into a little bit more of that as we get deeper into the program.

MR. KENNEY: Okay. Thank you, guys.

So, the first question -- I'm going to jump around here, I really want to hit on is, how do you all see CCAs and RENs interacting within the same territories effectively?

So, Lujuana, we can start with you again.

MS. MEDINA: Sure. So I think that, you know, with our CCA in place, there are complimentary services that we both can coordinate together and offer to our constituents.

You know, one of the benefits of being a Regional Energy Network is that we're regional-based, so we have a

broader touch point, whereas CCAs may be slightly fragmented in their infancy. But we find that, you know, their emphasis in the beginning will be to deliver the best available clean energy options as far as electric delivery.

And then our role is to help provide to their customers available options to help reduce their load, and then also provide them more clean energy options on programs that may be not the initial emphasis for the CCA.

But through our coordinated efforts, we're able to fulfill all those gaps, so that we're meeting everything that they need in one holistic manner. But I'll let Ted also --

MS. TELLEZ: Yeah, yeah. I think the same as well. And I mentioned, I think, you know, we share that same audience, ensuring that same message. I think one example that I want to use for Ventura County, we have some of those 100-percent default, which, you know, which is awesome, it's great, but we want to make sure that the audience doesn't think that they're safe. They don't have to anything else.

They're just -- now we're 100-percent renewable. That's it. We've done our part. So that's where we come in and, you know --

MR. BARDACKE: Let's start an --

MS. TELLEZ: -- let's take (indiscernible).

(Speaking over each other.)

MR. BARDACKE: Let's not start an aluminum smelter.

MS. TELLEZ: Yes.

UNIDIENTIFED FEMALE SPEAKER: Mr. Bardacke --

MS. TELLEZ: So that's where we -- that's where CCAs and RENs work together, and that's what we're going to do with CCA.

MR. BARDACKE: Yeah. I also go back to this idea that, you know, the genesis of the RENs is local government, and the genesis of CCAs is local government. So there's a sort of a shared DNA, a shared outlook on the world, which I think is helpful.

And, you know, as we mature and RENs evolve, you know, we're going to find that synergy below us, or we're going to go back to that original DNA, and, you know, and figure out how to be complimentary.

I really -- you know, what, you know, Alejandra said is really important. Just because you're getting 100-percent renewable energy, A, doesn't mean that you're off the hook, right.

But, B, it also means that you're paying more. And so, therefore, you know from a pocketbook perspective, you know, an avoided use is actually going to save you more money. And that's an important, you know, consideration,

particularly given that, you know, some of -- you know, we have one of the 100-percent cities in Ventura county is Oxnard, right, which is one of the poorest cities in all of Southern California. You know, they stepped up. They made that decision for their community, and it's working out well. But, you know, that's going to be a burden to some people, and we're going to look to working with the RENs to make sure that things stay affordable overall.

MR. KENNEY: Just as a follow-up on this. Have you guys looked at, you know, since CCAs have rolled out, maybe not equally throughout the State, to the CCAs that have been around, you know, like MCE and Sonoma Clean Power, of how they have integrated their work with, say, BayREN? Are those partnerships that you'd maybe want to model, or is that things you have discussed?

MS. TELLEZ: Yeah, I think we have. You know, we coordinate. We have been keeping tabs of what they're doing and how to coordinate, you know, the programs that they share or what they do.

So, definitely taking best practice and see -- you know, one of the beauty about local governments is that we always say we're so unique. We're different from our neighbor, but we're also great at working together. So, you know, they have some great programs that may not work, but we, you know, we look at them and see what, how we can

tailor and use here.

MR. KENNEY: All right. So, kind of building on that. What are some best practices or recommendations that you all could share for increasing participation from those hard-to-reach communities or low-income, disadvantaged communities, those folks within environmental justice communities, how are the RENs approaching that, you know, specific program examples?

And then, you know, Ted, how might the CCAs be planning to build into that as well? And, Ted, we'll start with you down there.

MR. BARDACKE: Okay. So, this is for me less of a, less of a question necessarily about efficiency, or more of just like, what are -- you know, how we approach disadvantaged communities overall.

So, first of all, our service territory has 15-percent of all the identified DACs in the State. So, it's a, you know, it's a significant portion of our customer base.

One thing that we did initially, and this gets to, I think to sort of, maybe it gives you a sense of where our Board is and where our leadership is. Is that in those 10 cities that opted to default all of their customers in at 100-percent renewable energy, we built in, frankly, an internal subsidy.

So that all CARE and FERA customers within those 10 communities would receive the same 100-percent renewable energy product at no additional cost. So they did not have to pay the seven- to nine-percent premium that exists for the 100-percent renewable energy product. They're paying, essentially, exactly what they would have paid to -- as a bundled customer for Edison, including their 30-percent or 12-percent CARE or FERA discount.

So, I think as we start getting back -- generate some cash and start investing in local programs and collaborating with the RENs, we, you know, we're going to bring that perspective of, you know, energy affordability, but also access to clean energy, you know, for all customer segments across the board, but with particular -- you know, looking out for any time we do a policy or, you know, institute something, you know, how is it going to affect, you know, the disadvantaged communities and -- so, there's like, what's the impact? How do you mitigate?

But then, you know, going forward, what do you do to particularly address, you know, those folks, and I think, you know, the RENs have a lot of experience, and we'll be looking to sort of some of their ideas about program design and outreach, and how you get people in to programs, which is, you know, it's hard.

It's sometimes very hard in what we call, hard to

reach, and, you know, we can't -- it's hard to, you know, do a real effective program if you -- you know, spending all your money on customer acquisition costs.

MS. TELLEZ: Yeah. One way that -- I know for the Tri-County REN, this is where it's been new to having a local government. It's where we turn to our other local government departments. One aspect is the human services healthcare. They already do all this engagement, all this outreach, so we learn from them the type of outreach that they do. We are going to share the same audience and the same clients.

One quick example is that we are providing energy efficiency training to our community nurses. They are already out in the community visiting some of the hard to reach or the DAC customers.

So they have a one-hour training every six months about what energy efficiency is. It's just a little different way of thinking. And when they're out doing the site visits for a healthcare aspect, they have energy efficiency to kind of think about.

So we're trying to connect those dots with local governments, and do that with the REN outreach that we're going be moving forward to.

MS. MEDINA: For SoCalREN, so, since we were -- you know, since our inception of 2012-2013, what we have

learned as best practices is that the public agency can be a great driver to community involvement, and also influence at the resident and community level.

So, for instance, what we have learned is that, you know, given we have a large immigrant community, or a large non-primary English speaking community, we've incorporated portfolio strategies that provide assistance, you know, through education and outreach tailored to them. So we're starting to implement a residential community coordinator that helps educate and outreach to those specific niche customers through public agency involvement.

So, for instance, we would provide a, you know, City of Alhambra workshop that provides all necessary information regarding all energy efficiency programs that not only we offer, but our partner IOUs, because we believe that there are other best available options, and that's what should be provided to that customer.

Another thing that we found was, the public agency is a great influencer for community pathways to zero-net energy. And so what we're trying to do -- and we understand that, you know, CPUC requirements are challenging, and they are tied to maybe a silo approach on DERs, we are going out to our communities and providing education and outreach regarding all DERs.

So even if we're in the door regarding energy

efficiency, we're taking that time to also educate public agencies and say, you can incorporate EV, you can incorporate DG. These are the programs available. These are the options where they can be financed. And providing them that education will be an influencer.

So, instead of just driving, you know, the education around programs, we need to be influencers and driving action. And that's what we hope our programs do, especially for disadvantaged communities. I don't like to call them low-income communities, I like to call them marginalized, because I think another big issue that we have in the County of L.A. is smog.

So we have a lot of corridor cities that outlying, big freeways and kind of transportation corridors, and they're environmental justice is very low at this time because of those – health affects provided by the GHG. And so we try to reach those communities as well.

MR. BARDACKE: I just want to add a specific example that was really interesting for us being connected to local government.

So, as part of our rollout we've been doing our own outreach through community groups on getting folks who might be eligible for CARE and FERA to -- but not signed up, to sign up. But we were doing that right at a time when -- I don't know if folks know about the public burden

debate within undocumented, the undocumented community. But the Federal Administration is trying to say that if you sign up for any public benefits, you might be considered a public burden. And a public burden is a reason for denying, or even in some times, revoking green cards or acquired citizenship.

And so, it's really hard right now in these, you know, impacted communities to get someone to sign up for a program, like -- I don't want to put my name on that. And I totally respect that and totally get that. So, one of the things that we've been doing, is just in terms of our community outreach, is learning from folks who are dealing with this public burden issue on a daily basis in their communities.

And figuring out to, you know, whether it, A, it's the right thing for people to sign up, and if so, like what are the communication strategies for getting them to sign up for, you know, a discount that is their right as a customer, because they're paying into those charges.

And so, this goes deep, and it goes deep to a lot of other things that are not, you know, energy related. But, you know, if someone's not willing to sign up for a 30-percent discount, imagine how much their not signing up for an energy efficiency program, if they're worried about, you know, being labeled a public charge.

MR. KENNEY: Thank you. That's really insightful.

Which leads into where I wanted to go next, which is, how can we look at balancing these energy efficiency programs with the other, you know, clean energy goals that we have. How do you guys view integrating, you know, decarbonization or electric vehicles into your efforts? You've mentioned that when you're in the door, you'd like to bring that up to the customer.

So how do you see that playing out in the near term, in the long term? Do we need to knock down these funding silos, or what do you see the pathway forward being?

And, Alejandra, I'd like to start with you.

MS. TELLEZ: Yeah. Definitely the funding silos are always an obstacle for local government. So, more funding and, you know, able to connect and kind of talk to each other. I think that will -- it will give us a clear, you know, understanding when we are in somebody's house explaining, you know, what the programs are, and explain all the different programs and how to get the funding.

And also, you know, the solution's not always -- we mentioned before, one size doesn't fit all. We do have all these other, you know, issues, when we have customer participation that, for whatever reason, can or won't

engage, so we have to overcome that obstacle, to kind of, you know, creating programs that, you know, can be tailored to each region or each county. That's one great benefit.

So, definitely, you know, mandates that are funded, and then mandates that can be tailored to, according to the region where they're going to be implemented.

MR. KENNEY: Lujuana?

MS. MEDINA: Yes, to her, and then added to that is, you know, one of the benefits of being Regional Energy Network and a local government program administrator, is that we're able to leverage external funds.

So, one of the things that we're trying to now is to see how our SoCalREN programs can be companion programs to external-funded efforts. So, for instance, we believe one of the biggest priorities should be integrating electric vehicle transportation electrification infrastructure in multifamily buildings.

As many have mentioned here, on the different panels, we have a significant amount of multifamily-unit buildings, and a significant amount of people driving electric vehicles, but do not have access to charging, which you would think would be like, okay, how does that work? How do they make it happen? But you would be very surprised.

And so what we hope to do is, you know, for instance, we have a SoCalREN multifamily program. But, of course, those are for EE dollars only. But we could leverage, for instance, a CEC-funded pilot that provides installation incentives for multifamily property units.

And since we're in the door with the SoCalREN, providing those dual sources allows that particular property owner to go in and see the value on a ROI basis about like, here's the different options that can be incorporated into your building, and here's the possibilities as far as reducing your carbon footprint, reducing your energy usage, and balancing those two.

So I think, you know, being a local government and having that availability or that option, you know, we just need to keep seeking those opportunities, and then incorporating them in our portfolio, so we could be models for the rest of the State.

MR. KENNEY: Ted?

MR. BARDACKE: Yes. So, I'll take maybe a little bit of a different tact, and tell a story about last week or maybe two weeks ago. I don't know how many of you out there watch how hourly KISO prices.

UNIDENTIFIED FEMALE SPEAKER: (Indiscernible).

MR. BARDACKE: Me.

UNIDENTIFIED MALE SPEAKER: (Indiscernible).

MR. BARDACKE: Yeah, right. There you go. Okay. Yeah, it's kind of cloudy today, so today's not a great -- but a couple weeks ago, you know, it was, it was clear, beautiful skies, sunny, 70 degrees and not so hot, not so cool.

Prices in KISO at 2:00 o'clock in the afternoon were, ranged between five and $10 a megawatt hour. At 8:00 o'clock that night the same day, so six hours later, they peaked at close to $100 a megawatt hour. So we had a 10-fold increase in wholesale energy prices on KISO market within the period of six hours. And this is not unusual. This is sort of, you just, you see it every single day.

And so, when Lujuana is installing those multifamily -- those chargers in multifamily buildings, I don't want them turned until midnight, okay. We can't turn them on until midnight, or we're just going to exacerbate the problem.

But if they can be, you know, done and controlled in such a way that we, that we can, you know, get all those cars charged between midnight and 6:00, like we're golden, or even better maybe focusing on workplace charging. So I think we're going to all sort of learn from our -- you know, so where it can charge during the day and, basically, get it for free.

So, I think in -- I'm thinking a lot these days

about sort of how we make sure that we're not in our silos, and just saying, okay, we've got all of those chargers in homes now, to hard-to-reach communities, like the job is done, because there's unintended consequences, and that's where sort of some of the communication and coordination, you know, sort of across all the program providers and the energy spaces is going to be really, really, really important as we go, as we go forward.

MR. KENNEY: Awesome. Thank you, guys.

So, kind of following up on this, you know, all the efforts you guys are making. Beyond what may be required in terms of reporting, like evaluating the success of the programs and measuring, verifying what happens when you go and do these installations, are there any other metric you guys are tracking.

And for Ted at the CCAs, are there things that you would expect to track for the programs you would hope to offer, that might be different from what we're dealing with today?

And Lujuana, we can start with you.

MS. MEDINA: Sure. So, I mean, outside of EM&V, we try to, try to, you know, measure our performance based on the influence, the outreach, the education we provide, and then how that's attributed actual savings that we actually find.

And then, also, on the overall actions that are taking place within, for instance, public agencies and residential customers. But it's a large, broad effort where we're trying to identify, what does that attribution look like? And then calculating how that translates, let's say, to the overall goals and targets that are established, for instance, by the CPUC and by the IEPR. So, that's kind of how we, we've tried to tie in our metrics, or our measurement of performance.

MR. KENNEY: Okay.

MS. TELLEZ: Yeah. I mean, other than the, you know, than the PUC mandate or EEMB, which is, you know, already a big -- it's a lot. Other than that, I think what we are also going to be doing is measuring kind of, you know, the influence of what's going on when an EE project happens. You know, how is that going to influence, you know, the EV infrastructure.

And just kind of the, the behavioral of what -- you know, when somebody does an energy efficiency, is there actual behavior at home, and then at work is it changing as, you know, what they do at their job and, you know, when they're at the office or wherever they're at, is that going to transfer over to what they're doing at home?

So kind of trying to track how an individual, you know, acts energy efficiency, you know, now that we have

CPA, you know, how do they all just interact. Because it's just one, big environment that we have to deal, you know, if we change one behavior here, but we totally forget it when we're at work. So trying to track that, how one influences the other. So that's one thing that we're trying to, we're trying to wrap our head around and how we can best track that.

MR. KENNEY: Okay.

MR. BARDACKE: So, thankfully, I guess I don't have to measure any of this towards the PUC program -- evaluation, until I start taking their money.

But -- so we have a much broader look at what -- you know, whether any particular program has been successful. And we want to look at GHG reduction, we want to look at local air quality. We want to look at equitable distribution across our service territory, both in terms of just geography, but also particular market segments. And we want to look at financial performance, what it does to the organization.

So, on, you know, on like the IOUs, we do not have guaranteed cost recovery. Every dollar that I invest I have to either make a return on it, it's got to lead to a financial return, or we have to know going in that we're not going to recover those costs, and they're just, they're just as spend.

And so, there's a different kind of financial discipline than what you would typically find in a EE program. You know, we don't have TRC, we don't have, you know, all that, you know, all that stuff that many people have done wonderful work on for the past, you know, few decades.

We have to run a business. We have to cover our costs. We have no tax dollars, we have no public-goods charge, we have no nothing. So, we're going to be really, really hyper-focused on making sure that we spend our money well. And there's this discipline of, you know, having to cover our costs every single year though rates that are going to shape a lot of the programs that we do in order to achieve those broader societal goals.

But the other, the flip side of that problem, the opportunity in that problem is that we, as an organization, we can be free to say, there are non-monetizable, societal benefits that we are willing to spend money on, and that's okay, right. It doesn't all have to be a return. We can spend money on resiliency and fire-prone areas.

We can spend money on storage in critical facilities, like fire stations and police stations, that don't have the kind of financial return that anybody would spend any tax dollars on, or any sort of public-goods-charge dollars the way they're currently evaluated. We

have the freedom to do that. We need to have the money to do that, but we do have the freedom to do that in -- without having to make that money back or show any sort of energy-related benefit, per se.

MR. KENNEY: Great.

So, (indiscernible), I just a couple more questions here. So, you know, talking about that kind of different approach you guys can take there with the CCAs, and just more broadly, what are all of you guys doing to inform people who participate, about the kind of non-energy benefit side.

So, beyond what they might see savings on their bill, what goes into educating them about whether it's improved their air quality, other kind of non-tangible things that may be coming as a result. You know, is that something you guys do, or is it something you would like to be doing, or any stories you can share.

Lujuana.

MS. MEDINA: Yeah. We actively do engage that kind of conversation with our public agency programs, where we inform them about not only the utility savings, which is always a top priority for them regarding cost. But also the benefits that they would have as far as health and comfort within their facilities, as well as the options of safety and resiliency, as Ted had mentioned, given that we

are in a very hot-tempered climate region, and we're faced with a lot of climate change adaptation problems.

And so what we try to do is drive them to have a long-term perspective. And so our overall outreach and education is kind of tailored that way. So, instead of just looking at the short-term perspective of the utility cost savings that would be attributed, we try to identify other areas that are kind on their objectives, as far as, like for instance, public agencies have health and safety requirements to meet for all of their constituents.

And so I think Garrett made a good point about street lighting and how, yes, it may save on the overall bill, but it also has provided safety regarding the communities, because they have a brighter, I know it's like a brighter visual on their new lights. So, that's something that they definitely prioritize and consider. But it's all about educating them and providing that understanding, that this is a long-term objective, and it will help overall.

MS. TELLEZ: Yes, definitely education. One thing that's happened in our region, you know, due to the recent wildfires, just because of what, you know, what we're talking about.

Even now, a year and a half after Thomas Fire, there are still homes that we go and visit. They were

nowhere near close where the fire was happening, but there is tons of ash in their attic, and they have no idea that it was there. So, I mean, that's one of the energy efficiencies, like hardly any of us go up on the attic and check our insulation. And they get excited about doing an insulation retrofit.

So, the fact that it's been there for a year and a half and they didn't have an idea that it was happening. So it's just getting that education forward and saying, you know, this is something that can happen, and this is something that we have to go and check. So, that's one thing that we're continuing a year and a half after the Thomas Fire.

A year and several months after the Woolsey Fires, kind of just, you know, having that -- it's not a good thing that it's become a common, but that's one thing that we have to keep on educating and reminding people.

And now it's become like a real-life event in our county that, you know, somebody will -- aware of and have to become respectful of what -- even if you're not close to the fire, and there's all this other, you know, there's outside effects of what can happen. And it's an energy efficiency project that we can, you know, take advantage of, so.

MR. KENNEY: Ted.

MR. BARDACKE: I'm good.

MR. KENNEY: You're good? All right.

All right. Well, then I wanted to ask one final question, which we've been asking all our panelists. Is there anything that, you know, at the Energy Commission or other state agencies that we can do to help? What recommendations would you have for us to take away today?

And, Ted, I'd like to start with you.

MR. BARDACKE: Yeah. So, I'll just say I'm -- I don't know what you'd call it these days, but I remember it as the Pier Program.

MR. KENNEY: That was our Natural Gas.

MR. BARDACKE: What?

MR. KENNEY: That's the Natural Gas Program.

MR. BARDACKE: No. The --

UNIDENTIFIED FEMALE SPEAKER: (Indiscernible.)

MR. KENNEY: EPIC. Yeah.

MR. BARDACKE: Thank you.

MR. KENNEY: EPIC.

MR. BARDACKE: Yes, EPIC. Nice. (Indiscernible). Yes.

So, you know, I -- one of the first big projects that I did in my sustainability and energy efficiency career and renewable energy career was through, it was then the PIER Program, now EPIC, we built the first 100 units of

net-zero electricity affordable housing in the State of California, 56 units in Poway, and 42 units in Chula Vista, using a -- you know, then the PIER Program funding.

And out of that, in addition to coming, like learning all the challenges of multifamily buildings, or just in general about net zero, came the idea that is -- that implemented a virtual net metering. So like from those two projects we brought the idea of virtual net metering to the PUC, and through the MASH Program and all that.

And I'll just tell the story. The reason that happened was he built these projects in the most -- in the dumbest way possible, because it was the only thing that we could do. So, in that, those 42 units in Chula Vista, which is a picture that you still see on the CEC web site, you open up the utility closet and there's 42 meter -- 42 inverters. And up what looks like one nice, beautiful array on the top of that roof is actually 42 separate systems. Like dumb, right? And -- but we built it. We did it.

And then we brought two PUC commissioners and two CEC commissioners, which was quite a feat back then when they didn't even talk to each other, down, and like flung open that utility closet and said, look, you guys, that's your fault.

And so back to the question -- and three years later we had like this amazing regulatory change around virtual net metering in the State of California.

So, I think the advice to the CEC in terms of its investments, and thinking about it is like, you know, go out on a limb and fund projects that you think are like maybe sub-optimal, or, you know, be open to like the idea of doing something and letting your project teams run with it, because you never know what the outcome is.

If you try to make sure that everything's done exactly the right way in a program the first time, you're never going to get the kind of learning opportunity that you need to. So, sort of be open to that in some of these experimental projects.

MR. KENNEY: Alejandra.

MS. TELLEZ: So the point funding -- I can never not say funding. I think one thing that, you know, both CEC, CPUC, I guess keep in mind, and Garrett mentioned earlier, you know, to get an energy efficiency incentive, all the obstacle and the work that gets put into it.

And then Laurel mentioned that when CEC or PUC, you know, suggests -- mandates something, don't forget that local governments don't have access to data, REU data. So we do have a hard time getting that data, and then the interpretation of, you know, when data can be released and

the different rules.

So, we're great at, you know, working together and funding through programs, but a lot of times we don't have access to the data needed. So, that's one of the, one of the big obstacles for local governments, is we don't have access to the data that, you know, helps us make informed decisions and helps us design programs that are going to make sense.

MR. KENNEY: Lujuana?

MS. MEDINA: Yeah. Well, first I want to thank you guys for actually -- I mentioned this to Michael earlier, that how you guys are taking a regional approach for holding these workshops, because they have a tendency to be northern-centric. So I want to thank you for coming down south, because I think it highlights our regional needs.

And so with that, I would just, would like from the CPUC and the CEC is to, one, have a better understanding about what our needs and our market requires. And then, also, provide local governments additional pathways and opportunities. I think you guys have initiated that, and I'm so happy.

And this is a great opportunity, but I'm hoping that that expand -- gets expanded, especially now with the -- you know, all of the CCAs coming onboard and they have,

they're having local government administrated.

You know, the IOU model is now changing, and I think local governments can be the long-term solution for all the customer choice options that are needed in the future in our State.

And then we also hold that kind of trusted capacity with our constituents, so I think that also should be leveraged. So, that's all.

MR. KENNEY: Great. Well, I'd like to open it up then to some Q&A.

So if anybody in the audience has a question, we'll be passing around a microphone.

David.

MR. JACOT: Hi. Thanks everyone. David Jacot, LADWP. I had a question specifically for Ted. If anybody wants to take it on, go ahead.

Ted and I met in the restroom earlier, and I had a whole litany of questions, but he's answered half of them, which has actually made me think of other questions. So, he's been great. Actually, it's really been informative. I've got to congratulate the whole panel first. It's been very informative.

But I see a disconnect here, and maybe this is more of a comment that you might want to respond to. I see a disconnect here now, now that I understand your business

model. You're thinking already in terms of, you've got 100-percent renewables, and so you've got this huge cost -- your intermittency is that issue. The IOUs and the POUs are still kind of in the infancy of dealing with the intermittency.

You know, at 33-percent doesn't make the big difference. It doesn't at 80-percent, and certainly not at 100-percent when you have a city that's signed up for 100-percent renewables. So you're ahead of the game, actually in how you're having to think about what your business model looks like.

So, energy efficiency it's kind of marginal to you. Really, it's more a matter of response in load shifting. And where energy -- where a measure, an energy efficiency measure typically is applied to the times you need that load to shift, then it's good, but everything else is bad for the most part, given your revenue model, no decoupling, you know, just pure revenue retail. You know, wherever you can shave off to do your policy stuff, great, like we do at LADWP, you know, within what -- you know, what the ecosystem will bear, what the market will bear.

So -- but the disconnect I see is that you're thinking in that term, in those terms, relatively short-term, because that's the immediate pressing business need. The utility, the IOU, or in our case, like the POU, we're

thinking long-term down the road when we're, you know, getting to that full decarbonization in 2045, and the amount of storage we're going to have to bring onto the system to make that work.

And so, we're -- I'm thinking, at least, if my energy efficiency program's a bit more long-term. Because I have our power system planning folks come to us and say already, don't give me HVAC savings at 4:00 p.m. And I tell them, the answer isn't less kWh savings or energy efficiency, the answer's more storage, build more storage.

But you guys -- and here's the inefficiency I see with the way this model's set up now, is you guys don't have that play. You can't just go try and build more storage. That's pretty much on the infrastructure side, I would assume. Maybe you can procure storage. So maybe that's one thing you could speak to.

But my other point is, and just observation is, is I just see this disconnect between the CCAs have these immediate revenue needs, totally natural, but having split that retail side out from the long-term poles and wires procurement and infrastructure building, doesn't that kind of exacerbate that -- what it's going to take to jump from where you guys are at to where the State ultimately needs to get, in terms of the infrastructure to support decarbonization, electrification, two times load growth,

and decarbonizing the existing grid?

MR. BARDACKE: Yeah. So that's a good question. We're still figuring it out. But we are already out in the market procuring front-of-the-meter storage. So, it's not a, it's actually not a -- not only the IOUs can invest in infrastructure in front of the meter.

So, you know, we're negotiating a number of long-term renewable energy contracts right now. More than half of them include storage. And we're also negotiating a deal in one of our local capacity constrained areas for 60 megawatts, 60 megawatt battery, standalone. We'll be the first CCA to invest in standalone energy storage.

So, you know, as a load-shifting demand -- you know, as a resource that can do what our business needs, but also contribute to the long-term, you know, transformation of the -- to a fully decarbonized grid.

The other thing that I'll note is that we -- when we have -- and this gets to the local government piece. To the extent that part of the solution, in terms of the intermittency across the State, is behind the meter solutions, we have a different relationship with our customers than the IOUs do, because we're, you know, we're connected to their addresses in so many other kinds of ways through our local governments.

So, the ability to sort of work on behind-the-

meter solutions in partnership with the RENs and what local governments are doing, whether it's through building codes or, you know, transportation policy, are two, you know, important areas, we think we've got, you know, part of the winning formula, at least the seeds of the winning formula. I don't -- it's -- you know, the fully integrated utility, you know, is really good for central planning. It's not -- it hasn't proven the best for decentralized planning.

And so that's sort of your call about how we're going to get to the fully decarbonized grid. It's probably going to be a little bit of central planning and a little bit of decentralized together, but, you know, we're certainly on the decentralized camp, given, you know, our business seeds, but also, you know, who we're connected to.

MR. KENNEY: Any other questions?

MR. SEVERANCE: Bruce Severance, Mitsubishi Electric. One of the things that, you know, I'd say to the director and VP level in our company that we've talked about, is the concern around -- there's a real need to do rate design that really appropriately values energy relative to carbon content on the grid. And we get that, in terms of like what we're trying to do with climate change.

And at the same time there's, you know, some push towards electrification, which works better with propane

and, you know, direct electric existing homes in terms of fuel switching, then it does for many natural gas scenarios.

And so, looking at those operating costs and wanting to avoid the scenario that David Jacot -- is it Jacot? I -- yeah -- was referring to, I mean, those are very valid concerns. And so, what I keep going back to -- and then we've got the grid harmonization piece, and your example of the 10-fold difference in costs between noon and 12:00 o'clock at night on the same day.

And then there's the behavioral variability of whether or not people actually plug in and program their EVs to start charging at the right time, or if they'll pay attention to the rate values at all.

So, what I -- in my mind what I keep going back to, and I'm wondering if anyone else is thinking about it. It's not just about storage in my mind, it's about the complimentary role that offshore wind can play in our grid.

And there's some analyses that have been done on this, and Cal Poly is in the middle of a study on this, where it really appears that offshore wind can highly compliment and fit around solar, and really help grid harmonize solar without doing the investment in storage.

Having a background in EV development, I'm really concerned about the lifecycle cost issues of just doing

mass grid storage. And to me, that should be this little bushing that absorbs a little bit of shock in the course of a day, and not this huge shock absorber that's trying to do all the grid management. And I don't think we're going to get there with just DR and load shifting. I mean, we can do that a little bit. You know, that's another smaller shock absorber.

So, you know, what the CCAs can do is align their power purchase agreements with people that are working on that. And to me -- as well as on storage. You know, there's -- it's more than just solar plus storage as one option. There's also wind plus as an option, and then just doing offshore wind, which blows much more continuously, and is going to help provide that sort of, you know, something more like baseload generation that we're losing with the nuclear power plants that are shutting down.

So, you know, I keep going back to that because, you know, we're concerned about it from that standpoint. Are you guys, you know, seeing that as an opportunity for, you know, putting out RFQs in that direction?

MR. BARDACKE: Well, I know folks in Alejandra's territory are looking at offshore winds, so she may know a little bit more on an update on that, on that project. I mean, I think there's a, there's got to be sort of the, all-of-the-above strategy.

The, you know, the Redwood Coast Energy Authority, which is the CCA in Humboldt County, already has issued an RFQ for offshore wind up in that area, and is collaborating deeply with PG&E on sort of, on how that would work. So, you know, we need to sort of get as much on the grid at 8:00 o'clock at night as possible. And if wind's going to do it, then, you know, we'll go, we'll go after it. But, you know, there's a lot of local politics around offshore wind. I don't know whether you -- what do you want to say about that?

MS. TELLEZ: Not a lot. Yeah. Yeah, there is a lot of politics -- I mean, we're all looking into it. I think that's one of the things, you know, there's competing, you know, opinions of what we should do with offshore wind and what the opportunities are in our county. But it is something that we are looking into. We didn't just completely write it off. So, we are, you know, kind of seeing what Redwood's doing and kind of the study at Cal Poly. So, it's something that's, it's been in the radar of our elected officials, so we're going to still be keeping an eye, and not totally going to say that it's not going to happen.

MR. KENNEY: All right. Any --

UNIDENTIFIED MALE SPEAKER: (Indiscernible.)

MS. TELLEZ: I don't know. You'll have to ask

the politicians.

MR. KENNEY: All right. Any other questions? All right. Well, then let's give our panelists a round of applause. Thank you guys so much.

(Applause.)

MR. KENNEY: Okay. So we're going to switch now to a short break. So, get up, stretch, get some water. We're going to return in 10 minutes. So -- I don't know what time it is. So at 3:00 o'clock we'll be back here right on time, to start our Multifamily Panel.

(A recess was taken from 2:51 p.m. to 3:01 p.m.)

MS. RAXTER: So, hello everyone. My name is Ronnie Raxter. I'm an Energy Commission Specialist in the Benchmarking and Equity Unit in the Efficiency Division of the California Energy Commission. I am pleased to moderate Panel Number 4, which is capturing deeper energy -- I'm sorry, deeper savings from multifamily buildings.

According to the U.S. Census Bureau, nearly 60-percent of multifamily buildings in California were built before 1979. According to the Federal Poverty Guidelines, 33-percent of California households are classified as low-income. And according to our barrier study, 47-percent of low-income Californians live in multifamily housing.

Will Rogers once said, "even if you are on the right track you will get run over if you just sit there."

Joining us today to help us move forward on the right track are John --

MR. PERFITT: Perfitt.

MS. RAXTER: -- Perfitt, from the Los Angeles Better Buildings Challenge, and Russell Bayba from Build It Green.

John is the Director of the Multifamily for the Los Angeles Better Buildings Challenge, a City of L.A. sponsored leadership initiative aimed at making Los Angeles buildings 20-percent more energy efficient by 2020.

For the last 10 years John has taught economic development finance to graduate planning students at the Price School of Public Policy at USC.

He also currently runs Restore Neighborhoods LA, or RNLA. RNLA is a specialized real estate non-profit focused on investing in real estate in lower income neighborhoods, while using economically and environmentally sustainable strategies.

RNLA has developed a strong competency with deploying Community Development Finance Institution, or CDFI, capital into neighborhoods, turning around distressed real estate assets and building cost-effective, affordable home ownership units.

And Russell Bayba is the Project Manager at Build It Green, and I'm going to hand it over to him for his bio.

MR. BAYBA: Thank you. So, Build It Green is a non-profit. We started with a program that does green building certification a number of years ago. We had moved into utility rebate programs. We've done -- we're in the process of doing studies with, actually with the CEC, a few of them, in fact.

And we're also working with Community Choice Energy utilities as well, trying to help contractors, property owners, to get rebates and go through this hard process of energy upgrades.

MS. RAXTER: All right. So for -- as a, kind of a general note, when responding, please indicate what type of multifamily building you're referring to, whether it's large, small or low-income.

The first question is two parts. What best practices can you share for capturing energy efficiency in multifamily buildings? Are these common area upgrades, or are you able to capture deeper upgrades in individual dwellings?

MR. PERFITT: Can I start? Okay. My answer's -- I feel like we're -- I thought we were the -- not the opening act, but the headliners, but we kind of lost some people, huh? It's like of like open mike. I signed up and that was my chance. Give me a microphone. A little levity at the energy efficiency panel, right?

My comments are mostly on medium and affordable, or what I call, "street affordable buildings." The majority of people at least, are very focused on the City of Los Angeles. The majority of people live -- that live in apartment buildings live in apartment buildings that are not covenanted or are not traditional affordable housing. They are what people call naturally occurring affordable. So that's what I'm informed by, because a big stock of the City of Los Angeles, a huge part of the apartment stock.

So, as far as best practices, I keep it really simple in a lot of facets of my life. I find it's just easier for someone as simple as I am. We focus on appliances, water heating and space heating. When you do that, that's about close to 80-percent of the consumption that goes on. So, programs, incentives, retrofits focusing on those things will yield results and move the meter.

As far as common area, the nice thing is the trend, at least in the city, and we'll talk more about this in -- with the State, with AB 802, is that whole-building data is becoming available.

And that's on multifamily to move the needle, you have to get into the units and get some change occurring there. Because, you know, you just work around the edges on common area. It's nice, and it can help somewhat with the NOI, the net operating income of a building, but it's

not going to move the needle, vis-à-vis, these incentive -- these targets we want to hit.

MR. BAYBA: Yeah. I think what -- multifamily is really complicated. There's -- it starts with five units and goes, you know, all the way up to, you know, 600 units I've gone into. And some of them look like single family and some of them look nothing like single family.

And so the approach is really dynamic. You really have to think about it from each building with -- given the income levels, how are you going to approach it? What kind of systems do they have, and really, you know, get that assessment done early, so you have a really good sense of what the opportunities are?

And, certainly, lighting and water heating is usually the biggest ones, but there's -- you know, each building is really different. And what we want to approach this with is a comprehensive look, and try to tackle what's -- you know, where we should go with each of these buildings, you know, kind of with that end goal of thinking about being all electric. I think that's kind of where we have to go.

And one of the things we're doing is looking at trying to -- because we can't do that in utility programs very often. One of the things we're trying to do is look at how to upgrade the shell. Get all the stuff we can get

done insulating the walls, the floors, the attics. And doing all the lighting that we can get done kind of early on, and cut preparation for hopefully going back when we can really have a lot of incentives for that fuel switching.

MS. RAXTER: So the next question is multipart as well. What changes can be made to capture more energy efficiency in multifamily dwellings? Are they problem -- I'm sorry, programmatic, policy, resource related or other?

MR. PERFITT: I think they're policy and programmatic and resource related. So I think it would be great to have a different set of incentives. I know this is fraught with problems, but I'd love to see utilities be able to offer incentives that prioritize multifamily, because the bulk of low-income folks that are low-income live in multifamily buildings.

And even more granular, high EUI, energy use intensity buildings, and increase the amount that is available to both tenants and landlords in those areas, to push out and invest in energy and efficiency in those low-income areas, which has not seen the level of investment.

And there's a whole group of advocates that will point that out to you -- that out to folks, about energy incentives, energy efficiency incentives not being, having the same subscription and utilization in some of these

areas. So I think that's a, you know, a policy and programmatic thing.

One sort of a mechanical or policy thing is -- and I'm getting a little bit into sort of the work that I do. And most of the work that I do is in lower-income areas and DACs, disadvantaged communities. So, how to come up with ways with, you know, new, faster and easier to use, more customer-friendly incentives, namely, things like point of sale, where you instantly realize the rebate.

Now, that's fraught with all kinds of mechanical problems, but some of these things would do a lot to push out incentives into the multifamily marketplace or into these buildings, and really move the needle on energy efficiency I think.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. Policy, I think, we really have to think long-term. We can't have these short cycles. We worked SoCalREN Multifamily for quite a while, and, you know, the projects that did really well are the ones that had already started. And they just happened to take advantage of the fact that there were rebates being offered.

It's really hard to think about a program cycle so short, typically three years. You really need to, with multifamily, you need to acquire -- figure out what the

issues are. You have to find where you're going to get the money. And those are much longer. Those are five, 10 years out. So, I think for policy, you really have to think long-term, and not short-term. I think that was, that was definitely a big lesson that we have learned.

Also, trying to figure out, you know, work with property owners. They take a long time to come around. Sometimes -- especially if you want to do deep retrofits, those take a lot of money. We'd like to see a way of funding that and make it easier for them to access money and to, you know, realize the savings.

Let's see. I think, also, kind of from a programmatic side, and it was talked about earlier, is just access to these programs, making them streamlined. They can be really complicated and cumbersome, and turn off a lot of property owners.

I've gone around a number of times trying to kind of sell the opportunity to property owners, and they saw that there was a certain amount of opportunity, but that the programs were overly complicated and time consuming, and even with -- especially the large property owners, they had resources do that, it just sort of overburdened them, and they wanted to -- they moved away from these opportunities. So, I think long-term investment is one of the big keys.

MS. RAXTER: So how are non-energy benefits incorporated into the program process, if at all?

John?

MR. PERFITT: We integrate when we can. In my work with the LABBC, Better Buildings Challenge, as well as with Restore Neighborhoods Los Angeles. We're in the process of implementing some TCC funds, for transformative climate community, cap-and-trade dollars, basically, in Watts.

We have a solar and energy efficiency program in the neighborhood of Watts. A very aggressive and well-funded outreach program. Some pretty bold targets for -- in a very targeted area. Two targets in terms of goals that we want to achieve. We have a workforce development component, both on the EE side, as well as on the solar side. So we've got some strategic partnerships with Grid Alternatives, who's doing some really great work with respect to the workforce development.

So whenever we can, and we have the opportunity, that's one thing that we try to be able to have people learn through a combination of classroom, as well as in-the-field training. We're always talking about lowering costs for tenants. We're always talking to them about increasing comfort. We're always talking to them about, you know, any of the other things that are possible.

We have a program, a pilot program with AEA that we're going to be working on, that is multifamily electrification. So, getting rid of and moving over and doing some fuel switching. So, those things are on our mind when we're implementing programs.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. I mean, I think when we're talking about non-energy benefits, we're talking about those co-benefits. Things that, you know, are not necessarily -- you know, you don't find them in gas therms or kWh.

We've really tried to think about how we can think about these programs as far as GHG reductions. And also think about them in terms of, how can we provide enough services to these tenants, homeowners, to make their lives better. We have a couple of pilots that we're working on in Northern California, where we're bringing in funding from other sources, and we're trying to do things not only from the energy side, but we're pulling out carpeting.

We're trying to increase -- or lower asthma triggers. We're going in and adding and replacing roofs where we could, so that Grid could then come back in and put solar on. We really look at trying to do as much for that homeowner as possible, that tenant, with the funding

that's available. Sometimes it's pretty difficult to do, and it's always a challenge, but I know these smaller utilities are much more interested in doing this kind of work, looking at these co-benefits.

MS. RAXTER: What challenges do you face to performing deep energy efficiency upgrades?

John?

MR. PERFITT: So, again, I'll talk about small to medium-size buildings, either in lower income areas or traditional affordable housing. The thing that we've encountered and we're talking with a lot of folks about, is there's worries of displacement. That somehow tenants will be displaced of retrofits and upgrades.

Coordination of work. When we're working in the City of Los Angeles, you know, sometimes there are certain requirements as far as potential relocation and otherwise. Taking systems off lines -- offline for periods of time is impactful for people's lives. Code violations, preexisting code violations that we encounter.

More egregious than that is usually deferred maintenance that you just sort of uncover, you can see sometimes, but sometimes you can't. And some of those -- those are some of the challenges that we figure out in the field.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. I mean, I think we have the same sort of thing, John. There's a lot of those barriers to going very deep. I think cost is a big one. That, you know, getting these central systems in, you know, upgraded, is really expensive. And a lot of time multifamily property owners don't have the kind of money to be able to do that.

They have these, I guess, market-rate, low-income, I think is how you described it. Is, you know, they're kind of mom-and-pop. They're not huge projects, but they don't have a lot of extra money to invest. And, you know, a lot of the investment is either, goes to the tenants, and, you know, not enough gets to go to them to make these kind of capital investments. So, I think you explained it pretty well.

MS. RAXTER: So that leads into our next question, is what funding sources exist for bridge funding to address unanticipated costs triggered by building retrofits, such as lead, mold and asbestos mitigation?

MR. PERFITT: Again, I'm going to talk about sort of mostly medium sized and smaller multifamily. Bridge is a tough one. I'm going to first talk about there are products out there that will specifically underwrite to landlord and tenant savings, and those are usually large refinance products, loan products, funding sources. Fannie

has one, Freddy has one.

They're both preservation under sort of the category of preservation, housing preservation. But they'll provide you with preferred terms with respect to undertaking certain energy efficiency upgrades.

There's also quite a few FHA long-term refinancing products out there that could be used effectively to refinance some of these -- or, excuse me, to implement some of these energy efficiency, but it' not really to your question.

Your question is about, you know, some of these things like asbestos and mold. My view on that is you're not -- I don't know of a stop-gap product that's out there that will do that. There are some limited programs in cities that they use CDBG, Community Development Block Grant funds, otherwise to do it. We've used them to do remediation, asbestos and lead and so forth. They existed to a limited extent.

The best way to handle a lot of this stuff is really good inspection, budgeting, contingency, to be able to deal with these things, or know what you're getting into beforehand. Spend the money on testing and otherwise. That's a mitigation, if you will, or -- it's not a bridge, per se.

You know, there are, there are products out there

like PACE, which has fallen on pretty hard times these days, that may be considered a bridge product, if you will, but it's a very tough thing to try to find bridge financing for a, you know, a problem like that. Instead, you should budget, with adequate contingency on your refinance and your full retrofit budget.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. We've tried to figure out how to leverage these funds. One of the problems is, just having access to them. The funding cycles, we find that there is funding for a period of time for, I think it was asbestos, and then that funding went away. So we couldn't anticipate where that funding would go and how far it would go. Sometimes the programs, you know, sunset at a certain time, and then there's funding later.

One of the things we've tried to utilize is private funding sources. Sometimes there is corporations that are willing to give grants, and we've used that. We've worked with GHHI a little bit, trying to identify funding, and I think we're going to do that with Marin Clean Energy.

There's a number of ways to go about this, but it gets complicated, and keeping track of all the different funding sources is challenging, and keeping up on it.

MS. RAXTER: So the next question is a multipoint

question, too.

To what extent do you utilize a well-trained workforce in your energy efficiency efforts? Are your building operators trained for new technologies and equipment, such heat pumps, and is additional training needed?

John?

MR. PERFITT: I think additional training is needed. I think sometimes they're not presented with the empirical evidence, and understand the potential cost-savings implications.

Working with well-trained -- I mean, we rely often times on just general contractors. Sometimes when it's a larger scale project, we'll have more specialized, energy related folks working on the project. But I definitely think -- and it's one of the things the Better Buildings Challenge does, is does product workplaces and case studies and things like that, to try to educate property managers, owners and so forth, about the efficacy of some of these things. It's really the cost benefit of a lot of these, implementation of a lot of these technologies.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. This has been something we're working on. At Build It Green we have a, kind of small

pilot to train contractors with heat pumps. Some of them were trying to get, you know, ones that have already done heat pumps, so that they can work with other contractors. But it's something we're really thinking about how to expand knowledge, really get people really comfortable with heat pumps. It's great to see, you know, Mitsubishi here listening in on this as well. But it's an area, I think, that we're trying to expand as much as possible within our work.

MS. RAXTER: Why should building owners push for deeper energy efficiency retrofits, and what advice would you give to other building owners not currently going beyond the minimum required upgrades?

John?

MR. PERFITT: You know, my answer's going to be very non-scientific. I'm good at that. Is it's a missed opportunity? It's -- every time I've not gone as far as I wanted to, notwithstanding even looking at the numbers and so forth, I've regretted it as an owner, as a developer and otherwise.

So, my point is, it's very similar to the case that I make for LIWP and otherwise, is that once you're in there and you're mobilized, the marginal -- it's just like a contractor. Often times you can do things once you're in the middle of something, that you couldn't otherwise do.

And if you hold back, it's a missed opportunity that will go missed for a long time.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah, yeah. Exactly. I think that's one of the biggest ones is, once you get in there, you want to do everything you can. You don't want to go back. And certainly with tenants, you don't have many opportunities.

A lot of times low-income tenants are working multiple jobs. They can handle you coming in once or twice, but if you come back a year later, five years later, it's really hard to get into residence, the -- you know, in unit. And it's also property owners don't want you there as well. They don't want you there for years.

So, you really want to get in, do all the work you can, because you won't have the opportunity later. They're not going to; they're not going to have you come back.

MS. RAXTER: Great. Thank you.

How do you incorporate low-income, community-based organizations into your efforts, and how do you ensure low-income residents are not priced out on the upgrade process?

John?

MR. PERFITT: We're constantly working with community-based organizations. We like to leverage a lot

of the, their ability to connect and message and so forth. So it's happening with the LABBC, it's happening with my work in small-scale development as well.

The second part of the question, this discussion is -- because I'm a little bit of a freak. I hang with the greedy developers; I hang with the advocates. I like them both. I respect them both. I hang with the people in between. I think of myself as a pure, a centrist when it comes to a lot of these housing policy and energy efficiency and sustainability issues, and very highly pragmatic more than anything.

So, we're in a debate right now with some of the advocates. As an implementer, we are an implementer about, you know, these upgrades, energy efficiency upgrades, you know, potentially pricing people out and displacing them.

My request to everyone, it could be on some of these other questions, is if that's that the case, let's have empirical evidence that shows that, and let's mitigate it. We're taking measures that we think would mitigate it, but we don't know definitively that this is happening in the marketplace. Because it's complicated and difficult to isolate from a general problem with people getting priced out of quality housing -- or not even quality housing, just housing, period.

So, you know, I prefer a civil discourse with

data and finding from objective sources that want to talk about -- you know, it's the same debate that you get in with folks about, you know, gentrification occurring. And it absolutely occurs, but it doesn't occur everywhere, and it doesn't everywhere that everyone perceives it occurs.

So, my answer to that is a question, basically. If that's occurring, people are getting priced out as a function of these energy efficiency upgrades, let's establish that and then let's come up with a strategy to not do that or mitigate those effects. But I'm not -- I remain unconvinced that it's happening one for one, and I could be wrong.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. I don't know if it's happening or not with LIWP we had a clause in our contract that, you know, stated, you know, you couldn't kick somebody out. There was language. I can't remember exactly what it said. But we no idea whether with -- after the upgrades, whether they got kicked out or not. It's one of the loopholes. It just is something that we'd like to keep track of, to figure out really what's going on.

And part of the first question, we really rely on community-based organizations to get the word out, to communicate to the populations that they know the most. We really -- we can't be everywhere. We run programs all over

the State. We definitely rely on the people who are working on the ground, and doing the work with the people that are getting these upgrades. I know not far from here; we're working with one contractor. And they told us that they were not using -- they were not going to talk about the solar potential on the projects that they might bring to these homeowners, because there was a sort of fly-by-night, as they described, solar company that was promising everything and not delivering. And gave the solar, PV a bad name. And it was -- they were rejecting a lot of the homeowners -- the homeowners were rejecting these contractors and community outreachers because of this problem.

And so we wouldn't have known about and known why we weren't getting many projects in that area unless we had heard from them, these people working right on the ground. And, yeah, I think those partnerships are really, really important.

MR. PERFITT: I don't want to dwell on this, but it's kind of a hot button for me right now. Because we get beat up by a variety -- from people for not pushing out and investing in energy efficiency in certain areas, like Watts, where we're working right now. And then we're also going to get it that we're going to potentially displace these people, because we're doing those energy

efficiencies.

So it's kind of like you've got to choose and -- but again, I'm not -- if anything, I'm objective. That if there is concrete evidence that this is, this is contributing to displacement, let's deal with that. But it's hard for me to, hard for me to get beat up both ways.

MS. RAXTER: Good answers. So the next one is, how are residents in multifamily buildings best able to access energy efficiency programs? And how do you as a building owner --

UNIDIENTIFED FEMALE SPEAKER: He's not a building owner.

MS. RAXTER: -- encourage or permit them to participate?

MR. PERFITT: Well, we're a building owner actually.

UNIDIENTIFED FEMALE SPEAKER: You are?

MR. PERFITT: Yeah, we own buildings. So we experience -- the truth is, the gentleman from Santa Monica was really eloquent in comparing in the earlier panel, I think the first one, comparing the solar. You buy a solar vehicle and you just send your receipt and your VIN number to the State and you get $1,500. Done.

It's not easy. It's not easy in a multifamily building to get -- be a tenant and try to go after gas, or,

you know, you've got to get -- there's a whole process here. So, user-friendliness is just not there.

There's a lot of different ways to streamline that and tons of ideas. We don't have time to talk about that, but -- and I'm sure there's a lot of potential, you know, legal reasons not to do some of the things.

But I do think it's incumbent on building owners and property management to educate tenants about these things, and help them somewhat understand the process, manage expectations and so forth, because it's not easy. It's a complicated one, and it doesn't need to be.

And sometimes I feel like it doesn't -- if you're trending towards getting less complicated, and the truth, tenants don't want to be bothered with this stuff. It's, they've got enough going on. They're busy.

This is sort a land -- even though the incentives are there, you know, to benefit them in some ways, depending on the incentive, it's sort of -- they look at it as the responsibility of -- because, in a way, it's a small capital improvement. So we look at like, we're going to get stuff on the turn. When the unit is vacant we're going to attack this stuff, even if it doesn't convey benefit to ownership, per se, that's the time to go get it, and we often do. And so, it's another way.

I think if you really want to move the market

somewhat, in terms of multifamily energy efficiency upgrades, which is a big portion of the market in a place like the City of Los Angeles, you've got to get tenants motivated to -- and financially motivated. So deep, targeted, quick rebates that are user-friendly, which it's pretty much not any of those. Some of them are deeper in the markets that I work in.

So, I think you'll get more response if you have those things in place, but they're not in place right now.

MS. RAXTER: And, Russell?

MR. BAYBA: Yeah. I think it's a challenge. I think that property owners are not as motivated to do upgrades that they don't see the benefit, right? So why would they put out money if they're not going to get some savings back.

And, you know with ESA, property owners don't like that either, because ESA will just go into the units and do some minor upgrades. And, I mean, the real challenge is really getting real upgrades for the whole building. And having the approach of working with the property owner to help educate and allow the tenants to -- for these programs to go in and get them served is really important. That's kind of how we look at it.

MS. RAXTER: Have you experienced successful market-rate multifamily retrofit, and if so, what made them

successful?

John?

MR. PERFITT: The people that do it, it's just like recapitalization, refinancing. It's really systematic. They're looking at budgeting cycles; they're looking at technology. They're looking at moving -- you know, the biggest bang for their dollar, and they're strategic about it. So -- and they're not necessarily accessing outside capital to do it on these financial project -- products that I talked about. Often times they're being smart with capital reserves, and going in and attacking these things that make financial sense.

So we see it with our partners at the LABBC, the ones that are really on it. And it's a regularized, sort of systematic approach to attacking these things.

MR. BAYBA: Yeah. I mean, I think, you know, generally speak, central systems are -- and whole-building approaches are the most successful. But, again, it's really the property owners that have been thinking about this for a while. They've secured funding, and the programs come in just to sort of put icing on the cake.

Maybe they were able to upgrade their HVAC systems to a higher -- or higher efficiency units, because they realized they were going to get a little bit more money. But the successful ones are really doing

everything. They're doing attic insulation. They're even going and doing wall insulation. They're changing out heating systems and cooling systems and water heating, as well as lightbulbs. So it's those larger projects that are doing everything that we really see are the most successful.

MS. RAXTER: And we are down to our last question. What role can the Energy Commission play to reduce barriers to energy efficiency upgrades, and what can other State agencies do to help?

MR. PERFITT: Do you want to mix it up and go first, Russell?

MR. BAYBA: Okay.

MS. RAXTER: All right. Russell, you're up.

MR. BAYBA: I only got a (indiscernible) last year.

I think really offering the assessment upfront for property owners is really important. I think figuring out how to have the assessment made so it's easy for the property owner to understand what's going on in their building. When they have that information, then they know how to tackle their issues. I mean, they, they're thinking probably long-term, and if they know what they can go after when is really important.

Again, going back to program cycles. That really

having these long-term program cycles is really key. Offering funding that's affordable and easy, I think that's a really, really important thing. Being able to communicate to property owners the co-benefits that are out there for their tenants, for their own properties.

And, you know, I think that another part of it is really targeting these smaller properties, not the larger properties. That we see a lot of between five and 20 units, 20 and 50-unit complexes, and those are falling through the cracks.

And what we want to do is really figure out how we can get in there and support them and tell them about the programs, tell them the opportunities. Talk to them about financing, talk to them about rebates. We need to look at this creatively, certainly regionally.

Let's see. What else are we -- and, also, offering technical support. That's something that I haven't really talked about is -- but it has been talked about on the panels. Is technical support is really key to making a lot of these upgrades comfortable for the property owners. If they don't understand how these are going to work, and the opportunities technically, they're not going to go for it.

Yeah, John?

MS. RAXTER: And, John?

MR. PERFITT: I don't -- in my work, folks in the City of L.A., Los Angeles Better Buildings Challenge, don't have that much interaction with the State agencies and the CEC and others, however, I will put in a couple of suggestions.

One is, the LIWP Program has been one that we've worked with, both on -- and we had a chance to make LIWP go further with some other cap-and-trade dollars. So, continued funding of that. I know it's largely sunsetting.

The -- I don't even know if there's jurisdiction or authority for any of these agencies to get comfortable with targeting incentives, deeper incentives in areas that are underserved economically, or have a high EUI. I mean, that to me makes all the sense in the world, and that are multifamily. I think that would be another great thing that could happen.

And this might have already happened, too, but it's the same complaint I have about of, sort of affordable housing, is like synchronize the compliance requirements, AB 802 with, you know, local jurisdictions that have energy efficiency and water efficiency ordinances.

For example, the City of L.A., if you comply with EBEWE, which is what it's called here in L.A., then we're done. You don't have to -- you're automatically qualified for -- excuse me, comply with AB 802. So the more that you

can make compliance, that piece easier for -- because in L.A., it goes down to 20,000 square feet, the buildings, and that's, you know, 25 units probably. So there's a lot of buildings that qualify for that.

So the more we can make compliance less burdensome and more automated and less of it, but still meeting the spirit of what we're trying to accomplish, because that's a good thing, that's helpful.

And I don't know what the roles of the State agencies are in any of those things. I apologize. I'm not a policy guy. I'm not an analyst. I'm a, you know, I'm a real estate practitioner and an advocate for, you know, smart, you know, energy efficiency upgrades and solar and so forth. So, those are my kind of ideas and suggestions.

MR. BAYBA: And I'd like to add, just that we should really be using the GHG metric, and not therms and kWh.

MS. RAXTER: I like that.

And I'm going to open for questions in the room. I think we are done. Thank you very much everybody.

MS. BIRD: I just want to make a comment. That's why you're here, because you're not a policy guy. We want to hear from --

MR. PERFITT: Thank you.

MS. BIRD: -- you know, the field, that's going

on. So, thank you. Thank you for both being here.

MR. PERFITT: My pleasure.

MS. RAXTER: Thank you.

(Applause.)

MR. KENNEY: All right. Thank you, Ronnie and to our panelists.

So, we now get to move on to our final piece of the day. So, I just wanted to open it up. First, if anybody had any closing comments they'd like to make. It doesn't have to be about the panel we just heard or about any panels we heard today. It could be things that are related to topics we care about, that you feel you want to have on the record. So I'll pause, and if you do have a question, please come forward, or come up.

MR. PERFITT: This is probably a stupid question, but I'm kind of the king of those. Is there a requirement, and this is -- we build a lot of, you know, homeless housing, accessory dwelling units, and some of this sort of real hard-core infill housing and stuff?

Is there any absolute requirement in many communities that you can build solar that is just standalone solar, unconnected to the grid, giving sort of consumer choice or, you know -- I don't know if that's a good question to ask in this forum, but it's stuff that I've been thinking about and trying to research and can't

get an answer to it? I know that there's -- LADWP makes you connect to the grid, basically, unless you do it rogue, which, you know, we do sometimes. Because we do other things rogue, too, because sometimes the regulations don't make sense.

MR. KENNEY: I think an answer is right behind you, if you want to pass the mike to your moderator.

MS. RAXTER: So this is Ronnie Raxter. So there's a couple of --

UNIDENTIFIED MALE SPEAKER: I can't hear you.

MS. RAXTER: Can you hear me now? All right.

So, this is Ronnie Raxter. There's a couple of different caveats to that. So, if you are interconnected to the utility grid, then you have a contract with the utility grid. And disconnecting from the utility grid, doing 100-percent backup, which is solar and batteries, then there is certain caveats with that.

The City of L.A., or LADWP, specifically, does not want you to connecting solar that's not, I want to say, that's not interacting with their grid and according to their regulations.

Some financing becomes a little more difficult if you're not connected to the utility, because financers want you to have access to a reliable electricity source. So in that regard, you can have some push back and forth. But if

you're not talking about financing, and you're talking about an individual building owner who wants their building to be off grid, it is absolutely a possibility. And per the Electrical Code, that can be done, just a lot of engineering involved with doing it.

MR. PERFITT: Thank you.

MR. KENNEY: Any other comments or questions related to what we have going on? No? Okay.

Well, then I'd like to just remind everybody that we do have a whole series of questions beyond the topics we talked here today, that are within our workshop notices that are posted on our web site, that we would also input on. So if you can visit our web site. The link is there on the screen.

Those workshop notices covering -- you know, questions covering things from, you know, the building energy code down to dealing with low-income and disadvantaged communities. A whole lot of other questions that we couldn't really delve into today. So, additional input is always welcome.

And we'd also welcome formal comments into our, written into your docket about what you did hear today in the panels or on the presentations. And those can be submitted anytime up until 5:00 p.m. on May 15th. After that point we will appreciate them, but they will be much

harder for us to incorporate into this process.

So, as I kind of laid out earlier in the day, we are working on this 2019 California Energy Efficiency Action Plan. And the input that we've gotten here today, and that we've already heard from parts throughout Central Valley, Northern California, and that we'll continue to hear tomorrow down in San Diego, are going to be key to us making sure that we take a regional approach, and are incorporating solutions that are going to work across the State. And as we heard, not making things a one-size-fits-all, and it won't fit.

So, we thank all the panelists who came and participated. And I'd like to thank our moderators for doing a great job of making sure that things went smoothly.

And a big thanks to L.A. County for hosting us and putting us up here, and giving us a great facility to do these workshop.

So, I will make one final plug for tomorrow. If anybody wants to call in or drive down to San Diego, we will be --

MS. BIRD: Which we're all doing tonight.

MR. KENNEY: Yeah. We're, we -- if you want to -- yeah, if you want to join the State caravan heading down to San Diego tonight, we will be setting up shop at the Public Utilities Department, kind of north of Downtown

there. So if you want more information on that, or where to find the call-in number or the agenda, if you want to find out if there's topics of interest, come and talk to us at the end of the workshop.

So, with that, I will say thank you, and we will adjourn.

(Applause.)

(The workshop was adjourned at 3:47 p.m.)

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

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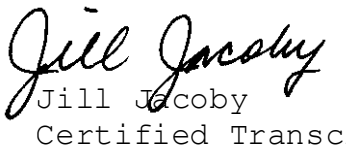

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