DOCKETED	
Docket Number:	19-IEPR-06
Project Title:	Energy Efficiency and Building Decarbonization
TN #:	228303
Document Title:	Transcript of 04252019 2019 California Energy Efficiency Action Plan
Description:	N/A
Filer:	Cody Goldthrite
Organization:	California Energy Commission
Submitter Role:	Committee
Submission Date:	5/17/2019 9:34:46 AM
Docketed Date:	5/17/2019

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	)	Energy Efficiency
	)	Action Plan
	)	

CALIFORNIA ENERGY COMMISSION (CEC)

San Joaquin Valley Air Pollution Control District
Governing Board Room, 1990 E Gettysburg Ave
Fresno, CA 93726

THURSDAY, APRIL 25, 2019

10:00 A.M.

Reported by: Gigi Lastra

APPEARANCES

COMMISSIONER PRESENT:

Bryan Early, Advisor to Commissioner McAllister

CEC STAFF PRESENT:

Michael Kenney
Eddie Rosales
Anne Fisher
Michael Lozano
Eugene Lee

PRESENTERS/PANELISTS:

Tom Jordan, San Joaquin Valley Air District
Brandon De Young, De Young Properties Homebuilders
Courtney Kalashian, San Joaquin Valley Clean Energy Organization
Christine Viterelli, City of Arvin
Nicholas Dunfee, TRC
Davi Ibarra, Southern California Edison
David Zoldoske, Fresno State University
John Larrea, California League of Food Producers
Carolyn Cook, California Department of Food and Ag
Dave Brenner, Fresno Housing Authority
Ben Clarin, EPRI
Betsy McGovern-Garcia, Self-Help Enterprises

Public Comments:

Abigail Solis
Colby Morrow
Angela Islas

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P R O C E E D I N G S

APRIL 25, 2019 10:01 A.M.

MR. KENNEY: All right. If everybody could take a seat, we're going to go ahead and get started here. I want to thank -- thank you all for coming to our third installment of this workshop series here in Fresno. And a big thank you to the Air District for hosting us.

Just a little housekeeping for folks here in the room, restrooms are out the door here to your right and emergency exits are clearly marked along the walls. So hopefully that doesn't happen, but quick exits in the room here.

So we are here today to talk about a variety of energy efficiency-related topics, all in the effort to get stakeholder input to this report that we are working on, this 2019 California Energy Efficiency Action Plan.

And I'm Michael Kenney, in the Efficiency Division at the Energy Commission, kind of leading this workshop series and gathering information to work on this report.

So today we're going to be hearing from Bryan Early who is actually advisor to Commissioner McAllister. I'll get into a little bit about what the report structure is and what the policy background is, legislative background is.

And then we'll be hearing from the San Joaquin Valley Air Pollution Control District. Following a panel then on

Local Government Energy Efficiency Action. Then a brief break for lunch before we continue in the afternoon with panel on Building Decarbonization. Followed by a panel on Agricultural Energy Efficiency, and then Capturing Savings from Multifamily Buildings.

And so the way that we would like to structure this workshop is at the end of each section we will leave time for questions. So if you have a question in the room, please come up to the podium. We'll address questions in the room first and then go to questions on the web or on the phone.

And with that, I'd like to break down kind of what our goal is here. We want to hear from all of you about the different successes and challenges you all have faced in your various energy efficiency activities. What best practices you can share with us and best practices that you would want others in your field or similar fields to know about. And what recommendations you might have to achieve more energy efficiency, to help remove any barriers that you faced, things that could be implemented statewide.

So we're all ears for ways to achieve more energy efficiency and to, you know, reduce the greenhouse gas emissions from our buildings in our various sectors.

So we're going to be collecting information across all these different topics that I went through in our agenda. As I mentioned, this is the third installment so previously

we've been to San Francisco and to Redding and heard on, you know, topics ranging from industrial energy efficiency to issues affecting more rural communities. So we're trying to hone in on what each location can share. We are a big state with a lot of different challenges and opportunities so we what to make sure we document all of those.

So we have a request for all of those in attendance, we have our notice posted in our docket on our website, and within that notice we have a series of questions beyond those that we're going to be covering through our panels today, broken up by different categories. And any input to those questions in -- submitted to our docket is greatly appreciated. And any feedback you have based on what you hear in today's panel is also greatly appreciated.

So these are some links to that information and we encourage you to follow those up after the meeting. We will have the docket open to receive any input until May 15th.

And with that, I'd like to pass some time over to Bryan Early, advisor to Commissioner McAllister.

MR. EARLY: Oh, I see. Is this working? It is. All right. I figured I'd use this mic. Thank you, Michael.

Bryan Early, I work for Commissioner McAllister who's the lead commissioner on energy efficiency at the California Energy Commission.

First off, I really wanted to thank the San Joaquin

Air Pollution Control District for letting us use this facility. I think Michael's going to get in to the legislative background as to, you know, precisely statutorily why we're doing this report.

But from my perspective, the gist of it is, we have a lot of really ambitious and bold targets that we have to meet here in the coming decade and we know we have to get there because of climate change.

We have a goal to double energy efficiency savings in existing buildings in the next ten years commensurate with our relatively new goal to reach economy wide carbon neutrality by 2045. And these are pretty tremendous goals. We know we need to get there and we need to figure out how to mobilize local action to make the changes that we need to get there.

We know that our existing buildings, in particular, have a huge potential to offer up savings and to provide a least cost pathway towards decarbonizing our economy while at the same time improving indoor air quality, improving comfort, and really improving people's lives.

So we're already thinking of this document which is an iterative process. We will be doing it for a couple of years leading up to 2030, but we really want this forum to be the venue where we, you know, talk about how realistic these goals are and how to try to mobilize action to get there.

So, again, you know, really thank the Air Pollution Control District, this is a big, diverse state with a lot of climate zones, a lot of different people, a lot of different modes of economic activity happening across the state. So we really thought it was important to put this process on the road, so to speak, and to hear from those areas where action really needs to happen.

So again, thank you everyone and looking forward to the discussion today.

MR. KENNEY: Thank you, Bryan, for that.

So now I'd like to change over and get into that legislative background for what it is we're trying to accomplish here.

Let's see. Can't get the clicker to work. Heather, if you can remove this slides. Just one moment while we get our slides working here. So we want the other slide show. Yeah, the one that's open right there -- the -- it was the other one. Yeah. Think it might -- oh, there we go, think it was just blocked. Okay.

So this 2019 California Energy Efficiency Action Plan is driven by some previous reports that we had been directed to do. So Assembly Bill 758 passed all the way back in 2009, directed us to put together this ten-year road map of energy efficiency activity focusing on the residential and public and commercial building sector primarily existing buildings.

And those 2015 and 20 -- subsequent 2016 update laid out this groundwork of goals and strategies to move energy efficiency forward across these sectors. But it wasn't really set, you know, to achieve a goal by a certain date, it was just best practices and things in the market that we needed to see happen.

So subsequently in 2015, we had Senate Bill 350 which amongst a variety of things included a goal to double our energy efficiency savings by 2030. So take what we expect to see in 2015 and double it and then hit that by 2030. So pretty high ask, but we were up to the challenge. And so in 2017 we laid out what these targets would look like and assessed the market for where energy efficiency savings are coming from and how close are we based on our current knowledge to achieving that 2030 goal. And we expanded our scope beyond just existing building to include agriculture industry and new construction.

So this new action plan builds upon these original reports, seeks to bring in other kind of one off reports focused on low income and disadvantaged communities and other energy equity issues to bring in these program pieces, these energy efficiency pieces that have a lot of overlap.

And more recently we've now been requested to look at building decarbonization which overlaps significantly with energy efficiency activity.

So Assembly Bill 3232 in 2018 is asking us to look at how can we reduce by 40 percent the emissions coming from nonresidential and commercial buildings. And while this action plan is not satisfying that statutorial requirement of our report, we are trying to expand into the building decarbonization space to understand the role energy efficiency plays there.

So we'll be updating through this report, both the targets reset as requested under Senate Bill 350, looking at new recommendations to achieving energy efficiency and trying to -- for the first time really set bold targets for agriculture industry, for conservation voltage reduction, and to make policy recommendations both to the California Legislature, recommendations that could be picked up by local governments.

And that's where this kind of travel around the state becomes really important because all of you are going to have different recommendations that may best work in your local communities or ones that have, you know, have been born here that are ready to be taken across the state and this is an avenue that we want to make sure that word gets out.

So we've built this report focused around this vision of having robust sustainable efficiency marketplaces that are going to achieve these goals as doubling of energy efficiency, breaking down barriers to low income

disadvantaged communities, to achieve more energy efficiency, and to reduce the emissions that come from our buildings.

We're guided by several principles that we're keeping in mind throughout this whole process about keeping things market centered that all the energy that we talk about and all the programs that you talk about must be reliable. At the end of the day everything must be quantifiable and scalable.

We aim to work across agencies both statewide, local, national, and with private industry as well so that policy coordination is key. And then we need to keep things cost effective. And that will mean different things to different organizations but we're trying to keep in mind how folks are cut -- making those calculations on their own.

And really importantly is the non-energy benefit side which really just is, you know, the benefits that come with these programs aren't just savings on your energy bill. A lot of times it's improved indoor air quality, improved comfort and those have really value which need to be tracked. So these goals then that we're seeking are kind of laid out there.

And so we're excited about this new report. Next week we will head to Los Angeles and San Diego to get more feedback but we're excited to hear about all the things happening in this part of the state.

And so with that, I'll take any questions on this before we move on with the rest of our agenda.

And if there are no questions, then we can switch back and get started with our first presentation today. This is from Tom Jordan of the San Joaquin Valley Air Pollution Control District.

MR. JORDAN: Well, good morning, I'm Tom Jordan with the San Joaquin Valley Air District. I'm the district senior policy advisor and have worked to some extent on our energy efficiency programs in the past.

I want to give a little context as far as an air district and energy efficiency and, you know, why we were involved and kind of where it fits in our overall strategy.

The San Joaquin Valley is a nonattainment area for both ozone and particulate matter. We have one of the most significant air quality challenges in the country and have been at it for quite some time.

Our involvement in energy efficiency really came out of our effort in 2007 to adopt a plan to meet the federal ozone standard. And as we went through that process, we found out that we were basically going to have to be bumped up to be what's called an extreme nonattainment area under the federal Clean Air Act. And what that means is after applying all the technology that was available to us, we couldn't identify enough emission reductions to meet the

federal standard.

At the time, that meant the 2007 plan would get us in to attainment in like the 2023 timeframe where as if we had been a severe nonattainment area, it would have been a 2017 timeframe.

Just to look at kind of how we got to that point, that wasn't the first clean air plan we developed for the valley. Clean air planning has really been an iterative process, the federal Clean Air Act really came in to its own in the 1990s and the standards' each five years are reevaluated by the federal government and are tightened based upon the most current health studies. So we've done plans previously for those previous federal standards and had made quite a bit of progress.

Our main area of authority as an air district is the regulation of what we call station sources of pollutions so mostly industrial sources. And since the early '90s, we've -- we reduced the emissions from those sources by about 80 percent.

On the mobile source side which is the -- now the biggest category of emissions, the state also had made dramatic improvement to reduce mobile source emissions. And now at the local air district, we actually operate a very robust incentive program to accelerate those mobile emission reductions even further.

When our board was making that decision on the 2007 plan, they felt that while that was legally what we needed to do, they wanted to do everything they could do to accelerate attainment of the standard prior to that 2023 timeframe.

Under the Clean Air Act when you adopt a plan, all the measures in the plan have to be enforceable. So some of the things that we thought we could do were outside of those -- our legal authority or others' legal authority to put in plan. So they adopted what they called the fast track for nonattainment plan.

And in that fast track we included a number of voluntary-type efforts that we would work with others to obtain emission reductions. And one of those efforts was the Regional Energy Efficiency Strategy. So in 2010, the District adopted the Regional Energy Efficiency Strategy and it was basically to see how we could use -- as one of the only entities that is valley wide and with a lot of kind of technical expertise how we could use that reach to bring more resources to energy efficiency programs here in the San Joaquin Valley.

A number of things we did out of the Regional Energy Efficiency Strategy was look around and see what resources were currently available to people, see ways that we could expand the reach of those resources, and see places where there were holes that needed to be filled.

One of the first things we did was we actually funded -- for a study and basically develop the structure of the San Joaquin Valley Clean Organization. The valley didn't really have an entity that was working valley wide on clean energy issues, and so we actually helped to establish that nonprofit to help make sure that there were resources to allow people to access energy efficiency funding from the investor and utilities and other programs at a statewide level.

We also realized that in the valley, our jurisdiction contains 59 cities and 8 counties. Some of those cities are very large. The city of Fresno's the fifth largest city in California, but a lot of them are very small with very limited resources.

And right around the time we adopted that Regional Energy Efficiency Strategy, we were in the midst of the financial turmoil in the nation and there was the American Investment and Recovery Act funding and a lot of that money was -- there was a lot of money available for energy efficiency programs.

Our larger jurisdictions were all in and were developing programs, but some of our smaller jurisdictions basically said we don't have the resources, we don't have the time, we don't have the expertise to take advantage of that funding. So as the Air District, we actually offered to

administer those federal grants for 33 of our small jurisdictions here in the valley. And the funding was to basically look at government facilities and government buildings and help to make them more energy efficient, basically.

So we actually worked with the San Joaquin Valley Clean Energy Organization which we just help to establish, they provided some of the expertise on the energy efficiency front. We helped with the administration of the program to make sure we were successful at implementing those dollars.

Another thing we looked at the same time was while we regulate stationary sources, for the most part that's a technology-driven process. So you basically look at people's processes and what you can do to reduce the emissions, let's say a boiler or some other thing through the application of technology.

But we basically thought hey, there might be some opportunity especially for some of the smaller industrial sources to apply efficiency-type metrics to them and have them redesign their manufacturing processes and reduce emissions by reducing their energy consumption.

So we actually contracted with a firm to go out and work with a couple of smaller industrial sources and apply those practices to make them more energy efficiency in their manufacturing processes. It was a very popular program and

that information we shared with some of our other industrial sources throughout the valley.

Also, we found some organizations in the valley that were already working with businesses that weren't traditionally regulated by the Air District, so more administrative-type functions or, you know, nonindustrial sources. And we actually worked with the greater Stockton Chamber of Commerce to develop -- help them expand and develop upon a recycling program they had.

The Stockton Chamber's a little bit unique in that they run the recycling program for their region. So they were already involved in talking to jurisdictions about reducing their weigh stream and other things. And we helped fund their efforts to basically work with those entities on energy efficiency programs as well.

And it was very successful, it was a very popular program so we actually provided funding for the Stockton Chamber to go meet with other chambers of commerce throughout the valley and see if they could replicate the program. They worked with a number of them -- different chambers and now we actually have green teams that are active in Stanislaus County and Merced County as well to share that energy efficiency message with others.

Also, at the District we decided to look at our own operations. We have three buildings in the District, two of

them we actually constructed and owned and we were actually the first lead certified building in Bakersfield to go in. We have solar on both of those buildings. We've gone through this building, we did not build, it was originally a furniture store back in the 1970s and it was -- has been repurposed. We've gone through and replaced all the lights with LED lights throughout the building and other things. So we were looking at all the different things we could do to make our buildings, as well, here at the district more efficient.

We also work a lot on programs to help the lower income and disadvantaged communities here in the valley. One of the things about the valley that is a little bit unique compared to the rest of the state is we have these extreme environmental challenges, but we also have some economic challenges that are almost unmatched anywhere else.

If you look at CalEnviroScreen scores which the state uses to designate areas with environmental burdens, economic burdens, the valley has 20 of the 30 most disadvantaged communities here.

So a lot of our efforts are to try to make -- take programs and make them actually work for folks in the valley. Just one example would be for motor -- light duty motor vehicles, the state has the CVRP program to get electric vehicles on the road, and so that's mostly new purchases or

new leases. The valley's 10 percent of the state population but we only account for 2 percent of the state's vouchers for the CVRP program. And part of that is because people in the valley aren't buying new car -- there are people in the valley that are but to a large extent, there are a lot of people in the valley that can't afford to purchase a new car.

So the Air District, we actually provided incentive on top of the state incentive to try to boost those numbers. But in addition, we've worked with another nonprofit, Valley Clean Air Now, to start a program called the tune-in, tune-up program where people can come with their cars, if they can't pass smog check, and get a voucher to repair their car.

And then they can also, if they meet certain income requirements, agree to scrap their car and get an incentive to purchase even a used electric vehicle or another advanced technology of vehicles.

But one of the things we found at those events is state programs, one of the biggest challenges is -- for low income people is actually contacting the customer. So we had these events that were going on for this whole other purpose to deal with their vehicles but we try to basically provide all the services we can for people at those events.

And especially now that we're talking about electric vehicles, we brought in people that are operating programs for solar for low income communities, for energy efficiency

for low income communities, and we're trying to basically touch those people once and provide them with all those different types of incentives that can work for them.

And that continues and we continue to build on its success and we think it's kind of a model for how a lot of these programs that may not work quite as well in low income communities can be bundled together and can be provided like in one time to people rather than each agency trying to find a way to reach those tough to reach communities.

Also, on the low income front and uniqueness of the valley as we talk about decarbonization existing buildings. One of the challenges that we hear often when we're talking to people about switching from natural gas to electric or other things is that in the valley because of our climate, we generally have colder than average winters. If you look at California, we have hotter than average summers. Our electricity loads are pretty high already and when you look at the tiered rate structure, people in the valley are very reticent to switch to electric because we're paying some of the highest rates, like in -- compared to Coastal Californians because of the state's rate structures.

So one of the things as a region I would suggest is if we do want to move people away from say natural gas to electric, is we need to look at those rate structures especially for lower income communities like the valley,

communities with the climate challenges to make sure that the structures match and provide incentives to go in the direction that we're trying to get people to go. Because if they're moving from relatively cheap natural gas to what they perceive, at least, and in many cases are experiencing higher electricity cost, it's going to be a big challenge. So I think especially dealing with the valley's disadvantage communities, we need to be particular -- particularly remindful of that.

Another program that the -- that was extremely successful and wasn't necessarily an energy efficiency program but it definitely was an emission reduction and decarbonization program with the agricultural industry that the District was involved in was -- it was called the AGIS program. And we actually partnered with PG&E Southern California Edison and the ag industry and approached the CPUC and what had happened was during the 1980s, a lot of people had switched to electric to diesel for pumping water at agricultural facilities because of rate structure issues and the like.

So we actually got a special rate structure for people that were willing to convert back from diesel to electric and for a ten-year period they had preferential rates. And the Air District partnered with that program and actually provided the funding to pay for scraping the diesel

engine and purchasing the electric motor for the ag source. And we replaced a couple of thousand diesel irrigation pumps with electric pumps. It was hugely successful program and I think one that as we go forward, we should look to build upon.

What -- one of the challenges of building upon it is the engines we've got currently are the ones that were the easier ones to get, they were closer to electric infrastructure. A lot of the engines that are left are engines that were difficult to serve through the power structure without line extensions and that kind of a thing.

But I think it is a huge opportunity that will not only improve air quality, reduce, you know, carbon and hopefully provide for the needs of the farmers with the rate structure that works for them.

So in a nutshell, kind of that's kind of been our involvement with energy efficiency. As we continue to move forward, you know, the valley -- we just recently adopted a plan for particulate matter that's extremely aggressive that has an attainment timeframe in 2025.

We continue to look at ways to promote electrification and energy efficiency as we move forward and as the Clean Air Act evolves and newer and newer standards come out, I think those needs are going to continue.

Also, being that mobile sources are such a big issue,

that interplay between electric vehicles and infrastructure for electric vehicles and how that all works I think is going to become even more and more important in efficiency and how we handle that on the grid will help as well.

So with that, I don't know -- do you want me to take any questions now or I would be happy to answer any questions or any comments you have about the Air District's involvement in energy efficiency.

MR. DE YOUNG: Hi, Brandon De Young, De Young Properties Homebuilder. I haven't really thought much about our involvement with homebuilding, energy efficiency, and the Air Pollution District. But as you talk about the rate structures and electrification switching, you know, fuel switching, we're already doing that with some of our efforts in building zero energy homes, switching from natural gas furnaces and water heaters to electrified, you know, heat pump systems.

But that point that you make is very real of the cost of natural gas being, you know, relatively low and people being afraid of their rates going up now that they are on electric. Granted its heat pump so it's way more efficient, of course, but they're still using electricity with that.

So I wonder if, you know, maybe it's worth exploring how our, you know, industry, the homebuilding industry and the Pollution District could, you know, work together to try,

you know, hit up that same issue.

MR. JORDAN: Yeah, and I think with new construction it's maybe a little bit easier because you can design the home, you know, efficient with efficiency in mind to begin and, you know, incorporation of solar and all that.

With retrofits it gets a little bit more challenging. But we're happy to talk to folks about ways we can work together. We actually -- the San Joaquin Valley Air District in around about way there's involvement on the new construction side.

We are the only air district in the state that has a indirect source requirement for new construction. So when people go through the permitting process, they're required to mitigate a certain amount of emissions from the construction of a new subdivision or a new industrial or commercial property.

And through that process, we give them credit for anything they're doing against those requirements, be it energy efficiency, be it design that in -- makes it more walkable all that kind of stuff.

So there's some -- there's some ways we're already touching that a little bit but we would be happy to talk with the builders about ways we can enhance that as well.

MR. DE YOUNG: Yeah, that would be great. Thank you.

MS. RODRIGUEZ: Hi, my name is Destiny Rodriguez, I

work with Center for Climate Protection.

And my question is -- and Tom, we've met before a few months back. Has the San Joaquin Valley Air District looked in to exploring community choice energy? Has there been further discussion on that?

MR. JORDAN: I know it's a -- you brought it to our attention and I know it's a hot topic. We haven't as an agency looked at it. I know we've had some questions from some of the jurisdictions in the valley about it. And I know there's a number of people that are going through it. But, you know, we're happy to continue with the conversation and I think the jurisdictions need to look at their individual situation and whether there's a benefit to them or not to go that route.

I know there's also at a statewide level a lot of discussion about the, you know, the whole process and about sharing cost and existing contracts as well which is I think all part of that conversation. So.

MS. RODRIGUEZ: Okay. Thank you, I'll be reaching out.

MR. JORDAN: Thanks.

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

Just wanted to thank you for that and to thank staff also for, you know, proactively engaging with the Air

Pollution Control Districts. And that makes us, Tom, that you draw of course between energy efficiency and our need to achieve our cleaner act goals and also protect human health generally are really, really important and oftentimes it's not a connection that is always made with energy efficiency.

So sort of an open end question just, you know, really encourage you and the other air districts to continue engaging with us and so we can make sure in our energy efficiency planning that we are drawing those lines very squarely and we want to make sure that we continue to collaborate with the air districts in the future to make sure that that firm connection is shown.

So thank you.

MR. JORDAN: Thanks.

MR. KENNEY: Okay. So thank you, Tom. And for people who have joined us since we've began, there is a signup sheet by the door and we encourage you to sign in so we know who all came and participated.

So, we're going to move on now to our first panel of the day. This is focused on Local Government Energy Efficiency Action and be moderated by Anne Fisher from the California Energy Commission. And I'm going to hand it over to her to introduce our panelists.

MS. FISHER: Thanks, Michael.

I'd like to introduce our panelists and ask them to

join me up here. So we have Courtney Kalashian, who is the executive director of the San Joaquin Valley Clean Energy Organization. She is a zealous advocate who gets results. She loves energy efficiency and serving the public sector and is far more comfortable out in the citrus orchard than in the big city, staying true to her motto of being proudly, boldly rural. Any success is because of her amazing team doing all the real work.

And I also like to introduce Christine Viterelli, who is a grant writer and administrator for the city of Arvin. Christine's recent work on a Federal Transit Authority's Low or No Admissions Award will transition the city of Arvin, small trans -- rural transit agency from diesel gasoline to electric buses, providing the community with much needed greenhouse gas reductions.

Christine is passionate about community development, economic development, bringing affordable housing, healthcare, jobs, electric vehicle charging stations, and energy efficiency programs to the disadvantaged community of Arvin.

Thank you for joining me ladies.

So our first question and I'll let whoever wants to address each question first, we can -- we can decide amongst ourselves. Our first question is: What energy initiatives are you proudest of in your jurisdiction?

Go first.

UNIDENTIFIED SPEAKER: Brief interruption. When you first -- when you start talking, identify who you are so we know which is which. Thank you.

MS. VITERELLI: Okey-doke. My name is Christine Viterelli, I'm with the city of Arvin.

And there's a lot of programs that I would say that we're proud of but the one that has in one fell swoop made a huge difference for Arvin moving forward would be the conversion of three diesel buses to zero emissions vehicles which is going to reduce greenhouse gases and particulate matter and it will also instantaneously take 50 percent of our fleet and turn it to electric.

MS. FISHER: Great.

MS. KALASHIAN: So at the -- oh, I'm Courtney Kalashian, with San Joaquin Valley Clean Energy Organization, process of elimination there. At the SJVCEO, we work with 75 local governments here in the San Joaquin Valley, in San Luis Obispo County and then Eastern San Bernardino County. But in the San Joaquin Valley, that's 62 local governments and a handful of public sector customers, whether they're community special districts or school districts.

In the ten-plus years that we've been working, we spent a few trying to find our way, but once we started working with Southern California Edison, Southern California

Gas Company, and PG&E to deliver public sector programs directly to local governments through the local government partnership program, we also were able to work with the California Long-Term Energy Efficiency Strategic Plan which in 2010 became the operating bible for many -- much of the work that we do. Since then, directed, we think, as through the opportunities in the Long-Term Energy Efficiency Strategic Plan, we've been able to benchmark over 11,000 accounts in the EPA's Energy Star Portfolio Manager Program.

That's a lot. It's not just buildings, we look at all infrastructure. But what the portfolio manager did for our local governments was provide an energy management system that would not have been available to them unless it was free. There are portfolio manager systems that are -- can be paid for and some local governments choose to do that, but there's a cost associated with it from $5,000 to $10,000 to $45,000.

And as Tom mentioned, the local governments that we serve don't have those resources available to them. So what we think has been amazing is watching these 75 local governments work with our staff to create energy use indexes for themselves. To understand how they use their energy and where they use their energy, so they can make smart investments in the work that they have ahead of them and so that they can use their tax dollars in a way the benefits the

public most directly. And that is something that I think we should all as residents of the region be most proud of. It's something that we've done with Arvin and it's work that we see direct value in because of the investments that local governments are able to make in energy efficiency.

MS. FISHER: Great. Thank you.

My next question for you is: How did these initiatives address energy efficiency? Particularly, how do they benefit low income or disadvantaged communities through energy efficiency or other means? How do they address the needs or concerns of those most impacted by environmental hazards, such as air pollution? And what long-term energy efficiency goals are you hoping to achieve?

MS. VITERELLI: That's a lot.

MS. FISHER: That's like five questions.

MS. VITERLLI: So, first of all I just wanted to state that without these sort of collaborative projects that Courtney mentioned, we'd probably wouldn't be in the position that we are today just because of lack of capacity of staff. The city of Arvin's really small and we're very rural and we have like one person in planning, you know. These staff members, they're critical, if they don't show up for work, we don't operate in those departments, we literally close the doors.

So by addressing and using these programs and working

as collaboratives, it enables us to have extra help in going after these programs that we otherwise wouldn't have the ability to. And it also brings knowledge like they've brought a lot of knowledge to the table in terms of what programs are out there and how we can establish energy efficiency. S, I mean, it's huge for small rural communities.

So I would say the number one benefit to our community is reduction of greenhouse gases and particulate matter. Especially in Arvin, we have a lot of semi-trucks going through the neighborhood. We have a lot of particulate matter in addition to overall pollution. And so the goal is to reduce those. And then the other benefit which Courtney touched on is that if we reduce energy costs and reduce funds from the general fund that normally would be spent to pay for gas and pay for energy usage, that money is then available for programs to our residents. And that's the overall benefit that is extremely helpful to our community.

Should I go on? Okay. And then in terms of how we're addressing the needs and concerns, it's an equity issue. I mean, particularly in Arvin, we're dealing with multiple socioeconomic and environmental challenges, we're dealing with pollution, we're dealing with water contamination, we're dealing with poverty, we're dealing with linguistic isolation. And so ultimately, it allows us to

bring programs to our residents that they otherwise wouldn't have access to.

And they are definitely concerned about the air pollution. They are -- you know, they -- a lot of our workers work outdoors in the fields and in the farms so they can't get away from it. So it has a health benefit that, that is immeasurable.

In addition to that, the long-term energy efficiency goals for Arvin are self-reliance, energy self-reliance and installation of solar. And so that we can actual operate. Should power go out, you know, we're looking at additional -- we're going after funds to -- for solar power and projects so that we can have some level of self-reliance and efficiency.

And as far as reach codes -- we're not there yet.

MS. FISHER: We're not there yet.

MS. VITERELLI: Okay.

MS. KALASHIAN: I may miss parts of the question, but I'll do my best on this. I think that Christine said something that was very important and it's hard to grasp the understanding of what we deal with in this region sitting in this room in Fresno in sort of a developed area.

But the San Joaquin Valley is very rural, California is very rural. And it is hard to grasp that. I know that going to Redding you started to deal with some of the -- hear some of these issues. But one of the most important pieces of

my work personally has been to serve with a group called the Rural Hard to Reach Working Group which was developed by the California Public Utilities Commission.

We, being rural folk, broke away from the CPUC and self-organized in 2015. But it's nine agencies throughout California that represent local governments and communities that are not served. And that's the biggest problem that we run in to is that Fresno, yes, is the fifth largest city but everything that surrounds it is not. It is rural communities that are disadvantaged not just by a statistical means but by the fact that it is so cost ineffective to serve these communities.

Getting to Arvin, even for our staff, that's a two-hour drive, but we make it because that's the job that we have. And if -- I think Tom pointed to it, there's not a lot of people doing this work in this region. There's not a lot of people doing this work in rural California.

And so the importance of every project that we can deliver means money saved for that community. We have communities like Seville, like Porterville where they have serious water issues. There -- the cost of living is so exorbitant that the idea of electrification while it's nice is unrealistic for them because if you're making $1,600 a month and you're paying $400 for your water and then you're paying $600 in rent, what are you let with? So if you have

electric energy charges that are upwards of three to four hundred dollars in the warm months which just so everyone understands that's not from Fresno, that's about six to eight months out of our year.

The -- it's unattainable to live. And it's unattainable to reach the goals the state is putting forward.

So if we can't address the rural issues, if we can't keep directing programs here, before the SJVCEO existed with large part thanks to the Air Pollution Control District, there was only one real source a Public Purpose Fund Program dollars coming in to the San Joaquin Valley, and that was the Kern local government partnership with PG&E, Southern California Edison, and the gas company.

Part of the reason that we were brought into existence was to ensure that ratepayer dollars that were for energy efficiency programs were actually coming back to the ratepayers in the San Joaquin Valley.

So when we look at how do we measure success? Well, we've seen population grow in the San Joaquin Valley. We've seen energy use stabilize. We've seen an influx of Public Purpose Program Dollars not just from the work that we do but it's not just the current energy watch. It is also the valley innovative energy watch. It is the five other local government partnership programs that serve the public sector as well as a myriad of other sectors so commercial,

industrial, agriculture, and residential, those programs are now being offered in the San Joaquin Valley.

The challenge that we're really going to face is as the Public Utilities Commission which really is sort of the driver of funds for energy efficiency programs at this time. As they move to new models where they outsource the design and development of programs to third parties, what is the incentive of third parties to come to rural California, to come to the San Joaquin Valley? Will they come to Fresno, maybe if they're based in Fresno. But if they have to drive three hours from Los Angeles where they're housed to get to say Orange Cove or even if they have to drive an hour and a half to get to Arvin, it's not cost effective to do that for them.

So the more agencies like ours, the more people like Christine that are doing work, the more ratepayer dollars are being returned, the more energy efficiency projects are being done and in a region in which, as Tom pointed out, 20 of the 30 most impacted disadvantaged communities are ours, any improvement is better. Because every dollar that we don't spend on energy is a dollar that goes back into mental health programs, into transportation, into parks, programs that can real -- to do real good for our community.

Energy efficiency isn't going to save the world in the way that some of us like to think it is, but what energy

efficiency can do, is it can reduce cost so that our local governments and our public sector servants can make our communities a better place for all of us to live.

MS. FISHER: Great. Thank you.

Our next question: Do you have any local ordinances in place such as CALGreen reach codes or a local benchmarking program? If so, how are they helping you reach your energy efficiency goals?

MS. VITERELLI: That's really interesting. First of all, Arvin just established our baseline greenhouse gas numbers and that's a first. It's never been done for a rural community that I know of. And so that was our first step and so now, we're sitting there thinking well now what do we do? How -- we have to implement these energy efficiency programs and then go back and measure to see what the value is and what we've achieved.

And we're currently working towards -- moving towards reach codes. Again the issue there would be that we need planning and funding dollars to make that attainable because with one person in the planning department, not only do we have to establish these reach codes but then we want to implement them.

So it's a bit of a challenge but we're looking at it and we've had some conversations already as to the next steps to establishing reach codes.

MS. KALASHIAN: So not working directly for local government, but working for lots of them, but let's look at the 62 local governments in the San Joaquin Valley. Again, with 11,000 accounts benchmarked in this service territory that we serve. What we found very early on was again, the bulk of this work came about in 2009, 2010. And the San Joaquin Valley is a very conservative area and we respect that and we respect the leadership and the local governance of our leaders and there was not an appetite to push for monu -- memorialized processes. Right? So putting something on paper that said, you know, well we're going to benchmark our building so that we're going to reduce this or do that.

There was a lot of discomfort from our local leadership. And we understood that. It -- people's opinions are not wrong because they're different. Right? And so that is one of the challenges that we've seen in this area, is we have seen a hesitance to adopt reach codes for a variety of political reasons as well as our Building Industry Association very directly said, we don't see the financial value that it's going to be bringing to those that are bringing jobs to the region.

And so these are the balances that we have to strike and these are the things that we have to try to move in a way that is responsible for the local governments that we serve.

So, you know, if you look at 62 local governments in

the region, we haven't forced them to adopt a benchmarking policy but are they doing the benchmarking and are they using the tool? Yeah, that's what they're doing. And we see that as success as a way to measurement.

In the Southern San Joaquin Valley again, the Building Industry Association said, we are -- we're not going to support reach codes, in fact, we're going to help lobby against reach codes. And that was up until probably two or three years ago.

And again, we can't force people to do things, people being our local elected that they're not comfortable doing. So all we can do is show by example that energy efficiency is effective as a cost reducer and hope that they can see that that value tangentially relates to the reach codes or to other policies that could be adopted.

And we're starting to see that. We're working with Build It Green to help bring funding to communities like Arvin to develop reach codes and to help demystify what we're trying to accomplish. And it's encouraging to see that we're getting to a point where it's not political ideology that's driving a lot of the work that we're doing, rather it's just dollar savings and cost savings and all of that only betters each of the communities in which we live.

MS. VITERELLI: One thing I would like to comment with regards to reach codes is that, you know, it has to be

incentivized in such a way that the community -- it will actually facilitate permit -- expediting permitting in building and make it a goal, but also make it functional.

So I love the concept of the reach codes and we're delving in to it, but the reality is there has to be somebody who's educated at that level in the planning department to be able to facilitate those programs.

And I think it could be sold to the building community if it would somehow help expedite the permitting process. If there was a way to incentivize local government so that we're going to expedite those permits and bring on an extra person to focus on the green aspect of reach codes, it would be a lot more effective. And people -- the reason by the building and the developers kind of shy away from it is because it's more expensive so the actual implementation of the project in the beginning has a frontload cost.

And then also, they feel that well now my building permitting process has just gotten expediential longer because we have to attain all these green elements.

So I think by addressing those portions of it in the planning department and for building codes, if those things were addressed, it probably could expediential improve the process and the permitting process.

MS. KALASHIAN: I think there's a pragmatism in which you explained that. Right? And that's something that we see

in our region is that it's not a whole sale rush to do what's newest and coolest. Right? It's actually taking a step back and being very pragmatic in the approach to how we're going to do things.

So one of the large challenges that many of our public sectors customers face is -- it's great to have reach codes, but whole smokes, the amount of facilities that are not even to code in this region in daunting.

And so how do we work in the structure that exists to bring those sites to code? Because the last thing we want to see is a local government go out and try to pass reach codes when in actuality, their own operations are, you know, frankly from like 1945. So it's -- we want to try to find a way to do this in a way that makes the most sense for the populations that we're serving.

MS. FISHER: Thank you.

Our next question is: What advice would you give to local governments seeking to do more related to energy efficiency?

MS. VITERELLI: Well, my number one piece of advice would -- advice would be to consider taking a multilevel approach. So no one individual program is going to have a significant impact, but when you layer them, such as we are doing, it can have a substantial impact.

So for example, implementing -- Arvin's currently

implementing EV charging stations with fleet transformation, with urban greening, and with programs like tree planting and creating tree inventory. So when you put all those programs together, it will have a significant impact because we're layering, our approach is a layered approach and not just we're going to do this one thing. So, that's what I would say.

MS. KALASHIAN: On your tree program, have you talked to anybody on my team about that yet? Because we have something that might help you, just as like a side note.

MS. VITERELLI: Not yet.

MS. KALASHIAN: Okay. Can you repeat the question? Sorry.

MS. FISHER: Yes.

MS. KALASHIAN: I got excited about the tree program. We've been trying to shop a tree planting program for like three years. So.

MS. FISHER: Do you have any advice to give to local governments?

MS. KALASHIAN: Yeah. You cannot manage what you haven't measure. Right? And that is the foundational theory we have of everything we do which is why we went so big on bench -- benchmarking.

What we found early on, again, going back to the ARRA funding. Our local governments really wanted to do street

lights and the utilities are having a great success getting street lights changed out to LED and it's beautiful. Right? Like it looks good, there's all the public safety issues.

But in reality, when we're looking at saving energy, that's not the biggest thing that we can do. So, if we take a community like Lindsay and, you know, they change out their street lights and it's great. But in actuality doing a project like retrofitting their pumps, adding VFDs, looking at their in-ground systems when it comes to energy efficiency. It actually has a much better and quicker rate of return and it is more meaningful on what they're able to put back in to those community funds by saving energy.

So if a public works director or a city manager has access to their energy data and can see where they're spending and how they're spending, it makes it a lot easier to convince the city council that hey maybe we should make this investment in our pumping systems first and then we can do the pretty beautification projects that we all love and like but the reality is we need to do those things that make the most financial sense and bring the greatest rate of return.

So, know what you're spending and where you're spending and how you're using so that you can make smart investments in the future.

MS. FISHER: Thank you.

Next question is: What have been your main challenges in rolling out the initiatives? How do these challenges differ between building sectors?

MS. VITERELLI: Well, our main challenge, it's probably no big surprise here, is funding, finding sources. And also capacity, finding the ability to actually put these programs together and fund them, would be our main challenge.

And with regards to building sectors, I guess it's going to be how we implement green programs with planning and our building in the future and have the ability to expedite those programs.

MS. KALASHIAN: So by now you have all heard I really am into energy benchmarking. But that's not like a byproduct of doing this for almost ten years. But our biggest challenge right now is that we can't use all this data, so 11,000 accounts, lots of data, lots of ability to help direct projects, save energy, meet state goals. Our biggest problem is 802 and that's because what happens when AB802 which is the benchmarking disclosure component of it went forward, the investor and utilities stopped reported everything that had previously been being reported.

The biggest thing that they no longer report to the Energy Star Portfolio Management System is cost data. We have energy used data and that's great, but until two years ago I could give Christine her energy used data as well as

her cost data. But if you're a local government, and you don't have a lot of money and you're particularly rural and you need to do some projects, it's really hard for me to convince you to do something based on the kWh that you're going to save, or on the therms that you're using because I've been doing this for a while and it still confounds me when I try to start getting in to the details of that.

But when I put in front of the city manager that they're using $500,000 a year in energy costs but their neighbor at the exact same size is only using $200,000 they could save $300,000 a year, that makes a big difference in motivating them to act.

And what happened is that the utilities which to their credit they have worked with our team as well as a multitude of others that do this work throughout the state to try to address the system, but when they updated the system to meet 802 requirements, they stopped reporting cost data. And short of a clarifying statement from the CEC saying, no, we did not tell you to stop submitting cost data, they're never going to give us our cost data back. We've been at this for two years and we've talked to everyone and anyone that will listen to us about it because as you can tell this is a big deal for me.

So short of a statement of clarification that the utilities should be reporting cost data, they're not going to

report cost data. And if I don't have cost data, I'm not going to get my local governments to act. And I have seen that in a disproportion amount of people that go oh, I just don't know if I could do that. Because it's not the same motivator.

And what it comes down to is cost drives local governments because every dollar that they don't spend is a dollar that goes in to a community program.

So if we're going to continue to have a robust public sector, if we're going to have a, you know, the -- if local governments are going to help meet state goals, we need to be able to get them to act and the biggest motivator at getting them to act is to show them what they're spending and how they can reduce it.

So that was a soapbox moment a bit but I apologize but it is important.

MS. VITERELLI: I really agree because I'm the only one who's in Arvin who's doing this kind of stuff as the grant writer, I established my own cost data. It was a pile about this thick of PG&E bills and gas bills and so I did have the opportunity to look at it. And then, you know, what I would suggest to the local governments is to ask them to compile their information in terms of costs. And I can see the effect of putting in a solar unit and we were able to aggregate power so -- you know, for a solar project we have

in the transit building.

So it actually eliminated the cost of running not one but two buildings and so the city manager could see that. But unless you have someone inside the local government who's willing to pull that data together and, you know, advocate for it, it does become more difficult.

MS. KALASHIAN: And Christine, how long have you been with the City of Arvin?

MS. VITERELLI: I've been for two years almost -- it will be three years in October.

MS. KALASHIAN: So, before Christine's arrival getting Arvin to do things like this it wasn't happening and that's not because they didn't want to, they just didn't have capacity.

And she's a rarity, you know, we're really fortunate to be able to work with her but most of our local governments don't have a Christine.

So, that's one of those things is that if there's not somebody that can sit there and do that and I can probably name on both hands the number of people that do what she does in a 62-jurisdiction region, I mean, that's small.

MS. VITERELLI: Well, thank you for that. I will say this. If you get people in small local governments to start initiating these programs, once they -- the ball starts rolling and the city council sees the effect and attention

gets drawn to the community, then everybody's on board, so.

MS. KALASHIAN: So, that's a good part about it.

MS. VITERELLI: Yeah.

MS. FISHER: Great. Thank you.

Our final question: What can the State of California and the Energy Commission in particular do to support you in your work?

MS. VITERELLI: Well, that's kind of a loaded question. Starting with a lot of dollar signs.

Well, I would say that the number one thing to do is not only to have these programs for energy efficiency and electric vehicle conversions, and urban greening, and fleet transition, and benchmarking but to provide funding for energy efficiency planning. So if we had funding to really put together a plan for those reach codes, it would be very beneficial because it wouldn't require necessarily the one city staff member in the planning department taking on that responsibility in addition to the responsibilities they already have. And provide funding for capacity building and implementation.

And then the number one thing of all -- of those that I've mentioned would be funding for public outreach to develop community buy in. Because we, right now, I'm very happy to say are -- we've installed ten public charging stations and we're in the process of establishing workplace

charging and hopefully three of them will be running when I get back to Arvin today.

But we need funds to -- for community and public outreach and for buy in. I want to have those programs not just for city facilities but for community facilities and it takes dollars to put people out in the streets and work with the community to let them know about all the electric vehicle programs that are out there and it take dollars to put -- luckily we're using interns now, we've got some interns from Cal State so I'm putting them door to door to talk to people and have them pass out information.

But the public needs to buy in, the residents need to have buy in into these kind of programs. And it's very important because I don't want them to knock over the tree we just planted and I want them to consider, you know, converting from, you know, an older car into a new electric vehicle or hybrid. And so that's really critical.

And then also supporting local governments to initiated pilot programs to being able to roll the dice and take a chance that a community if given the opportunity can be innovative with support and with funding. So in -- that would be the best thing that any state entity could do for a community especial a DAC because typical DACs do not have funding in capacity to implement these programs.

MS. KALASHIAN: So all of that and get me my cost

data back that's the second piece. I think the third is sort of this interesting issue that we're dealing with that really addresses local governments. Historically your counterparts of the CPUC have directed this funding for energy efficiency programs with all the investor and utilities called local government partnerships. They've been around for decades in one form or another. We have the honor of operating three of them in the state and then working collaboratively with the 40 plus other -- 39-plus others that exist.

Those are going away and it's one of those things that's really interesting because again, your counterparts the CPUC are weird and so they've got this idea that the market is going to solve all the ills and all the problems by sending everything out to the third-party solicitation process.

But what's happening is that the investor and utilities are cutting back on programs. The public sector is newly defined under the CPUC guidance. We don't even have a market characterization study for the public sector which is crazy, right, like the amount of infrastructure that's available to reduce energy savings to help the state meet the goals. We don't even actually know what's available to us right now. Right? So that's interesting.

And then the programs that were designed to serve people like Christine, to invest in capacity building, to

identify projects, to do the community outreach. We were able to do community outreach with some of our other community benefit organizations to help identify opportunities under the San Joaquin Valley proceeding. You know we were able to go out and support those that do that kind of directed work but we were able to help fund that work and to bring information about community solar and to bring information about electrification because of programs like the local government partnership programs.

But those are going away. And the idea is that large engineering firms are going to go out and conduct all of these programs and all of these projects and at the same time they're still going to build capacity for local governments, they're still going to do community outreach, they going to still work with CBOs to get the word out there. They're not going to do that.

I mean, we're looking at how we transition our own business model to fit in to what they're doing. But the truth of the matter is that the real meaningful work that we do, the work that's been funded by ratepayer dollars and have seen successes because here's the thing, we've had a good -- a good amount of success in Kern and Tulare County, those two counties alone just with Southern California Edison, and I'm going to just use an ugly number here, but it's almost 25 million kWh has been saved over the last decade in that --

in those two counties alone.

So there's good work that's happening and there's good cost savings that's happening and there's really interesting community outreach opportunities.

But if programs like that diminish, what can the state do? The state can support programs like that are -- that are being stripped away by the CPUC because they're not cost effective by the total resource cost. And for those that don't operate in the TRC, I'm sorry. But also, good for you.

Those programs, those will drive the public sector. And the public sector will drive the energy savings that we need to help meet state goals because my God, they have been untapped for so long.

So what can you do? Is you can help institutionalize and memorialize programs that have served the public sector, and that have served local governments, and that can be refined, that can be improved, and can be scaled out especially across the rural areas of the state to ensure that this work continues. Because otherwise, again 62 local governments in the -- in our region and I can probably gather about ten Christines.

So we need to do better and we need to be able to build a region that can do this work on its own.

MS. VITERELLI: One thing I'd like to add to that

too, is that the government is rolling out a lot of programs that call for TA. Oh, we're going to offer technical assistance. But the reality is if it's not a local program or it's not available locally, it's much more difficult.

So if they give a grant for technical assistance to a company that's in Sacramento, the chances of them coming down to Arvin are slim to none. So I have suggested to the state and I do a lot of suggesting is that they allow local governments -- they fund local governments for implementing programs where they have options so that they can find a local institution that can assist them. So that I don't need someone to come down from San Francisco, but I could pick up the phone and call a local program such as SJVECO and have them come down and assist us.

Because offering technical assistance is not just about sending a bid out to a big organization that's going to bid it and probably win it but offer no assistance to McFarland, Delano, Taft. And, you know, when I speak about Arvin, I'm not just speaking about Arvin, but I look at all of our local communities as sister cities. So, you know, McFarland, Delano, Taft areas of Bakersfield, they need assistance too. And so we sort of work together and work with the other communities and organizations and I always try to share information with them because they have the same similar fact patterns and demographics that our community

does. And by spreading this information, hopefully it will help them as well.

MS. KALASHIAN: And I think a lot of that goes back to locational targeting and locational goals. So when we're looking at how are we going to reach goals across the state or even if how are we going to reach goals in our own Air Pollution Control District, when we look at it as sort of like, well, this is our goal and then we're all going to do the same thing to get there, that's unrealistic and it's not going to happen. And you going to have communities that just don't opt in. Right?

So how do you make it attainable and how do you make it realistic that everybody's participating in the process? You have locational goals and locational targeting and that that not just motivates the Arvins and McFarlands but it motivates the [indiscernible], the Orange Coves, and the Lindsays. And you get them working towards their own sort of success. Right? That's the piece of it. And they can use local scale or they can develop local scale.

You know, we -- before SJVCEO was here, our local governments were contracting and bringing in consultants from the Bay Area and from Los Angeles and Sacramento. The fact that we have a local workforce that can do this now is what I'm -- one of the things I'm most proud of. Because before us, our local governments had to rely on people from urban

areas which isn't to say that they weren't doing a good job but it wasn't valley grown and it wasn't putting dollars back into our own communities. And that's really important for rural areas is to be able to have a sense of ownership because fly by night just having somebody come in and say, well, I can do this for you and here's your Climate Action Plan and I'm gone. Well, how do they implement it?

They know -- how do they interpret that? And if there's a change in leadership, how do they explain in and continue the buy in if they don't have it locally grown. And so that's a really big component of this.

MS. FISHER: Thank you so much for your insight, we really appreciate it.

MS. VITERELLI: Thank you.

MS. KALASHIAN: Thank you.

MS. FISHER: Do we need to stay for questions or are we good?

Do we have any questions?

MS. KALASHIAN: We're good?

MS. FISHER: Yeah.

MR. KALASHIAN: Okay.

MR. KENNEY: Okay. So it was already on.

Okay. So thank you to Anne and Courtney and Christine for that insightful panel.

We're going to now pause here and do a break for

lunch. So, we will return in one hour to the programming and kick off right after lunch with a panel on Building Decarbonization. So I believe -- and I don't see a clock here -- so at 12 -- well, 12:18 so let's say 12:20. At 12:20 we're going to resume programming. So for those on the phones, we'll be back in an hour. Thank you.

[Off the record at 11:20 p.m.]

[On the record at 12:20 p.m.]

MR. KENNEY: All right. So for those of you in the room here, if you could begin finding your way to your seat, we're going to get started in just a moment with our next panel.

So and those of you on the web, we'll be beginning momentarily.

[Pause in proceeding]

MR. KENNEY: All right. So we're going to go ahead and begin the afternoon portion of our workshop. For those of you who just joined us, we're going to be beginning with Building Decarbonization Opportunities and Challenges.

And the way we're structuring these panels, following the Q&A led by the moderator to the panelists, there'll be an opportunity for those in the audience and on the phones to ask questions. So please hold off on asking those until the end of the formal portion of the panel.

And with that, I'd like to introduce the moderator

for this panel, Eddie Rosales.

MR. ROSALES: Thank you. Good afternoon, thank you all for being in attendance. 12, it's about 12:20 right now, so I know it's a little -- right in the middle of most people's lunch break but we're going to go ahead and get started.

This is Panel 2, we're going to be focusing our discussion today on Building Decarbonization Strategies, Policies, Goals. But we're going to let the panel experts here field some questions, let us know what they're doing, how they approach the issue and the idea of building decarbonization.

We got three panelists. I will go in to questions and before I go in to questions, let me do some brief introductions on each of you three. And thanks -- thank you all for being here today.

So I'll start with -- to my immediate left and then I'll go down -- down the row here. So to my immediate left, I got Nicholas Dunfee, he manages new residential construction programs for TRC, including the California Advanced Homes Program, PG&E California Multifamily New Homes, Sonoma Clean Power, Advanced Energy Rebuild, he's also working with Elec -- Roseville Electric Advance Homes Program, also works with SMUD on their all Electric Smart Homes Program.

In recent years, Mr. Dunfee has been focusing on beneficial electrification efforts in California, launching multiple first of their kind residential electrification programs. Welcome, Nic.

Next -- next panelist up, Brandon De Young, he's an executive vice president from -- of De Young Properties. Brandon represents the third of a generation in his family in the homebuilding business established in 1974 by his parents. So thanks to Brandon's efforts, the De Young Property now leads on building zero energy smart homes. And De Young built the first Z -- ZE community in Central Valley and the largest in the entire state. Welcome, Brandon.

And our last panelist, Davi Ibarra, senior advisor, Southern California Edison. Davi is responsible for the implementation of the San Joaquin Valley disadvantaged pilots -- communities pilot projects. He has been with the company since 2001, and for the past ten years he has been working on low income energy efficiency programs. Thank you.

Thank you all three for being here once again.

So with that introduction, I'm going to start my questions. I do want to remind the audience; I'll go through either all or most of my questions. I will pause about 45 minutes into it to give the opportunity for the audience to also ask questions. If there's any -- well, the live audience and any of the audience members following us on the

web.

Okay. So the first question and I will start with Nic here to my immediate left and then we can go down the row.

Can you -- can you get into some information to share with us what actions are you taking to help decarbonization buildings? And since you work with multiple projects and different jurisdictions, maybe you want to pick one or a couple just to highlight some of your activities and experience there.

MR. DUNFEE: All right. Thank you very much. Yeah, I'll highlight a couple of the projects I've been working on recently. One the advanced energy rebuild that's going on up in Northern California, hopes to be expanding to some of the affected homes in Southern California here in the next few weeks. But there were -- we've established incentive levels, it's a collaboration between the CCA and the IOU which allows us to give additional funding. It also allows us a little more leeway outside of the PUC funding structure. It actually allows us to do some all-electric incentives for all electric homes because we're working that portion of it through the local CCA.

And we're finding a lot of -- we're getting a lot good response. Probably about half of our homes coming through the program currently are coming in as all electric.

It's very promising and we're expanding that into the Paradise area and like I said, hopefully down here to Southern California to those that were affected by the fires last year. The ones we have enrolled currently are from the fire previous year up in Santa Rosa area. So we're just expanding that program in to the new affected folks.

The other major program with electrification that I want to highlight is the SMUD Smart Homes Program. So what we're able to do with SMUD being an all-electric utility for their all electric new construction, the avoided therms used to just kind of go up in the ether, they weren't able to really utilize those therms. So what we did was we came up with a strategy where we convert those avoided therms into kWh based on source carbon in their actual grid mix and the heat rate of their power plant.

So basically, we're doing a calculation that the therms were saving out of the home if we were to send those therms through the power plant, add in the renewable portfolio standard, and then deliver it to the home, we're converting that to that kWh and using that as a baseline for the new homes.

So what this is -- has allowed SMUD to do is it has allowed them to enhance their incentives because now they have energy efficiency funding for saving the kWh since we have this new baseline counting for those therms. So it's

allowed them to raise their incentives to the point where right now they're giving incentives up to $5,000 a home for new construction all electric and upwards of $10,000 a home for a retrofit for all electric.

And this -- this has a major impact, especially with the new carbon reduction mandates that came out last year. The carbon-free grid mandate we have by 2045. That means that these homes are getting more efficient and they're creating less carbon every day as opposed to their split commodity counterpart that actually if anything, it's producing more carbon. As the equipment gets older, it's actually not getting any more efficient as it ages.

Beyond that, my company also works -- another division is working on all electric reach codes for multiple municipalities across the state of California right now as well.

MR. ROSALES: Let me ask one follow up to you. How's your experience been with workforce training? I mean, with the contractors you're working with or have you had to work with them, how much of a nudge or convincing have you had to do to design and install all electric?

MR. DUNFEE: A lot. There is -- if I had to say one of the biggest needs that we have in the -- in this movement is workforce training for two reasons. One, -- and they're kind of both the same reason. Most of these contractors are

actually older in age, there's going to be a large turnover in contractors in a few years, and a lot of them don't have continuing education.

So when I -- a lot of times when I speak about heat pumps to some of these system contractors, they are really misinformed or they had information that is a decade old, they're not aware of inverter driven heat pumps, they're not aware of the improved efficiencies now in colder climates.

And on a personal side, I went through an all-electric retrofit of my own home even when calling contractors to tell them that was the purpose, several of them tried to talk me out of it. Several of them had false information about heat pumps and how they work. And one of them actually had no idea what a mini-split system was when they came to my house to give me a quote.

So that -- it's just, I know it's anecdotal but it's a really, I think it's a really good take on the state of the contracting market right now and where -- how we need to get them up to speed for decarbonization these homes.

MR. ROSALES: Thank you. And so, Brandon, I'll turn to you with the same question. Can you -- you want to be able -- just general and then maybe touch on some points on, you know, what your company's doing and what you do with regard to decarbonizing a building. And maybe even do you even refer to the concept decarbonization or you use

electrification and do you have preferences when you're using those words?

MR. DE YOUNG: Yeah. I can definitely corroborate what Nic's talking about here. The workforce is definitely not generally tuned up to -- or is not necessarily equipped to handle some of these technologies, especially when you talk about electrifying loads. You know, we switched to heat pump systems for heating and cooling, for water heating.

Not only is it the trades that have a problem with it, but our own team for example. And not only our like service team members or construction management, you know, supervisors but even sales, right, we have to sale that. And so, if our -- if the consumers don't know what it is or what the benefits are of it or how it functions and why it's not going to be a problem for them, then no one's going to want to buy it, right? So at the end of the day, if no one's buying it, then what's the point of it all?

So we've spent many, many hours of researching it ourselves, making sure we're experts on it so that we can then train not only our team, but also consumers. And we're even having to -- ourselves train, in some cases, the trades themselves too.

There are programs, you know, that can kind of help with this, you know, the workforce training programs that are around but they're, I don't think by enlarge they're having a

big effect. And most of these trades that we use probably don't even know about some of these programs that can be used to train them.

And then the other thing is what incentive do they have to learn it? I guess if the codes are requiring some of these things, they'll have to learn it, but most of them like he said, they're probably a little older in the years and, you know, kind of the whole teach an old dog new tricks kind of a thing. It really is true in this sense.

So then coming back to the original question about projects we're doing. So for the last probably decade we've -- we're a single-family homebuilder. We do about a hundred homes a year around this -- in this type of market. You know, 12, 14 years ago we were pushing 300, so the market very much dictates how many homes we build. But we're about a hundred right now. And smaller, relatively speaking, you know, family-owned company. It does allow us to be a little bit more nimble and willing to take a little more risk than say some large national builder that's all about pumping out units, you know, that's all it's about for them. For us, you know, we want to build a better community. We're locally, you know, owned and we all live here and this is our own community as well.

So we've about a decade ago made a, you know, challenged ourselves to build a better home when it comes to

energy efficiency, comfort, better air -- indoor air quality, all of that is what we focused on. And, you know, we heard someone earlier talk about benchmarking. It all started with knowing where you're at. Right? You have to know where your starting point is and know what a goal is and then try your path there.

So for us, and this is why I say it's been about ten years ago, it wasn't just one year we decided let's do a zero energy community. We've taken many baby steps over many, many years learning ourselves because a lot of this is complicated. It's hard to describe to someone how a heat pump works. Right? So imagine doing like overhauling all of your home's specifications, not just heat pump water heater but a whole bunch of different things and trying to learn it all.

So we've taken, you know, small bite-sized chunks along the way to the point where in 2017, we unveiled our first zero -- full zero energy community. We built a few zero energy prototype homes initially, one in 2013 and one in 2017. And then later in 2017, we unveiled a complete community of 36 zero energy homes.

And then -- then after that first community, we actually unveiled two more zero energy communities, one that was about 45 home sites, another one that's 58. So when -- in all, we're probably going to have over a hundred zero

energy homes so all -- in the city of Clovis, actually. So that's kind of been our focus, trying to make sure that it's affordable, that people want to buy it. Because again, at the end of the day, if no one wants to buy it or can afford it, that's a problem. So.

And a lot of challenges are in that. And one quick, too, you mentioned electrification and decarbonization. The way we look at it is yeah, internally we talk about that, we know what electrification is and the idea of trying to, you know, fuel switch -- go to electricity so that you can use renewable power to power, you know, the home. And we're all on board with that. Most consumers don't, at least in our experience, they don't ever hear the words decarbonization or electrification. They don't really know what that means or if anything, it maybe scares them.

So it definitely is on us to educate them on what it is and really not even probably saying the words much here and there may be in just general conceptual, you know, press releases or advertisements. But really when you're selling a customer a home, you're not saying, yeah, we've electrified the home, you know, you're saying -- you're selling what you've done in the home and how it benefits them, not that it happens to be not natural gas and electric now. If anything, again, that potential could scare someone. So.

I mean, it's not like we're hiding anything but you

want to make sure you're selling in a way that they actually want to buy it.

MR. ROSALES: Thank you.

Davi, the same question for you.

MR. IBARRA: So, again, so my primary role today is really working on the San Joaquin Valley pilot, is in the early stages of implementation. So in this pilot in particular targeted to disadvantages communities, there is a lot of what would be called electrification or decarbonization. And the focus is really on the existing homes, residential homes that have either propane or wood-burning appliances.

So we're not targeting any natural gas, at least in this pilot. And again, the idea is to convert these homes and provide them a more reliable and cost efficient, you know, resource for electricity and came to the renewable standpoint.

So the approach itself, again were at early stages now and it's going to involve, you know, third-party solicitation so we're looking for and we'll be seeking out a third party who's going to be going out to the communities working in the communities that we're offering these pilots in, hiring contractors as well, that are in those local communities.

And the type of measures that we are seeking to

implement are your heat pump space conditioner and your heat pump water heaters as a minimum.

And then other measures may include, you know, electric dryers, cooktops. But the key to implementing this is what's been, you know, shared is really the education component. And that's why it's going to be critical for the third party that is hired, selected for the community outreach has a really understanding on what it is that we're trying to achieve here. Because at the end of the day, this is a pilot that we would hope to be able to scale up for the multiple communities.

I mean, where -- Edison in particular is only targeting three communities right now. There's a total of 11 as part of this pilot and that goes along with PG&E and SoCalGas. But again, for Edison it's only three communities in which we would then want to expand this to -- I think there's approximately 170 communities that were identified as disadvantaged communities.

So I think one of the questions about workforce, and again, I think I kind of eluded to is that we will be seeking out contractors that do have an understanding on this. But it's also to impose some local training or hiring of workforce as well. So it is to develop and create those opportunities for jobs on the different scales. Because, I mean, you have a process from doing your enrolment in

outreach to your installations all the way through your inspections process.

And aside from this program, the other key component is also the layering of other programs out there. You know, there's Community Solar Green Tariffs that would be applied. There's the Energy Savings Assistance program which is a low income program that would be leveraged in the offerings that will be provided to these customers. So the idea is to deliver, you know, as best as possible a one-stop shop basically for these customers that will be targeted through this pilot. So.

MR. ROSALES: Thank you, that was all good.

I'm going to follow up on this question and we can start with Davi and if you guys have points you guys want to share, feel free to jump in.

Let me -- since we're talking about buildings and each of you have given us your perspective on your experience with different projects. What's your take on which projects are maybe best suited or most advantageous to start decarbonizing? And think of it in maybe in a contrast scenario where you have new construction versus existing building and retrofit or maybe it could be just an exact measure.

But and I'll start with you Davi. Can you guys give us some insights on what your takes are on that based on your

experience and also your background?

MR. IBARRA: Well, again and I think from our perspective and for the program that I'm working on, it's really the existing buildings. And in particular, we are targeting residential. And these are disadvantaged communities with the -- also the intent of these are customers that don't have the natural gas lines -- that they have the, I guess, you know, the dirtier fuel which is like the propane and the wood-burning appliances.

So, that's where I think the opportunities at, and that's where we're focusing on right now. And with those primary measures being your heat pump, space conditioners. So we would be installing whether it's a split systems or mini-splits. If they don't have one existing, that would be the one and then the water heating being the two primary measures that we would be focusing on for existing residential customers.

MR. ROSALES: Do you find when it comes to measures, do you find folks react more positively or negatively to any one measure?

MR. IBARRA: If -- I think the idea in general and I think [indiscernible] maybe alluded to this is that it's just the education and the perception, you know, in -- when it comes down to, you know, going from what they're comfortable with and what they've known for so many years to now being

all electric. I think to some customers, that may be scary.

But the idea here is, you know, through education as well, is really demonstrating and I think in an earlier panel they talked about the cost savings, you know, showing that dollar value versus just your usage and so forth. I think that will be important in kind of breaking through that barrier or that perception that, you know, there may be some resistance on accepting these new technologies or -- not new technologies but new measures in their home.

MR. ROSALES: Brandon, Davi.

MR. DE YOUNG: Yeah, totally agree. I mean, cost is king. Right? When it touches their pocketbook, that's where their ears are going to perk up and their going to be interested in it. You just thought to sell them on the rest of the benefits. It is tough a lot for -- it is very tough for us from a cost savings marketing standpoint, we never want to under promise, I'm sorry, overpromise, right, and under deliver. And so and there's the whole legal realm of, you know, marketing, you know, something that's may be incorrect, and we know, you know, homeowners use energy extremely differently.

We did a study of -- you know, we're a production builder so we build the same plans over and over again, right. So we can see what our homeowners use even in the exact floorplan, exact same home, same specifications and

everything. And some of them use double the amount of energy than others in the exact same home. It's like that different. I'm sure you guys all have data on that too probably.

But so it's hard for us to really give a good number and feel confident that someone's not going to come back and knock on our door and say -- show us their bill and say, hey we didn't hit that number, you know, we're going to sue you. It's a challenge for builders and it's a risk.

I mean, that's what I was saying earlier, you know, for us being a relatively small builder compared to other builders out there, there is risk in all this.

And so this is why we spent so much time and money on attorneys and PR companies and all this -- making sure that every word we say is very precise and making sure that it's accurate as possible. But at the same time still proving the value of it. Right? And showing that it really is going to reduce your energy bill significantly, you know. So, I think it's all in the wording from our side.

MR. DUNFEE: So, when you ask where it's most effective? I think it really depends on how you look at it. If you're looking at it from a carbon standpoint, then yes, the retrofit situation you're definitely going to have more of a car -- impact on the carbon when you retrofit an existing home that's not built to current standards that's

using more natural gas to start with.

But if you want to look at it from a cost-effective standpoint, it is cost effective and has been cost effective for the last two code cycles. It is a net positive to the builder to build, at least through two different studies that TRC has done, to build an all-electric home as opposed to a natural gas. When you take into account the cost of bringing the gas to the property, the cost of plumbing within the home itself, and then design considerations when you're looking for flues and where you put your gas appliances within the homes.

So we had a study under 20 -- under the upcoming 2019 code for Palo Alto that shows it's about a $6,000 positive to a builder to build an all-electric home. So if we're looking at cost effectiveness, the easiest place to reach is new construction because you're avoiding the cost of putting all this infrastructure in to start with. If you're looking for a carbon impact, then I agree the retrofit realm is -- you're definitely getting more of a carbon impact, but it's coming at a higher cost.

MR. DE YOUNG: And I'll tack on to that a little bit. I mean, I definitely agree, yeah, it seems more cost effective for sure on new construction to electrify. But I will also say what the actual savings are is super complicated. We've looked in to it ourselves to say, hey and

in theory if this one community we didn't have to do all this infrastructure for -- to get gas to the community, what kind of savings are we looking like? And then not just that but what kind of costs to add is there to go electric? Because that's a whole other side of the equation that actually we found in some of our communities outweighs the savings.

And when I say extra costs, I'm talking switching to an induction electric cooktop from gas, switching to heat pump HVAC and heat pump water heating. Those combine was probably close to five grand more incremental costs, not total, but that's how much more it would cost to switch to electric products like that.

Now you don't -- you could say you don't have to go all the way to induction electric for cooking, you could use a regular electric radiant, but none of our customers are going to be willing to take the plunge to electric cooking if it's not induction. And even then, even if it is induction, we have a lot of people that won't want it, they want their gas cooking, right.

So our homes are probably 90 to 95 percent all electric except for the cooktop. That's like the last thing that's just, we're not ready ourselves to take the plunge because that's a huge risk. Right? If we can't sell a home just simply because the water -- the cooktop is not the type of fuel that they want, that's not a good business practice.

But everything else we felt like, you know, that yes, there's risk but we can educate them well enough on switching their HVAC and water heating to being electric and heat pump and we can make that work. And that's been okay.

We do offer electric cooking as an option so they can switch to that but so long story short, we're not ready, at least personally from our company's standpoint ready to totally cut the pipe from gas yet. But I do see that in the future. I really think it's just coming back to this whole customer -- consumer education thing. Once people realize -- we did in my own personal home renovation recently put in induction and, you know, very much we're concerned as well but we love it. And so, I -- it's -- there's so many benefits to it, it's all about how you promote it.

MR. ROSALES: So, I'm going to add -- the next question will build off of that.

So and I'll probably, I'll start with you Brandon. So we talked about, we touched on the workforce training. Definitely talked about, you know, value to the customers and how they react to electrified options and measures in homes where they're retrofit or new construction.

If you go up a level though and look at it from a policy or maybe even from a technical design, you could pick one or the other if you like, do you -- can you speak to barriers that exist for build -- building decarbonization at

that level when it comes to policy barriers or technical design barriers that still exist and that you're still trying to overcome this all for?

MR. DE YOUNG: I would say from a technical barrier standpoint, I mean, we're doing it. If we achieved, you know zero energy, we can -- we're building them in mass, it's -- I don't think it's a technical challenge anymore. I mean, yeah, there are little technical issues here and there are still being worked out and, you know, having being -- been the first to do this in our area, at least, it's a steep learning curve. And they were significant.

Like we spent, like I said ten years just learning the technical challenges along the way and trying to overcome them, and we're still overcoming, you know, issues like that. But it's achievable and we're there. So I mean, the barriers I would say aren't overcomeable, it's just a matter of figuring out what the right solution is.

But as far as, like from a policy standpoint, I think the concern from like a builder standpoint is if it costs more, the number one is the consumer willing to pay more for it and number two, if they are, can they -- is the lending and appraisal industry equipped to lend more for it, as well? Right? Because if -- let's say a customer's willing to spend -- let's take solar for example, you know, $10,000 for a solar system, but the appraiser comes in for the home loan

lender and appraises the home only an additional $5,000. Well, now there's a delta of $5,000 that the consumer's going to have to pay us for the difference, right, to make us whole or the solar company whole.

And we're seeing that significantly still. And that's just the solar side let alone efficiency and all these other great aspects of things. But, you know, if the lending and appraisal industries are not equipped to value, you know, accurately value the benefits in, you know, solar was one thing but electrification and decarbonization, there's no metric for them, at least in my world, for them to really accurately give value to that. And so even if a buyer is willing to pay more for it, there's a big problem there of affordability for that.

So I think those are in my world the biggest challenges of trying to scale up to this kind of homebuilding.

MR. ROSALES: All right. Nic, do you want to jump in on this one?

MR. DUNFEE: Yeah. Also on the technical side, I agree with Brandon, most of the tech -- the technology is basically proven out in a residential setting. We're not really overcoming technical barriers there anymore, it's the education side of it.

When we get in to commercial buildings and we start

looking at multifamily, we start looking at buildings with central systems, there is a big gap in central water heating currently. We definitely know how to condition commercial buildings and condition these large spaces, but we have issues with the central water heating.

TRC actually hosted a symposium on behalf of SMUD last fall where we got together stakeholders, different MEPs, we got together manufacturers, and we kind of flushed out what's needed to get us to where we need to be. But the commercial sector's definitely well behind the residential.

But in response to the question about what's needed, I'll talk about from a program standpoint. The regulations that govern the funding for programs and the way we're allowed to apply incentives has not kept up with the changes in regulation. It's not kept up with the switch to looking at carbon as opposed to looking at energy. For example, our resource programs are judged still on kWh and therm savings.

And we're hitting a zero code right now in residential. So there's really no kWh or therm savings to be had and that's what our programs are judged on. Yet the real goal is to grid optimize these homes. Right? It's not really to save kWh anymore, it's to figure out what time of day do we want them to use the energy and how do we shift it?

But as a program, we have no way of incentivizing that. We have no funding mechanism to help get homes to that

point because we're still stuck in this kWh and therm world where that's what we get paid for.

So really changing that, I would say the TRC requirements because we're still based on kWh and therms and they're not there, the TRC calculation needs a total resource cost, needs a -- it needs adjusted. And along with that is the three-prong test. For those that aren't familiar, it's a three-prong test that you have to pass all three pieces of it in order to incentivize fuel switching. And there is a cost effectiveness metric is one of those three and that cost effective metric is dated. And it really is beneficial to keeping fossil fuels in the home as opposed to switching to electric.

If we could get that -- get the regulation around that adjusted, it does open up some incentive funds, but then if we can get out of this old -- the old way of thinking about saving energy and no -- and start thing about saving carbon and, you know, the carbon intensity at the grid and when we use energy as opposed to how much we're using, it could really open up avenues to help make this more affordable for people to make that leap over to all electric and a decarbonization building.

MR. ROSALES: Davi, you work on this program the San Joaquin Valley program and it's mostly obviously driven by proceeds -- cap and trade proceeds some of the work there.

But do you have takeaways in terms of barriers that you've noticed? And I'll let you characterize them any way you like but is there anything you'd like to share with us?

MR. IBARRA: Sure. I think Nic covered a lot of the items that as a utility we face, you know, where compliance basically at the end of the day, you know, compliance in regards to the cost effectiveness and so forth. And meeting these, you know, objectives.

But I think if I could just add one item as it relates to policy. At the end of the day, you know, there's senate bills that are referred to. There's Senate Bill 1477 which has to do with obviously decarbonization as well. So I think if anything, there's maybe sometimes challenges in that in itself. I think there's so many senate bills and objectives out there that at times they conflict with each other.

And so then when programs are being created or developed, it's figuring out the prioritization. What is more important? Is it going to be greenhouse gas reduction? Is it savings, energy savings? Is it, you know, what is the objective here at the end of the day? You know, where I think if there was a way to kind of reevaluate again all these different policies that -- to really focus on what is, you know, at the end of the day as a state, what is it that we're trying to do and how do all these new policies that are

being evaluated or considered, how do they contribute to that overall objective?

And is it, you know, any -- again, contradictory or conflicting goal, you know, with something that has already set out or is something that has been already in place for, you know, a number of years? Does it need to be reevaluated?

So it's something you can kick in, you know, like Nic was mentioning, you know, where how the measures are being evaluated. When can we offer incentives? You know, whether it's for fuel switching or what have you. I mean, those are things that really limit what can be done and offered to a customer. So.

MR. DE YOUNG: Yeah, and just, I got a couple things that come to mind in fairness. CEC with a new Title 24, 2019 code coming into effect soon, have tried to make it easier from a grid harmonization standpoint. I know Mozi, for example, over there has always been an advocate of trying to make sure that the code allows for grid harmonization strategies. Of course, they've now added in the ability to include energy storage in the home. So a battery, for example, and that would incentivize a builder to for example not to have -- put -- not have to put as much solar on the home to meet the new code, for example. I mean, I guess you could argue the merits of that.

But the point is it's trying to go towards that idea

of when energy is being used and produced. And so. But there's still so many questions. Right? Like as far as that requirement goes are they going to determine exactly how that battery is going to charged and discharged, for example? I mean, there's a lot to it that I'm not really sure is flushed out. But.

And then on the other side, the electrification kind of question, they did also add a pathway or at least a baseline that you can compare your home against that's all electric so that you're not being penalized. Because before without other pathway you would be penalized if you switched some of your components to electrical -- components from what the baseline of the code minimum was, you get penalized for that. That's obviously not ideal for what the whole target of everything should be. Right?

So luckily, they've tried to at least add that pathway where you're not being penalized. So they're trying but it's so complicated and there's so much to it that it's just I think going to take time.

MR. DUNFEE: Anyone know what the model at the change in the baseline in the modeling. Another big thing that would really help with this movement is if we could get proper evaluation of heat pumps in the modeling, heat pumps, ductless heat pumps, default to a ducted system, which is definitely not properly evaluating the system. Minimum

efficient ducted system, any heat pump.

And then in multifamily and commercial, we don't even have the ability to model heat pump water heating systems. Their -- CEC has workarounds and they definitely have -- I've seen letters written to planning departments to allow people to install them and consider them prescriptive in their model. But there is no way to truly and properly evaluate those technologies in the current California engines which is really detrimental.

When I go talk to a production builder and I try to get him to switch over to a heat pump and they run -- they have their energy consultant run the model and it comes back that the heat pump is -- has worse compliance than their split system, it doesn't make any sense to them and it's really, really hard for us as a program or, you know, as consultants to tell these builders that no, this is more efficient, this is the better way to go, but the software just hasn't kept up with the technology. And those are very difficult conversations to have with builders.

MR. DE YOUNG: Yeah. I mean, airtightness, for example, the envelope that is nowhere near model -- what it should be like. We get to a point where it's not cost effective at all to continue making the home more airtight. And it's unfortunate because we would like to go that route but if we're not incentivized properly to do so then it's not

a very good business decision. So.

MR. ROSALES: And you guys are actually touching on some of the like the appliance measures I wanted to sort of touch on as a follow up on this question.

So I'll start with Brandon again because obviously on the ground designing and he's also installing and -- but feel free to chime in after he responds.

So what are you seeing, Brandon, I mean, what takeaways are you getting from best practices in terms of water heating and space heating and -- maybe cooking installation? Maybe not all three together, maybe separately but what are some of the best practices that you're seeing in terms of that above and beyond just saying, you know, heat pumps are good for water heating now. But what type of heat pump? Where are they being installed? And how they being designed for installation?

MR. DE YOUNG: Yeah. I mean, first thing I'll say as far as heat pumps go for HVAC and water heating -- so uncommon around here, at least for the type of construction we do, single family residential construction. It's like pretty much unheard of.

And it's for that reason, I think, because I mentioned earlier there's a huge cost premium to switch to those products. I think that's -- has a lot to do with it. That they're just so uncommon, they're sort of special order

product. And so I'm thinking that over time that cost will come down as it becomes more common to see these products.

But we're definitely still valuating in a lot of our projects the points you brought us as to where -- is it best to install these? How is it best to operate them? For example, on the water heating side, these heat pump systems have the ability to cool and dry air. Right? Because when air's coming in that heat pump, it's going to be hotter and drying. Then when it exists through the exhaust, it's going to be cooler. Right? Because it's pulling that heat out of the air so any air coming out is colder. So it has this nice cooling effect. Right?

So there's in theory a way to duct that exhaust air back into the home during the summertime and now you're cooling your home while extracting the heat and heating your water with it. Right? So I mean, it sounds genius in principle, but then there's all these challenges when you actually try to implement it.

And so for example if you have a two-story home, how do you get that duct all the way up to the second floor in a way that will work properly? There's tons of little details like that that come up when you start to try to implement these unique ways.

But so for now ultimately the short answer is, we use them in the most typical way, and we install them in the most

typical place. So for example, water heater, garage. HVAC, we still use the split system, it's split forced air ducted system so outdoor unit, indoor unit up in the attic with duct work.

Once -- however, one thing I will say is in the attics, we do a sealed attic where we insulate under the roof deck and that way that whole space is now within the thermal envelope. So that system can run a lot more efficiently. Obviously that helps with that problem.

Heat pump, water heating, HVAC. And what was the other one? Oh, cooking. Like appliances. Yeah, I mean, again it's pretty typical, it's just that education thing. It's -- if a consumer knows why it's beneficial to them, so we tried to -- we had a design studio where all our customers come through when they buy a home, they can pick all their design selections, including appliances and things like that.

And we've tried to equip our design studio sales team with the right information like YouTube videos or videos made by the manufacturer that help promote why it's a good thing. Like boiling a pot of water in three minutes, for example, or watching two chefs battle it out, you know, making a pasta plate and one on induction is done in like three minutes or five minutes when the other one's just starting to boil the water. Right?

You know, trying to use those things to help is

helpful but I think it's going to be a long path to get there.

MR. DUNFEE: I would say in general, most folks don't really care too much about how their water's heated, they just care that it's hot. They don't really care how their space is conditioned, they just care that it's comfortable. But they actually interact with their fuel source when they cook, and at their fireplaces. And those are the two sticking points to get homeowners to switch and to get builders to switch is because they're afraid they're not going to be able to sell the home because the consumer's demanding it.

So if this comes down to -- we were talking about workforce education earlier, this comes down to consumer education. There's a big push the building decarb coalition right now for public awareness of this. They're actually dedicating some funding specifically for induction which I think will really help.

There're some studies that have happened recently. Sonoma Clean Power has a lender program for induction hot plates. And SMUD actually just gave, I think it's like a 150 of them away to customers if they did a pre and a post survey. And they did the same study in Sonoma Clean Power. I'm not going to quote the numbers because I don't know them that well, both those studies are public and the numbers are

pretty astonishing. The turnaround of the perception before they ever cooked on one until after they cooked on a hot plate. The turnaround really even for me and somebody's an advocate and cooks on induction and loves it, thinks it's superior to natural gas cooking at this point, I was even astonished at that -- that the drastic turnaround before and after using the appliances.

But the cooking is going to be a major, major hurdle to overcome because it is the only place where every household interacts directly with their fuel source.

MR. IBARRA: So what's been -- what I -- especially with what Nic just said is really the focus here for my best practice is it does come down to the consumer, the customer, the end user. It's education in trying to influence behavior, that's what it ends up coming down to as well, influencing their behavior.

So some of the things that, you know, are being planted, at least for the San Joaquin Valley pilot is, you know, I mentioned about this community outreach efforts and so for then. And is to really host those type of events where they do have kind of like hands on with the appliance especially with the cooktops and so forth.

But what's going -- what's really key and has been somewhat of a challenge is breaking through that behavior. Because customers typically will assume hey, if these

appliances are energy efficient, then that means I can use more of it, you know. So then when they actually at the end of the month when they see their bill and they're like whoa, wait, why is it much higher than before? I thought it was supposed to be energy efficient. And it has to do with the fact that now their using more of it than before.

So again, one of those key items that -- is really to focus on that education and influencing the behavior. It's that not to necessarily allow, you know, a customer just to all of a sudden just change the -- how they go about interacting with their new appliances. So that is one of the key focus of this pilot as well.

MR. DE YOUNG: And just one quick thing to add to that too. These -- some of these products function differently. So for example, the water heater is very different from what we've been using for the last ten years, tankless gas water heaters. Right? Tankless gas water heaters, endless hot water. A heat pump water heater is not endless hot water, very much the opposite. So educating them on how to properly use it and how it's supposed to be used is really crucial.

Same thing with the HVAC side, it's probably going to take longer for the system to heat the home or cool the home than a typical system -- definitely the heating side.

And so, you know, they need to be educated on how

it's -- what's normal for it and why is it supposed to function that way? If they're not use to it, yeah, it's a challenge. But again, that's where educating even our own team is super important. Because if we didn't know any of that, then we're going to be stumbling over ourselves trying to explain why it's a good thing.

MR. ROSALES: I got a couple more questions, but I want to pause because going to pivot over -- we got a question. I'll ask someone to field that question and then we can continue. But and after that question, I'll give -- I'll also pause to check on the audience to see if there's any audience questions. But let's turn to the Webex question.

Was there an audience question? No. An audience question?

Oh, audience.

UNIDENTIFIED SPEAKER: No, no. I was just indicating you need to switch over.

MR. ROSALES: All right. So I'll pause for questions. Is there any questions from the audience at this point? Do -- great, we got one.

Yeah, come up to the podium and ask your question.

MS. SOLIS: Hi. So I have more of a couple of comments and maybe questions geared to the CEC.

My name is Abigail, I work with Self Help Enterprises

and I also have worked very closely with the San Joaquin Valley Spanish communities' proceedings over the last couple of years. And I want to thank the CEC for coming out to Fresno today. We really appreciate it when you take the time to actually come to the San Joaquin Valley and hear from us directly. So I appreciate that.

In looking at your agenda and listening to today's -- to this panel and the previous panel, I really appreciate the conversation. However, I did notice that the agenda didn't have the place to actually talk about unincorporated disadvantaged communities in the San Joaquin Valley. And just want to make sure that I highlight some of the issues that we're facing here.

A lot of the programs that the CEC has funded focus on multifamily housing which we really appreciate because Self Help Enterprises works with the multifamily housing. But we also in the San Joaquin Valley have many, many communities that are just single-family home communities.

And I was just curious if the CEC has numbers about how much of your investment dollars or your program dollars are actually coming down to single family homes in the San Joaquin Valley? I'm just curious what that is compared to other regions of the state. Because as you're probably well aware, people here in the San Joaquin Valley are the poorest in the state and they're paying much more than other areas of

the state, which of course alone is wrong. But the fact that there are programs out there that could possibly be helping to change this, we'd really like to see how we can work to make, you know, to make that happen.

Also, somebody here earlier talked about the cost effective test. And I want to say that I completely agree with you, I think it's about time that we not only revamp our cost effective test but also make sure that we're considering the things that really matter to residents in communities.

We talked a little bit -- I heard Davi talk about the San Joaquin Valley disadvantaged communities, the 12 communities that do not have access to natural gas or still use wood burning to fuel their homes and propane.

There are still over 170 communities in the same -- in the same conditions. And when we think about how we prioritize our investments and our dollars, these communities are not only facing high costs -- energy costs and high fuel costs, but they're also the communities that have children who are getting sick more because they're trying to avoid using their propane at all cost. There are families who are using their stovetops or their ovens to heat their homes all night. And we know that's a huge safety issue.

So I think when we consider what we are thinking about when we make investments, considering non-energy benefits to communities is very important. I think that will

help to kind of reach -- help us reach our goal and our target in the state. We're not just talking about dollars and cents, that's not the bottom line. I think the overall health and safety issues is also very important to consider.

And currently Assembly Member Reyes has AB961 which would mandate that the -- all energy programs to the CPUC be considered for non-energy benefits when deciding where to invest that in. So.

Also, just want to highlight, since we do have some IOUs in the room, that when you think about the poorest residence in California and some of them being here in the San Joaquin Valley, when you change to time of use rates is going to drastically affect these communities who already are the poorest. And just thinking about what we can do to help them deal with that in the near future. Because in the San Joaquin Valley we had extremely hot summers, very cold winters. Cost of -- time of use rates is really a big problem that residents are starting to think about and worry about.

So again, I didn't have much of a question. I just had some comments that I wanted to make sure were on the record. So thank you for your time.

MR. ROSALES: Thank you. I don't got an immediate response on your programs question but maybe we'll get some information to you. We're mostly policy oriented commission,

but we do run programs, but I don't have any information offhand, but I'll follow up on that.

MR. EARLY: So can I make a couple --

MR. ROSALES: You can --

MR. EARLY: Yeah, just to comment on that. Bryan Early.

We should talk and I can make sure that we can get you a list of the limited programs that the Energy Commission does run. We can see the breakdown for the San Joaquin region and then I can help facilitate figuring out other funds which mostly come from, you know, PUC and utility programs. But happy to be a bridge here.

MR. ROSALES: Thanks, Bryan.

I'm going to field this question, then I'll give it back to you. Go ahead.

MR. LARREA: Yeah. John Larrea with the California League of Food Producers. We represent the large industrial food producers. And obviously we're -- are, you know, high level here in the valley as well.

I was pleased to hear Davi and Nic talk about something that's near and dear to my heart which is essentially getting a standard that everybody could measure by. The energy efficiency standards that we're using today are kind of outmoded. Given what we're facing in the future coming, we need to have a standard that applies to

everything. And as far as I'm -- I've been doing it for two to three years over at the Air Resources Board because we're dealing with the cap and trade there, that if you're going to have a standard -- if carbon is the issue, then make carbon king and crown it and then start to serve that. Because that way then we have a single measure for everything as opposed to allowing what happening now.

I can give you horror stories about my guys trying to get incentive programs and change out new technologies associated with this, if they're trying to use ratepayer dollars through the utilities. It's not the utilities' fault that, you know, something that should take six months ends up taking three years and sometimes doesn't go through at all because we have such an archaic system where they have to measure industry standard practices. Where we have ex-anti reviews, where we have ex-post reviews. And none of this is applying to have been looking at is that energy saving dollar actually being done?

You know what, as far as I'm concerned and frankly I'm happy that Edison's here because they filed a proceeding at the PUC to essentially kick off this, to try to get some kind of a basic standard that we can all measure against and then everybody can come under it.

I mean, as a homeowner myself, I would much rather see a new home that says this home here has now, you know,

emissions reductions associated with this home is equal to this. You know, that's a much easier standard than saying you're going to save this much money on your bill every month because of your energy efficiency. Well, most people can't, they don't make those calculations. And so, you know, getting to there is going to be probably the best thing we can do over the next few years.

In terms of -- the other is that I've been -- and I talked to the Air Resources Board and I've talked to others, too, and industries as well. You know, one of those things I'd love to see happen is to separate out ratepayer dollars from energy efficiency projects altogether. Having utilities, especially -- you can start with large industrials because they're the ones who are most to risk, and I know this is about decarbonization of smaller units, but nevertheless, it can apply down to there, too, and utilize other sources of income or funds to do those projects through the utilities.

So we've got the cap and trade money. There are millions of dollars there. And they're sitting there right now. And the utilities really don't have any access to them for their large industrial users or even in the residentials. They have to go through the PUC process associated with looking at those ratepayer dollars which is just -- it complicates the system more than anything else.

Whereas, if we were able to separate that out and a large facility that came in and said we want to replace our boiler. Or a homeowner that came in and said I want to replace my water heater. You know, and the utility had the access to those dollars that were not associated with ratepayer dollars.

How easy would that be? It would have a heck of a lot faster because you wouldn't have to go through the reviews and the hoops that you have to do currently.

So again, I'm just supporting what was going on here. And, really, you know, let's keep pushing on this kind of thing. The industrials are largely behind where you're trying to go here, I think, in terms of that. Even though this doesn't affect them directly, it is a move in the right direction. And if we can bring along you guys, we can probably get some change going too.

MR. ROSALES: Thank you, John.

MS. MORROW: Good afternoon, my name's Colby Morrow and I work for Southern California Gas Company. And I live in Fresno, I work in Fresno, so I'm a local.

And just a couple of things. So I'm an air quality expert, not energy efficiency. So I'm -- that's what the tome said, I think I've in. So for example, if we look at the greenhouse gas inventory, there's a much larger sources of greenhouse gas emissions in our state than residential

homes, for example. And maybe even if you included all of the commercial buildings, still much larger. And so where are those and since I live and work here are the dairies.

And so I'm -- and I don't know that this is for the panelists but rather -- why aren't we talking about renewable natural gas? Someone said I think it was maybe the panel before about the only way to go renewable is for electricity. But that's not true, we have a great need to capture methane from -- from wastewater treatment plants, from dairies, from landfills, all this large sources and put it to beneficial use.

So that's -- I think that when you talk about decarbonization, you need to talk about that as well.

And then I'm friends with Courtney and have worked with her in the past and really the affordability issue in this area is just overwhelming. And so I also am curious about the CEC, what are you doing in terms of -- I mean, why do we have to have fuel switching? Why do we have to have electric only? In my mind, and again, this is kind of layperson looking at it, it seems to me that it would be much more cost effective to have a hybrid approach and use every type of opportunity to get to the goals.

And I really appreciated, I think it was Brandon or maybe Davi about what -- what is our goal? Like, do we -- I mean, for me here, I live here, it's a criteria plume

emissions here. They largely outweigh any concern I have about greenhouse gas because my husband got pneumonia two years in a row. I got pneumonia for the first time last year and it's because of particulate emissions not because of greenhouse gas emissions. So it's -- you know, I really think that we need to have a holistic approach to evaluate what our priorities are.

Thank you.

MR. ROSALES: Thank you. Good comments.

Now I want to say my quick response is our focus here was building decarbonization. Biofuels is a very important subject, it's probably a big enough subject to have a whole panel by itself, but we were building this panel just around building decarbonization. So I wouldn't want to veer into getting into a big response.

But I'm going to pause really quick, it looks like there's one more.

Let me -- let's take -- well, let's take your question and then I want to wrap up because I'm very limited on time now. But let's field your question, it'll be the last question.

MS. ISLAS: No problem. And it's more of comments and just really seconding a lot of what my -- some of my partners had actually mentioned.

So my name is Angela Islas, I work with the Central

California Asthma Collaborative here in Fresno. I am also a part of the Disadvantaged Communities Advisory Group. I'm part of the membership for -- under the PUC and the CEC. So we are -- we're really trying our best to really kind of bring up these discussions around energy efficiency. We know the value with a lot of the programs that we are evaluating amongst the PUC that really is the essential conversation we are having is really trying to figure out how to have these energy efficiency programs more accessible in the communities that we represent in each of our regions.

But definitely the conversation of decarbonization is really something that, you know, our group and the Disadvantaged Communities Advisory Group should be really talking about. It's essential to our -- to my organization for CCAC that, you know, we see a future where a lot of our residents are living in this decarbonization home where they have an EV car and they have a full energy efficient system in their home and it's zero -- and it's net zero. And it's just -- that's the image that we see in the future for a lot of these homes but for right now, we do see the challenges, especially with affordability.

I just wanted to quickly share, one of my clients that I had met last week, you know, she has a son who is suffering from asthma and she lives in southwest Fresno which, you know, ae all know is historically disadvantaged

and historically always left out of just advancing in making sure that these residents are getting the best of what will help them live in a healthier neighborhood.

But my client had shared with me how her energy bill has just been continuously running up and up and up while she's struggling to even like keep her primary care doctor to just refuse the proper medication for her son. But yet in her unit, half of her unit is going to be receiving solar but yet her unit is not.

So that really is something that has bothered me since our -- our -- our -- our meeting that, you know, there's this half of the residents that will be able to have energy efficiency and have solar and have all these projects but yet there's this other half that's not going to be able to for some reason, it's probably because of the two-story complexity of the unit which I think De Young had actually kind of brushed over. And that is a difficulty. You know, how you mentioned that, you know, how are you going to be able to make a full vent kind of get constructed within a two-story complex. So I do want to still be able to have this conversation. I'm happy to bring this up in the Disadvantaged Communities Advisory Group because I think it is important under energy efficiency that we talk about just this movement of decarbonization.

And definitely just wanted to second about Abby's

comments on AB961 with non-energy benefits. That is something that I think, you know, in the public health lens that that is something that we want to be able to measure when it comes to seeing how a decarbonized home is going to really impact positively with a lot of these families and those who are suffering of, you know, multiple diseases but also with asthma being one of the highest rates here in the valley. So I wanted to really kind of put that out.

But also to mention about what Davi had mentioned, you know, with all of these different senate bills and all these different priorities that you guys have. You know, I do want to point out, you know, Governor Brown before he stepped, you know, before he had left office, he really -- he signed a bill in 2018 saying that we are going to reach a hundred percent renewable by 2045, 2050. So all of these priorities that you all have, it is overwhelming but in my eye, I see it as a start. Because that's where we need to be right now. We need to have a start so we're not rushing towards the end when we're trying to reach a hundred percent renewable.

So that's just a sign of encouragement from me to just show that I know that there's going to be so many priorities. I know that you're going to get like this tug of war saying like you need to prioritize on this, prioritize on GHG emissions and all this. But at least it's a start. And

at least you'll know how to prioritize it to where you are able to reach that attainment at the end.

So I really do appreciate this conversation and I think definitely that I will hopefully be able to bring this up in my group but also CEC to continue having this conversation. And I'm looking forward to that.

Thank you.

MR. ROSALES: Thank you. So great comments.

I'm going to -- only in the interest of time, I'm going to transition us and start closing out.

Before I let you guys go, I'm going to get one quick question. I want to make one reminder. We had great comments, I want to make sure everyone's aware that we do have open docket. If you're not familiar with our public comment process, please submit your comments and ideas and your thoughts in that docket. That's very important so we could have it on the record. We do take notes now, but it's good to have party comments or, you know, stakeholder comments on the record.

UNIDENTIFIED SPEAKER: Just to clarify. So our verbal comments is not enough? I thought that's why we were doing that.

MR. ROSALES: Are they?

UNIDENTIFIED SPEAKER: I think that's why many of us did that.

MR. ROSALES: I'm getting a nod yes. I wasn't clear but I'm being told that we are. Bryan.

MR. EARLY: Yes, certainly this -- Bryan Early with the Energy Commission. Definitely appreciate your inputs and participation. We will create a transcript which we will then go through. So submitting written comments is not a requirement, we just encourage it because it makes our job a little easier. And then it helps to have -- to also, you know, force participants to really sit down and cogently summarize everything. You know, just like we all had to do in college. But we can go through the transcript. So it's no problem.

MR. ROSALES: Thanks, Bryan.

Is that clear? So a transcript is part of the record but it is, I think it would be preferable if you have time and the energy to submit -- submit a comment on docket. And you don't have to do it immediately. Like Bryan said it's not required but it is there available for the public to urge to comment.

Okay. I'm a little over time but I do want to ask one last important question. Folks, if I could have one minute of response real quick. And it was touching on actually an issue that was brought up from the last comment we had here. Is, how do you measure success? And we'll just start from my immediate left and go down. How do you

record -- document your progress, record your success and share maybe that record. You know, can you quickly touch on that?

MR. DUNFEE: So I'll say the programs we've launched for electrifying residential new construction, they're not even a year old at this point, which means our first homes are just now completing. So we'll probably be another year before we can get any -- any real usable data out of those homes. We have a year's worth of usage.

The plan right now is to take those homes and compare them to a load profile of a similar split commodity home. And then look at the carbon intensity of the grid on an hour by hour basis and compare it those load profiles and to see what are the true carbon impact of those all-electric homes are. And to see what the bill impacts are as well to the homeowners.

MR. ROSALES: So that's forthcoming.

MR. DUNFEE: That is forthcoming. Because since we're doing new construction, typically you sign homes up a year before they're built and then you have to wait a year to get the bill. So we're just about a year into the program. We've had our first homes completing in both programs. So within a year we should have some -- some actual usable data from the real live homes. We're not dealing with our -- our modeled assumptions any longer.

MR. ROSALES: And real quick for the folks in the audience, information and data like that might be important to bolster arguments. Where can they find that -- your report or your reportings?

MR. DUNFEE: Yeah, you just follow -- we have several different TRC websites and blogs for the different programs to --

MR. ROSALES: Can they contact you?

MR. DUNFEE: Yeah, they can contact me directly.

MR. ROSALES: Thank you.

MR. DUNFEE: Yeah.

MR. ROSALES: Brandon.

MR. DE YOUNG: So I mean, success for us, obviously we're a for profit private company. Right? So it's to be able to create and design and build and sell a product that is better for everyone. Not only the person that's buying it but everyone in the community as well.

We've, like I've said, spent 10 years developing ultimately what we're building now and to become what we call our zero energy smart homes. And so I feel like our success is having built and developed something that is better for the environment, better for the community, and better for the homeowners from an energy efficiency, lower cost to operate, comfort, better air quality, everything above -- basically all of the above. And that's why we love what we're doing is

because it kind of solves all the problems.

MR. IBARRA: Measuring success. That's a loaded question. At least for the San Joaquin pilot. Again, there's going to be a lot of data collected because this is a new effort. Like I said, it hasn't fully kicked off. But at the end of the day, I think success for this pilot would be the ability to scale the program -- this pilot into a full-blown program at the end of the day.

Because this is a pilot program for three years, it's limited in the number of customers that are being targeted within a limited number of communities, so at the end of the day, the success would be, again, evaluating all the data that really provides us a pathway to say we could scale this up into a program that could be offered to more communities and more customers.

MR. ROSALES: And for folks who are interested in learning about how you can be tracking metrics and progress, can they find information on the part in the proceeding -- any proceeding documents?

MR. IBARRA: There might be, again, in proceeding I believe there would be -- I would imagine that there'll be like some kind of monthly reporting or something I think that would be entailed or required as part of this process. So.

MR. ROSALES: Are you guys tracking carbon savings in that, would you -- do you know?

MR. IBARRA: At this time, no, I'm not aware of what -- there's just a lot of data elements that are being captured because there is an initial data gathering phase for baseline. And then at the end of the pilot, there will be an economic feasibility study and that's what will help in, you know, paving the way if this is going to be scaled up or not. So.

MR. ROSALES: All right.

MR. IBARRA: Yeah.

MR. ROSALES: Well that's -- I'm going to wrap it up there. Thank you for your time, that was great. Thank you for all your insights, thanks for all the public comments. And that will conclude the Building Decarbonization panel.

Thank you.

MR. LOZANO: All right. Good afternoon. My name is Mike Lozano, I'm a senior mechanical engineer with the Energy Efficiency Research Office.

Just a little background on me. I do a lot of research in the areas of industrial, agriculture, water. Industrial is probably most of it but, you know, we're in the valley a lot, Imperial Valley. And today I'm going to moderating a panel Capturing Energy Efficiency from the Agricultural Sector.

So if -- let me give you a little something on my panelists and invite them up at this time. Please take a

seat.

All right. First, I'd like to give you the bio on Dr. David Zoldoske from Fresno State University. Dr. Zoldoske served as a researcher and director for the Center for Irrigation Technology at CSU Fresno for 35 years. He also served as the first executive director for the water resources policy initiatives at the chancellor's office.

David has been recognized as person of the year by the California Irrigation Institute, that was in 2015. He is a senior fellow with the California Council on science and technology and worked as a research network expert for the Public Policy Institute of California, Water Policy Center.

We've heard for a little bit from John Larrea. He's director of the government affairs for the California League of Food Processors. CLFP is a statewide nonprofit trade association that represents food processors for the production facilities in California. The membership includes firms involved with canning, freezing, drying of a wide variety of fruit and vegetable products as well as nut processors, [indiscernible] manufacturers, oil producers. He has over 30 years of experience in government relations in California.

In 1997, John was appointed as an analyst and consultant for the CPUC Commission where he covered energy and natural gas issues as a legislative liaison for the

Commission's Office of Government Affairs.

And finally, Carolyn Cook is a senior environmental science -- scientist supervisor with the California Department of Food and Ag in the office of environmental farming and innovation. Her work focuses on climate change impacts and greenhouse gas mitigation opportunities within California agriculture.

She works on the development and implementation of incentive programs for farmers such as the state water efficiency enhancement program. This is a grant program designed to expand water and energy efficient irrigation systems. She's a Cal Poly grad, and a master's in environmental management from University of San Francisco.

All right. So we're going to dive right in with a few questions. Please remember to state your name at least for the first couple of times so we can get it on the record. And I will start from my left.

All right. So Question 1: Describe your current energy efficiency activities or the state of the art which you would find interesting. What challenges would you say are faced in achieving energy efficiency in the agriculture arena?

MR. ZOLDOSKE: Okay. So Dave Zoldoske. Couple of programs that -- oh, sorry. There we go.

Dave Zoldoske. Couple of programs that we're running

out of Fresno State or manage, rather. One is the Advanced Pump Efficiency Program. We've been doing that for probably close to 20 years. 90 percent of the electrical energy used in -- on farm production is for pumping water. Shouldn't be a surprise to anybody. So really, the pumping plan is really key to -- or the first step in energy efficiency. And so we have a program, we reach out and we provide pump performance evaluation.

But more important and we've heard this throughout the day the theme about education. You can give a number to a grower about their pumping plant but what does that number mean and what action should be required, if any?

So that -- that program's been very successful. Kind of at the peak of the drought, I think we were booking about a million kilowatt hours a month in first year of savings by improving the pumping plant efficiency.

A second program which I'm proud to say is sponsored by the California Energy Commission is -- about four years ago I was the lead on establishing what we call the BlueTechValley which is one of four regional centers in the state; Bay Area, Los Angeles, San Diego, and all the rest. So we represent 39 counties to really promote in our area ag, water, and energy innovation. And so we work closely with entrepreneurs.

Locally, we do focus in DACs, trying to understand

both their needs and folks in there that might have solutions to address some of the energy challenges we have. But we also look for many place around the world to find solutions that help keep our ag.

But primarily our ag, that are ag, water, and energy usage, you know, optimization. And so we do get folks from around the world as well as locally and across the country helping us with new ideas and technologies that we try to go from concept to commercialization. And so I think we've gone through about 300 companies that we've, you know, touched coming in and stuff. And there's a whole range, everything from automating cooling of cows that help with their production of milk and other things to, you know, large more energy attentive savings. So those are two that come to mind.

And what do we -- what do we face? It's really adoption, right? And so with startup companies, there is reluctance to adopt technologies that are funded by VC, Venture Capitalist. Are you going to be here tomorrow if I spend my money today?

So there's some of that that we're working on trying to either, you know, attach them to -- I mean, obviously came from John Deere, it's a well-known name, it's been around for a hundred years. People wouldn't worry about whether John Deere's going to be here tomorrow. But you know, if you're

energy specialist and I've been, you know, 90 days or a year or whatever, there's real concern. And unfortunately, there's been a lot of train wrecks out there as well.

So our base challenge is really to bring these technologies to bear and hopefully support those companies so that they not just be on the technology but the financial, marketing, and business plans are robust enough to carry it forward.

And on the ag pump efficiency program with the advanced pump efficiency program, it's really interfacing the pumping efficiency with the in-field distribution of water efficiency. Unfortunately, many -- there's 4 million acres of drip microsystems out there that get installed new and they're fairly efficient when they're new but they -- maintenance is not really maintained as you would think and those systems degrade over time.

And so one of my favorite questions to ask growers is what do you think the efficiency of your drip system is and the whole room of folks will raise their hand and that's over 90. And that's true when they bought it. But if you look at the curve, maybe it's only 15 or 20 percent of the systems out there will achieve that today. And that really means either I've got a very special group in the room or they haven't checked since the day they bought it. And it's probably the latter.

So it's really again education, getting those systems audited and taking appropriate action.

MR. LOZANO: All right. John.

MR. LARREA: Yes.

MR. LOZANO: John, same question.

MR. LARREA: Yeah, John Larrea with the California League of Food Producers.

As you know, we represent the large industrial. So describing my current energy efficiency activities is essentially, I'm looking for options. Options for our members in our industry to be able to obtain further energy efficiencies as we move forward to reduce emissions associated with this.

The state's goals are driving this and they're going to be very strict. Up until 2020, we were just looking at cap and trade. But after SB32 and we've extended the cap and trade beyond that and increased the emissions reductions, essentially doubling them. It's become very important for our guys to be able to have as many opportunities as we can find for them to be able to, you know, work through their systems and their processes to become more energy efficient as quickly as possible.

One of the things that I have been doing lately is to work with the utilities to try to identify those programs that would most help our particular members. Also to help

them to reform the program so they're more responsive to what our members need as opposed to just a generalized energy efficiency program out there to see if anybody will go with that. We want it targeted. We need to be targeted because the type of industry that we are.

We're working with the agencies as well. One of the biggest success stories I think is the food production investment program that we just ran through with the CEC. That's, you know, despite the fact it's been around for what two years now?

MR. LOZANO: About a year and a half, I think.

MR. LARREA: About a year and a half. I was working on that three years before when I was standing in front of the Air Resources Board saying you need to direct some of the cap and trade money back to the industries that are paying into this. They're the ones that you're saying are the biggest emitters and they're the ones who are most in need of the types of support in order to be able to become more energy efficient.

This program actually has accomplished that. We now have a program that gives preference to cap and trade facilities, food processing facilities. And it also is unique in that it doesn't contain all of the regular problems associated with trying to apply for grants or loans through a regular agency process. We specifically went in with the

idea that let's make this streamline. Let's make it easy for these companies to come in and to address these issues and to try to get the technologies that they need.

So those are the types of things that I've been working on for the most part and I continue to look for options out there in whatever way, shape, or form. You heard me talk about the idea of making carbon king. That I think would be the biggest streamlining thing we could possible do and we can pull all of the agencies into this and then have that be the measure against all programs that run through that.

And also finding those other funding sources. You know, the cap and trade is here to stay. And that money is going to be coming through the auction and it's going to be available. And we need to be able to make sure it gets directed to those companies that are going to need it most and can utilize it the most and create the most emissions reductions or other types of reductions that they may need going into the future.

And as far as the challenges that we're facing, technology. For years we've talked about the lack of technology, especially for our industries. What type of new technologies are available for boilers. Really, there's none out there. And the types of reductions that we're going to need, we're going to need some kind of a giant leap in terms

of technologies in order for us to be able to meet the types of reductions that they're going to demand of us in the future and still allow us to remain competitive in our markets.

So one of the things that we've really been pushing on is to try to get more investment in new technologies, R&D and others that are specifically aimed at food processors. One of the things we were able to do at the CEC -- and again, they've been the most receptive is that, you know, for years they would come to us and say you know, we've got new technologies and they'd throw out these programs and say, you know, this is aimed at ag, you know, come on in and apply for the grants. But the technologies themselves didn't really focus on what we needed.

We began the process of talking with the CEC over a year or two and told them ask us what we need. Ask us what we want and then try to find those technologies and provide those type of grants on those technologies and get those companies to come in and create those.

And part of that I think resulted in the FPIP program. And the other is that now we've seen kind of a shift in the focus of at least the Energy Commission in terms of, you know, targeting our particular industry, understanding what our industry needs, and what types of technologies are going to best benefit us in terms of reaching those energy

efficiency goals that the state has been tasked with.

So that's the other area that I've been working on for the most part.

MR. LOZANO: All right. Carolyn, same question. But I would request that -- that you would expound on anything you have water related because that will be part of the follow-up question.

MS. COOK: Well, good. I guess I'm suited to talk that a little bit.

So my name is Carolyn Cook, I am a senior environmental scientist with the Department of Food and Agriculture. And I work in our office of environmental farming and innovation. That's a fairly new office, we're about three years old now. And really got jump started when some of the cap and trade money became available for incentives programs. And so we now house four programs that are focused on providing incentives to farmers and ranchers to reduce greenhouse gases.

So as far energy efficiency goes, relate that, you know, our lens is also carbon at this time as far as the activities we're taking for reducing emissions and agriculture. I was sort of curious, yeah, how energy efficiency was being defined I guess, today. And so I thought a little bit about that. A lot of our programs involve renewable energy so the program that I work on is the

State Water Efficiency & Enhancement Program. It's focused on irrigation and a lot of the farmers are incorporating renewable energy production into their irrigation systems and applying for funding for that from our program.

We were kind of lucky to be one of the first departments at the state to start up a program in response to the funding being available through cap and trade. SWEEP was really given its first appropriation of $10 million in 2014 through an emergency drought legislation bill. So touching on the water component, water savings and greenhouse gas reductions became sort of coequal objectives of our program. And we've now -- now have had $62 million go through our program. And we have 20 million that we're looking to spend in the next year. So we've had over 600 projects and it's been very exciting and a bit of a whirlwind.

I think one thing that's helped SWEEP -- we call it SWEEP be effective at reducing emissions and hitting energy efficiency and also water savings is that it's a pretty flexible program. So folks can apply for funding for what they need on their farm. Whether they want to install a micro irrigation system or they're looking at maybe some sensors that will help them time their irrigations more effectively. The renewable energy, I touched on that. And also some of the pump improvements. So a lot folks apply for funding for variable frequency drives and sort of higher tech

equipment that's going to help them be more energy efficient.

Challenges. What's been interesting to me and watching the program evolve is that California really has a lot regional scenarios as far as water and energy go. And so what is needed down in Imperial Valley is really different than what's needed in the central coast or central valley. So just making sure the programs are accessible to everybody, that it's flexible has been really important and I'd like to see us improve in that area as well as far as finding the right technologies and the right partnerships for different regions.

MR. LOZANO: All right. This is a follow-up question for the panel.

I do -- my group does a lot of, you know, research projects. And in the old days it was quite easy to figure out what the value of the project, the value proposition of a project. You say the therm, you say this percentage of therms or you saved so much kilowatt hours. The question has been coming up for many years, it's very difficult. What is the embedded energy of water?

And so my question to you would be how are you finding the industry, you know, the farmers, irrigation, agencies, how are they viewing what the value of water is? Because if you have primary rights, then it's like you get your water. If you're, you know, pumping, you know, you have

to pump even deeper and deeper and use more and more electricity to pump it out. So when you're talking to your stakeholders, how are they viewing it? Just as a very simple calculation or are they thinking deeply about it?

So I'll come back from Carolyn back to here.

MS. COOK: You know, I think farmers and ranchers are very cognizant of those costs. And that's something I was sort of referring to in the differences that we have in California regions where in some areas water might be less expensive for them but their energy or their fuel inputs are very expensive. So, yeah, I think they're always trying to balance those costs and maximize profitability of farming.

MR. LARREA: I'll try to answer this in terms of that. I'm mostly the energy guy. But for the most part, you know, food processors tend to use water in their process itself. From the very beginning when they dump their product into the process and it starts to go through the factory itself all the way to the canning process. So it's -- my understanding is it's simply a matter of how many times can you reuse that water? And it's more of a conservation-type issue associated with that before the water finally gets to the point where it just becomes either a wastewater that needs to be dealt with on the basis of the locality there or whether or not it can be spread out and utilized by the facility either in a growing aspect or some other thing. So

they're always looking for ways to become more efficient in terms of how they utilize that water and they spend a lot of years doing that.

The other of course is the wastewater issues as well as the pumping issues. That becomes still one of their number one products. If you're using groundwater associated with it, they're trying to find energy efficiency associated with those pumps and they're looking for any means possible in order to be able to reduce the costs associated with that.

So that's essentially as I understand it. It is one of their major factors associated with how they operate their businesses.

MR. ZOLDOSKE: So, yeah, the cost of water is a complicated thing, I guess. But I would -- just a couple of observations. One is that the recent drought, the multiyear drought I think raised everybody's awareness about water, it's availability. Even those that thought they had secure water rights found out that perhaps some of those were in jeopardy. So I think the awareness of growers is much higher. I know training at Fresno State, we rarely could get any growers to come out during the summer, they're working hard to learn more about water management and we were filling classes and standing room only during the drought.

So just anecdotal if you want to call it that. But certainly there was -- it -- it's really, you know, what is

the most important concern of a farmer and it changes, right? I mean, it might be labor, it might be weeds or bugs or water, whatever it might be, and certainly water was raised to near the top of the list.

But I would also say, I mean, I've heard conversations about the holistic approach and I think that's really -- and my comments later today will also echo that -- but I think avoided cost when water is mismanaged, it carries constituents to the groundwater. We have high nitrates in the groundwater then we have to treat that to bring it back up to drinking water standards. So I think as we move forward, the cost of water, the appropriate application to water, water management all is data driven. And I think going forward, it's really going to be really imperative that growers have sufficient data on their farms in order to certify, if you will, that they're good stewards to that water supply. And obviously it has huge impacts on the energy as well.

So those are all related. And so it's first use of water, it's avoided cost. And then lastly I would say we have lots of water sources, Imperial water bodies, brackish water in the San Joaquin Valley. Particularly that could probably surf for ag water. If we can figure out how to treat it, not to drinking water standards but to plant standards and do that at a cost that makes sense.

So I think technology, you know, somewhere out there will come along and allow us to do that. So. But without that, I mean, we can probably look at maybe 2 million acres of California farmland to be, you know, fallowed or set aside going forward. Those remaining acres will use more water per acre perhaps, almonds are the crops that are high value and that are highly automated and don't use -- depending on labor with labor being a challenge these days. So.

So it is a complicated issue, but I think we are in the midst of change so it's not a static question to be answered, it's dynamic. And so you sort of have to throw your dart at the dart board and, you know, make your best guess.

But I think we kind of know where it's headed. And but I would say we have a dearth of data in order to manage at the level we're going to need to in the future and that's where technology is going to come in and I think provide the real backbone to make it work.

MR. LOZANO: All right. Not just in the water arena, but what emerging technology -- this is a question for the entire panel -- do you see on the horizon that may help the agricultural sector capture more energy efficiency?

And I'd like to combine with there was another question. I would like to hear about emerging technology seen on the horizon that would help but also that you think

that the ag industry in the Central Valley would actually be open to adopting.

So realistic things in let's say three to ten years that's going to make a big difference.

So I'll open this up. Carolyn again.

MS. COOK: Yeah, I mean, I think actually --

MR. LOZANO: You need --

MS. COOK: Sorry. Couldn't tell.

I actually think that farmers are quite inundated and sometimes maybe overwhelmed with the technologies that are available to them.

And it's also hard to know what's cutting edge maybe because things are moving pretty quickly. Some things that I think are very promising include some of the, you know, monitoring services that are available that help people identify and some of them have been sort of funded through Energy Commission grants in the past before too. But helping farmers and ranchers identify when they have an energy leak or some sort of problem on their pumps, that's one.

I know we're seeing a lot more applications for different types of sensors, not just energy or pump sensors but water sensors and that water savings can translate to energy savings of course as well.

Drone technology but -- but again I guess sort of the missing link at least as far as I'm concerned maybe not for

the food processors but for the farmers is not the new technologies but how -- deciding which ones to choose and how to use them and the training part that goes into that is what I'm seeing.

MR. LOZANO: And John, I know that you're more of the processors than farmers but in processing -- because you're absolutely right, you know, from the IAW, my team's perspective, a lot of the low hanging fruit from like a, you know, a boiler, a burner, is pretty much gone. You have to make a paradigm shift.

What do you think is the next big thing in food processing?

MR. LARREA: Funny you should ask because that's exactly the question we were asking ourselves too. Because just standing there and telling the state that we need new technologies, we need new investments in technologies, we need R&D doesn't really get us there. So.

But one of the things we also didn't see was targeted studies that will determine this. You know, I mean, like I said we've worked with the CEC to, you know, walk them through our plants, let them look at what we're trying to do. Give them an idea of what we might need in the future.

But to that end, because of the doubling of the emissions reduction that the state is seeking, we felt a greater urgency to be able to get there. So the league

itself and the members have started a text study. And what we've done is we've gone out and we've asked them to write a white paper to determine what is out there? What is a variable right now in terms of these technologies? What is coming within the next five years? And what is the foreseeable future look like in terms of that type.

And the reason we want to do that is because we want to be able to go to the Air Resources Board and to the Energy Commission and say here's what we found, here's what we'd like you to focus in terms of what we're looking for in the future and to drive towards that. This -- for our particular industry, that's where it's going to be.

So one of the things we found is under the FPIP program we've used the data that has come in, the public data associated with those projects that were not only okay but those that were not, anything that is public data. And we found some surprising correlations there. In fact, we're probably going to end up sharing those with you here fairly soon. Because we're still putting them together.

But this program is going to be a gold mine in terms of our ability to be able to pinpoint what our industry's going to need moving forward. And also, part of that is to convince the agencies, especially like the Air Resources Board that, you know, when you're moving forward on a regulation such as the cap and trade or you're moving forward

in terms of your emissions reduction's goals, you need to be cognizant of what is achievable and what isn't? What will really impact our industry and what will make it more difficult for us to reach those goals? And that will impact our markets and essentially either drive us out of the state or drive us out of the business.

So, you know, having that type of data and like I said the Resources Board is very excited about this particular text study and we're hoping it's going to result in a bigger investment in technology studies for the entire state in terms of the various types of industries that need these new types of tech investments.

It's pretty easy. I mean, if you look at the transportation sector, there's a lot of new technologies there. And those technologies that are available and to try those forward, you know, the government can put through regulations and policies that will force that technology in. But when there's no new technologies that are available for this, then we end up having to pay. And we pay for allowances and it does not reduce emissions except through production reductions.

And once we start to reduce our production, that affects employment, it affects economies, local economies. And as one person said, you know, we have here in the valley, it's the highest unemployment rate in the state. And it

continues to be that despite the fact the state is doing fairly well right now. We're still going to be on the low end.

Anything that impacts our ability to be able to expand our businesses and to, you know, create more jobs, you know, if it's going to force us into reducing our production or, you know, hurt us in the marketplace where we lose our market percentages to a certain degree, jobs follow. You lose it, you lose the jobs.

So that's why we're trying to get the state to understand technology is where it's at. At least for our particular industry. And the more you invest in that type of research associated with that, the better off the valley's going to be and the better off our industry is going to be because then we'll have options associated with how we want to address the emissions reductions that are going to be required of us in the future.

MR. LOZANO: Thanks. So I think to manage -- you know, I'm going to talk about water and the ag sector but on farm.

Yeah, I'd like to see water meters out there for farmers. That sounds pretty weird but you know we have studies that there's 100,000 ag wells and maybe only of a third of them have water meters. So, you know, I don't know how you measure -- manage it without measurement. I mean,

there's other ways that they get around that and do it. But I think we need with Sustainable Groundwater Management Act, we need to have an infrastructure that then really helps reporting withdraws and stuff with, you know, I think the best accuracy that technology allows.

But I think going forward, I think machine learning and AI are really things that benefit the -- think of the farm as a factory just without walls, okay. Because we've got all the components going on out there. And -- and a little bit like Brandon said there with, you know, you're trying to sell something and you can scare away the customer. And I think machine learning and AI is those spooky things. But it's really like taking that data, integrating it into a process that can alert you earlier to abnormalities or some -- some -- something that's not operating correctly out in the field and make decisions. And as we get into the demand response and other things that are important to the energy use, you can then bank water in the soil and then -- and then -- and then go through those periods of blackouts.

And I know the CFA has its healthy soils program. And while that sounds like, you know, why is that important? If you can double the water holding capacity in a healthy soil, in other words instead of holding two inches of water in a foot of soil, you can have four, that gives you a long period of time that the plant has water available to it

during a period when the irrigation system isn't running and allows for perhaps not running a system during peak time and everything.

So it's really about integrating all these variables together to achieve multiple goals. We just don't have these conversations. The program said I'd see out there federal, state, local, whatever, are very targeted on specific things. And if you just said, hey, you know, if I had another dime with that dollar, I could double the benefits from it, seems like a good investment.

And it's about educating the growers about how this all integrates together. But ultimately I think machine learning and AI have great opportunities to assist the grower in really managing the roots zone, the soil moisture, the fertility, and those things in a way that just isn't achievable from -- from looking at a spreadsheet on getting an alert on your phone. It just, you know, the -- the granularity of the data and the action time are just so -- I think delayed or in the fog of decisions.

So I'm hopeful that's where we're all headed and I think as these technologies roll in there, we really have an opportunity to optimize at least on the farm the water energy nexus.

MR. LOZANO: Thank you. I need to move on to Q&A in about five minutes.

But I want -- this is the final one-minute elevator blurb that I want you guys to give me. And here's how I'm going to -- how I'm going to phrase this question.

Knowing what you know what the Energy Commission does, what is it in the ag arena that you think okay, do more of that? You know. And if you can put it in 90 seconds, how do we improve whatever program you think that is.

So let's start off with John.

MR. LARREA: Simply put, think outside the box. I think the FPIP program shows that there were some in the Energy Commission we're open to new ideas, willing to break through what had always been the traditional way of trying to do things.

By the way, I always want to thank the CDFA because they were the one who hosted the first governor's task force on the FPIP, so they had a lot to do with that as well. And I'm sorry I missed -- I kind of forgot that.

MS. COOK: Thanks.

MR. LARREA: But thinking outside the box, especially within their agencies is what's going to get us to the goals that the state has set for us. We need to come up with new ways to look at things, new approaches to it. And FPIP is a perfect example of thinking that is going beyond just the regular bureaucracy associated with we create a thing, we set up a grant program, we run to the grant program. And those,

you either get it or you don't.

An assembly addressed the unique characteristics of ag and food processing itself and said here's a program that we feel can, you know, accommodate your needs in terms of how you can apply for it and what you can utilize out of it.

And that's -- for me, that's exactly what's needed going forward.

MR. LOZANO: And just so people know that the FPIP is Food Processing -- Food Processing Investment Program.

Basically it's in your white sheet team that we have and he's right, it's something that the government doesn't usually do, put a lot of money into a new program with new eyes on it. I think, I believe everybody in that team is 30 years or younger, actually. So, you know, it's not the same old, same old.

So it was -- it was -- it was something that I hope we do more of, so I agree with you there. Thank you.

MS. LARREA: Just because I'm an advocate of this, it did some things, it took our recommendations. And one of the recommendations we had was I was always disturbed by the fact that, you know, you have utility incentive programs that are going on, then you have incentive programs coming through the Energy Commission. Then you might have incentive programs coming from someplace else. You know, there's never a combination of them.

You know, one of the things we asked for is can we combine these programs? Can -- if we have an incentive program running through the PUC and the utilities are pushing it, you know, can we combine that with something that comes out of the FPIP, either by using that -- the money that's coming out of the incentive program as matching funds or can we combine it with a new technology there that would qualify here.

I mean, these are the types of innovated thinking that we're seeing right now that is helping food processors to move forward. I'm very proud of the fact that out of -- out of all of the awards there, five of the companies that are members of CLFP were rewarded six programs, six grant programs of a total of $12 million which is almost half of the money that came out of -- that was awarded out of that first -- first iteration of the program. So and I'm hoping to improve that.

So, yes, this is the type of thinking that we need going forward at least for the food processors and I'm pretty sure ag could benefit from this too. So.

MR. LOZANO: All right. Thank you. Carolyn.

MS. COOK: Yeah. I was thinking about what you were saying so I kind of lost track of the question.

But, yeah, I would just comment also on the food processors incentive program. I got to sort of witness that

from the referee. It was really -- some of the challenges, the ones that you mentioned on combining funding and the way programs are sort of structured differently throughout the state. And then just sort of trying to rectify that or at least bring it all together was incredible to just see people meeting that challenge or trying to. So hopefully it keeps going and there's some good success there.

I guess as far as what the Energy Commission works on and I had two thoughts. I do think with farmers and ranchers, I mentioned that decision making is really difficult sometimes, choosing the right technologies. And since the Energy Commission does often, you know, fund new technologies or research, it would be great if there was also maybe more on the translation. The translation to how it's practiced in the field and of course CDFA can also work in that some more and we can get some collaborations maybe going on that kind of thing.

And then I also want to go back to what I mentioned before, maybe tailoring some research to these regional concerns. You know California is being impacted by Sigma and other resource needs throughout the state are different. So we need to maybe tailor our approach in those different regions whether it's with research or our efforts.

MR. LOZANO: Doctor, I'll give you the last word.

MR. ZOLDOSKE: Okay. First I'd just like to

compliment the Energy Commission on what some of the bold steps they have taken. I think it's, you know, all the agencies out there, you seem to be the one that's less bound by history and I know that the focus on, you know, innovation and incubators and accelerators and trying to bring technology to bear on these problems I think is a bold move and I think it's going to pay off big for the state and for the producers of California. So I want to first be on record to compliment you for that.

But looking going forward, I think we need to look -- again, I'll just speak to the on farm irrigation. We've got -- we've got multiple policy changes out there and I think to use --

[Webex interruption]

MR. ZOLDOSKE: Ran out of time, huh?

I think we've got -- we've got policy issues that I think the CEC and others, CDFA as well, should at least consider as they move forward and that is, you know, we're going to have to be managing withdraws from our groundwater and there's technologies available for that. So as we go forward, why not look at individual -- or farms that, you know, we got efficient pumping plants. Need to distribute the water uniformly and then you need to manage it appropriately. And then those all integrate into, as I mentioned early, you've got demand response possibilities,

you've got this shifting of the peak tariffs for energy. But integrate that into a system approach as -- as a project or projects and make sure they're all linked together so that -- so what -- begin with the end in mind here, right? And so how do we make those -- all those pieces fit together?

And I guess the last thing I would say, I would look for some way to aggregate the multiple programs, both federal and state, throughout their EQUIP from the feds. The SWEEP program, we've heard about that. We've got the CEC programs. And how do make those -- and I think you mentioned it a little bit. How do those integrate together in a way that we can get multiple benefits and achieve success for everyone and be seen that the individual parts -- or the whole's bigger than the individual parts. I think if we can kind of keep that in the back of our mind as we design these programs and implement, I think -- including the Air Resources Board here, how do we, you know, help clean the air with irrigation systems, there's a lot to be said about that plan. Certainly can sequester carbon. We've talked about that a lot today and maybe look at that as part of the equation.

So I think it's about taking a holistic approach and making sure that we get the biggest bang out of our efforts and I think we will continue to be successful.

So thank you for your efforts.

MR. LOZANO: All right. Thank you. Well, I wasn't

meaning to do this but if anybody is actually interested in learning more about FPIP, they're going to have a stakeholder workshop in this room on May 9th, 10 to 2.

All right. So now I'm going to open -- open the floor to questions. If you have any questions on anything was asked. Or you can ask something new. I might not have the answer, but I'll give it a game try. So. Any questions online or in the audience?

No? In that case -- in that case I would like to thank my panel. I think it was really good. I finally got to talk about water, I never get to talk about water. Everybody wants to talk about kilowatts and I want to talk about water. So it was fun for me, I hope it was fun for you. And I hope it was educational for everybody online and listening. So thank you.

MR. ZOLDOSKE: Thank you.

MR. KENNEY: All right. So we're going to go ahead and take a ten-minute break. And then kick off with our final panel and closing comments. So we'll be returning at 2:25.

[Off the record at 2:15 p.m.]

[On the record at 2:24 p.m.]

MR. KENNEY: All right. We're going to go ahead and get started with the last portion of today's workshop. So if everyone could return to their seats. And we apologize for

quick drop in our call coverage but hopefully folks have dialed back in.

So our final panel for today is by capturing deeper savings from multifamily buildings. And will be moderated by Eugene Lee from the California Energy Commission.

MR. LEE: Good afternoon. My name is Eugene Lee, and I'm the supervisor of the benchmarking and equity unit in the Efficiency Division at the California Energy Commission. And again, I'm pleased to be moderating Panel 4, Capturing Deeper Savings from Multifamily Buildings.

I recognize that today is also opening day for Avengers: Endgame and perhaps many of you are out there, getting in the line. But I think we've got some really great energy avengers here this afternoon that will capture your attention.

I'm pleased to introduce to you Dave Brenner. And he's from the Fresno Housing Authority. Dave has worked as a planning consultant, nonprofit investment analyst and affordable housing developer. And he currently works with the Fresno Housing Authorities Development Team, playing a dual role as a project manager for new construction projects and as a coordinator for the Agency's energy projects. His recent focus includes full scale energy retrofits, rooftop solar installations, a car sharing in EV pilot, and several research partnerships. Welcome, Dave.

Also, I have Ben Clarin from EPRI. And he is the senior project manager there and he's focused on advanced buildings and energy communities. A great topic. And he has a portfolio projects looking at demonstrating and deploying advanced building technologies and practices to enable building efficiency in decarbonization. And his current work in multifamily includes a new construction projects working with builders and developers to enable and scalability in associated grid impacts of low carbon communities. Terrific work.

And we also have Betsy McGovern-Garcia from Self-Help Enterprises. She represents over 16 years of affordable housing development experience. And she's also worked at the city of Tulare where she had facilitated various energy efficiency projects and coordinated the cleanup of three brownfields. Also working at the city of Visalia where she's assisted in the design and the water conservation policy and community engagement. And now at Self-Help Enterprises, she is working in advancing sustainability elements and including zero net energy developments in gray water and virtual net energy metering. And incentive programs and striving for ZME deployment as well as substantially rehabbing affordable housing projects and with their experience in the LWIP program.

So playing off the movie, what is the endgame today?

The endgame is basically to change buildings and behavior. And we're going to have a robust discussion about those challenges related to both the buildings and behavior. And we know that we have a housing stock that has aged and that nearly 60 percent of this multifamily housing stock was built before 1979 and yet we also know that 47 percent of low income Californians living in multifamily housing. And 54 percent of low income households use a primary language other than English.

These are all barriers and challenges. But we've got some smart people to help us talk through these things this afternoon. So our first question is, what best practices can you share for capturing energy efficiency in multifamily buildings?

Dave.

MR. BRENNER: Yeah. I guess I'll give a little bit of background first. So the housing authority, we have about 4,000 units spread across 80 properties throughout the county. And about a third of those are duplexes built in the 1950s, and another third are low rise built in the '70s, and another third are built in the tax credit program in the last ten years and are incredibly efficient in high quality and high density. So it's a very, you know, it's a mixed match stock with very different challenges.

And most of our loads, we don't really have a lot of

central metering, most of our loads are in unit so all of our deep retrofit work goes in unit and is focused on the residents with -- we tend to add a little bit of a solar component for the common area but most of all of the work is focused in unit.

And I think just really our best practice in past we've kind of done one office here and there, we've gone after windows, we've gone after lighting. But our best practice is shifting towards major rehabs, combining our work with major rehabs to go really deep. We found that it takes a lot of entropy and a lot of momentum to actually mobilize us both in terms of the [indiscernible] environmental testing, the resident considerations, procurement for us is a big issue, dealing with PG&E is a very timely -- time consuming issue. So all of those things put together and getting our staff on board, it takes a lot to kind of push a project forward. And to get really deep retrofits, we should tie -- we -- it helps us to tie in to other rehab efforts that are ongoing.

So that's been our shift, our learning process in the last couple of years.

MR. LEE: Thank you. Ben.

MR. CLARIN: Kind of piggybacking on what Dave said is one of the best practices that we work, we're not necessarily a developer or kind of a manager of affordable

housing or multifamily housing. We work with multiple different stakeholders in order to enable advanced practices in the housing stock. And so what we try to do especially in our demonstration projects because we're working upstream as far as evaluating and testing advanced technologies and practices bringing most stakeholders in, in advance, as far as everybody understanding to your point that endgame. Are we trying to meet not only short-term building codes and standards goals, but recognizing the greater goals in the state of California which are focused in on climate change and decarbonization. So that's one step.

Another thing is and that in line to Dave's point is the traditional kind of demand side management program has been focused in on widgets and specific technologies. But once you get to a certain point with a builder or a developer, manufacturers willing to make that -- that -- to move past the inertia. It's good to enable deep efficiency because that's when it makes sense cost effectively as well as a timeline perspective. So our perspective is not necessarily having technologies fixed but having technologies in mind that enable building decarbonization and deeper efficiency.

One of the challenges we always have is targeting. There's an over -- there's sometimes an overgeneralization on how to approach specific buildings. And so that's something

that we've looked at as far as trying to identify some of the gaps and some of the advance solutions to enable better targeting of particular measures in particular building stocks.

MR. LEE: Thank you. What do you have to add, Betsy.

MS. MCGOVERN-GARCIA: Yeah. So good afternoon.

MR. LEE: Mic.

MS. MCGOVERN-GARCIA: Oh. There we go.

Okay. Well, good afternoon, as Eugene mentioned, I work for Self-Help Enterprises. We're a community-based nonprofit organization focused on the San Joaquin Valley. So we cover eight counties in the valley. We've been around for over 50 years and have been an active builder of multifamily housing. We have about 1500 units in our portfolio and I think generally have taken on the sustainability goal of getting as close to zero net energy as we can with all of our new construction and then actively seeking opportunities to take our existing portfolio to zero net energy. Through the combination of really focus energy efficiency retrofits and solar PV onsite.

Recently we completed five LWIP projects. We have six in the queue so we're spending about $8.3 million of incentive money with our own capital to retrofit those 11 projects. I think the thing that has really made a difference in our ability to achieve really deep focused

energy efficiency retrofits is the technical assistance that has come along with the LWIP program. I've never seen -- and I've worked in a variety of energy efficiency programs over my career, I've never seen a program where they actually send somebody out and crawl into your crawl space. And to look at all of your lightbulbs and test your HVAC and really do an in-depth energy audit. And then follow that with a conversation about what your options are.

Additionally, with the LWIP program having one centralized expert that can facilitate the ESA program, all of the different incentive programs leveraging multiple IOUs within their funding programs to really yield the largest amount of incentive to effectuate the project. Within those projects I think that our success has been on focusing on large systems. We're seeing an average of 49 percent reduction in energy consumption at these projects so it's very, very substantial and that's because we're tackling the large system, the windows, the HVAC, really doing focus duct ceiling and blower testing in projects that are 20 years old and just have really awful systems. So having the ability to leverage adequate incentive amounts to do those really deep retrofits has been beneficial.

MR. LEE: That's wonderful. I was having nightmares about crawl spaces when you had mentioned that --

MS. MCGOVERN-GARCIA: Yes. Yes.

MR. LEE: -- from my past.

You touched a little bit on this, Ben, about the challenges with respect to targeting and our next question relates to kind of changes that could be made to capture more energy efficiency in multifamily buildings. Could you expand on that?

MR. CLARIN: Yeah. There's – to Dave's point to Betsy's point, one thing that we've noticed is kind of working through our multiple different stakeholders when they're ready to capture the specific incentives and where there are -- where they are and when their deadlines are and when to get those rebates and incentives, they're all over the place.

We had one particular project where the project manager, we asked that person to draw up how to do that and it looked like a giant maze that a three -- my three-year-old son would create. And so having one center program concierge to have -- to guide a particular builder or developer is one way to kind of make that a little bit more easy because this -- we all have specific jobs, myself maybe mine's energy focus but Dave has a job with managing properties. Energy is a part of it, it's not necessarily a centralized part of it. Same with Betsy.

MS. MCGOVERN-GARCIA: Uh-huh.

MR. CLARIN: It's how to make it easy, how to make it

simple is -- has been a challenge as far as expansion.

MR. LEE: So it's really just kind of lack of resources that you could have a sufficient kind of technical assistance always available to help someone go through this entire calculus.

MS. MCGOVERN-GARCIA: Uh-huh.

MR. LEE: It's really difficult.

Dave, do you have something to add on this?

MR. BRENNER: Yeah, so I think definitely to what Ben just said about the timeline and availability of funding. I mean, in the past you had, you know, once a year. The programs came out with the money and you applied. And then right now the LAWP program has a -- we went through five properties and getting those was fantastic and then we've been on the wait list for 18 months for the next properties. And as they've come up, they haven't matched our timeline. So when the money's available, it's incredibly important when you're talking about deep retrofits.

And the other thing I'm going -- exactly what Betsy said on technical assistance from LAWP program. We'd been through other programs type -- programs like ESA which are pretty top level. But that was the first time someone had sat down with us and gone through everything with us on our properties, helped us understand maintenance of the systems, and long term longevity and sort of all the things that go

into their calculations for GHGs and fair energy savings.

And, you know, coming into that, I was actually -- my background is finance and housing, my background is not energy. And that kind of created me, it kind of made me become the energy person of our agency because I saw so much potential after that. And I think -- if you're talking about energy in the smaller organizations, it's easy to say there's savings to be had, everybody knows that. You also have to be able to address all of the concerns that come with changing systems. And I think the technical assistance made us confident that we could do that and it kind of created someone in our agency, who in this case was me, who would push that going forward.

MR. LEE: Betsy.

MS. MCGOVERN-GARCIA: Sure. I think we've all mentioned technical assistance. I would just add that there were two components in that technical assistance -- assistance that were absolutely crucial -- in addition to helping us navigate other incentive programs. The technical assistance included finding contractors in order to implement new technology. So we're hesitant from a maintenance and upkeep standpoint to take on new technologies that have been tried and tested and we often have a hard finding installers or maintenance folks. And so we -- part of our technical assistance also included finding contractors, finding local

workforce, and really an in-depth understanding of the technology.

The second thing I think, you know, the purpose of this is energy efficiency but often that comes with solar applications. And understanding the tariff side of these conversations, you know, if you're under VNOM and you're installing solar and there's a conversion to a time of use tariff and all of your residents have to electively make that shift in their utility account, that can be problematic. If it's master metered and you're submetering, there are challenges with that when you embark on certain types of technology. So not only having expertise with the incentive programs and the technologies but also the tariff side of it is absolutely crucial.

I mentioned large systems. I think we've all gone through the weatherization programs or the direct install programs where they come out and change some of our lightbulbs and maybe put in an occupancy sensor. But as California's multifamily inventory continues to age, really making meaningful opportunities available for HVAC replacements, windows full systems, and in upgrading those really to current technologies, I think is where the state is going to see large reductions in energy consumption and really great returns. And structuring those incentives to where they're adequate to cover the majority of the retrofits

so that they can be done independently from a tax credit resyndication or another funding stream and really stand on their own merits.

And then the final thing I'll mention is that we shouldn't forget data. You know, data drives our investments. We look at which of our projects are the highest consumers. We have to have access to that data in order to make informed decisions. And AB802 has come some way in getting us access to that data but it is still highly inaccessible for our projects. Much like Dave's, there's a lot of townhome units or four-plexes, and so we're under that six-unit threshold. And so if we can aggregate buildings on site and meet that threshold to more easily access data for our entire project and then be able to evaluate post installation performance, is absolutely crucial.

MR. LEE: Wow, excellent points.

We touched a little about non-energy benefits this morning. And I'm curious how you have incorporated non-energy benefits in this kind of program process.

I'll begin with you again, Betsy.

MS. MCGOVERN-GARCIA: Oh, sure.

MR. LEE: Yeah.

MS. MCGOVERN-GARCIA: Yeah. So being from the valley, we always consider water and so we tried to navigate through every energy efficiency program to find opportunities

for water conservation. And so really drawing that water energy nexus with an incentive programs is absolutely crucial and we appreciate those opportunities.

I think another benefit is just indoor quality and comfort. We have a lot of residents that are on extremely fixed incomes and they are hesitant to run their air conditioning because of the bills and their budget constraints. We've seen families in our single family housing program not use their brand new efficient air conditioning units and they'll go out and get a super inefficient swamp cooler and stick in a window or a window unit and then there's no sealing around the perimeter so that air is just flowing everywhere and it ends up being more inefficient. But they're trying to do the best thing for their family and their household. And so pairing education with all of these retrofits is absolutely crucial. And demonstrating the successes once the retrofits are through and how they can actually have a comfortable indoor air quality because of the new technologies.

And I think we should continue to focus on the educational opportunity. If we go into a project and really make it zero net energy through a retrofit that has deep energy efficiency upgrades that's paired with solar PV and we educate our residents on their energy allowance and the fact that they could have near zero bills and then they start to

think about their consumption habits and where they're setting their thermostats and turning their lights off when they leave their units. All of these retrofit projects are an opportunity for community engagement and education. And so that creates a really great opportunity within our communities.

MR. LEE: Great. That's an excellent illustration of what I was talking about not buildings and -- but it's in the behavior. Right?

And do you have something to add, Dave?

MR. BRENNER: Yeah. I think when we think about this we always start first with kind of the business case for both the property and for the residents. I mean, our average household has about $11,000 in take home cash every year which are really low numbers so you're talking about any savings is a pretty substantial percentage addition. So we start with that case for all the retrofits.

And then the second thing is really toward what Betsy said is the -- is comfort and sort of pride of place. There are certain upgrades like windows and lighting which make a unit feel a lot better. Unlike water heaters which are just water heaters behind the wall. And so that kind of thing goes a long way with the resident so we take that very seriously in our considerations.

And the last thing is air quality has been a really

interesting issue for us. It's -- in the valley, there's a lot of awareness related to air quality and asthma. So we use that kind of as a selling point for a lot of our upgrades and for -- we do a lot of decarbonization on our new projects. We have an EV project coming out so we've found that to be a really strong selling point.

Really not GHGs, GHGs don't really -- haven't really sold to anybody, but air quality really has in the valley.

MR. LEE: Great. Ben.

MR. CLARIN: So we think about it a little differently, depending on the application and the building. I think from a new construction standpoint, a couple of things that they touched on was it's not necessarily non-energy benefits but non-energy values that have an energy impact. So for example, when we work with home builders and developers, they have metrics as far as selling homes, selling buildings.

The way we test scalability is if they're already developing a customer journey around certain technology, certain impacts, how can we leverage specific things around comfort, convenience, control, and have -- develop the tools in order to have deeper effic -- realize deeper efficiency using that embedded -- I would call it smart home or kind of advanced building associated with that.

Now in kind of the multifamily -- the retrofit space,

it's to a lot of Dave and Betsy's points, it's things like indoor air quality, its comfort, its pride of home, it's also safety and security. So we talked about it in the previous panel and decarbonization, a lot of folks are using their ovens to heat their home. And so that's -- going to whether its electric or going to induction, one of the biggest things is when we go do these demonstrations, just having a gourmet chef just put his hand on there. And every three-year-old mom looks at that and says wow, that's great.

MR. LEE: Right.

MR. CLARIN: And so that's a big thing. And one thing we want to -- one last thing from a non-energy benefits is scalability, is understanding the realization rates. It's one thing to do a demo, it's another thing to have a plan or scenario to enable tech transfer to not only one building but [indiscernible] buildings.

MR. LEE: Okay. I want to continue with you, Ben. You know, we talked about these deep energy upgrades and could you expand a bit more about the challenges that you discovered on this way?

MR. CLARIN: I think some of the deep energy upgrades is kind of the secondary impact surge. Also so it's timing, it's realization that a demonstration never happens the way that you, it's opening wall five years ago and figuring out that there's asbestos there and there goes all your budget to

the -- there goes all your budget and you have to be a little bit more nimble as far as your original plan and your strategy.

But also understanding secondary impacts that happen when you talk about scales. So when we have particular measures or bundles of measures knowing that how -- how applicable or how extensible that is to a particular community. So some of the impacts to your point, Betsy, as far as VNOM is what happens is a secondary impact is tools to help customers manage time of use rates.

MR. LEE: Uh-huh.

MR. CLARIN: And so in certain scenarios, those tools are there. Connected appliances, smart thermostats, apps that provide energy budgets.

But for those who have issues as far as broadband connectivity, don't have access to broadband, those tools are not there.

MR. LEE: Sure.

MR. CLARIN: So I think we had previous discussion or questions as far as how do we develop tools not only for those who can't afford but those who can't afford. As California's grid becomes more, I would call it temporal and spatial [indiscernible].

MR. LEE: Yeah. There really is a call for us a greater understanding of our communities.

MR. CLARIN: Right.

MR. LEE: Right? In our residents.

And Betsy, to this point about challenges.

MS. MCGOVERN-GARCIA: Yeah, so the very first thing I respond to almost any question about challenges is money because if there is not money or adequate incentives to do the project, then it's a nonstarter.

And so access to capital, access to adequate incentives paired with meaningful TA really is the most effective way to achieve those deep energy efficiency upgrades.

I think there have also been challenges primarily in LWIP but could exist in other programs where they're reimbursement based. And so for example at different stages of our LWIP, really, really deep energy retrofits, we had a millions dollars outstanding that we had fronted and we were waiting for reimbursement. And so lucky for us we were able to absorb that cash flow, but if you have a smaller organization or individual property owner that maybe, you know, owns and operates 20 units in a really rural disadvantaged community and that's their lifeline and they want to engage in some of these programs, they're not going to be able to front that type of capital. And so I think putting some meaningful thought into how you're advancing incentives within the programs and how you're paying those

out is absolutely crucial.

I think those are the main things I would highlight.

MR. LEE: Absolutely. You bring an excellent point about, you know, not every organization has those kind of reserves that -- because we know that multifamily buildings, there are always things behind the wall as you described.

That really goes to my next question because when you find those unanticipated costs in those discoveries, you know, whether it be, you know, lead, mold, or as you had mentioned about asbestos, you know, Dave, I'm sure you've just made those kind of discoveries in your properties.

MR. BRENNER: Yeah.

MR. LEE: How do you fund those or what do you do?

MR. BRENNER: It's the thing you always fear is that you're going to come across something big and so we, I mean, across our portfolio we've tested for lead and asbestos, but you're always going to have something come up. I mean it's going to be some code violation that you didn't even think about. It's going to be some, you know, it's going to be mold behind the walls, it's going to be something that you didn't think about, some material you didn't think about. Or some design issue that you didn't about.

And in most of these cases you rely on the property reserves to -- to deal with that and they're almost never adequate to deal with it unless you're -- for some reason

your property is cash flowing well which is almost never the case in affordable housing. So I think you -- you come into that, you come into all these projects fearing that and projects do get abandoned for that reason, you back off projects.

I don't -- I don't think there's really a good answer for this question. I mean, you hope you can go as far as you can with the reserves but at the same time, it really hurts to deplete your reserves dealing with code issues or things that are not, you know, top of the list of priority needs for the property.

MR. LEE: Yeah, I guess part of it is really being proactive and being aware of and trying to as mitigate as much as you can on the front end these kinds of surprises.

Betsy, you've got a huge portfolio.

MS. MCGOVERN-GARCIA: Yeah, I don't have a lot of insight into those specific types of challenges other than to say the same types of things as Dave. We will typically use project reserves in those instances and if you have an experienced owner that can toggle back and forth between capital improvements and reserve accounts, it can be an effective solution for addressing those concerns.

Also being aware of local resources, we always try to have a Plan B in case something doesn't pan out the first go around. And so the HOME program and the CDBG program have

been great resources as you know, Eugene, for mold and rehab and those types of things.

I think it's worthwhile to spend some time thinking about affordable housing resources and how they can be paired with the energy efficiency programs to potentially leverage resources. The Affordable Housing and Sustainable Communities program is a great example of leveraging transportation investments with energy efficiency water conservation, et cetera, but that's primarily targeting new construction. I'm sure with some thought with all of the housing resources that are coming down the pipeline, pairing some of those resources together with energy efficiency opportunities could really help address both sides of the equation.

MR. LEE: Yeah. Yeah. Being very familiar with that program since I was part of the original work group, I did try to ensure that retrofits were eligible and these kind of upgrades were those kind of costs that we could finance.

MS. MCGOVERN-GARCIA: Uh-huh.

MR. LEE: So certainly that's an opportunity out there.

Just checking for time. Good?

So the question that has been asked, you know, today has been how can the Energy Commission actually advance and reduce these kind of barriers to energy efficiency upgrades?

Dave.

MR. BRENNER: Yeah, so kind of two thoughts on this. And the first one relates to data, very much what Eugene is working on.

So a year ago we really had no data to monitor or evaluate anything so we had a stack of utility bills to dig through if we wanted to look at anything. Today we have portals to evaluate all of our solar which is a substantial portfolio. It's a megawatt and a half. We have PG&E's online energy portal for all our common area sites and the data's getting really good really fast. It's 15 interval data. And we have portfolio manager for AB802 data, for in unit data. So we have these three different views into how our property works. And nothing. I mean, a year ago we had nothing, we had no insight whatsoever. So this is a drastic change. And -- well, technical assistance has helped us get there which has been really helpful.

We also need to take the next step in technical assistance to help us kind of understand what we're looking at, especially with regards to rates and time of use rates. And sort of all the opportunities exist within the buildings now that we can actually see how they're performing and try to figure out why they're performing that way.

And the second thing is rights to utility allowances. There's kind of a movement at the federal level to make

utility allowances performance based or usage based. And so historically our utility rates were kind of consistent and so you couldn't really change them with improvements except in a few cases. But now since they're usage based, when we invest in the properties, or any affordable housing owner invests in the properties, they do, it changes your rent levels.

So there's a really good incentive coming out of that. At the moment, it's not, in my view, not that well done from HUD and from USDA. It's a little bit cumbersome in how they do it and it goes up and there's a lot of fluctuations and stuff so at the moment it's not quite there. But with the data coming out of AB802 and this trend, I think there's a really -- in the coming years, there's going to be a really amazing opportunity for UAs to be a really good incentive for affordable housing owners.

MR. LEE: Great point. You know, one of my employees actually works on the Utility Allowance Calculator, the UAC, and yeah, it's a tough, it's a tough issue. And yet it has such a profound effect on your cash flow.

MR. BRENNER: Yeah.

MS. MCGOVERN-GARCIA: Uh-huh.

MR. LEE: You know, I get it. That's a -- do you have something to add on this?

MS. MCGOVERN-GARCIA: Yeah. Just reiterating the single point of contact to help navigate all the programs.

And then with that, we've had challenges with -- on the solar side, with interconnection but also with some of our energy efficiency upgrade technologies and in attempting to install electric vehicle chargers. There's been real engineering challenges with the meter panel, the tie-ins, the voltage, et cetera, and we don't understand what any of that means. And so when we go to try and fix it, it's hard to navigate.

And so having an opportunity for there to be a technical assistance provider from the IOU that can help us understand interconnection, meter upgrades, aging technology on the site that needs to be upgrade in order to facilitate heat pump improvements, those type of things would be very, very beneficial.

I think a lot of our bottleneck and a lot of our frustration lies with the IOU interface in getting the right answers and getting timely responses. And so not only having the technical assistance provider on a side of the incentive and the actual retrofit implementation, but also having technical assistance available from the IOUs to help navigate their systems would also be extremely helpful.

MR. LEE: Yeah. You know, speaking of workforce, so the next question relates to workforce and that local -- having that well-trained local workforce.

What has been your experience with a well-trained workforce? Dave.

MR. BRENNER: Yeah. So we actually haven't had from an installer perspective, we haven't really had any challenges in installation. We're kind of testing that right now in a project we're working with EPRI where we're looking at more kind of cutting edge, leading edge systems and so we may have a little bit of a challenge.

I think about this kind of in terms of our maintenance staff as well, though, because we really have had to kind of rethink how we -- how we train them, how to prepare them for what's coming. We have -- we have good pensions so we have really long-term maintenance employees. So they're really skilled people. But, you know, what's coming is really different.

So last year we went through this whole building training that was provided by TRC. It was looking more at operations and performance and maintenance evaluation. And we think that's kind of a new -- a new direction that we'd like to head. And the other piece of that is that it was looking a little bit at the tech that's coming into these homes. So some of the HVAC systems that we're looking at are pretty tech heavy. There's a lot of sensors, there's a lot of data coming out of them that if you know how to use it, it's pretty amazing. But our team would need quite a bit of training to get there.

And then there's more tech coming, right? So we put

in 400 Nest thermostats a couple of months ago. And I was the only one on staff who had one at home. And so there's a lot of training that needs to go -- which is surprising to people from other places but it -- there's quite a bit that needs to go to get up to speed on some of those things. So we -- I think that's where our focus is going to be in the coming future.

MR. LEE: Great.

Betsy, your experience.

MS. MCGOVERN-GARCIA: All of the same things that Dave has described the need to educate our onsite managers and maintenance staff and really working that into retrofit programs to make sure that once technologies are installed, they're operating correctly.

MR. LEE: Thank you. So now that you're on board, what advice would you give to other building owners not currently going beyond the minimum but may be on the fence and how can they push the envelope?

Yes, Betsy.

MS. MCGOVERN-GARCIA: Okay. So two -- two co-benefits
that we like to consider when doing really deep and meaningful energy efficiency projects are the opportunities to replace old, aging systems. We constantly struggle in our projects with extremely low rents that cannot be raised

because we're striving to provide affordable housing. And so pairing your energy efficiency strategy with your replacement strategy and your building management strategy can be really effective in garnering an argument in support of those energy efficiency upgrades.

And then we also look at improved resident satisfaction and retention. You know, if you have a multifamily unit in town where your electrical bill is $20 and then you go down the street and it's $80, that makes a huge difference. And so improving the living conditions, improving the affordability of those units really goes a long way for a resident satisfaction and retention.

MR. LEE: Do you find that you actually consider these energy retrofits in your capital improvement plan documents yet or?

MS. MCGOVERN-GARCIA: Yeah, we haven't gotten that -- to that point yet. I think that – I think we have a general goal to integrate energy efficiency in everything that we do and even one step beyond that. Now we're starting to think about climate adaptation and some of those requirements when we're doing a retrofit project. The funding has been rally sporadic and it's been challenging trying to sync up really meaningful funding opportunities like LWIP with a regular scheduled retrofit or resyndication schedule. And so we actually have pursued energy efficiency upgrade projects

independent of other capital efforts or resyndication just because the timing was right on those.

So I would say generally that is part of every strategy for a retrofit. It's just hit and miss. You know, some of us -- some of our projects may have a 10 percent reduction and other projects have 60 percent reduction because of access to incentives at the time the project is completed. So having a consistent program, a consistent stream of incentives and ongoing technical assistance will help create that certainty within our portfolio and help us be more effective at incorporating those deep energy efficiency retrofits with other types of building retrofits.

MR. LEE: Right. Right. It would be nice not to have such a financing duct curve, right?

MS. MCGOVERN-GARCIA: Right. Yes.

MR. LEE: Ben, do you have something to add on this topic about really -- how do you communicate to a building owner about think a little deeper here?

MR. CLARIN: I think from a new construction perspective, it's valuating the efficiency or the decarbonization cell or kind of embedding it into their current business model. I think Brandon talked about it a little bit in his panel as far as their metrics are selling homes, their metrics are selling dwelling places that people will call their own. And so it's going to go against

upgrades of granite countertops, it's just going to have to. So the quicker we can get it as part of the conversation and valuate that, that's one thing.

I think Betsy talked about it but from the retrofit perspective, one of the challenges is matching timelines and having the acknowledgment that when you do match timelines and then you do have the opportunity to not only go to the widget base but go deep efficiency because that's when it kind of makes sense. And not only efficiency but also renewables. Because, to your point, Betsy, one of the challenges is the infrastructure that's there from the utility industry is that when you're going to do an upgrade as far as not only from the building standpoint but from the utility distribution standpoint, that cost pencils out a little bit more when you're doing deep efficiency. If you're just going to do a single, if you're going to do a heat pump water heat upgrades, why not -- why not electrify your space heating, why not go to your EVs, why not go to solar? Because when you do, the interconnection challenges are going to stay the same. So when you do them, you might as well do them and do them all at the same time.

MR. LEE: Yeah, really bundling and thinking holistically, isn't it, is your recommendation?

Being a community-based organization, Betsy, I know you do this at SHE. How do you incorporate other community-

based organizations in what you do?

MS. MCGOVERN-GARCIA: Yeah, so we have a number of community-based organizations in our area that provide weatherization-type services still. And so we will always seek their guidance and engagements when we're doing any kind of energy efficiency – well, really any kind of retrofit project to see what resources they can bring to the table.

There's also a really great opportunity with community-based organizations that run workforce development programs to engage those workforce development programs in your projects. And so an example of that would be the Proteus Solar Training program. We've utilized folks that have gone through their program or in their program for solar install. There's a youth bill program that we've done with Fresno EOC and [indiscernible] other groups to train individuals on construction. And that inevitably includes Title 24 and other types of energy efficiency. And so just being aware of who your community-based organizations are, what types of programs they offer, and then being thoughtful in pairing those programs together to really impact your target community.

MR. LEE: I know you're really sensitive to this about the low-income residents, really thinking permanency.

MS. MCGOVERN-GARCIA: Yeah.

MR. LEE: You're a long-term quality of life. We're

concerned about displacement and how low-income residents may be really sensitive about being kind of priced out. What will this effect of these retrofits happen to me? How do you mitigate that risk and concern?

MS. MCGOVERN-GARCIA: Yeah. So we -- we take the approach with all of our energy efficiency projects that we are not going to raise rents as the result of the project. And I think some of this has come from the LIWP, the Low Income Weatherization Program, restricting adjustments to utility allowances and rents when improvements go in. But our goal is to create a better living environment while also making it more affordable for our resident in the hopes that they can then use that additional disposable income to pay off some bills, save for home ownership, go back to school, et cetera. And so there is not a financial hardship when we go through these types of retrofits for our residents. And so I think really in how you're structuring incentive programs on the benefits to the residents and whether or not utility allowances can be adjusted, rents can be raised, those types of things is absolutely crucial.

So those are the things that we think about. Also we really work to engage our residents in pre and post engagement. So engaging them when we're designing the suite of retrofits. And then also post installment engagement. If we go in and sell a bunch of thermostats but no one's using

them correctly, you know, we want to know that immediately. Or if they're not seeing their generation credits on their bills or they haven't seen a reduction in consumption close to what was projected. And so really meaningful resident engagement in the initial design of the suite of retrofit and then post installation I think is absolutely crucial.

MR. LEE: So you're really speaking of education.

MS. MCGOVERN-GARCIA: H'm-h'm.

MR. LEE: Yeah. And being a part of their benefit package so to speak.

Dave.

MR. BRENNER: Yeah, I think -- so with the same approach, you know, whatever our goals going into these is that we're putting money back to the residents, especially at the top, probably at the top of our list. So we don't adjust rents or utility allowances in any way, except in a few cases where you have to because their usage based.

But we, you know, in our -- our housing is very stable and rent controlled. But when this happens in the general market, there is a threat of displacement. And so we have -- so we run this oversee administered Section 8 programs. That's 11,000 low-income vouchers in Fresno County. And so they're in market rate housing throughout the county. And so anytime you have substantial updates to a project, it does put at risk people who have been living

there at a relatively affordable rent or people who are Section 8 that, you know, they want to move it up -- the owner wants to move the complex up in the market and it does create a risk of displacement.

So it's a very real issue for us. It hasn't been historically in Fresno a real issue but it's becoming a real issue. And there are certain neighborhoods where gentrification will be substantial in the next five to ten years.

So we're working with community groups to look at that and we're working with our landlords to sort of lock them in for the long term into the Section 8 program. But I think it's a very real problem and I think I would like to see some of the programs that do go into those market rate units try to kind of build affordability into it if they can. If there's some way to do energy dollars for rent freeze exchange. I know there are like in the east coast there are some projects like that.

I think I'd like to see a pilot like that. I don't know how successful it'd be because I don't know what the uptake would be in our community but I think we need to try something because the pressures are starting to come.

MR. LEE: That's a great point. I take it you're describing a project based kind of Section 8 kind of scenario with that landlord or.

MR. BRENNER: Actually in our case, it's usually not project based, it's usually, they're floating vouchers.

MR. LEE: Okay.

MR. BRENNER: But there are so many of them in certain areas of the city of Fresno that we'll have a complex with 20 units and 15 of them will be Section 8 vouchers.

MR. LEE: Oh, okay. Interesting.

How are residents in your buildings best able to access energy efficiency programs?

Betsy.

MS. MCGOVERN-GARCIA: Yeah. I would just say that we -- we believe the most effective method for effectuating really meaningful energy efficiency retrofit projects is through the building owner and on a large scale. It's extremely problematic when you have an incentive program that targets the accountholder with the electrical account. They're living in a project where they don't own the capital asset and they might not have a long term regard for how that asset is maintained or the energy efficiency level of that. And so there's also issues, you know, there can be language barriers, engagement barriers, and really disadvantaged communities, residents not understanding the interplay between energy efficiency and their bill or their, you know, what tier they're in, those types of things.

And so designing programs to where the owner of the

building can enroll all the units in one sweep without a lot of requirements for signatures or access to individual utility accounts, those types of things. The owner really is the -- as the owner of that asset, they're responsible for the long-term maintenance. And there's also economies and efficiencies that go along with that. You know, if you have a program that's targeted on individual units, you might get five in a 50-unit project. Whereas if you target the building owner, you get all 50 in one -- in one shot.

So we have found that our residents are hesitant to engage in programs if they're the ones who are required to initiate the enrollment, initiate the work, all of those types of things. But if you allow the opportunity for the building owner to do those things, it is extremely, extremely more effective.

MR. LEE: Ben, I see.

MR. CLARIN: Yeah. The split incentive is definitely a challenge in some of our projects that we have that or we've piloted either focused on recruitment of particular occupants versus recruitment of a building owner. And you can see a drastic change in essentially participation in ____ to strategies.

In that sense and that scenario, it's important that you have some form of advocacy group or some sort of knowledge transfer to show the value of the -- to the

occupants of those specific efficiency changes. And we've talked about this in the previous questions as far as will this -- how does this affect me? How does this affect my home? Will my rent change because of this is important to consider.

MR. LEE: Important questions to answer and address head on.

Last question, Dave. What is your experience with actual market rate in multifamily retrofits?

MR. BRENNER: Yeah, so we don't own market rate. We own all deed restricted or portable housing. But last year we made an effort to try to reach out to landlords that employ the Section 8 program with the ESA program. Because we realized that they were underutilizing a program that could very effectively get them better lighting and weatherization.

And so we tried to go through it. We tried to kind of figure out which units, which complexes had not ever had ESA retrofits and we tried to blanket verify which Betsy -- which Betsy just said I wish we had been doing for our own properties, but we couldn't find a way to do that because they are market rate properties, they just happen to have a very large number of Section 8 vouchers on them and just happen to be a very low rent.

So in Fresno you'll have market rate properties that

are renting for, you know a two-bedroom unit for 650 a month. So it's a very affordable property, it's just not, you know, a deed restricted affordable property.

So we didn't make any progress. We did speak to several of our bigger landlords about the program but we didn't really have any uptake in it. But it's something that should be attractive to them and I think there's program obstacles, especially the verification of income and sort of the qualification of their units that, you know, that need to be gotten out of the way because a program that can easily put high quality lighting in units, you know, should be considered. And I think if you just take a look around Fresno, like there's a complex just south of us that has lighting that looks like it's from the '80s and it has single pane windows and very thin metal frames. And it's a property that's going to stay that way for another ten years and be run relatively affordably. But, you know, it's the kind of property that we probably won't reach unless we change the way we go about it.

MR. LEE: Thank you.

I'll turn, at this time, for any kind of questions that we may have on line or in the room.

Okay. Well, this has been a fantastic discussion. And thank you so much for participating. Let's give them a hand.

It's tough being the final panel of the day. But as a -- just a final reminder since we did talk about benchmarking, this year is our first year for compliance for multifamily buildings. So June 1st, just as we've been collecting building energy data for commercial buildings, about 50,000 square feet, we are now collecting multifamily building energy data for buildings exceeding 50,000 square feet and 17 units and above.

So this is going to be an exciting year for the Energy Commission as we are going to be actually disclosing the 2018 commercial data on our website. So stay tuned out there.

This is -- we're beginning I think of a successful program. And as you said, it's about this data. And hopefully this is a part of the tool kit that we will use to advance energy efficiency for both commercial and multifamily buildings.

Thank you, panel. I will now turn it over to Michael.

MR. KENNEY: Okay. So thank you to our final panel for the day. We are now entering our final phase for today's workshop. We wanted to offer any last comments from the audience or from those in attendance to put on the record for anything they've heard today. So I'll pause for a moment to allow anybody to make a comment.

There aren't any comments.

So what I would like to reiterate is our request to those who participated and those who listened in to visit our website and leave information in our docket. So many good comments brought up today both on the panel and in the audience but it really helps us to see written and fleshed out comments that we can build upon in our action plan. So that information is available here on the slides. You can also reach us the information listed on the notice. And so there are questions and other things we were hoping to get input on beyond what was discussed here today.

We also would invite everyone to participate via call in or in person to our future workshops which are April 30th in Los Angeles and May 1st in San Diego. And the exact addresses and times for those can be found on our website as well.

And so with that, I'd like to thank the San Joaquin Valley Air Pollution Control District for giving us the time here today and being gracious hosts. And we look forward to coming back and working with them in the future and with all those who are participating today.

And so with that, I say thank you and we'll adjourn the meeting.

(Thereupon, the hearing was adjourned at 3:21 p.m.)

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REPORTER'S CERTIFICATE

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

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

IN WITNESS WHEREOF, I have hereunto set my hand this 16th day of May, 2019.

_____

Eduwiges Lastra
CER-915

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

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

MARTHA L. NELSON, CERT**367

May 16, 2019