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CALIFORNIA ENERGY COMMISSION

In the matter of:

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LEAD COMMISSIONER WORKSHOP ON SCOPING CALIFORNIA'S EQUITABLE BUILDING DECARBONIZATION PROGRAM

TRANSCRIPT OF PROCEEDINGS

REMOTE VIA ZOOM

TUESDAY, DECEMBER 13, 2022

9:00 A.M.

Reported by:

Martha Nelson

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P R O C E D I N G S

9:01 a.m.

TUESDAY, DECEMBER 13, 2022

MS. NELSON: Good morning everyone and welcome to today's workshop on the Equitable Building Decarbonization Program. This is a scoping workshop to inform the development of the Equitable Building Decarbonization Program. So today we are sharing a number of presentations and information. And we are also, primarily, seeking feedback and input to what people are -- to what you all hear today.

So I am Jennifer Nelson. I am the Branch Manager of the Existing Buildings Branch within the Efficiency Division at the California Energy Commission. I will start with a few logistical comments and then we will get into the substance of the workshop.

Next slide.

So please be aware of a few things. Today's workshop is being recorded. A recording link of today's workshop will be posted to the Energy Commission's website and a written transcript will be available in about a month. Please note that all of today's presentations will be docketed within the next day and available for download from the CEC's website.

Something to note, if I say CEC throughout this presentation, it means the California Energy Commission. Also the California Energy Commission is committed to hearing from all interested parties and encourages comments from the public and stakeholders. We encourage the submission of detailed comments to our docket through the links included in the notice for this workshop and we are committed to giving consideration to all comments submitted orally or in written form, as well as to input provided by both panelists and non-panelists.

If you experience difficulties joining Zoom or with Zoom throughout the workshop, please contact Zoom directly at the information provided in the notice as well as on this slide. The phone number is 1-888-799-9666 extension 2, or you can contact the CEC's public advisor at publicadvisor@energy.ca.gov, or by phone directly at 916-957-7910.

Next slide.

So there are a couple ways to provide comments to this proceeding.

First, today, please use the Zoom Q&A feature if you have any questions while the panelists or the presenters are speaking. You also may make a comment during the public comment periods. We have reserved 60 minutes after the first panel and 30 minutes after each of this afternoon's panels to take public comment. This is the time to direct comments to the Commissioners, as well as to staff. Spoken comments may be limited to three minutes and one person per organization depending upon the number of people who wish to speak.

If you wish to speak during a public comment period, please use the raise-hand feature on Zoom so that the comment facilitator can announce your name and unmute you. If you are on the telephone, please press star nine to raise your hand and star six once you're called upon to unmute yourself. When you are called upon, please, as indicated, unmute yourself, say and spell your name so we have it spelled correctly in the transcript, state your affiliation, and then make your comment.

The second option for providing comment to CEC or responses to our request for information is after today's workshop. We do have a webpage that has been set up. The web link is in the notice, as well as in the request for information that's on the Energy Commission's webpage. One recommendation, which is a simple way, is to just Google Energy Commission Equitable Building Decarbonization Program, and it will pop up and direct you to the link to that page directly.

Comments are due for today's workshop, as well as to the request for information by Friday, January 13, January 2023, so one month from today. As well as on that webpage, there is also a docket, as well as a listserv where you can sign up to receive alerts when comments are submitted to the docket directly.

Next. Next slide, please.

So here is the schedule for today's event. As you can see, this is an all-day event with significant time, as indicated before, reserved for public comment, that one hour after the first panel, a half hour after the second panel, and then another half hour after the third panel.

Our formal dais, our virtual dais for today, is occupied by Chair David Hochschild, CEC Commissioner Andrew McAllister, and Vice Chair of the Chemehuevi Tribal Council Brian McDonald. This dais may offer questions, comments, or responses during today's presentations and after panel discussions or during public comment periods.

I will now turn the event over to Commissioner McAllister to make some opening comments.

COMMISSIONER MCALLISTER: Well, thank you, Jennifer. I really appreciate your and all the staff's effort to put this workshop together. And, you know, we have some staff that's visible and a number of staff that are not visible. So I just wanted to thank the whole team for this, you as a fearless leader of this effort.

I also wanted to thank my Advisor, my Chief of

Staff, Bryan Early, who's also been really had his hands in this workshop as well.

And I wanted to -- I also want to thank Vice Chair, Brian McDonald, for being with us. Thank you, Vice Chair McDonald. It's really great to have you helping to shape this conversation. The legislation, you know, calls out tribes as one of the key constituents and recipients of these program efforts, and so it's really key to have you involved right from the start and, you know, looking forward to many more robust conversations going forward.

Today is, I think, kind of a landmark occasion in California. We are incredibly energized and grateful and conscious of the gravity of this enterprise that we are starting to form today. The legislature has seen fit, and the governor, working with the legislature, have all seen fit to put some serious resources into building decarbonization, and it's, you know, it’s kind of long overdue in some sense, because our buildings have always been a key part of our decarbonization journey. You know, they're a key resource, a key energy consumption site in our buildings across the state and, you know, about a quarter of our emissions or so and, you know, clearly, we have to attack those emissions head on.

We've been doing efficiency in this state for, you know, almost a half a century, and so we have a lot of things to be proud of. And, you know, again, we're number one in the ACEEE state scorecard and, you know, we're doing a lot of innovative things that other states look to, but we cannot rest on our laurels. You know, we have to develop ways to really go deep and get to zero. And this is kind of a brave new world that we're entering together with all of our colleagues across the country and world.

But again, California is unique in that we're dedicating significant resources to this effort. And so I think we have the conditions to produce the kind of experience and results and knowledge that are really going to help us get to zero and help others get to zero, as well, help show the way.

And so with that kind of, I think, gravitas as a setup, that's the posture in which we enter this workshop today. And I think if it can happen anywhere, it will happen in California, you know, where sort of the future happens first here. And so I think we have a lot of tools in our toolbox and we need to use those tools and build new tools as we go to really figure out what works.

We're focusing on low-income, disadvantaged, under-resourced, under-invested, disinvested communities across the state, historically marginalized. You know, those are that third or 40 percent of our state where the investment is just not going to happen without some concerted effort in the state investments and then public-private partnerships over the long term in a sustained way. That's how we're going to really reduce the emissions from our buildings across the state.

And so we're sort of beginning with that framing, rather than the historical program framing of, hey, let's, you know, just push money out in the marketplace for whoever can take it up and use that as a market transformation and then let it trickle down to the sort of low-income sectors. Well, no, that's not acceptable anymore. We have to start with the folks who really need help, develop the market there, and then help it expand into the broader marketplace and go kind of up market rather than down market with the evolution of our programs.

And so all of this is to say that we are grateful to have such a robust set of stakeholders in California, really intelligent, really experienced, really smart and creative and innovative people working in this space. And many of them you'll see are on the agenda for today. But pretty much all of you attending here today are part of that ecosystem, as well, and many more beyond that. So this is where we need broad participation to help us develop the ideas that we can then incorporate into the guidelines for these programs and then roll these programs out and really push the resources where they're most needed.

In my kind of conception, and you know, I'm one voice that oversee these efforts but, you know, there is no perfect answer here and we really need everyone. You know, this should not be pride of ownership in any of these ideas. Certainly, I don't have it. I just want to do the right thing, as I know all of you do, and try to get the best bang for our buck here when we're investing state resources in our buildings across the state.

We have tools in our toolbox that we've never had before in programs of this magnitude. We have access to the kind of data, for example, that's going to allow us to go where the savings are and to anticipate the impacts on buildings and the people who own and live in them on their on their bills, for example. And so we really want to invest these resources, not as sort of peanut butter spread across all of the target areas, but really be conscious of where we need to invest resources for the highest impact and where we can manage the bill impacts of electrification investments in the various parts of the state.

So, though, we have to do, you know, kind of all of the above, we can't just sort of throw money and hope that it works. We have to really be able to plan it out and target it well. And we have the informational resources and the analytical tools to be able to do that.

So really interested in folks' views about how we, as a Commission, can develop those tools and put them in place so that they don't get in the way, but they actually help us accelerate these programs and target our investments to the greatest effect.

Anyway, I'm really excited about this workshop and all the smart people we have on the panels. Starting with sort of the state perspective, the first panel will look at the programs that exist and the opportunities. We'll give Jennifer Nelson, who you met, will go over sort of the existing suite of programs and the legislation that really we're going to talk about with that equitable building decarbonization. We have Rory Cox from the CPUC and Chuck Belk from the Department of Community Services and Development. So that's our morning.

Really looking forward to robust public discussion. So start writing down your questions, start putting your bullet points that you want to get into your public comment, and start the discussion this morning. Really interested to hear what all of you have to say.

And then we'll take a lunch break, and we'll do a couple panels in the afternoon, one about the Direct Install Program and one about the Incentive Program, so the two components of our direction from the legislation, which sum total over the next four years or so will be roughly

$922 million, so, you know, close to a $1 billion of state investment in this area. And I think on the one hand, that's an incredible amount of money in the grand scheme of things, sort of historical perspective. And utilities have invested, or utility rate payers have invested, you know, roughly, you know, a billion-ish dollars per year for many years. That investment has declined in the ultimate late years, but that has been kind of the go-to resources, rate payer funds.

These funds are General Funds, and so they have a lot more flexibility, and we really do have the ability to shape where we invest in a more muscular way. And so at the same time we, you know, obviously want to coordinate with the existing programs that are out there. So we'll talk about that and sort of table a lot of these ideas.

And so the state investment is divided up into these two kind of general buckets, a Direct Install Program, and a more traditional incentive/rebate program. And so both of those we want to talk about today and going forward.

I do want to encourage everyone to participate and to put your ideas in the hopper. There's just no question is a bad question. No idea is a bad idea. We really want everybody to come forth.

And I would just, you know, say the idea here is not to make a sales pitch or to sort of, you know, inject your widget or your program into the mix. It's really to bring ideas for how the State of California can best implement these programs. And so we want to just sort of make sure that set a posture or sort of a context of sharing of ideas and again, no pride of ownership.

It looks like -- this is just a heads-up, it doesn't look like -- maybe we've been switching panelists over to attendees, but it looks like the link that got posted on the website was for panelists, and so we had a inflation of numbers there. So maybe Gabe and team, you've worked that out. But I just want to give a heads up for the panelists that there may be quite a number of people additional on the panel as panelists, so just for awareness.

Let's see. I think, you know, again, I think the Energy Commission has shown over the last, you know, decade or so that we can really push significant resources out into the world. Prop 39, we did a lot of -- you know, we did a billion-and-a-half or so of money out to schools across the state over a few years. That program is wrapping up now. It has wrapped up really. And the New Solar Homes Partnership and, you know, the ECAA Financing Program, you know, really have a good solid track record of doing these kinds of programs.

But this program in particular, you know, I don't want to overstate the challenges, but I just want to sort of keep it real a little bit. You know, we have, we'll hear a little bit more about this in the presentations, but we have, you know, roughly 5 million low and moderately low-income households across the state, 5 million, okay? So a billion dollars sounds like a lot. But if you sort of do some, you know, fairly back-of-the-envelope numbers and ascribe, you know, a couple of 20 grand or something per unit as an upgrade cost, the sort of upfront cost, that's $100 billion. So two orders of magnitude more than we actually have.

And so we have to see these programs in the coming couple of years as a leverageable opportunity. The state's not going to subsidize its way out of this. So in the near term, we need to invest heavily and directly into our low-income buildings where, you know, our neediest populations are and where the savings potential, where the potential for positive impact is greatest. Preserving public health and taking equity into considerations and, you know, looking at air quality impacts, all that sort of stuff, you know, we need to we need to be very aware of all these cross sector impacts as well. But at the end of the day, we're going to have to figure out models and use these programs to scale up in a way that uses a significant amount of private capital or non-state capital.

We also have federal funds, you know, roughly half-a-billion dollars, $560 million of federal funds that will be coming down to these programs as well. Hopefully, we'll be able to seamlessly put those monies into the same program structures. So we're working with the Department of Energy and some other key states to ensure to sort of tilt the scales a little bit to help DOE see the practicality of their providing guidance along those lines so that states can really not have to reinvent the wheel with the federal money down the road. So a lot of different dots to connect, a lot of pieces of this.

You know, again, I wanted to take a little bit of time up front to just set a little context about, you know, one, how momentous and historic this opportunity is and, two, how we really need to see this as kind of building the vocation of -- across the state of putting and getting money into lots of small projects. You know, we'll get a few tens of thousands of buildings with these monies, but we really have a couple of orders of magnitude, a couple of orders of magnitude more to do in the relatively near term. You know, in the next decade and a half, we need to really get to a significant portion of those five billion households and the market needs to expand beyond them to do the rest of the households. I mean, we're trying to get to zero by 2045, right? So that's only a couple decades off.

So these programs are, I think, a key fulcrum for making that happen. And so I think we have a lot of urgency, a lot of -- there's a lot of kind of -- you know, we have to be in the moment with implementing and developing these programs and we have to kind of keep that long term urgency as well along the way.

So there's, there's a lot at stake, you know, we really need to -- you know, California needs to show success so others can walk that path as well. And so I think as we plow this road forward, working together with our sleeves rolled up, and really taking that public interest in you and just being -- acting with a sense of volunteerism throughout is really where we need to go.

So I want to just appreciate everyone who's on the dais and everyone who's attending. It looks like we have really good attendance so far. And we will have more workshops and we will have a lot more possibilities for interaction with stakeholders going forward. But we really wanted to start off before the end of the year with a workshop to sort of put a flag on the ground and say, hey, we're starting this process and lay out some initial ideas, some timelines. There's a public process we have to go through to develop these programs and put them in place and find implementers, which you'll hear about. And you know, where we're doing great, we want to hear that. But, particularly, where there are ideas that can help this approach be more effective, we want to hear that.

So I see a lot of familiar names in the in the Hollywood Squares here, so great to see all the attendance and role of the board and participation.

And with that, I will pass the mic to Vice Chair Brian McDonald from the Chemehuevi Tribe. So thank you very much. I probably mangled that. I should have asked you how to pronounce it first.

VICE CHAIR MCDONALD: Yeah, you got it right. Commissioner.

COMMISSIONER MCALLISTER: Oh, good.

VICE CHAIR MCDONALD: Well, Good morning, Commissioner, Staff, and all the stakeholders. I just took a peek and looks like we've got a good amount of folks online. I think we appreciate that.

So my name is Brian McDonald. I'm the Vice Chairman of the Chemehuevi Indian Tribe. Our Reservation is located in a rather remote area, about as far east in San Bernardino County as you can get, where we govern about 36,000 acres of mostly pristine desert and a little more than 30 miles of shoreline along the Colorado River. And while our, you know, our isolated location is beautiful, it does present problems. And some of those problems, basic resources, capital, human capital and, you know, employment as well.

Basic infrastructure needs are part of the reason that that I'm here today. And I think we are interested in finding solutions that, you know, how our land is held, various jurisdictional issues tend to complicate some conversations. And that's not just necessarily in this space. That's kind of across the board. There's a, you know, a continuous education process that the tribal leaders go through with the agencies' leaders, state leaders, federal leaders. And I think that's probably true of most tribes.

But there are, in this particular space, lot of potential partnership opportunities. And I appreciate the efforts to on behalf of staff and these processes to find those.

I'll keep these comments short. Look, Chemehuevi appreciates the opportunity for platform and input into this process. This is a new process for me and for tribes. There's no one here to kick me under the table. And I was told I could interrupt wherever I wanted to, so I'll try to keep that to a minimum. But I'm looking forward to a good session.

So thank you, Commissioner. You may be unmuted.

COMMISSIONER MCALLISTER: Thank you. Yeah, thank you very much, Commissioner McDonald.

And I guess the only thing, you know, I might add is that, in particular -- so, you know, I framed sort of the big picture there.

You know, as a state agency, we have a lot of process. And so I want to -- and many of you on the -- that are attending, and certainly the panelists, you know, have a lot of experience with our process at the Energy Commission and other state agencies, like the ARB and the CPUC, who these programs will be interfacing with, you know, integrally throughout their life. And, you know, I think the way we can see these programs fits right into the way the scoping plan is approaching building decarbonization.

The PUC has a number of proceedings and is making a number of different investments in decarbonization, including in the building sector. And so, you know, weaving that together in ways that make sense, and we're not tripping over the programs, really important to talk about to understand. Some places will have a long history of different programs and implementers, other places will not. So, you know, making sure that we are using the state processes appropriately and efficiently and in a way that doesn't create new barriers.

That sounds a little abstract but what we want, okay, is funds to go to projects that are implemented by quality contractors doing quality installations in the kind of target populations that the statute tells us we need to go for, which is low-income and disadvantaged communities, to use those kind of somewhat hackneyed terms but they're the terms that we have and sort of at least have general understanding what we mean, in these under-resourced communities and tribes across the state.

So, you know, how do we identify the right projects and efficiently channel resources to good contractors that, hopefully, are from those local places doing quality projects that we then can monitor and show that the savings are actually there and have positive impacts on those customers, on those residents and energy users across the state?

So, let's just keep in mind, what we really want is projects, is contractors, you know, getting out there doing quality projects that help decarbonize our buildings. So that's our ultimate goal and we need to figure out how to do that efficiently and effectively for the benefit of those residents and not create new barriers. So that's the goal.

The guidelines that we will be aiming to publish sometime next spring, we'll hear about the timeline here. Those guidelines are really a key kind of framing approach.

And so I think some of the most important comments that you all will provide us will have to do with what guidelines we should set for these programs and how we should approach identifying and contracting implementers, you know, across the state.

So anyway, I will stop there. I know there's a lot of expertise here in the room, in the virtual room. I really want to hear from everyone.

And, again, I want to thank Jen and the team for putting this workshop together. We're looking forward to a fruitful day. So, thanks a lot, Jen. Over to you.

MS. NELSON: Thank you, Commissioner McAllister.

And thank you, Vice Chairman McDonald.

So with that, we will go into our first panel. Our first panel, as the Commissioner had indicated and which the notice also shares, is the first panel today. It will be comprised of state agency representatives providing a review of building decarbonization programs and incentive options.

I will be the first speaker. I am Jennifer Nelson. I'm also the facilitator. And then I'll be followed by Rory Cox with the California Public Utilities Commission, and Chuck Belk with the California Department of Community Services and Development.

Before I dive into my presentation, I do want to do one more housekeeping item. So, for some of you who have entered, you might notice that you are being automatically named Kristina Duloglo. We are now correcting that, so you are now being identified as an attendee with a number following you. That is to facilitate the public comment period. You are also welcome, if you are able to, to go in there and change your name to your actual name.

So with that, we'll tee up the first presentation, Gabe, and then we will dive into the workshop -- or my presentation.

So as previously shared, I am Jennifer Nelson, the Branch Manager of the Existing Buildings Branch. In today's presentation, I will be providing an overview of two distinct but aligned activities, first being the policy context and statutory direction for the Equitable Building Decarbonization Program, as well as initial framing, thinking, and specific areas needing input and recommendations. Second, I will provide an overview of active or planned building decarbonization activities at the California Energy Commission.

Next slide, please.

So for some context, California has ambitious goals and policy drivers to reduce greenhouse gas emissions and fight climate change. Those goals and policies include statewide carbon neutrality by 2045, 100 percent renewable and carbon-free electricity by 2045, doubling of energy efficiency savings by 2030, providing equitable low-carbon solutions to low-income and disadvantaged communities, electrifying the transportation and decarbonizing fuels, and reducing hydrofluorocarbon emissions by 40 percent from 2013 levels.

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Buildings are a key factor in meeting our state's climate goals. California houses 14 million homes and 7 billion square feet of commercial space. These buildings account for approximately 25 percent of the state's greenhouse gas emissions. The combustion of gas for space and water heating is the single largest source of greenhouse gas emissions in buildings as a category.

In contrast to the progress that is being made in newly constructed buildings, where regulatory tools are most effective, the decarbonization of existing homes is more challenging and greatly lags behind the pace required to meet California's climate goals. While retrofits to existing buildings do offer the greatest potential for emission reductions, they also face more barriers, including, but not limited to, upfront cost, split incentives between a tenant and a building's owner, structural issues, and space constraints are just a few of those. Older buildings with minimal insulation, air gaps, and non-existent or low-performing space heating and cooling are also not equipped to adequately withstand extreme heat and protect occupants.

There is a real risk that without thoughtful and intentional prioritization, the state's most vulnerable and underserved will be the last to receive the benefits of a clean energy future due to lack of capital, credit, and access to infrastructure.

The Department of Energy estimates that nearly 5 million households in California are low income. The California EnviroScreen by the EPA estimates that approximately 10 million people or 25 percent of California's population live in a disadvantaged community.

In its first annual affordability report released in April of 2021, the California Public Utilities Commission found that 13 percent of the state's lower income households spend more than 15 percent of their income on electricity service. That number for the gas service drives for six percent of lower income households spend more than ten percent of their income on gas. These households and communities require direct investment to remedy the systemic inequalities, environmental hazards, and energy burdens affecting them.

CEC assessed the trajectory and strategies to reduce greenhouse gas emissions in buildings in the 2021 Building Decarbonization Assessment. Amongst other things, the report concluded that significant levels of efficient electric equipment, such as heat pumps, along with supporting energy efficiency measures, reducing refrigerant leakage, and advancing load flexibility activity would be necessary to reduce greenhouse gas emissions 40 percent below current levels by 2030.

The cost to support the replacement and early retirement of equipment range from tens to hundreds of billions of dollars. Resources in the form of installed equipment and building infrastructure upgrades, rebates, financing options, or technical assistance can significantly accelerate the decarbonization and improve the quality of life, particularly for low to moderate income Californians.

Based upon this information, the CEC recommended in the 2021 Integrated Energy Policy Report that the state adopt a 6 million heat pump goal by 2030 and focus future decarbonization action on decarbonizing California's existing buildings with a prioritization on advancing energy equity.

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In September of this year, Governor Newsom gave the CEC an amazing opportunity to continue the state's leadership in mitigating and combating climate change by signing Assembly 209 and Assembly Bill 179.

Assembly Bill 209, amongst other things, directs the CEC to develop and implement an Equitable Building Decarbonization Program. This program includes two primary components, a Direct Install Program focused on reducing greenhouse gas emissions and homes of low to moderate income residents, and the Statewide Incentive Program to accelerate deployment of low carbon building technologies.

Assembly bill 179 provided CEC with $112 million for the program's first year, and up to $922 million is budgeted to this effort over the next four fiscal years.

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So the legislation for the Direct Install provides both requirements and flexibility to the CEC in developing the program. The requirements specifically include the program shall reduce emissions of greenhouse gas emissions through a Direct Install Program that provides energy efficiency, decarbonization, and load flexibility solutions to a consumer at minimal or no cost. The program shall also encourage, where feasible, resiliency to extreme heat, improvements to indoor air quality, energy affordability, and grid reliability to support.

The program's focus is on the residential sector and low to moderate income homeowners and tenants. In the residential sector, and it's in it's on the slide here, I want to place some focus that it is on single-family, multi-family, as well as mobile and manufactured homes.

There is a preference that where the building meets one of three criteria. So a preference shall be offered when a building is located in an under-resourced community, the building is owned or managed by a California Native American tribe or a California tribal organization, or three, the building is owned by a member of the California Native American tribe. In addition, the workers shall be paid prevailing wage where possible and when applicable. And the CEC is to evaluate potential changes to increase participation if funds are unspent after two years.

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So similar to the Direct Install Program the legislature gave CEC flexibility, as well as some firm parameters, in establishing the statewide incentive program.

So first, once again, the program shall reduce greenhouse gas emissions with a focus on low-carbon building technologies. The CEC is directed to coordinate with other program administrators, including the Public Utilities Commission, the Department of Community Services and Development, as well as the Strategic Growth Council. And a minimum of 50 percent shall benefit residents living in an under-resourced community.

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So Energy Commission staff has been evaluating options for the program structure and does have early thoughts and potential recommendations. Questions have been posed in a request for information that was posted on December 9th to gather feedback and input from the public and stakeholders in four broad categories, the first being the incentive program as a whole, and the other three are related directly to the Direct Install Program. Those three categories are program criteria, implementers and solicitation scoring, and eligible equipment and activities.

Some early thoughts and potential recommendations that Staff has are, first, that Staff prioritize the Direct Install Program through the first quarter of 2023.

Second, that they allocate the majority of the funding, approximately two-thirds or up to $610 million of the budget be directed to the Direct Install Program. While this is a significant amount of funding relative to previous decarbonization investments in existing buildings in California, as Commissioner McAllister commented, it is a small amount relative to the need in this sector.

This program will be able to cover only a small fraction of the millions of potential eligible households. Program criteria used to prioritize and score proposals will need to be both flexible enough to meet the needs of the different regions of the state and sufficiently uniform to establish appropriate baselines and metrics for implementation and program oversight.

Staff is also recommending that there be a focus on existing residential single-family multifamily and manufactured homes. This means that the program will not look to incentivize new developments.

Staff is also recommending or in the thought process of considering funding and identifying mechanisms to do so, existing Direct Install Decarbonization Programs that have an established infrastructure and proven demand.

Staff is also looking at encouraging and removing barriers where feasible for layering and leveraging other incentive programs. This will allow program funds to go further or to provide multiple benefits at one time to the occupant.

One thought for a solicitation is to segment the state for regional implementers with possible focused solicitations for manufactured homes and tribes. Staff is also analyzing utilizing a single statewide implementer for the regional implementation activities.

Staff is looking to seek a technical support contract to ensure all program implementers have access to data and tools to support their program and targeting activities. This would be in replacement or in lieu of the individual solicitations being responsible for their own technical support. Having CEC hold a contract would then allow all of the programs and all of the outreach and the targeting to be facilitated by Energy Commission technical support contract.

We're also looking at contracting for a single measurement and verification contractor to independently assess the different programs based upon energy bills and other data sources and metrics.

Next slide.

So here are the program activities and milestones that we're looking at completing over the next year. As Staff work to develop the program, there are three main things we're trying to balance here. We're trying to move as quickly as possible. We understand the need to get the money out the door and to retrofit homes and to change people's lives. We're balancing that need to move quickly with the need for public feedback and data to design the program as best we can and to give a quality program to occupants of those homes. And third, we're also needing to align with the time necessary for developing and adopting guidelines and solicitations to support the program.

So the first activity on this list is data gathering and research. Staff has been gathering reports, pilot studies, analyzing data, assessing tools, asking questions, having conversations. That has been going on since September. So that activity has led to today and that activity will continue through not only the development of the program but also the implementation of the program.

The second activity milestone is the scoping workshop. That is today. This is a big lift and is an achievement. And the idea behind this, as we said at the beginning, is we want to share what we have done so far and what our initial thoughts are so we can facilitate and receive input and feedback from stakeholders and the public.

We are aiming, as you can see in spring of 2023, we are aiming to have contracts. Those would be either technical contracts to support the program or possibly a measurement and verification contract to support the program, either released or in place.

The draft guidelines, we are also looking at having drafts released to the public for review and public comment in spring of next year.

Finally, once the guidelines are developed, I would then expect that soon after we would be issuing the solicitations. And so depending upon where in spring the guidelines are adopted, the solicitation would then be issued either in spring or summer of 2023.

Next slide.

So we are now entering the second part of my presentation today, the portfolio of decarbonization programs at the California Energy Commission that complement the Equitable Building Decarbonization Program. So this slide shows programs authorized and funded by the state.

So the first one on the list is the BUILD Program, the Building Initiative for Low Emissions Development Program. This program provides up to $2 million in incentives and 300 hours of technical assistance for building all electric new low-income single and multifamily homes. This program was developed and is being implemented in partnership with the California Public Utilities Commission who chose the California Energy Commission to administer the program. This program has a $60 million budget. And projects must be located in one of the four gas service territories.

Similar to the BUILD Program is the California Electric Home Program. This program provides over $58 million in incentives and technical assistance for the construction of new market rate residential buildings as all electric and or with energy storage systems. This program will be launched next year in 2023.

And then on the next line you see the Equitable Building Decarbonization Program which I just reviewed.

And the final two are research and development programs. CEC administers two programs that focus on research that lead to technological advancements and scientific breakthroughs supporting California's clean energy goals, the Electric Program Investment Charge and the Gas Research and Development work.

So first, the Electric Program Investment Charge Program, also known as EPIC, was created in 2011 and focuses on research that benefits electric IOU ratepayers. Approximately $148 million per year is available to fund projects that emphasize reliability, lower cost, and safety with the goal of accelerating clean and energy efficient technology innovation and adoption. Equity considerations are integrated throughout the grant making process including involving communities in the development of projects and research initiatives that produce direct benefits.

To date, the EPIC program has provided approximately 67 percent of its funding, or $221 million, to projects located in and benefiting low-income or disadvantaged communities. EPIC will be continuing this effort in its 2021 to 2025 portfolio years with over $75 million in research plan for building decarbonization. Examples of potential research include demonstrating advanced electrification technologies, improving building energy efficiency by addressing barriers, and evaluating air quality and health impacts of clean energy transitions in California.

The Gas Research and Development Program is a much smaller program when compared to EPIC. It is funded at $24 million per year. The program focuses on funding research and development that supports the transition to clean energy, greater reliability, lower cost, and increased safety for Californians.

Since 2016, approximately $80 million has been invested in projects that are located in and benefiting disadvantaged communities. Most recently, projects have focused on quantifying exposures to indoor pollutants and multifamily homes that cook with natural gas and location specific analysis associated with gas pipeline decommissioning.

Next slide, please.

So this slide shows building decarbonization activities at CEC that are funded by the federal government, specifically -- or may be funded by the federal government, specifically the Federal Infrastructure Investment and Jobs Act, or the IIJA, as well as the Inflation Reduction Act, also known as the IRA.

The IIJA was signed into law in November of last year and set aside approximately $75 billion for programs related to clean energy and power and $7.5 billion for electric vehicle charging infrastructure. The IRA is more recent, it was signed in August of this year, and this legislation created a greater number of financial incentives related to clean energy, many in the form of tax credits.

So just running through this list quickly, so we have the Homeowner Managing Energy Savings Program, or HOMES Program, which will provide rebates to single and multifamily homeowners for whole house energy saving retrofits. Rebates are available to all income levels with higher rebates for low-income households and homes that are located in disadvantaged communities. The Energy Commission expects to receive approximately $282 million for the program and is looking to launch the program in 2024.

The High Efficiency Electric Homes Rebate Program, or HEEHRA, will provide rebates of up to $14,000 to low- and moderate-income households for electric appliances, such as heat pumps and electric stoves, and necessary upgrades to install that equipment and run that equipment. The CEC expects to receive approximately $280 million for that program, plans to hold workshops next year, and plans to launch in 2024.

The State Energy Program is expected to provide approximately $31 million to support Energy Commission operations. The Energy Commission receives annual funding from this program and the funding can be spent over five years.

The Energy Efficiency Revolving Loan Fund Capitalization Grant Program, we expect -- for this program, we're expecting to receive a grant in 2023 for approximately $6.8 million. We anticipate funds will be used to fund energy efficiency audits and upgrades based upon those audits and we should have more information on this opportunity next spring.

Similar, we're expecting to receive additional information later this year and that is the Energy Efficiency Conservation Block Grant. We are expecting to receive approximately $10 million in funds. And we anticipate combining these funds with $6 million in reflows from Revolving Loan funds that were initially funded by the American Recovery and Reinvestment Act from 2009 to provide additional planning and deployment grants to tribes and local governments. Like I said we expect more information on that program later this year.

And then the final row here is a competitive opportunity titled the Building Codes Implementation for Efficiency and Resilience. The purpose of this opportunity is to enable sustained cost-effective implementation of updated Building Energy Codes to save customers money on their energy bills. We anticipate putting forward an application to request funding for local building department technical support, innovative compliance tools for local building departments, and innovation to compliance modeling. We expect this opportunity will be released at the end of the year and the award would be $225 million. And that is, like I indicated previously, it is a competitive one where we will be competing against other states or consortiums of states. Next slide, please.

So this is the program and staff contact. If you have any questions or want to chat or want to meet, my information is right there jennifer.nelson@energy.ca.gov. That's also my direct line. I also have a link here to the program webpage. Like I said you can take a screenshot and then type it in really quickly or, like I said, I recommend going to Google or whatever your favorite search engine is typing in Equitable Building Decarbonization Program California Energy Commission and one of the top few links should be the California Energy Commission.

I also encourage people to sign up for the subscription service, specifically decarbonization topics, and you will receive all information that we post related to this program. And I please encourage/seek/welcome comments to not only the request for information that we posted on December 9th but any comments or questions related to this program, specifically. Please submit those within the next month by January 13th.

And with that I will conclude my presentation. And if the Commissioner doesn't have any comments or questions, then I will put my facilitator back on and I will introduce Rory Cox with the California public utilities commission.

COMMISSIONER MCALLISTER: No questions, Jen. Thanks a lot.

Go ahead Rory.

MR. COX: Good morning. Yeah. Hi. I'm Rory Cox. I'm with the California Public Utilities Commission. I work in the Energy Division. And I've been working on building decarbonization issues for a few years now. I'm on a team that works on these programs and, yeah, happy to be here and exciting time to be doing this work, certainly. And thanks so much Jennifer and to the Commission for having us.

Why don’t you move on to the next slide, Gabe? Thanks.

So I'm just going to give you a very brief thumbnail sketch of the programs that we have that are currently incentivizing either heat pumps directly or building decarbonization more broadly. And Jennifer already touched on the BUILD Initiative. That is something that we administer that the CEC is implementing, so I'm not going to go into that.

TECH is really the one that we are far more hands-on with. It's a program that we administer and help manage. And currently, it’s set at -- the budget is $117 million but the state authorized another $50 million in General Funds for the TECH Initiative, and potentially another $95 million in next year's budget potentially. It kind of depends on how the economy does but so that's all going to the TECH Initiative.

TECH is focused on market development or market transformation and midstream activities. It's contractor training. It's incentives. It's pilot programs and Quick Start Grants that are intended to try ideas and see what works and what doesn't. It's intended to do all those things. And we're going to hear more about TECH in a future panel this afternoon, so hopefully you'll all stick around for that.

And then the last thing is that we have a $5 million contract for program evaluation of both BUILD and TECH, which we work with Opinion Dynamics on.

Next slide, please, Gabe.

A little bit more about the role of TECH. We really do envision TECH, and TECH has been sort of playing this role, as being a cross-programmatic kind of hub for all the programs that are out there, even the ones that they're not funded for.

And you can see that this is for -- as a for instance I put up a screenshot of the incentive finder on the Switch Is On website, which is something that TECH manages, and you'll see that there's a list of 27 incentives in my zip code of 94610. Some of those are BayREN which is -- and then if you go down the list of 27, you'll see incentives for PG&E and for East Bay Community Energy, as well as for direct TECH incentives when they come back.

But that's the whole purpose of that website, is to sort of be the clearinghouse for everything that's going on to incentivize heat pumps sort of a one-stop shop.

So we are using TECH as sort of a backbone to provide the seamless contractor and customer experience for all things heat pumps right now. We're also using TECH as a data tracking infrastructure and a data tracking website that provides all kinds of good information about where heat pumps are being installed and whatnot.

So next slide, please.

Other equity-related CPUC programs for building decarbonization, we have the San Joaquin Valley pilots where we are -- have $56 million in funding to upgrade homes that are in the San Joaquin Valley that were cut off from the natural gas grid when they were developed decades ago. And the question was: Do we bring in natural gas service or do we just electrify everything? And we opted to electrify everything, and these are largely disadvantaged communities. We expect to finish all of the upgrades to those homes in the third quarter of 2023.

We also have a Mobile Home Park electrification Standard where we are -- currently, the Mobile Home Park Program is basically looking at -- it is converting what our sub-metered mobile home parks, which is to say the mobile home park will have one meter for -- and then they will connect all the all the mobile homes to this one meter which has a host of safety issues because all those sub those sub-connections are not are not regulated by us and there's safety issues there, as well as consumer issues. So we're working on getting all getting all the mobile homes to be -- to have their own meters.

And, but then, we're also in the proceeding we're looking at reviewing the electrical service size to support electrification for mobile homes, as well as manufactured homes, so that's what we're doing there.

Next slide.

Load shifting Programs, we authorized $84.7 million to for heat pump water heaters incentives which are going to be dedicated towards load shifting, so that means that we power them during the day when the solar resources are high and we use that hot water as storage, basically, so they don't have to be powered when the solar resources go down in the late afternoon and evening. And about half of that budget is dedicated to low-income customers with more generous incentives for them. And Energy Solutions is the implementer of that program.

Also the Water Saver Program and the SCE's Smart Heat Pump Water Heater Program are also intended to install smart controls and communications on heat pump water heaters and electric resistance water heaters to enable load shifting, so we have a big focus on just water heaters for just load shifting purposes.

Next slide.

The Wildlife and Natural Disaster Resiliency Rebuild Program, so these are incentives to rebuild homes destroyed by natural disasters to all electric and beyond the Title 24 Code. And this is, I believe, a $50 million (phonetic) program and has a flat-based incentive structure for single-family homes or units in multi-family buildings. And we have equity incentives that is that is one and a half times greater than the market rate incentives. This program will become available next year.

And the last slide.

The Energy Efficiency Portfolio, Commissioner McAllister mentioned that, we were spending about $1 billion a year in energy efficiency, it is less than that now, I think it's about three-quarters of a billion. But until last year, we really could not incentivize fuel substitution or switching from a natural gas appliance to an electric appliance, basically. And we have changed the rules in energy efficiency, so now that is allowed. And we have been taking steps to sort of normalize fuel substitution within the Energy Efficiency Portfolio in future energy efficiency cycles. So this slide kind of explains the steps that we've taken to do that, and so we can expect more from that.

So basically, what I just summarized are three major sort of buckets of funding. Building decarbonization is focused on greenhouse gas reductions. We have the load shifting programs, like SGIP and the Water Saver Program. That is just focused on shifting load. And then we have the Energy Efficiency Portfolio. All three of these buckets of funding come from different pieces of legislation, different. They all have different rules. They all have different metrics for success but they're all funding the same thing. So that is, you know, that is The -- and then there's this overlay of equity. You know, there's some of, there are carve-outs for equity, obviously.

So this is kind of where, you know, this is all getting kind of very complex. We tried to address that in a decision that we passed last year on incentive layering. And this is something that the TECH Initiative is very aware of and is, you know, is accounting for in their incentive finder and everything.

But this is -- you know, I mean, when we did the incentive layering decision, we didn't know there was going to be an IRA for federal funding. And that is kind of the, you know, the big, good problem to have, but something that we have to watch out for is over-incentivizing appliances so that the incentive funds are spread evenly throughout the marketplace rather than people gaming and, you know, you could potentially get more incentive than the appliance is worth if there's not the proper sort of air traffic controller looking all this.

So that is my sort of last point I want to make about all these programs. It's good but it's, also, I think it's unprecedented. I don't know -- ever remember ever hearing of any kind of -- all these different funding sources with all of these different rules and different buckets of money going towards the same type of thing before. So that is something that we just all need to be cognizant of as we move forward.

And I believe that is my last slide, Jennifer. Yep, that is it, so thank you all.

If there's no questions from the dais, we will now move on to Chuck Belk with the Department of Community Services and Development.

COMMISSIONER MCALLISTER: I actually do have a question.

MS. NELSON: Okay.

COMMISSIONER MCALLISTER: Sorry. I also noticed that one attendee has had their hand up for a while, and I'm not sure if it's a clarifying question, but -- or if it can wait, but it might be a logistical question because we've had this issue with the panelists versus attendee kind of thing. So it's P. Huntsaker (phonetic). I don't know. If it's a substantive question, I think it should wait for public comment, but if it's a sort of logistical question that might help us manage the workshop a little bit better, then maybe we can let that person ask the question.

Also, Vice Chair McDonald has his hand up as well.

COMMISSIONER MCALLISTER: So Vice Chair McDonald?

MR. COURT: Yeah, it looks, just so you know, it looks like the attendee lowered their hand.

COMMISSIONER MCALLISTER: Oh, great. Okay. Great.

MS. NELSON: So hopefully that's been handled.

COMMISSIONER MCALLISTER: Great.

So Vice Chair McDonald, go ahead. I have a question, as well, but I'll cede the mic to you for the first question.

VICE CHAIR MCDONALD: So I guess my question revolves around incentives, the incentivizing process, as we talk about low-income folks; right? The challenges that that we see, I think a lot of tribes and probably just low-income people generally, a lot of times we see these incentives, well, if you pay for it up front, right, then we will reimburse you. And that is not effective, at least in our community; right?

I realize there's probably a number of different ways to do that. We talked a little bit about some of this in a previous session, maybe it was the lead up to this, but I do think that deserves -- certainly, there's a lot of research going into how to incentivize for low-income folks, pay up front. It doesn't work for my community.

And so I just want to make sure that we put that into the record or whatever the process is here. And maybe we talk about creative ways to do that.

COMMISSIONER MCALLISTER: Thank you very much, Vice Chair. That's a great point. And I guess maybe I would ask Rory just to expound on that, and our staff can too.

Typically, we're talking mostly about midstream and more upstream rebates at this point, or incentives, which happen on the front end so that the, you know, investment does not have to be out of pocket from a recipient. So, in general, that's seen as best practice for these sorts of programs.

But, Rory, you can expound on that.

MR. COX: Yes, that's right. And the TECH Initiative is doing that now. It is a midstream incentive that the contractors get and they may or may not -- you know, they -- it's kind of their call as to how much they pass on to the customer.

And one of the -- but with the SGIP Program, the, the incentives for equity customers are like twice the amount as they are for market rate customers, roughly speaking, and that will likely be a midstream incentive as well. And the intention of that is really to have the appliance for equity customers be this upfront cost, the same or less than a natural gas, the incumbent technology, and no more than that.

And the IRA has two types of incentives, one is tax refund for market rate customers, and then an upfront incentive for equity customers. So I know that they have thought about that when they designed the IRA. And there's, I mean, there's so many other incentives that have different rules, but those are just some that I know of where that, that issue has been addressed.

COMMISSIONER MCALLISTER: Yeah. Thanks, Rory. And we'll hear a little bit about this, and we should actually, you know, develop a docket on how the various programs can be more efficient with channeling rebates and making it completely seamless, particularly for low-income participants to just have access to that rebate, and have the rebate kind of applied in the ether and still give them a fair amount of choice for what products they choose, you know, they go out to the big box or whatever and buy, so that they're, you know, they're not limited in their choices. So as long as they get, you know, above a certain threshold efficiency or performance, they can, you know, have that cost bought, you know, bought down in a seamless way.

So I guess the other, so I wanted to just highlight and invite everyone to think hard about this issue that you brought up, Rory, about how to ensure that, say, you know, given a given program participant, a given consumer, you know, has access to every rebate or every incentive that they can, and every program support that they can, but that the rules of all these different buckets are actually complied with.

And so, you know, there is the possibility -- so the IRA, for example, we're arguing that -- so there is a prohibition of using multiple federal incentives on the same measure. And so we're arguing, the states are arguing, to DOE that that would mean -- that could mean that actually, you know, incentives from the HOMES Program and the HEEHRA Program could actually go to the same family as long as those program funds cover different measures, and we accounted for that. And so that allows a lot of funding. And then you can layer that with any other programs from the state level and potentially, you know, bring significant resources that can cover almost the whole cost, or maybe even the whole cost of a home upgrade. So, you know, we're talking, you know, 15 to 20 grand kind of thing. So, you know, DOE will have to give us direction about whether they're going to permit that, but that's what we're arguing.

And so one question is: Have you thought about or are you aware of any sort of progress on this question of tracking, you know, by household or by participant? You know, most projects probably are not going to be done all at once. So you're going to have a rebate for X measure, you know, say a furnace replacement with a heat pump, and then you're going to have a water heater later, and then you're going to have, you know, maybe a whole home upgrade. And so how do we make sure that, you know, the law and the rules of programs are being complied with? And you know, then an audit, you know, needs to see that when it goes and looks at those projects.

MR. COX: Yeah. And I think --

COMMISSIONER MCALLISTER: Have you given thought on what that looks like?

MR. COX: Well, I mean, I think the best chance we have against that is to have a centralized tracking, data tracking repository for these things. And I mentioned the TECH Initiative built a database for these, to track this very thing. And so I think that is something. And, you know, the TECH Initiative does not have -- you know, they have -- I mean, we put in our decision, we sort of put a request that all the all of our non-jurisdictional entities that the PUC does not have oversight over, like the CCAs and the munis, that they, you know, that they recognize that that is a worthwhile repository to, to report their --

COMMISSIONER MCALLISTER: Right.

MR. COX: -- information to. So some of this is, you know --

COMMISSIONER MCALLISTER: Okay.

MR. COX: -- just by the nature of the fact that we have so many people, nobody is the boss, you know, --

COMMISSIONER MCALLISTER: Right.

MR. COX: -- we kind of -- I think we need to kind of win the trust of people to sort of recognize that we do have a tracking system and please participate in it.

COMMISSIONER MCALLISTER: Yeah. Great. And so, you know, I think we should consider them for these Energy Commission programs that we maybe even could require that that database be used, so that's a possibility.

MR. COX: Yeah.

COMMISSIONER MCALLISTER: We'd love to hear people's opinion about that.

The other question I had, and you know, maybe there's -- I'll probably bring this up again in the afternoon, but these tax incentives are going into effect on January one. So the residential, you know, upgrade tax incentives, I forget the numbers, the numbers of which provisions they are, but basically, you know, the tax credits and tax deductions. The tax credit for upgrading existing homes, the residential tax credit, it goes into effect, you know, soon. And the issue with that, though, is that low-income customers that are the target for these programs may not have the tax burden or kind of the, you know, sophistication to be able to claim that. They might not know about it. You know, they might not claim it on the natural.

I wonder if there's any thought being given out there and, you know, stakeholders to weigh in, too, about how to monetize those tax incentives in a way that allows them to buy down the cost of customers that may not have a tax burden?

And so I know the feds have for like electric co-ops that don't have a tax burden, they are allowing them to claim an equivalent cash, you know, reward, basically, that that substitutes for that tax liability that they avoid.

So there's a deeper deep conversation that needs to happen about how we can bring those tax incentives to bear because they are significant, they could really move the needle for a lot of projects. And they're not typically built into these kinds of incentive programs but they really ought to be, so we need to we need to figure that out.

I don't know if your team, Rory, at the PUC has thought about that.

MR. COX: Not, not a lot, no.

COMMISSIONER MCALLISTER: Okay.

MR. COX: Yeah, I'm sorry, and --

COMMISSIONER MCALLISTER: I think maybe we'll just table that for the afternoon, as well, because I know we have some folks in the afternoon, you may have thoughts about that. But in any case, I want to just get that on the record as a conversation. That's an important one to have, not only --

MR. COX: Now that Evan from TECH has had fair warning, he's got a few hours to think about this --

COMMISSIONER MCALLISTER: Yeah. Exactly.

MR. COX: -- before he presents.

COMMISSIONER MCALLISTER: Yeah, he could go and talk to his tax advisor.

So I also wanted to encourage people -- so we had that snafu with the with the link on the website, a lot of people came in through as panelists, and then it got shifted over to attendees. So I would encourage everyone who's got an attendee number X to log off and log back on and as themselves with the new link that's been posted to the website.

I think, Gabe or Jen, you can maybe confirm that

that's happened. I think the it's also being reposted or recent to the listserv.

MR. TAYLOR: That is correct, Commissioner.

COMMISSIONER MCALLISTER: Okay, great. So if you wanted to log off quickly and log back on at some point, maybe when there's a break or whatever, or just when you have a chance, that would be helpful so that we can kind of know who's there and that your name reflects here, your name is there on your on your on your participation.

So okay, thanks a lot. I'll move it back to Jen to keep us going.

MS. NELSON: I see that Vice Chair McDonald has his hand raised.

COMMISSIONER MCALLISTER: Oh, okay. Great.

Commissioner McDonald, go ahead.

VICE CHAIR MCDONALD: Yeah, so I -- somebody turned my camera off, so I can't just start. Waving.

So two questions. And I'm not sure if they're exactly on point, but I would point out to the audience that for tribes, or at least with Chemehuevi, the way that we're trying to take advantage of some of, you know, these programs, SGIP, just the way our lands and homes are held, is the government is taking on the responsibility of implementing some of these programs on behalf of our members, and finding a way to recapture, you know, that expense.

For tax purposes, tribes, we don't pay taxes, we're a government, so that would be a challenge. And as I'm thinking about some of the comments for midstream into contractors, a lot of Chemehuevi, I'll speak Chemehuevi, but I think we have some of the same -- or some tribes have similar problems getting -- so we're not in an urban setting; right? We're rural. And rural folks will definitely have this challenge, as well, getting those contractors out to our areas is a challenge.

So again, as we're talking about incentives and programmatic, there might be a way to incentivize contractors to do the outreach to the tribal communities. And they should be incentivized because in order to go embark in a relationship with a tribe in a different type of government in a different setting is going to take education on their part; right?

So I plant the seed. And as, you know, I think it doesn't just apply to this situation, but I think it would apply to others, so I just wanted to put that out there for our policymakers consideration.

That is all.

MS. NELSON: So with that, just another quick housekeeping item.

If you did not log out and log in with your name and you are still as an attendee, if you do put something in the Q&A, please go ahead and also include your name so that way we know who is who is asking the question.

So with that, I will now pass it over to Chuck Belk with the Department of Community Services and Development for his presentation today.

Thank you.

MR. BELK: Thank you for sharing the slides, Gabe. I appreciate that.

Good morning. My name is Chuck Belk and I'm the Assistant Deputy Director in the Department of Community Services and Development’s Energy Division. And I first want to say thank you to Commissioner McAllister and Vice Chair McDonald for providing us the opportunity to take part in this conversation today.

Next slide, please.

For those of you who may be unaware, the Department of Community Services and Development, or CSD, is a department under the umbrella of the California Health and Human Services Agency. CSD works with a network of private, nonprofit and local government agencies to administer programs that are designed to reduce poverty by assisting low-income individuals and families to become self-sufficient and remain so, and also to help households meet their home energy needs and reduce utility costs through energy efficiency upgrades and by providing access, when possible, to solar renewable energy.

Next slide, please.

CSD administers a variety of programs, but our programs that directly relate to energy efficiency and reduction in carbon or GHG and by extension, in some cases, decarbonization, fall into two different funding buckets, our federal programs and state programs.

CSD's federal programs are the U.S. Department of Health and Human Services Low Income Home Energy Assistance Program or LIHEAP, it's quite a mouthful, and this program offers utility payments, energy crisis services such as utility payment assistance interventions that help to prevent low-income households utility services from being disconnected or, possibly, to provide an emergency repair or replacement of critical heating, cooling or water heating appliances to help keep low-income occupants healthy and help them keep warm in the winter and cool in the summer. The program also offers weatherization services to many of the clients that receive utility assistance benefits through the program.

The U.S. Department of Energy's Weatherization Assistance Program is our second program and it's also termed or called DOE WAP. And this program is a technically driven energy efficiency program that helps to address to a little -- to a minimal level health and safety issues in the homes of qualified participants. But it's, also, it's mainly focused on driving down energy costs through the installation of energy conservation measures such as insulation, infiltration reduction, and the installation of energy efficient home energy systems and appliances. Both of the federal programs mentioned have been administered by CSD for more than 40 years.

Next slide. Oh, I'm sorry, not next slide yet.

CSD also administers a state energy efficiency program known as the Low Income Weatherization Program or LIWP, which has traditionally been funded since 2015 by the state's Cap and Trade Program, the California Climate Investments. It's also referred to as the Greenhouse Gas Reduction Fund or GGRF funds. LIWP has operated various program components or iterations since the receipt of the first round of funding in 2015.

Currently, LIWP is operating two program components, a Single-Family Energy Efficiency and Solar Renewables Program that is geared to farmworker housing. This is a direct program that provides no-cost solar PV and energy efficiency upgrades that benefit low-income farmworker households in specific counties within the state.

We also have another program which is a

Multifamily Energy Efficiency and Solar Renewables Program which offers training and technical assistance and financial incentives for energy efficiency upgrades and solar PV installations in low-income affordable housing buildings and properties. It also includes a carve-out for multifamily farmworker housing and also work to upgrade homeless shelters.

Now we can go to the next slide, please.

Before I tell you about our current Direct Install Farmworker Program, I wanted to provide a brief overview of what informed our design of that Direct Install Program. I want to apologize in advance for the small print on this slide but I'm going to walk through each of the various bullets on the right, so hopefully that'll be okay.

In 2016, CSD was in the early stages of design for a new LIWP single-family program approach. And we worked with a number of stakeholders, including the SB 535 Coalition which is made up of organizations such as APEN or the Greenlining Institute, energy industry contractors, and also community-based organizations, as well as others, and what we did is we dialogued about possible approaches.

What we learned during months of discussion and input was ultimately rolled into the design and then procurement for a $57.6 million program that we began to call our Regional Approach.

What we did with respect to procurement is we required nonprofit or government entities as the principal contractors to the grant who were then required to build a team of partners and subcontractors to handle all aspects of the single-family approach -- excuse me Single-Family Program such as program administration and service delivery, materials ordering and management, workforce development, among other things. We utilized a disadvantaged community-focused approach where we apportioned five regions based on low-income population numbers. And you can see that visual representation of the five regions on the left hand side of the screen.

We also adjusted the regions based on funding amounts to make sure that they made sense geographically. The regions are made up of mostly contiguous counties where possible, and the objective was to allow for streamlined services, administrative efficiencies and, importantly, sufficient funding to administer the program and to fully expend it over an accelerated 18 month period.

The measures provided in the program were typical energy efficiency measures that were energy audit driven such as efficient appliances for heating, cooling, water heating and other things, insulation, lighting upgrades et cetera. Solar PV was also integrated with energy efficiency work at a portion of the homes that were targeted to high energy users who were also homeowners.

The effort was able to wrap up, engage qualified households and deliver services, and to fully expend and close out within 18 months so it was a definite success.

Next slide, please.

So what we were able to learn from the operation of the LIWP single-family regional approach is that, well ,what may seem very obvious, but integrating energy efficiency and solar PV makes a lot of sense. It offered efficient delivery of services and administrative efficiencies, such as a streamlined marketing approach for the implementers.

Also by working to provide PV to homeowners with high energy bills, we were able to maximize program results and to truly benefit high energy users. There were also a number of regional efficiencies we recognized. By aggregating counties into larger regions, we ended up subcontracting with fewer service providers to contract to both run the program, and then also for us to monitor which offered us efficiencies excuse me efficiencies at the state contracting level. And it also allowed for some administrative efficiencies at the local and regional level as well with respect to controlling material and supply costs, and also service delivery.

The proposers that were awarded contracts needed to demonstrate the knowledge of the regions that they wanted to administer the program in. So there was a definite focus on understanding the low-income communities and specific populations within each region, but also they needed to determine how to best perform outreach and to work as a trusted provider in the communities where they operated.

With respect to health and safety and structural issues, based on the condition of homes served as part of the regional approach we saw a real need for a more robust health and safety response. For example, if unsafe conditions existed in a home, we wanted contractors to have the ability to address those health and safety conditions immediately if at all possible. And that wasn't initially a focus in the earlier stages of the LIWP program because there was a much greater emphasis on greenhouse gas reduction, and so the funding was not able to do that at the time.

Also, age, condition, and structural issues in some homes were beyond the scope of the program and prevented regional administrators from serving the needs of some of the most vulnerable low-income populations, for example, roof repairs and electric panel upgrades to support PV, and also things such as water heater platform repairs or kitchen exhaust and repair or replacement.

Next slide, please. Okay thank you.

This brings me to our farmworker housing component which is, as mentioned on an earlier slide, we are currently operating this program and have just actually begun to ramp up and to implement a new version of the program. After competitive a procurement, we recently awarded this contract for both regions that are in the program, which will be displayed on the next slide, to La Cooperativa Campesina de California. As I mentioned, this is actually a second iteration for this program as we successfully completed an earlier effort funded at approximately $12 million in mid-2021.

The current effort which will be launched in 18 counties will be funded with $25 million in General Funds, and there will be an additional California climate investment of $15 million. Again, the counties, which I'll display on the next slide, were identified for inclusion based on the number of farmworker households that reside in each of those counties.

The goal of the program is to reduce greenhouse gas emissions and household energy costs through direct installation of energy efficiency and solar renewables. It's targeted to single-family farmworker households living in one to four-unit buildings or mobile homes. Homeowners or renters can qualify for the program provided they meet the income restriction guidelines of they need to be below 80 percent of area median income or 80 percent of SMI or state median income, whichever is higher.

It's an energy audit driven approach where energy savings and cost effectiveness help to drive the packages of measures that are going to be installed. As mentioned in the lessons learned on the last slide, LIWP Farmworker has a funding carveout to address health and safety such as heating, cooling, water heating, as well as the other code requirement items such as smoke detectors and CO alarms. We do require that appliances first be modeled as efficiency measures before they can be charged to the health and safety budget, however.

And we also included a limited home repair budget that helps to support the installation of both energy efficiency and PV, things such as roof repair, electrical panel upgrades, et cetera.

Next slide, please.

The map on the right side shows the counties that are included in the program at present. There are two different regions. And I'm sorry, it's a little small, but if you have questions about which counties are included I can happily list them for you. This slide also bullet points some of the measures that can be installed in LIWP

Farmworker, things such as lighting upgrades, whole house fans, insulation, heating and cooling upgrades. And we do include heat pumps, either central or ductless mini-splits, high efficiency and heat pump water heaters, and of course, solar PV, but that's only allowed to be installed on homeowner properties only.

We also allow for fuel switching but it's limited to the major appliances such as heating, cooling, and water heating and must be paired with solar PV, because one of our primary goals is to reduce energy costs for low-income farmworkers and we don't want them to experience an increased energy burden.

The current project queue for this initial launch which just launched about a month and a half ago is, as of today, there are 263 jobs in the pipeline for services and these households range from having expressed interest in the program to having qualified or been enrolled to those that are ready for audits and assessments.

Next slide, please. The last program I'll discuss today is our -- the LIWP program for multifamily. And we are currently operating -- excuse me we have we've operated this program since early 2016 and it’s been both exceptionally well received and it's very highly successful.

The first LIWP Multifamily Program will be wrapping up in May of 2023. However, we received additional funding from both the CCI in the amount of $15 million and the General Fund of $25 million. And after a competitive procurement we recently awarded a new contract to the Association for Energy Affordability as the implementer for the new round of funding.

The goal of the program is similar to Farmworker in that we look to reduce greenhouse gas emissions and energy usage, and we utilize a deep energy retrofit approach that's integrated with solar PV. The program has a one-stop shop model where the implementer provides technical assistance helps to develop and shape the project scope while working with affordable housing owners and managers to help them see the benefits of going further with retrofits. Using LIWP incentives, the owners own funding resources, and by helping property owners to become aware of additional incentive programs that they can leverage in these projects helps to deepen the measure packages which results in energy savings that benefit the property owner, their residents, and that also help to further the goals of the program.

What's unique to the program is we have no set list of measures in LIWP Multifamily. We utilize an energy modeling approach. And if a proposed measure saves energy and reduces greenhouse gas, then it can receive incentives which are determined by the projected greenhouse gas being reduced. That's measured in metric tons of CO2 equivalent.

The incentives are tiered, so based on who benefits from the investment. For example if it's a resident benefiting investment, there's a higher incentive, and if it's a property owner investment benefiting investment, then it has a lower incentive. And the program also aligns well with many other incentive programs which helps to expand its retrofit scopes further.

Next slide, please.

LIWP Multifamily is designed to address properties with buildings of five or more units. And a minimum of 60 percent of the units at a property must be at or below 80 percent of the area median income. The program also includes funding carveouts to address homeless shelters and multifamily housing that serves farmworker households. And to protect the investments, which can be sizable, the program requires a minimum of ten years remaining on affordability or deed restrictions to qualify for services.

Projects must also contain a minimum -- or excuse me, they must also attain a minimum of 15 percent in projected energy reductions below baseline and a minimum of 40 percent reduction when integrated with solar PV. And our experience to date has been, on average, approximately

44 percent of projected savings have been experienced across all the projects served and that's displayed on the left hand side of this of this slide.

Something we're really proud of is that a full one-third of all projects served to date have an estimated energy savings of between 45 and 95 percent which is just outstanding. And for a visual, you can see this in the chart by combining the light blue and the yellow pie wedges to the left on the left side hand of the pie.

Lastly, I'd like to note that this program aligns well with the focus of this panel today in that and that we are looking to innovate and electrify buildings by using heat pump heating, cooling and water heating which we integrate with solar PV, again, to reduce and manage energy costs at the properties. And as it states in the last point on this page, we've had seven projects as of as of this date that, as a result of deep efficiency retrofits, electrification and integration of solar PV, have approached or are near net-zero with respect to -- with greater than 85 percent projected energy savings.

Last slide, please.

I just put this last slide up to offer some websites and contact information should you have additional questions about LIWP after today's panel.

Thank you very much.

COMMISSIONER MCALLISTER: Fantastic. Thank you very much, Chuck.

MS. NELSON: Very informative, yeah.

COMMISSIONER MCALLISTER: Yeah. Fantastic. So I just have a couple of questions. I don't know if Vice Chair McDonald also does, but I'll just jump in.

So really, I mean, you know, I think many of us have been watching CSD evolve these programs, these integrated programs, kind of, you know, with, relatively flexible funding, like the ap-and-Trade funding. And it's great to hear about the success of the Farmworker Program. I was just, actually, last night at an event at the Mexican consulate. And one of the executives of the Cooperativa Campesina, I think you called it, was there, actually, and I talked with him about it and really kind of identify that program as a potential existing channel that we can, you know, work with and through together with you, so for example.

So we really need a list of these kinds of existing channels that lend themselves to really hitting the ground running when we start to deploy these funds and, you know, as soon as possible. So thanks for that. And congrats on all that success.

I guess I'm wondering, you know, just by just -- just to sort of put a pin, a reference point, in this conversation, do you have a sense of what -- this is for Chuck -- do you have a sense of what the sort of the cost per unit of those integrated programs, LIWP and the Farmworker Program, ends up looking like? I mean, you're pairing with PV and storage. I mean, you're really kind of taking an all-in approach. And so, you know, I would certainly expect those costs to be significant.

I guess I would say that, you know, we're going to make every effort in these programs to kind of right size and, you know, certainly not raise energy bills but try to not maybe over-invest if there's a way to do that, to bring down bills tremendously. I mean, obviously if we can do that cost effectively, we want to do that, so we need to be judicious with our funds so we can cover the most families possible.

So I guess, anyway, all this is a way to ask, do you have a sense for sort of the unit cost of your integrated programs?

MR. BELK: Yeah. For the Farmworker Program, I don't have exact numbers for you, this would be referring to our first iteration of the program that just closed about a year and a half ago, a year ago, and that program, we were seeing investments from a low side, if it was just energy efficiency that was being installed, of probably $5,000 to $8,000, on up to a proper program -- the program where we installed both solar PV and efficiency, and we saw those investments as high as maybe $15,000, $20,000, even low $20,000 range.

I do want to note that we ran a kind of a pilot within our first program. We were looking to move to fuel switch. And we, at that time we, we allowed the investment to cover every single appliance in the home that would be able to be electrified. So it wasn't just the major heating appliances and any water heating appliances, but also like stoves and things that needed to be changed from gas to electricity. We did see some of those costs that were relatively sizable.

And so we ended up going into this new program iteration by limiting some of the investment in fuel substitution for the major appliances only, but we saw some investments as high as $35,000 to $45,000, in that range, for a couple of the fuels of substitution pilots we did in the first round.

And so our concern, like yours, is that we want to see this, this benefit spread as widely as possible and to serve as many homes as possible. But that is a sizable investment and I think the state of California would need to consider that as we kind of move down the line towards decarbonization in the future.

COMMISSIONER MCALLISTER: Well, great. That's awesome. So that’s pretty wide range. And I think it just speaks to the fact that we have to be judicious as you are in how we scope each project. And I think, again, we have some analytical tools that I'd love to work with you on to use actual interval meter data, consumption data, you know, at the household level to really identify where those seasonal energy savings are and where their electrification and fuel substitution can really have the biggest savings impact on energetically, and also greenhouse gas and bill, so juggling all those things. I'm excited to deploy those tools and really use them to optimize these programs and collaborate with you on that.

My second question, then I'll pass the mic to Vice Chair McDonald, and then we want to open up for public comment, as well, and anticipate a really robust public comment period here.

What's your sense of how much you are having to cover of the cost versus bringing in the building owner to cover some of the costs? Like how much sort of copay have you been able to perceive in these program approaches?

MR. BELK: So are you referring to our Multifamily Program, I'm assuming?

COMMISSIONER MCALLISTER: Yeah, sorry, the Multifamily, LIWP Multifamily. Yeah.

MR. BELK: So I think it certainly varies by project and it depends on what the scope is at each of the different projects, which are quite different depending on where the property is located, the climate zone, and the age of the property, et cetera. But I believe, and actually we have somebody from AEA on the call later on today, they're participating in another panel who might be able to give us a more exact number, but I believe that number is somewhere in the area of about we’re recovering about 80 percent of the retrofit dollars for these buildings.

COMMISSIONER MCALLISTER: Okay.

MR. BELK: And the owners are bringing in 10 to 20 percent depending on the project. And again, it depends a lot on what the measures are that are being installed.

We also do require in the Multifamily Program that the owners come in and actually take care of any health and safety issues that are in the buildings before we actually will come in and implement the program. And so that's something that the owners have to shoulder.

And then one other thing I wanted to note is that the owners, because of the model of the program, the owners are actually the ones who are responsible for getting the work done, so they're managing the project from beginning to end with their subcontractors, which they have to go out and bid for --

COMMISSIONER MCALLISTER: Okay.

MR. BELK: -- and they have to develop scope. So there was some definite work and some sweat equity that they put into these projects to help them to make sense.

COMMISSIONER MCALLISTER: Now how much are you seeing those kinds of transaction costs slowing down the pipeline? I guess, you know, how much sort of upfront work, just sort of high level? I don't want to take too much time on this. But, you know, those sorts of transaction costs, you know, we need to certainly consider and figure out a way to kind of put some -- you know, create a pipeline so that the owners kind of -- building owners know what their responsibility is coming in and we don't have to sort of be too bespoke in our approach to them; right?

MR. BELK: That's true. One of the things we know is the types of projects that we're working on in LIWP Multifamily are typically very complex projects. They're mostly tax credit housing-type buildings.

COMMISSIONER MCALLISTER: Yeah.

MR. BELK: And so we found throughout our experience that these are -- because they are complex projects, they might take anywhere from 12 to 16 or 18 months to fully come to fruition. So it takes time to develop the scope, to work out the bid situations, to make sure that the program is all lined up and ready to go, and then they begin the, the implementation process.

There's another factor in that, and I'm certainly not a tax credit expert, but there is a sweet spot on a number of buildings that are affordable housing buildings. Typically it's, I think, around year 12, 13, 14, where they re syndicate the buildings, and so there is more available for them to invest --

COMMISSIONER MCALLISTER: Yeah.

MR. BELK: -- in the properties at that time.

And the other thing, the last thing I wanted to note, is that a lot of times the reason they take a little time for the property owners to implement and to realize that the full fruition is that these are often part of larger scale rehabilitation programs, so they might be doing a much larger scale, but we're focused really on the energy efficiency and the solar renewable piece of it. So that actually can actually drag out a program, as well, so -- or an effort.

COMMISSIONER MCALLISTER: Yeah. Yeah.

MR. BELK: So I just wanted to point that out.

COMMISSIONER MCALLISTER: Yeah. In our AB 758 existing building upgrade, you know, decarbonization work we definitely identified that resyndication moment as a pipeline that we have to build. And I think there's good data about which buildings across the state are coming up for resyndication and what years, and hopefully we can tap into that sort of --

MR. BELK: Yes.

COMMISSIONER MCALLISTER: -- keep a longer term pressure. So, yeah, really, really appreciate your plowing this ground and leading the way to make these approaches work. So thanks for being with us. I'm sure there'll be other questions we can stay on.

I wanted to see if Vice Chair McDonald had any questions?

VICE CHAIR MCDONALD: No. Well, no real questions. I was excited to learn about that program or some of these programs, particularly as to regards with the farmworkers. Farmworkers are close to my heart. My wife did a lot of promoter work in Imperial and in Riverside County for many years working with those communities.

I think, as you were going through the slides, there seems to be some part of the approach to those programs that would make sense in our tribal communities; right? So I'm interested in learning more about how you put that together and how we could take some of that approach and maybe apply to other programs. And that's really my comment. I was excited to learn about it. There were some things that really resonated with me and how we could approach this, but I haven't had enough time to digest it.

So congratulations on the success. And I look forward to learning more about those programs.

MR. BELK: Thank you, Vice Chair McDonald. I do want to note that we actually did work on a pilot project doing a community solar project down in Riverside County, the Santa Rosa Band of Cahuilla Indians, and actually completed and went online last year, so that was a success. And, you know, perhaps that could be a model we can look to in the future to help in tribal areas, so just pointing that out, so --

VICE CHAIR MCDONALD: Thank you for that. I appreciate it.

COMMISSIONER MCALLISTER: Great. And the EPIC Program actually has funded quite a lot of work in tribes across the state, and sort of those are more piloty programs but, you know, obviously with the goal of demonstrating and being able to scale. So I think, you know, the Energy Commission, and likely other agencies, have some experience with specific tribes.

And we've actually done -- we did a local tribal, the Tribal Challenge, which we funded with some reflows of ARRA money, which are still floating around out there, right, after ten years of the American Recovery and

Reinvestment Act. And those were -- those have been for sort of tribal planning, for the most part, and now are moving into being able to, you know, identify projects for potential funding as well.

So that ARRA Program, I think, was successful, allowed to get a better handle on the needs of many tribes across the state. And we have a tribal liaison, who -- Ms. Katrina Leni-Konig, who is really plugged in -- you know, I think you, actually, Vice Chair McDonald, it would be great if you could -- I think you probably already know her, but certainly begin to deepen that conversation. So anyway, lots of things to follow up on here.

And I can ask more questions but I won't. I want to open it up for public comment and lots of good conversations to be had going forward.

So I will leave it there and then pass it to -- is Gabe going to -- who's going to moderate the Q&A, Jen?

MS. NELSON: I believe Dorothy will be opening it up for public comment.

COMMISSIONER MCALLISTER: Dorothy. Okay.

MS. NELSON: I first want to say thank you to the panel, great presentations.

COMMISSIONER MCALLISTER: Yeah, it was fantastic.

MS. NELSON: It was a great kickoff for today and for this program.

COMMISSIONER MCALLISTER: Thanks. Thanks Rory and Chuck. And Jen, thank you, as well, for all you have done and will do.

COMMISSIONER MCALLISTER: Alright. So, Dorothy, take it away. Thank you.

MS. MURIMI: Thank you, Commissioner McAlister.

So I'm Dorothy with the Office of the Public Advisor, Energy Equity and Tribal Affairs.

We’ll begin the public comment period and then move on to Q&A. So the public comment period is the opportunities for attendees to give their comments. All comments will be part of the record. Once called on your, your line will be unmuted, and please unmute on your end. State and spell your first and last name for the record. For those on Zoom, use the raise-hand feature, it looks like an open palm. And if you'd like to ask a question, use the Q&A feature at the bottom of your screen there. And for those joining by phone, press star nine to raise your hand and then star six to unmute on your end.

Comments may be limited to three minutes or less for speakers. We'll show a timer on the screen and alert you when your time is up.

I'll begin with folks on Zoom. I see Rachel Kuykendall. Apologies if I misstated your name. Please state spelling your name for the record. You may begin your comment.

MS. KUYKENDALL: No worries. It's a, it's a tough one. So my name is Rachel Kuykendall, R-A-C-H-E-L, last name K-U-Y-K-E-N-D-A-L-L, with PG&E. Thank you Commissioners, and Jennifer, Rory, Chuck for your -- this great conversation this morning. We're just really excited here at PG&E about this particular suite of funds that will be available to our customers.

Really excited to see the strong emphasis on equity. You know, what we are seeing here at PG&E, and really a lot of assessments across the state, is that as we electrify and customers depart the gas system, we'll start to see higher gas rates for all customers. And this is most likely to impact our low-income and vulnerable customers who are least likely to be able to afford the upfront cost of electrification. So we absolutely need a plan for serving these customers so that they're able to take advantage of carbon free homes and buildings.

In particular, just wanted to highlight a couple efforts at PG&E that may make sense to collaborate with as we're designing these programs. So obviously, the San Joaquin pilot, some really great lessons learned there.

We are also rolling out our ESA Program, Deep Green Pilot, that focuses specifically on deep energy savings and electrification for low-income customers.

Our Financing Program would be a great pairing with some of these upfront rebates, as well, especially to the Vice Chair who's talking a lot about, you know, the ability for our low-income customers to be able to afford some of these upfront costs.

And then finally we have a Zonal Equity Program that's looking specifically at targeting zonal electrification for vulnerable communities that may be of interest.

One particular thing I'd like to highlight with these funds that we're particularly excited about is that they are General Funds, so we are able to have a lot more flexibility, as Commissioner McAllister was saying, compared to traditional ratepayer funds. And this can allow us to target some difficult decarbonization pockets that frankly, just at PG&E, we can't tackle but are really great opportunities.

A couple ideas that we wanted to emphasize just in public comments today, anything we can do to help push some of these funds towards efforts for us as utilities to see opportunity for zonal electrification, which is a combination of whole building electrification in tandem with decommissioning the gas infrastructure, that allows us to remove those costs of maintaining the gas system from ratepayer bills which can be a huge asset, and not a lot of funds currently can cover that sort of effort.

Additionally, propane customers, it would be great if we could target some dollars there, as well as some incentives around stoves and cooktops, which are just less cost effective for traditional utility programs.

So I see I'm out of time. I just want to say thank you again and let us know what we can do to help at PG&E to make sure these programs have the best impact possible.

COMMISSIONER MCALLISTER: Rachel, I just wanted --

MS. MURIMI: Thank you, Rachel.

COMMISSIONER MCALLISTER: Rachel, I want to say thank you for that. And, you know, we do have a great partnership with investor utilities and the PUC. You know, really looking forward to figuring out how we can collaborate and sort of streamline offerings, you know, not complicate but really make these interactions between programs as streamlined as possible. We, you know, really appreciate the collaboration with the case teams on our Building Standards. And that actually has a lot of spillover effects for this conversation, as well, so just kudos to you and the team. Thanks.

MS. MURIMI: Alright, so we'll give one more opportunity for folks who are joining on Zoom before we move on to Q&A.

If you'd like to make a public comment, once again, for those calling in, you can press star nine to raise your hand, and then star six to unmute on your end. And for those on Zoom, go ahead and use the raise-hand feature. It looks like an open palm on the bottom of your screen there. Give that one moment.

I see one more commenter, J. Shipman. Apologies if I misstated your name. Please state your first and last name and give your -- and you can go ahead and give your comments.

MR. SHIPMAN: Sure. Thank you very much. This is John Shipman, J-O-H-N S-H-I-P-M-A-N, with Franklin Energy. And so just a comment about Commissioner McAllister's comment about the amount of homes -- sorry about that, I've got a little frog in my throat here for a second, let me just drink a little water -- that we need to touch and how we might be able to kind of expand on the amount of homes with the available funding and the potential of leveraging funding that we have.

I think there's an interesting opportunity to, in disadvantaged communities, to leverage some current funding sources that may focus on allowing those homeowners to take on some of the debt to improve the homes using energy efficiency measures, and especially those that would be rebated and incentive, and that is through the Energy Efficient Mortgage Program which is a HUD program. And so I'm not sure the level of familiarity there, but this is a program that could expand, maybe even double or more than the amount of homes we'd be able to touch by allowing the homeowner to actually take on some of that debt and put it into a lending product.

Just wanted to put that comment out there and see if there was any thought behind that going forward?

Thank you.

COMMISSIONER MCALLISTER: Well, our practice is not to comment on every public comment, but I just feel like there are a lot of key stakeholders, a lot of really important, you know, efforts going on out there that we need to hear about and interact about. So definitely, you know, kudos to Franklin for all the work you've done on sort of performance-based incentives and programs. I really appreciate the innovation there. And then, also, and I think we can build on those tools here with these programs.

Definitely, I think we are aware of the Energy Smart Mortgage, the HUD mortgage products. You know, mortgages are a little bit hard to sort of work into a program like this at more than kind of a niche level, but let's definitely, you know, put that on that table for discussion in terms of, you know, maybe we can sort of put some uniformity in that and sort of help people take advantage of that program as part of their decarbonization investment.

MS. MURIMI: Thank you for that comment, John,

And thank you, Commissioner McAllister.

So seeing no raised hands at this time, I'd like to tip it to my colleague Gabe Taylor for Q&A. And then folks who still want to give their comments, go ahead and use the raise-hand feature, again, looks like an open palm. And folks calling in, press star nine.

MR. TAYLOR: Thank you, Dorothy.

MS. MURIMI: So at this time -- oh, thanks, Gabe.

MR. TAYLOR: So I'm going to read off the Q&A, the questions that were listed, and I'll mark them as answered live. And the responses are open, obviously, to the Commissioners, to the dais and to the panelists, and any appropriate staff, so please feel free.

So first from Jay Murdoch,

"Closing the financing gap, you know, both in local government policy, is there a successful model in California or other States that can be repurposed here where local governments can offer a property tax abatement for making EE and wildfire improvements to existing homes, such as our pace or a model or another tool?

MS. NELSON: So this is Jennifer Nelson with the California Energy Commission. You are hearing some silence at this point, as we're kind of all kind of considering this question.

I do not know about this but this is an interesting idea and one that I can follow up with you after the workshop and I can do some research on my own too.

COMMISSIONER MCALLISTER: So I had a little experience with this. This is Commissioner McAllister. And I'm sure other people on the call do, so definitely -- on the Zoom do. So definitely put your comments into the chat or the Q&A about any knowledge. Let's just crowdsource some of these answers. It's a great question. I think I would just have two quick comments.

One is that R-PACE, you know, it’s done, you know, a lot of good in California. It has seen some hard times these days in terms of just sort of the practical implementation of it. And California is one of the few places where R-PACE has actually, you know, done significant quantities of projects. We don't see it happening a lot of the other country. I think it's because of these -- some of these transaction costs and sort of ongoing relatively expensive piece of the marketplace, but it's certainly a program that could be funding, you know, more than it is, the bits of legal challenge, some legal difficulties that kind of we need to get past.

And let's see, what was the first part of that of that question? Let's see.

MR. TAYLOR: Successful models --

COMMISSIONER MCALLISTER: Oh, there it is.

MR. TAYLOR: -- for local government.

COMMISSIONER MCALLISTER: Oh, yeah, local government. Yeah, so local government, I would say, you know, those of you who are active at the local government level, and certainly we can, you know, bring some folks together cross progressive local governments that would think about doing this, you know, they do very pretty zealously guard their tax base. And so getting a tax incentive in place at the local level can be kind of challenging.

There are some progressive jurisdictions, like Berkeley, that actually allow a homeowner, say, that buys a home to get part of their transfer tax back if they invested in certain things like earthquake retrofitting and that kind of thing. And so there's some innovative ways that tax policy at the local level is getting used. And it sounds like Jay is familiar, that you're familiar with some of that.

But certainly, you know, anything we can bring at all levels, including the local level, to help fund these projects, we want to try to do, again, you know, in a streamlined way.

MR. TAYLOR: Thank you, Commissioner.

My name is Gabriel Taylor. I'm a Senior Engineer with the Energy Efficiency Division here at the Energy Commission. And I just wanted to add that all of these questions will also go back to the record and our team will look at them and think about them and possibly respond to them in future settings.

So let's continue with the questions. We have a couple more here before our lunch break.

So the next one is from Attendee 61. Oh, go ahead.

VICE CHAIR MCDONALD: Gabriel, I'm sorry. I just, as I read the question, and again, we talked a little bit about taxes and tribes, but a model like that would be super beneficial to Chemehuevi, and I think other tribes, because we're a little bit different than most cities in that our tribal government pushes these projects on behalf and for our people. If we could find a way to provide finance to the government to do these residential projects and then we monitor track or audit something like that, I think that would be very beneficial to our tribal communities.

So that's my comment.

MR. TAYLOR: Thank you, Vice Chair.

The next question from Attendee 61. “For TECH, how do you ensure participating customers understand the potential impact to the electric bill?”

I think this is directed at Rory

MR. COX: Yeah, sorry. Took me a second to unmute.

So TECH is -- so it, really, it's really kind of a situational thing because in many cases the change will not affect the bill in any great way. And it really depends on the climate zone, but according to the study that E3 did, electrification, switching from natural gas to electricity, does not have a big increase in bills. And certainly in cases where a home already has air conditioning, it's not a big increase. So it is kind of a -- you know, we don't have any rules about what the contractors tell the customers. And to my knowledge, this has not been a problem yet. I think we've done something along the lines of 10,000 different installations at this point now, so it just has not been an issue thus far.

COMMISSIONER MCALLISTER: Hey, Rory, can you -- maybe you talked about this and I missed it, but could you talk about TECH's relative emphasis on low-income versus open market?

MR. COX: Sure. TECH to date has so far -- in terms of the incentives, the incentives are really not big enough to appeal to a low-income customer because it's just they're not -- they have not to date been high enough to do that.

What TECH -- so it's really been market rate, you know, early adopters. I mean, this is early days of heat pumps, So these are mostly people who own homes and are -- you know, probably have more disposable income because their cost is going to be -- they still have -- there's still a lot of skin in the game that a customer would need to date for the incentive program.

TECH on the low-income front has been more focused on pilots and Quick Start Grants that are sort of trying out ideas on, you know, on a small scale on different aspects of catering to a low-income clientele. And the SGIP Program will definitely have a low-income carveout when it goes online. And like I said before, that will, you know, pay for a good part of the water heater. And in those cases, if they're on the right rate, it should not have, again, you know, our research has shown that it should not have, as long as they're on, I think it's called, the E-ELEC rate, it should not have a big impact on rates.

MR. TAYLOR: Thank you very much, Rory.

Next question. Attendee 61 says.

“There are various programs for low-income customers that cover the entire cost to upgrade to heat pump technologies. How are” -- and I'm paraphrasing -- “how are the various programs coordinating with each other to ensure that low-income consumers are not paying for services they could receive for free through another program?”

MR. COX: Well, I'll take that one.

To the best of our ability, TECH is, again, trying to play that role. All the incentives that are out there should be captured on the switch is on website. So if somebody uses that website to put in their zip code and see what incentives are out there, they should see everything that's available.

MR. TAYLOR: Thank you. I would add, this is also the subject of the Energy Commission's Senate Bill 68 process. We had a workshop for this back in August and the Energy Commission aims to -- is required to prepare a website that will offer decarbonization resources for builders, property owners, and local governments that will help navigate all of the programs that are available.

Next question. Attendee 72 says,

“If awarded the grant for Public Code implementation for efficiency and resilience, will the funds be used to inform the 2025 Building Code or the 2028 Building Code?”

This is a question for CEC.

COMMISSIONER MCALLISTER: Could you repeat that question, Gabe? I'm sorry.

MR. TAYLOR: “If awarded the grant for Building Code implementation,” I believe that's the federal grant reference there --

COMMISSIONER MCALLISTER: Oh, right.

MR. TAYLOR: -- “for efficiency and resilience, will the funds be used for the current Building Code Title 24 cycle or the next one?”

COMMISSIONER MCALLISTER: Well, so I don't know if some of the team that's on that proposal development team is on a call but -- this Commissioner McAllister -- I could just say high level.

You know, the way we are contemplating it now, I understand that's a competitive opportunity or, you know, we have to apply for those funds and tell the Department of Energy what it is we intend to use them for. And I think there are a bunch of things, the long-term tools that will apply to any, any cycle. They don't have to be specific to a particular code update because they have to do with enabling and source the tools and local government resources and kind of developing digitization tools that will sort of streamline the permitting and the compliance process no matter sort of when that is, not specifically necessarily any one code update.

Now we are updating our Title 20 and 24 enforcement provisions. And so it's related but not to any particular code cycle, I would say.

But Daniel Wong is leading that and might be on the call. I think there's some -- let's see. And Christine Collopy is also --

MR. TAYLOR: Commissioner, this is Gabriel Taylor. Yeah, my understanding from the team is that it may be used. The application is not released yet, so we're --

COMMISSIONER MCALLISTER: Okay.

MR. TAYLOR: -- preparing an application now. Once it's released, we'll make that application. It is competitive. So if we do secure the funds, I believe that our team will apply them as expeditiously as possible.

COMMISSIONER MCALLISTER: And so I think, you know, California stands a really good chance. We have a very compelling narrative of why we would do a lot of good with those funds. And so I think DOE will look favorably on our application. We do have, you know, a fair amount of information about what it's going to look like, although as

Gabe said, it's not -- it hasn't been made public by DOE yet. So anyway, much more TBD on that front. But it will be a good resource to bring those state to help with code implementation and compliance.

MR. TAYLOR: Yes. And we'll also have a docket set up for that and we'll be seeking public comment and public involvement for that application.

Next question. Attendee 117 says,

"Is there a list of LIWP contractors that can be shared? Also, is there an SIR calculation template for the LIWP program that can be shared?

And that's from Ron Wexler from West Energy.

MR. BELK: Hi, this is Chuck at the CSD. And so we do have, on our website, we have the contractors that are serving both the LIWP Farmworker approach and also the LIWP Multifamily. I also identified those in the last slide. There's a website contact for them to reach out to them or to go to their websites and contact them directly.

So those are the two main subcontractors we have. One is La Cooperativa de Campesina. I mentioned that for the Farmworker Program. And the Association for Energy Affordability is the Multifamily Program at this point. So I would say reaching out to them, those are the two contractors that we work directly with. They then would employ any -- or I would say La Cooperativa would employ subcontractors below them to provide program services, whereas AEA works with property owners who then hire contractors at their site to install measures and to do the efficiency work.

And with respect to -- what is the second part of the question, was -- I think I missed that. The second part was -- anybody? Is it already gone from the list?

MR. TAYLOR: It's been filed. Sorry.

MR. BELK: Oh, yeah, the SIR calculation, the savings to invest.

MR. TAYLOR: Yes.

MR. COX: Okay. So we utilize, in the Farmworker Program, we utilize the Snugg Pro Energy Audit. That actually performs, as part of the energy modeling, it actually performs the SIR calculation for us. So there is not a template, but it's done through energy modeling.

And in the Multifamily Program, they use -- I think it's EnergyPro Light to do modeling on these very complex buildings that they're working on, for the most part, that they need to take into account a lot more specifications that are a little more advanced and technical than what you would get in a single-family home or a small multifamily.

MR. TAYLOR: Thank you.

Next question is from Alice Sung. And Alice, you have a lot of comments in here. I'm going to paraphrase it. Please feel free to raise your hand if you'd like to have your three minutes to expand on this.

But the question is:

"Are both the CEC and the CPUC considering the intent of the Federal Justice 40 Policy where a minimum of 40 percent of the benefits, not just dollars, go to disadvantaged communities, especially where monies relate to or are funded by federal programs?"

And further asks that we define the benefits.

Alice, I do believe that one of the purposes of this kickoff workshop and this process, this public process, is to publicly define, think about and define those benefits.

Would anybody else like to comment?

MS. NELSON: So I am translating --

MR. TAYLOR: Jen.

MS. NELSON: -- for Christine Collopy, who is the lead for the federal activities within the Efficiency Division. She said, "Yes. The CEC will adhere to the Department of Energy's Justice 40 Policy."

And as Gabe indicated, the the state programs already -- the Direct Install, as well as the Incentive Program already give allocations where those benefits go to low income and moderate income, with priorities for underserved and tribal communities for the Direct Install, as well as 50 percent of the funds for the Incentive Program must benefit disadvantaged communities. I don't know if Deana or if there's somebody -- Deana Carrillo, who is the Director of the Renewables Division wants to -- if she has any more to add to that comment for the federal?

MS. CARRILLO: Thanks Jen. This is Deana. Not at this time. You know, we're still waiting for information on the IRA to be coming out, as well, but yes, we will.

MS. NELSON: I feel like we need t-shirts, "Yes, we will." There we go.

MR. TAYLOR: Thank you both.

The next question from Attendee 94, "Is there available funding for roof repair and MSP upgrade to help homeowners have access to solar?"

MS. NELSON: I don't know if this question is looking specifically at existing programs or if they're discussing this as a possibility for the Direct Install. The Direct Install, the equipment possibilities and eligible uses of funds for either equipment or activities will be determined during the guideline process.

So if you have recommendations, Attendee 94, I don't know your name, so I apologize, please submit comments to the docket and that would help us.

MR. TAYLOR: The next question, Attendee 91 says, "Could panel speak more to the share of potential eligible homes that are not able to participate in programs due to health safety wiring or other structural issues? Has that data been aggregated or systematically tracked at all?"

MR. BELK: I'm not sure if the person is requesting information regarding the LIWP Program, but it seems like that might be logical because it did refer to that in the evaluation of our earlier iteration of the LIWP Single-Family Program.

I don't have actual data to provide to you. I know that we could probably go to go back to the regional administrators from that time and see if they have records relating to it. But what we heard pretty significantly is that the issues regarding electric panel upgrades and roof conditions really got in the way of a lot of the solar PV install that was going on at that time. And so that's one of the things we moved to moderate and to adjust as we went forward with the LIWP Farmworker Program moving forward. So we heard that we took, we took action to do so.

With respect to health and safety, most of the program operators at that time were able to leverage with other programs that actually did allow for some of the health and safety repairs to occur. These could have been ESA programs, also could have been the LIHEAP Program if they were an implementer that had access to LIHEAP contractors in their approach. So I don't have numbers on that for you, but I think that was, in general, how it was addressed at that time.

MR. TAYLOR: Thank you.

Next question from Leonel Campoy.

"As electrification progresses, will the electric utilities absorb the cost of upgrades to the distribution circuits and transformers or will the utilities bill these costs to consumers?"

COMMISSIONER MCALLISTER: So I think maybe Rory might want to comment on this.

But just the way rate making happens is that utility distribution system upgrades get built by the utilities and generally they get rate based as part of the utilities, just sort of the way that they do rate making every few years, so it becomes part of the rate base and then gets built into tariffs more generally. So that happens kind of on the national in distribution planning and construction.

One thing that is just worth note, and Rory, if you want to expand on this, the PUC just did sort of change that dynamic for gas distribution upgrades where gas system extensions to go to new developments are now no longer allowed to be rate based.

MR. COX: Yeah.

COMMISSIONER MCALLISTER: And so, anyway, we want to -- that's a really important decision that the PUC made recently.

MR. COX: That's absolutely right. That's tens of millions of dollars that were given to subsidize gas extension to the distribution grid.

We are -- I should say that we're looking at the electrical situation. And I'm a big fan of the study that NV5 put out a few months ago that describes the problem. And I'll just, you know, I'll just leave it at that, that we are -- that this is an issue that we're very interested in terms of who bears the cost of electrical upgrades.

COMMISSIONER MCALLISTER: Honestly, also, probably this is a bigger question or a bigger driver of this problem is probably electrification of the transportation sector. Buildings and transportation are the two big electrification -- or the two big sectors of our economy that are going to be electrified and drive these kinds of distribution and broader system investments. But electrification, the EV revolution, is sort of, you know, at hand now and is going to begin to drive demand increases, you know, load increases probably more quickly than building electrification. Although if we're successful here, maybe not; right.

So I think both are important, but transportation is also a large new load, so this is a broader question than just building electrification.

MR. COX: I have to say that we did recently change. Over the last few years, we've been increasingly changing the rules for EV owners in terms of what they pay for electrical upgrades. So that's already happened to where it's not as much of a burden if you're -- especially if your EV triggers an upgrade that needs to happen on the distribution side.

MR. TAYLOR: Next question from Helen Walter-Terrinoni.

"I've heard the hypothesis that once buildings are upgraded, that property owners may shift away from low - and medium-income tenants. Has the CEC or others collected data on this and do you have thoughts on ensuring the gain is maintained for low and medium income tenants?"

This may be -- so Helen, so this is preserving existing affordable housing. This is one of the top items in this, in equitable building decarbonization. This has been -- this was the focus, actually, at one of the tracts at ACEEE over the summer and there's been a lot of writing on this. So this is definitely a focus of Staff at this time.

Would anybody like to expand on that?

MS. NELSON: Yeah, I can just build upon what Gabe just indicated. This is one of the things.

AB 209 does authorize the CEC to consider tenant protections in participating rental properties. That is one of the areas that we are seeking input and feedback on, is what tenant protections could be put in place that would be applicable across all regions of the state? And then ultimately, also, who would be responsible for enforcing those agreements? Are we looking at it as a private matter that if the home owner violates the agreement then the tenant would just need to go to court and it would need to be a court matter, or is it something that stakeholders or the public are looking to local government or the state to enforce to some degree?

So at this point we're just, we're looking for feedback. It's a very important question for us to look at.

MR. TAYLOR: Yeah. And this is an issue that is well -- it goes well beyond California. This is something that we're seeing a lot of impacts in the Midwest and in just about every jurisdiction really that is engaged in improving the efficiency and decarbonizing existing building stock.

Next question from Tori J. And Tori, you asked two questions here, so I'm going to read them one at a time. First,

"Based on the Building Decarb Program implemented to date, is there a general rule of thumb for the percentage of eligible homes that choose to participate in the programs, an acceptance rate, basically?"

MS. NELSON: I don't know, Chuck, if you have a response to this based upon your experience with the LIWP programs, or if this has been tracked?

MR. BELK: Sorry, I was having trouble getting the unmute to happen.

So I don't have a percentage to offer with respect to eligible homes that to choose to participate in the programs or the acceptance rate. I'm, sorry, I don't have the ability to offer that.

I did want to speak, I think, to the second piece of the question, the second question which hasn't been covered, and I was going to maybe offer a comment here, is that permitting processes for overall program implementation can sometimes be a barrier with respect to getting, you know, the dollars expended. And I'm speaking mainly to some of the impacts that were felt during the

COVID pandemic shutdowns with some of our programs. But there are and still continue to be some backlog with respect to getting solar projects, in some cases, interconnected or receiving the permission to operate.

And so just want to note that that is and there continue to be some kind of things items that, that are bottlenecks. Hopefully, they will be continued to be worked through by the various companies, utilities, et cetera, that operate those, the interconnection pieces, that can actually help the program move forward in a more expeditious way.

But that's just -- I just wanted to note that on the second piece of the question.

MR. TAYLOR: Yeah. The second piece, the second part of the question is: "How impactful is the permitting process and the overall program implementation timeline?"

And I would add, thank you for those comments. And I would add that, again, the Senate bill 68 requirement that the Energy Commission prepare a decarbonization -- a website that helps homeowners, contractors, and local governments with decarbonization, one of our focus there will be with local governments providing guidance on how to best craft the permitting process and local ordinances so that it gets -- so it supports decarbonization. It doesn't prove that is not as much of an impediment in some of these projects.

MS.NELSON: And Tory, this is Jennifer Nelson again. I will follow up on that first question to see if we have any data or part of any pilot studies, any kind of results on that acceptance rate and then share that with you. If you share your information with me, I can reach out to you after the workshop.

MR. TAYLOR: Next question from Brad Simcox from Resource Innovations.

“Participation in energy programs can be time consuming, burdensome, and confusing for customers. Coordinating their participation in multiple programs as a service that an implementation contractor can provide but the requirements and timelines of these programs can be difficult to align, which still makes the customer's participation constant. Are you giving any thought to aligning the participation rules, processes, applications, et cetera, with any of the programs that you're hoping to be most closely coordinated, leveraged?”

MS. NELSON: This is Jennifer Nelson with the Energy Commission.

Yes, we're giving quite a bit of thought to how to align the participation rules, processes, applications, as well as identifying any barriers or hurdles to determine if there's any way that we can either remove or mitigate those. We want to make this program, especially the Direct Install Program, but also the Incentive Program, we want to make it as simple and as easy for people to utilize and be a participant in those programs.

MR. COX: Yeah, this is Rory. I just want to say that I, you know, second that. Anything we can do to streamline all the different programs for the customer is welcome as something that TECH has -- like I said, TECH has, you know, is doing what they can, but there's so Many -- it’s kind of the Wild West out there in terms of program implementers because there's, you know, our two agencies, there's utilities, and then there's the CCAs, the RENs the, the Air Quality Districts, you know, now the federal government.

So it's kind of like, we got a lot coming from all different directions and, you know, there's not -- there's no boss, you know, there's no boss in the room, you know, so we’re kind of -- you know, so everyone's trying to do what they can to sort of build, I think, trust amongst everybody. Certainly, that's what TECH has been doing. But there's just a lot of activity that has come from all different directions through different pieces of legislation and different decisions that are made by different entities, so that’s the world we live in right now.

MS. NELSON: And I encourage Brad, stakeholders, the public program implementers, if you have suggestions on how we can do this, please let us know.

MR. TAYLOR: And a good place -- I hope I'm not abusing my host privileges here -- but a good place to put that would be in the Senate Bill 68 docket.

MS. NELSON: I would also do a double plug to put it into the Equitable Building Decarbonization Program docket, too, so pick your choice, we will get the information. Thank you.

MR. TAYLOR: We are absolutely eager to hear from you and we are definitely thinking about this.

Next question from Greg Sutliff with Alcal Specialty Contracting.

"It seems the organizers that can stack rebates and incentives to maximize and compound the impact public monies can have in EJ and DAC communities. Oftentimes program design prevents these companies from subcontracting specific measure operations, product supply and install to smaller companies.

"Additionally, to piggyback on Jay Murdoch's comment above some of the requirements placed on small contractors without the in-house capabilities such as testing, compliance paperwork, et cetera, wind up excluding some of the contractor base that can actually service geographic regions that pose issues for program access.”

Greg, I'd like to point out that the Energy Commission and a number of state agencies have experienced distributing federal funds. And these state funds, now from the American Recovery and Reinvestment Act a decade ago, many of the programs we had included training for smaller contractors on how to fill out the paperwork, how to comply with federal or state requirements in these programs. So that is absolutely a component of many of these programs, is to ensure that small contractors are capable of accepting the funds within a reasonable workload.

Any other comments?

MS. NELSON: Yeah, this is Jennifer Nelson with the Energy Commission again. I'm just looking at the follow-up comment that Greg had posed, a couple, it looks like a minute later, indicating that the two issues --

“But those two issues slow down program streamlining, and it would help a lot to address them as these programs are being established.”

I just want to indicate, yes, we will be considering those issues as we establish the guidelines and then, as well, as we frame the solicitations that will be issued.

So once again, if you have any specific -- if you can provide comments with these concerns and with either specific solutions or recommendations that we can consider, that would be helpful for us.

MR. TAYLOR: Please do submit those comments in writing to the docket, Greg, so that Staff has a chance to respond to them and to think about them. Thank you.

One more question here. Again, if anyone would like to speak, it looks like we're running right on time here, so if anybody would like to speak, please raise your hand. But we'll also have an opportunity to speak later this afternoon. So we're going to go to lunch here in just a moment.

One more comment/question, and that says,

> "Does the CEC envision a meaningful role for community-based organizations implementing this program similar to the Community Energy Navigator roles in the San Joaquin Valley Affordable Energy Pilots administered by the California Public Utilities Commission?"

I can say without hesitation, absolutely. But engaging with CBOs is an absolute key, especially when you're talking about equity, but in any program where you're going into communities. Every community is different. Every building is different. Every consumer is different. And it is absolutely key to engage with CBOs in that area who understand that community.

MS. NELSON: And I want to follow on Gabe's comment there. Yes. Once again, I tend to go with a simple responses. Yes, we do envision a meaningful role for community-based organizations and are also directed by the legislation to give preference during the competitive solicitation process for applications or proposals that include a community-based organization.

MR. TAYLOR: One more comment. Emily Courtney says,

"Key to equitable building decarbonization is ensuring that the jobs created through these public investments are quality family sustaining careers, technically sophisticated but -- these jobs are hard work, technically sophisticated, and we need more folks, more folks working in this field to achieve our climate goals.

"Can you tell us more about the prevailing wage provision and thoughts on additional labor standards to enhance quality jobs, such as requirements to provide healthcare and plans to ensure consistency of Labor Standards across publicly-funded decarb programs in California?"

MS. NELSON: So this is Jennifer again.

On the prevailing wage provision, it does say where it's applicable that the program shall require prevailing wage for the program implementation.

Beyond that, on additional Labor Standards to enhance the job quality, that is something that we would take up and consider during the public process, this process here. So if you have specific recommendations for us to consider, I would recommend that you submit them to the docket.

MR. TAYLOR: And we have one more question after that. And while we welcome questions, we are at time for our lunch break. I'd like to give everyone an opportunity for an actual lunch break. So if you have further questions, please hold them for this afternoon, if you can.

The final question here is regarding benefits and environmental justice.

"What are our thoughts on capturing and tracking benefits? Reducing, for example, reducing extreme heat risks in vulnerable populations and reducing indoor asthma triggers are both benefits. This program sounds like a great opportunity to reduce these risks under current and future climates."

MS. NELSON: This is Jennifer with the Energy Commission again.

My thoughts on capturing and tracking those benefits; yes, we want to capture and track those benefits. The more data we can receive from these programs, the better. Especially as it helps us not only adjust the program as it's being implemented to, you know, whatever the current situation might be that is affecting the program, but also in terms of framing future programs and to realizing what those benefits are from electrification and from decarbonizing homes. Great idea.

MR. TAYLOR: Thank you, Jen.

One more comment. Attendee 134 says,

"Assuming a large influx of over-the-counter-style permits will need to be issued, in what way can local jurisdiction streamline the process or access statewide resources and support?"

And I take the opportunity to once again, plug it our SB 68 process. We are putting together a resource for local governments for exactly that purpose. There are also a number of local government organizations and regional area networks, for example, that are working to share lessons learned between local governments on permitting forms and processes.

Any other comments?

Hearing none, I'll turn it back over to Commissioner McAllister to turn it -- to close this out for lunch -- to the dais, I should say. Thank you.

COMMISSIONER MCALLISTER: Well, I have to ask. Thanks, Gabe, really. Thanks for moderating, Dorothy, and for all the back and forth. And really appreciate folks thoughtful comments. These are exactly the kind of issues we wanted folks to bring up.

You know, the, I guess I would just say, you know, absolutely, you know, to that last comment about tracking health impacts and other, you know, sort of corollary benefits, we absolutely want to find ways to do that. But we also want to do it in a way that doesn't slow down the projects or process or, you know, create new transaction costs.

You know, tracking tenant protections is another area where, you know, we know that's in the legislation and we know we need it needs to be taken seriously. But we're going to need partners to do that kind of thing. You know, every new requirement, every new tracking, every new kind of piece of data that you require from participants is potentially, you know, restricting participation in the program. It's tamping down participation and we want to keep our doors as wide open as possible and really focus on participation, getting it up; right?

So, you know, so how to balance those various factors is something we really need people to work with us on and really want to, you know, find partners that can help track and appreciate, you know, sort of partners in those sectors, like in the healthcare arena, to see how we can track health outcomes, for example, in specific areas where these programs are operating.

So there's some good work on all of these topics and we just want to integrate it and find the right partnerships. So folks' thoughts on that will be very much appreciated.

I want to just, again, thank Staff for the morning. We've got a big afternoon ahead of us with two more panels. This is a great foundation for that discussion.

I want to see if Vice Chair McDonald had any additional thoughts or comments before we close for lunch?

VICE CHAIR MCDONALD: Very educational. I appreciate all of you for putting us together. I especially appreciate, you know, the inclusion of our tribes, tribal leadership. I feel like I'm representing a bunch of them today, although I know that I can't actually do that with so many broad differences. But I think it's a, it's a start.

You know, I'm very glad the legislature was wise enough to call out the tribes in this. And so this is invigorating for me. I got myself in trouble in some previous conversations with some of the agencies saying I'd volunteer to help how I could and this is part of that and I'm here. Consider me a partner. And, you know, we'll work towards inclusion of other tribal leaders in the space as, you know, these processes go forward.

Again, I think it's important to understand that these, and again, I will say processes, the procedures, they're new to tribes, so it's a little bit different. I like this particularly because we are -- it seems more free to speak our minds, and so whereas, in some of the other procedures, we're not able to do that and we don't want to get anybody in trouble.

I'm available for questions from Staff, from Commission as needed.

And my only question is, do you guys -- am I booted for the day? You want me to stick around? That's the question; right? So --

COMMISSIONER MCALLISTER: You are more than welcome to be on the dais for the afternoon. I mean, I think, you know -- and in fact, I can totally appreciate this must be like drinking from a fire hose for you. You know, those of us who have had the fortune or misfortune of being embedded in these programs for decades kind of know some of the lingo and there's a certain best, you know, sort of standard practice that sort of infuses much of the energy efficiency work across the agency in different ways.

But I think creativity and getting out of our boxes and out of our silos is going to be just key to really making these programs work in the real world. And so I think your participation and ideas and fresh perspectives on this are going to be invaluable, and your colleagues and the tribes across the state. I really think that's why, you know, we want to involve you integrally in this and really do justice to the legislation, but also just find ways to solve these problems that have been longstanding across the state with tribes and other, you know, other kind of underinvested/under-resourced communities.

So, absolutely, you know, as long as you can tolerate staying on, we invite you to stay on.

VICE CHAIR MCDONALD: I'll be here. And it's not all foreign to me. I mean, I did spend the better part of the last decade working for the utility.

COMMISSIONER MCALLISTER: Right. Right.

VICE CHAIR MCDONALD: But this process is different. So --

COMMISSIONER MCALLISTER: Yeah.

VICE CHAIR MCDONALD: -- you know, we'll get used to it, we'll get acclimated, and I just appreciate the inclusion, so thank you all.

COMMISSIONER MCALLISTER: Absolutely. Well, we really appreciate your being here.

And with that, is there anything else, Jen, that we need to cover logistically for the afternoon, just maybe timing and when --

MS. NELSON: Yeah. I just --

COMMISSIONER MCALLISTER: -- we'll be back?

MS. NELSON: Yeah. We’ll be returning at 12:30 and then we'll be having two panels this afternoon.

COMMISSIONER MCALLISTER: Okay.

MS. NELSON: As the Commissioner indicated, one, the first one, will be on the Direct Install Program. There will be a 30-minute public online period after that panel. And then we'll be following that one up with the panel focused on the Incentive Program, following that once again with a 30-minute public comment period.

COMMISSIONER MCALLISTER: Great. And folks who are going to break for lunch, we're all going to break for lunch, but if folks who are still attendee number whatever, if you could log off and log back on with the new link, that would help us manage the participation and know your name and just be -- it would just be kind of a little more personal all around, so appreciate everyone doing that while they have a little break.

So thanks a lot. We'll see you here at 12:30.

Thanks everybody.

(Off the record at 11:40 a.m.)

(On the record at 12:31 p.m.)

MS. NELSON: Hi Commissioner. It looks like we have -- Vice Chair McDonald is also here with us.

So before we move over to the panel, I do want to do just a couple of quick reminders. Number one, the workshop is being recorded. Number two, all of today's presentations will be documented and available on the CEC's website. The transcript and recording will also be available. The transcript in about a month and the recording of this event in about a day or two.

Another disclaimer, the California Energy Commission is committed to hearing from all interested parties and encourages comments from the public and stakeholders. We encourage the submission of detailed comments to our docket through the links included in the notice for this workshop. And we are committed to giving consideration to all comments submitted orally, as well as in written form, as well as input provided by both panelists and non-panelists.

As indicated on the screen, if you were not here during the morning session, there are a couple of ways for you to provide comments today. You can, during presentations of the panels, you can utilize the Zoom Q&A

feature at the bottom and ask questions or put in chats during that time.

We also have 30 minutes designated after each of this afternoon's panels for public comment period. Please use the raise-hand feature if you do wish to speak.

One note, if you are in this workshop and your name is listed as attendee followed by a number, please edit to include your name so that way we can call on your name as opposed to the attendee number. This makes it a little bit more personal.

If you're attending this workshop via telephone, please press star nine to raise your hand, and then once called upon, star six to unmute yourself. When you do get comments, please say and spell your first and last name, state your affiliation and then make your comments.

We are also encouraging, want/need feedback after today's workshop, either in comments to any of the topics that are discussed today, as well as that are part of equitable building decarbonization or comments specifically addressing the questions that are posed in a request for information, which is on the webpage for this program. I will put that webpage in the chat to make it easier to access. You can also go ahead and Google or use your favorite search engine and just type in Equitable Building Decarbonization Program Energy Commission and it should pop up in the first four or five results, and then click and go.

If you have any questions, you can reach out to the -- there's information on the webpage where to reach out to. You're also welcome to reach out to me directly, Jennifer Nelson, jennifer.nelson@energy.ca.gov.

And with that, we can turn it over unless Commissioner or Vice Chair, if you want to make a couple comments, we can do that. If not, then we'll turn it over to Deana Carrillo to facilitate the next panel.

COMMISSIONER MCALLISTER: Just really briefly, I won't go into any depth here, but just wanted to thank everybody for being with us and sticking it out into the afternoon. And also, you know, in particular, these two -- this is our opportunity to begin to talk a little more turkey in terms of actual programs. And we'd love to hear about models.

You know, there are a number of existing programs out there at the Air Districts. You know, we heard some of them from the PUC, but they're at local governments, and some of the RENs and Councils of Government, the metropolitan planning organizations across the state. Like there are some interesting program models that may or may not be in the energy sector but that are program models that could potentially help us design these programs to have the most effective touches with actual, you know, residents and homeowners across the state.

So think creatively and bring us your ideas and sort of analogs and metaphors, or analogs and examples of actual projects out there. You know, all welcome. And, you know, again, we need to really think outside the box here to get these programs ramped up in the near term, and then really dialed in for a solid foundation for the longer term as we find ways to bring in private capital and really get the scale to get those goals of 6 million heat pumps and 7 million climate friendly, climate ready homes by 2035 and, you know, those are big numbers. So, you know, I just want everybody to think, give us their best thoughts.

And thanks again. Looking forward to these two panels on the Direct Install Program and the incentive program.

Vice Chair, did you have any comments? Thanks for joining us in the afternoon.

VICE CHAIR MCDONALD: No, I'm eager to learn, though, so I will jump in as I'm allowed. And, you know, I'm here and I appreciate the opportunity.

COMMISSIONER MCALLISTER: Thanks to all the panelists for both of these panels. And, you know, we have some very innovative strategic leadership thinking happening in the state, so thanks everyone for being with us.

And off to you, Deana.

MS. CARRILLO: Great. Thank you, Commissioner.

Hello everyone. My name is Deana Carrillo and I'm one of the Directors here at the Energy Commission, working to stand up several of our building decarbonization programs here. And it is my pleasure today to be the moderator of the next panel where we're going to work on facilitating a bit of a roundtable discussion, both with the dais and with those here online. And I will just kick it off.

Our first speaker today is Jamie Katz.

And Jamie, if you could introduce yourself? I want to make sure we're not having any technical issues.

MX. KATZ: Yeah. No, I'm right here, Deana. I'm going to go ahead and start sharing my screen if that's all right.

MS. CARRILLO: Perfect. Thanks, Jamie.

MX. KATZ: Great. Okay. Excellent. Thank you all so much. So hello. My name is Jamie Katz. I'm a Staff attorney with Leadership Counsel for Justice and Accountability. My pronouns are they/them. I'm based out of our Fresno office. And today I have the -- I'm looking forward to the opportunity to share with you some initial thoughts about ensuring that building decarbonization in this program is truly equitable.

So a little bit of background. Leadership Counsel for Justice and Accountability works alongside some of the most impacted communities in the San Joaquin and eastern Coachella Valleys on a variety of issue areas ranging from land use to drinking water, energy, housing, and a variety of others.

The three key points that I want to get across here today are, one, that equitable building decarbonization is a key priority for environmental justice communities in the state of California. We need to make sure that we follow through on the commitment made in last year's budget -- or this year's budget, I should say. Next, that co-creation needs to be a central organizing principle as this program is stood up and implemented. And finally, in fact, benefit and prioritize the communities laid out in this program.

So first, this is a priority for environmental justice communities. So, you know, we have -- you know, the colleagues and I who worked and advocated for this in the budget this year really wanted to ensure that there was as much funding as possible for the Direct Install Program. I'm very much looking forward to the incentive conversation later on this afternoon to learn more. But, you know, what we have seen is that the Direct Installation Program is really the most effective way to reach folks who do not have the upfront capital to make these upgrades to where they're living.

Next, you know, the residents that we work with, they want to be part of the energy transition. They just need a pathway that works for them to do so. And they also see that, really, the clear co-benefits, many of which have been discussed already today, but just to lay out, you know, improvements in indoor and outdoor air quality, improved habitability in their homes, and of course, with the appropriately paired policies, the potential to reduce significant energy burden that many residents that we work with face.

So I want to talk a little bit about co-creation, what it is and why it's so important.

So I think, first of all, I mean, I think today is a great first conversation, but I think it's important to -- for this process to include co-creation with residents, the folks for whom this program is intended to benefit, beginning today and moving throughout this process. So that means, again, not only in the process that the CEC is running but required in terms of by any program implementers later on in the process.

Some tangible things that this means, this means accessible materials. That not only means that they're available sufficiently ahead of time and in languages that residents can understand, but with an appropriate level of detail where you are neither required to have an advanced degree in order to understand them, but they also have enough specificity that the folks impacted by these policies can understand meaningfully what's going on.

Next, accessible and participatory meetings. This means meetings that are held at a time and a location where folks who don't get paid to do this kind of work full-time can participate. So that means it's inconvenient for maybe some of the folks here today, certainly I know it's convenient for me to have meetings that are held during business hours, but having meetings in evenings, on weekends are really important for residents to be able to participate.

Also looking at a format which values the expertise that everyone is bringing to these conversations where there's, you know, active dialogue throughout, where it's not, you know, folks with advanced degrees talking to people who have an expertise in, you know, the community where they come from and are bringing other expertise that aren't always valued in these spaces.

And I think the final thing I'll say on co-creation is that, you know, Leadership Council, we've seen a lot of really encouraging steps in the 2022 IPER Update in terms of the best practices for community engagement. We've provided some additional comments to sort of flesh that out. But we would encourage, as this program is being stood up, to sort of look to that for some best practices.

I think the last main point that I want to raise are just some high-level priorities for how to ensure the benefits are going to get to the folks this program is intended to benefit. I, of course, can't touch on everything. You know, I know another presenter is going to be talking about tenant protections. That's, of course, incredibly important to many of the residents that we work with. I'm going to be talking though about holistic home upgrades. So this is extremely important to ensure that residents are able to access, you know, to participate in this transition.

I think in particular what we've seen is through -- the San Joaquin Valley pilots have really, you know, as the CPUC has mentioned earlier, really has elevated the need for policy that specifically considers residents of older mobile homes. And so what we've seen in the San Joaquin Valley pilots, which had, in general, a $5,000 cost cap per home, that worked really well for certain kinds of housing stock but did not work in general for particularly older mobile homes, so that cost could be four, sometimes six times that amount. And so needing to look at creative ways to address that cost cap issue.

Also issues around residents who do not have an up-to-date certificate of title and that the pilot identified a sort of expedited process with HCD to get residents access to that.

And finally, that many of these older mobile homes are not up to code either because of, you know, degradation over time or unpermitted additions to their mobile homes and trying to find ways to give residents not only the funding, but enough lead time to make those adjustments so that they can participate fully in these programs.

I think the final point that I really want to make here is that the reason that, you know, there's many older homes, older mobile homes, places where lower-income folks live are not able to accommodate these technologies are because of historical and present day patterns of disinvestment, and that what we need to look at is ways of pairing this program with efforts for investments in more affordable housing, not only because it's the right thing to do but because we, as California, are not going to meet our climate goals or our decarbonization goals if low-income Californians are not able to live -- to participate in building decarbonization policy. And I understand that this program is, again, just a down payment on what we need to do and is not intended to build new affordable housing.

But what I would love to see is that one of the outcomes of this program is that we identify key opportunities for stakeholders in building decarbonization to be allies and advocates for additional funding for affordable housing. Because the fact is, again, we are not going to reach our decarbonization targets if we're not ensuring that every Californian has the opportunity to participate.

And I think with that, here are a couple of resources that I would encourage folks to check out. And thank you so much.

MS. CARRILLO: Thanks so much, Jamie. Appreciate your thoughts on you being here today.

Next we have Ericka Flores with NRDC. Ericka, could you go ahead and introduce yourself?

MS. FLORES: Of course. I think before I get started, Gabriel has my -- there we go. Thank you so much.

Thank you for having me today. My name is Ericka Flores. My pronouns are she/her/ella. I am a clean energy and equity advocate with NRDC. And I just want to thank the CEC for having me here today to talk a little bit more about the Direct Install Program and how we would like to see this being implemented.

Next slide.

So the first thing is cost caps. Now we believe that the Direct Install Program should be more generous rather than restricted with the money invested to fully electrify homes. Now we're not necessarily asking for cost caps. We know that we should be very careful because cost caps are tricky. And we know that in order to fully electrify a home, including electrical and building modifications necessary for the electrification of that home or apartment, in addition to other important complementary energy efficiency measures, the cost could range anywhere from $10,000 to $30,000 per home or apartment. And that's with consideration of outliers on either side.

So if the goal is to have a lot of breadth but we can accept limited debt per project, then a cost cap could be necessary in order to help guide that framework. However, if the goal is to upgrade a home comprehensively and then market has complete, then the higher cap and more flexibility will most likely be needed.

Also, and I'll be talking a little bit more about that in a different slide, we have to consider the ability to leverage other programs. And this is also going to come into effect because sometimes those are easy options to integrate and sometimes they're not.

So, you know, also, in order to not be overly rigid, as some homes and or apartments will be more expensive than others, as I mentioned, arriving at a total budget and household goal based on a simpler average per home will also allow the implementer to balance out higher costs and lower projects.

Now ultimately, we believe that the budget will have to be very substantial and we know that. And again, as I mentioned, that will help facilitate giving local implementers more flexibility to distribute funds, so no cost caps per home.

Next slide.

The next thing is tenant protections. So the statute actually mentions tenant protections. But one recommendation that we have is that the statute says that the DI program, the Direct Install Program, may include tenant protections for participating rental properties. But the issue with that is that we believe that that word "may" should be a must and that we must ensure that renters who engage in this program are fully protected at all times. Because in order to have a fully successful implementation program, we have to ensure that the tenants who engage in the Direct Install Program, the DI program, are reassured that they will not be misplaced on house and that there will not be any increase in rents after the DI program is complete.

Another very important piece of this is that the information that these protections, how they're laid out, should be guided by trusted community-based organizations, should be guided by tenant rights organizations who are the experts, and ideally, one that community has entrusted already.

Now because the Direct Install Program is aimed to engage with low-income communities, we know that we want this to be inclusive, we want this to be diverse, undoubtedly, we have to know and assume that many of these individuals, many of these residents will be working class and likely a large percentage of BIPOC residents, Black, Indigenous, people of color. And historically, communities of color have been displaced, removed, and been unjustly evicted.

And so these facts help create a distrust with state-funded programs such as this one that may require tenants to be apprehensive to engage and also apprehensive to leave their home for a short or long period of time while building modifications are complete.

So one thing that we believe is going to help close that gap is, as I mentioned at the beginning of this slide, is to reassure tenants that the housing protections will be available to provide safe, clean, and local nearby to where they live housing if and when they are needed, and that they -- and that we select and work closely with tenant rights organizations because they are the true experts. We want this to be fundamentally reassuring that we are helping and not causing additional harms.

And so community-led grassroots organizations are the ones who are the experts. We should lean on their expertise to help guide the Tenant Protections Program and how this should look like as the Direct Install Program is actually being developed.

Next slide, please.

The other thing is labor standards. So NRDC supports giving preference to skilled and trained workers, and also apprenticeship programs, wherever and whenever available. The hiring of local workers really, really, really matters, and as well as the hiring of people of color, local workers, and groups of people who have traditionally been left out of the workforce. This will be imperative for this program in ensuring that it's successful as well, that it's inclusive and diverse, and as Jamie mentioned, that it's equitable.

And so one other thing that I want to mention here is that when we pay these workers, our workers, we want to make sure that they're being paid livable and dignified wages to ensure that they're being able to survive off those wages as well. So that's very important, that piece.

Next slide.

Another thing is leveraging the money. So when it comes to this program, we want to make sure that we're not starting a new program in places where they already exist. So we believe that if there's a program already, for example, there might be existing programs in regions such as Los Angeles and Sacramento, where we may want to do regional things that can work in conjunction with the existing programs there, then we should focus on that rather than starting programs in other places that may not have funds to leverage to ensure everyone gets a chance.

And the reason why this is important is because we don't want these places to end up competing against each other, because then the places with the resources will then get all the resources. And that is a problem, and it is not going to be equitable. So we want to ensure that we're preventing that, they're not competing against each other.

Let's see. Okay, next slide, please.

And the very last thing is we want to allow time to set up this program. The Direct Install Program is new. It's going to take time to get set up, and that's a good thing. We don't want to rush this process. So in the meantime, we should take advantage of the time while the program is being set up and being shaped to get feedback from community-based organizations, community-led, community-centric organizations to continue to help shape and give feedback to the program and really listen to what they have to say.

And in the meantime that this is happening, other incredible programs can benefit from the 2022 Fiscal Year Fund, such as the Low-Income Weatherization Program, Multifamily Program, and TECH. So if we have some money already, we should put that into those existing programs so that they can benefit as well.

So ultimately, the takeaway from this slide is let's not rush the process. Let's ensure that we have a really good implemented program that's equitable, inclusive, and diverse, and that is not missing anything that we want to see and that communities want to see within this program.

And next slide.

And that's it. If you have any questions, I'll be happy to answer them. You can always feel free to reach out to me. My email is there on the slide. And once again, thank you for the time allowed to be able to share some of these ideas and points.

MS. CARRILLO: Great. Thank you so much, Ericka. I do have one quick follow-up question for you just for clarification for both myself and perhaps the other attendees.

In your slides, you recommended -- I believe what the recommendation was that the funding go to areas where existing programs aren't currently active. Was that the correct takeaway?

MS. FLORES: No. The funding go into programs where they're already active. They are active.

MS. CARRILLO: Gotcha. Thanks for that clarification.

Alright, with that, I'm going to pass it off to Mudit.

Mudit, could you go ahead and introduce yourself?

MR. SAXENA: Yeah. You got it. Can you hear me?

MS. CARRILLO: Yeah, we can. And you should be able to share your slides.

MR. SAXENA: I'll do it right now. Okay. Thank you.

Hi. My name is Mudit Saxena. I am the CEO and founder of XeroHome. Are you able to see my screen? And is that the right screen?

MS. CARRILLO: Yes.

MR. SAXENA: Alright.

MS. CARRILLO: Heat pump retrofits?

MR. SAXENA: Yeah, you got it. All right. Great. Thank you.

MS. CARRILLO: Yeah.

MR. SAXENA: Let me see. One more second here. Let me situate myself. Alright. Great. Yeah.

My name is Mudit Saxena. I'm the CEO and founder of XeroHome. My expertise is in building energy modeling and large-scale energy analytics. I have about two decades of experience working in this field, and I just wanted to bring the perspective of data and analysis to our discussion today.

So before I begin, a quick acknowledgement that some of the work I'm presenting here was funded by Southern California Edison and Pacific Gas and Electric under the Codes and Standards and Cross-Cutting Program (phonetic). So we have 14 million homes in California, about 9 million of those are single-family, and each one of these homes is unique. They are in a different location, they pay different utility rates, they're in different climates, and they're built and used differently. So we can't quite think of all homes in sort of one broad stroke. They are very, very different. And very importantly, this utility rate piece is quite important.

So when the question comes up, which is, will heat pump upgrades result in utility bill savings? Well, the answer, as we found, depends on several factors, and we've been working on this for a few months now. And these are the five factors that, in my opinion, are the ones that really impact whether you're going to see your utility bills go down or not. And those factors are utility rates.

You are definitely, in an electrification upgrade, you're switching from one fuel in favor of another fuel, in this case, natural gas, to electricity, and electricity is more expensive as a fuel. But heat pumps can be 300 percent to 400 percent efficient, which makes it possible for you to cover that cost increment. But across the state, there's such a diversity in utility rates, that we don't find this to be true everywhere. You may or may not come out on top.

There was a question in the earlier session which Rory Cox answered about how does a TECH Program take care of the utility bill savings that are positive or not? And I wanted to counter Rory's response to that inquiry, going from the TECH experience has talked about how they don't really see that. Well, a lot of the work we've done really shows us that it's really a mixed bag. You are not guaranteed that your utility bills will go down.

I'm sort of thinking out loud, perhaps, Rory's experience and the TECH, TECH perhaps self-selected for regions that were favorable, their utility rates have been favorable for electrification. But if you look across the state, that may not be the case. The other four aspects that really impact cost effectiveness, or whether you'll see utility bills go down, are your existing equipment that sets your baseline, that's what you're comparing against, of course, the envelope of your building, the usage pattern, and of course, the climate.

And to kind of make the point, I looked at -- I took the utility regions, this is the utility territory maps, or electric and gas rates, and I colored them by whether it's high versus low, so there's a gradient here. And you can see that the state is pretty large and diverse, and we've got quite a lot of diversity in terms of having high to low utility rates, both for electric and gas.

And what really is interesting is when you put these two maps together and sort of superimpose them and you start to see sort of a pattern emerge, which is really great to see because you can then start to identify places where electric rates are low compared to natural gas, and those regions become sort of inherently favorable for electrification. So by looking at a sort of regional scale analysis like that, you could start to identify and you can start to see some of those areas emerge as I overlap these two images.

But why stop there? Let's kind of take another step here and look at climate. Here is the solar radiation across the state. And we've got a state that's very diverse in this region, in this manner as well. You've got really extreme climates in the desert region in the south. You've got mild climate on the coast.

And if you're going to put that on top of this, as well, you can start to now look at this and say, okay, where are my heat pumps going to be more effective as, you know, if you're in a place where you are needing a lot more heating and cooling, it's a more extreme climate, your heat pump is going to be used a lot more, which helps in its cost-effectiveness, whereas in coastal and milder climates, it's harder to justify replacing the heat pump, especially when there are homes that don't have cooling in a lot of places.

So as you superimpose more sort of layers on this, you can start to see exactly where our sort of areas might be. And then the last piece I wanted to bring was the equity lens. And I'm just grabbing a screenshot here from CalEnviroScreen looking at the population characteristics, and one could think, sort of taking that and also superimposing that on top of this, and now the map is completely unreadable, but my point is that you can kind of see how layering such information can really give the California Energy Commission the, you know, needed data to prioritize where a Direct Install Program might not just be profitable and, you know, decrease the utility bills for the customer, but also is going to face where it is needed most and is going to save the most carbon because it's going to be used the most.

So all these things can be brought in from sort of a macro-level perspective as you look at data with this sort of macro-level analysis, but we don't have to do it at that level. What's great is that, you know, although buildings are complex. You know, homes are fairly complex when you think about how they heat and cool themselves and how water is heated, et cetera. There are advanced calculation tools that we have available now that can be used to predict savings and to prioritize upgrades.

So all of those pieces of information as layering those on a macro-level, you could think of those as inputs into a calculation program, like an energy modeling tool, and processing that at scale we can start to prioritize and create these heat maps for regions where heat pumps should be installed first or where they should be prioritized.

One such example of a large-scale analysis we just recently completed was for the City of Petaluma. This is a large-scale energy modeling analysis we did. There's 14,000 homes in Petaluma, and we modeled each and every one of those, so every dot on the map represents an energy model of a home, and so there's 1,400 dots on the map. And you can start to create these sort of heat maps because the energy modeling takes into account the TOU rates, the carbon intensity, the utility bill impacts. In fact, we can even feed in prior energy usage data to calibrate these models at scale. So this kind of analysis capability allows us to really start to think of using data as a way to guide our Direct Install Programs.

One of the questions or key insights that came out of that Petaluma program or analysis was the city asked us, you know, our -- will electrification increase or decrease utility bills for our homes? And the answer, I can have you concentrate on the green graphic here, which is full electrification, heat pump, HVAC, and heat pump water heater, the answer that came out is that, well, it's about 80 percent homes that will see positive savings or decrease in their utility bills, and about 20 percent homes that will see an increase in utility bills. And that's given the utility rates, it’s a little more clean power, and PG&E gas rates, and the climate of the region, and the homes that we were able to model there.

So each of these dots, again, on the chart here is homes, there’s 1,400 homes here, and we -- oh, sorry, 14,000 homes, and these homes are on this axis showing you whether you have positive or negative savings. So anything above zero, you're seeing positive savings.

So this is both good news and bad news; right?

So the city was like, okay, that's great, 80 percent of our homes are going to have their bills go down, but then also that means 20 percent of homes will have their bills go up.

And so what we were able to do is sort of open this up even a little bit further, which is what analysis and analysis tools like these allow you to do, is for these 20 percent homes, this is where we can really use energy efficiency and renewables, and then combine with electrification and create sort of a positive savings package.

And what really came out of this analysis was that, you know, adding these energy efficiency measures along with electrification is really the right approach that we need to have to ensure that the savings are there, ensure that the utility bills are going down, and you end up with a much more comfortable, livable, better, you know, healthy environment for the occupant. So it's all in all a win-win.

So to kind of bottle it down, you know, we were able to see that there's a mixed bag here when it comes to using utility bills. And we've done this analysis across multiple cities in the state now and I can tell you that it's always a mixed bag. There's very few cities where you have always positive savings. It's going to be some negative and some positive. And this is where efficiency and renewables can really play a big role.

So I'll end with this slide, which is my kind of two points that I wanted to leave everybody with, which is the Direct Install Program for heat pumps for this. You know, we can identify locations or home characteristics, usage patterns, where heat pumps replacement will result in utility bill savings, and then prioritize low- and middle-income regions with a high equity need for those replacements.

And then where utility savings are harder, identify efficiency and renewables when packaged with heat pumps can guarantee utility bill savings and then prioritize the low-income and middle-income homes again, which are great candidates, usually, because they are typically not been upgraded for a very long time, so they make themselves very good candidates for energy efficiency. There's a lot of savings. There's a lot of low-hanging fruit to be had here. And, you know, combining that with electrification really, really brings the whole package together.

So I'll stop here and send it back to you for questions, Deana.

MS. CARRILLO: Thanks, Mudit. I do have several questions. But I also want to open it up to others and for a conversation amongst the panelists, so I'm going to hold off because I don't want to monopolize the time.

COMMISSIONER MCALLISTER: So, Deana, this is Commissioner McAllister. I just wanted to say, just thank the panelists. I've been having to fight a few fires here, so I've been in and out, so I'll save my questions for the end of the panel.

MS. CARRILLO: Great. Thank you, Commissioner.

Vice Chair, did you have a follow-up question now?

VICE CHAIR MCDONALD: I don't have a question. I would say I appreciate all of these panelists and what they brought to the table today.

The Leadership Counsel for Justice and Accountability -- I'm just looking at my notes real quick -- Jamie articulated a lot of thoughts that I think resonate with all of my low-income tribal members out here. So I think there are some things that transfer across, and I appreciate that articulation.

Ericka, I'm absorbing some of the comments. I think I agreed with all of them, but your approach was a little bit more process-oriented, right, as far as the different programs and how to break them down. I think it was tremendous the way that both of those panelists do it.

And I'm still absorbing the final panelist -- is it, I'm sorry, Mudit? -- the last. So I got really intrigued with the maps. I think that type of use of data is going to be tremendously valuable across all sorts of programs and processes. I certainly identified with the need for, you know, or how much impact heat pumps could make in desert climates and how they, you know, could effectively lower bills and improve carbon emissions in my community.

So I appreciated all of the panelists. I don't have any questions for them, but I, you know, I hope everything they brought to the table is taken seriously. That's all I can really say.

MS. CARRILLO: Great. Thank you, Vice Chair. We do have one other panelist.

Commissioner McAllister, did you have a follow-up before our last panelist? Oh, you're muted, sir.

COMMISSIONER MCALLISTER: Sorry. So how do we reorganize? Sorry, I had to get off for a little while, so I didn't --

MS. CARRILLO: Yeah, we've got one more.

COMMISSIONER MCALLISTER: -- I didn’t follow exactly what’s up.

MS. CARRILLO: Yeah, we've got one more panelist to give a short brief presentation, and then we can open it up for a roundtable discussion and questions.

COMMISSIONER MCALLISTER: Okay. Great.

MS. CARRILLO: And then back to the dais.

COMMISSIONER MCALLISTER: Who's the final panelist?

MS. CARRILLO: Mr. Nick Dirr.

COMMISSIONER MCALLISTER: Oh, Nick. Okay. Great.

MS. CARRILLO: Could you go ahead and introduce yourself?

COMMISSIONER MCALLISTER: Yeah. Great. So I'll wait until after Nick goes and then ask my questions.

MS. CARRILLO: Sounds good.

MR. DIRR: Sure.

COMMISSIONER MCALLISTER: Great. Thank you.

MR. DIRR: Hi, everyone. Nick Dirr, Senior Director of Programs at AEA, the Association for Energy Affordability.

Let me pull up my PowerPoint. Let's see here.

MS. CARRILLO: Nick, we could also run it here if it's easier.

MR. DIRR: Okay, now I got it. Are you able to see the screen just fine?

MS. CARRILLO: Yeah, we're good. Thanks.

MR. DIRR: Great. So I work with AEA. We're a technical nonprofit with a focus on affordable multifamily buildings, so that's going to be the main perspective I'm bringing in today's panel. We're involved in program design and implementation, technical assistance, training and research, and have been involved in a number of deep energy electrification projects, again, associated with the multifamily building stock.

So just to kind of set the stage, you know, multifamily is a fairly unique type of building. You know, from an electrification perspective, it can be pretty diverse. So, you know, for HVAC electrification opportunities in a multifamily building, it really depends on what the existing HVAC system is, you know, so there's a lot more diversity in regards to HVAC system types than one might see in a single-family residential building, so something that's going to have to be considered in a future Direct Install Program.

So if a building already had existing air conditioning, then, you know, traditionally converting that existing air conditioner to a new heat pump is pretty much the path of least resistance in regards to electrifying HVAC. If the building did not have existing air conditioning or it had a really old type of heating system, you know, some of these older multifamily buildings have like a central steam heating system, then they really need to rethink what type of HVAC system would be the best for that project.

So usually that's not necessarily going to be a like-for-like type replacement. That's going to be a brand new HVAC system that, you know, may be rather involved from a retrofit perspective, you know? And that could include mini split heat pumps or through-the-wall package terminal heat pumps.

From the water heating side, around 40 percent of multifamily buildings have water heaters in the apartment. So for those situations, just a traditional, you know, residential heat pump water heater would be the retrofit consideration there. However, about 60 percent of multifamily buildings have a central water heating system. So the electrification opportunities associated with that are going to be more of a commercial, higher complexity-type retrofit, where it's replacing an old gas boiler with a new commercial size heat pump water heater that serves the whole building.

Also in multifamily properties, they often have dedicated laundry rooms, some of which have their own water heater. And then some of these multifamily buildings, including affordable multifamily, also have pools and spas, so that's also an opportunity to install a heat pump pool heater in those applications.

Then, obviously, other electrification opportunities in these properties would be, you know, induction cooking, laundry drying, and then, obviously, electrical capacity upgrades that are going to be needed to accommodate all these retrofits.

So, you know, when, you know, the CEC is looking at decarbonization, you know, it's not just about electrification. And Mudit really, you know, hit the nail on the head on that too, it's electrification, it's energy efficiency. It's also a lot of other opportunities around health and safety and just improving the livability of the homes.

But pairing electrification with energy efficiency is really going to be critical for this comprehensive decarbonization approach. You know, number one, if the envelope is made more efficient and there's any way to reduce the heating, cooling or hot water loads for the building, that means that newly electrified equipment is going to need to run less. So there's going to be a positive utility bill benefit on that. Also the electric grid impacts will hopefully be minimized when electrification is paired with energy efficiency retrofits.

And then sometimes this means that you can actually use lower capacity heat pump equipment for either HVAC or water heating. So there's cost implications and electricity demand implications as well. So, you know, that’s -- we're talking about improving the envelope of the building, the ventilation systems of the building, the end use fixtures, so plumbing fixtures, and then distribution systems is really important, both for HVAC but also and especially for central water heating applications. It's not necessarily just replacing the old gas boiler with the heat pump water heater. It's also looking at the distribution of the hot water that goes to the building and making improvements there. And that all needs to be tied hand in hand with the electrification retrofit.

Then, obviously, incorporating efficient lighting and appliances. While it doesn't directly impact the loads associated with that newly electrified equipment, it's an opportunity to reduce overall electricity consumption, which will have both mutable benefits but also positive grid benefits.

So what we've seen for some of the key program features for electrification and decarbonization programs, it really mirrors some of the key program features that we've seen in energy efficiency programs. So I know, you know, comments have been made throughout to make sure that the programs are as streamlined and simple as possible so that it's easy for participants to understand, participating contractors to understand, all of us on these calls today to understand. So there's a balance between making sure a program is streamlined and simple, but also making sure it's flexible and adaptable. And those are sometimes competing tensions that, you know, as a state and as the Energy Commission sort of develops these guidelines, that it need to be a balancing point between, again, that streamlined simplicity, but also making sure that things are flexible and adaptable.

Having a knowledgeable resource that, you know, participants, contractors, communities can engage with around opportunities is really critical, so I would highly recommend the Energy Commission consider that.

And then a lot of times projects are going to need a lot of project management support, customer support, technical assistance. So working with really strong partners in these programs will be important to help some of these more complex projects move forward.

You know, rebate structure best practices, you know, this applies both to an incentive program, but also to a Direct Install Program. Typically, you know, the retrofits done in the apartment unit are going to be higher cost sort of per apartment basis than the central retrofits typically would be. And again, that's because, you know, even with economies of scale, each retrofit within a unit, you know, has its own unique challenges. So typically, you know, those are higher costs, so the incentives or the subsidies are going to be higher for the in-unit retrofits.

Sometimes it's a challenge to balance the sort of greenhouse gas or energy benefits certain retrofits provide relative just to the cost of the retrofit. So like a really good example is, you know, kind of what Mudit was explaining before, converting from, you know, a gas heating system with a really inefficient air conditioning system, converting that to a heat pump in a very hot or cold climate would result in a lot of greenhouse gas savings.

Same thing with water heating upgrades, whereas retrofits say in a more mild climate, or retrofits incorporating electric cooking, you know, those tend to be relatively expensive. But like the relative greenhouse gas savings on those may be lower, but the subsidy still needs to be sufficient to enable that work to go forward. So sometimes there's a potential decoupling of the GHG or energy savings benefit of retrofit relative to the cost or subsidy needed to make that retrofit happen.

And then obviously for affordable multifamily, especially for properties that don't have access to a lot of reserves, incentives are really critical to make this go forward. You know, Chuck from CSD mentioned this earlier but, you know, it's really important that programs can come together, either as a singular program or as programs learning multiple resources to, you know, sometimes cover 50, 60, 80 percent of the cost of the project to enable this to go forward.

There's just not enough access to reserves for a lot of affordable multifamily to make this project happen and go forward, especially since these retrofits tend to be pretty expensive. I think, you know, Ericka shared the average cost that they've seen, and that pretty much aligns with what we've seen too, is that for these comprehensive retrofits, it could be anywhere from $10,000 to $30,000 per household.

So just, you know, considerations around electrification projects. I think most folks are probably familiar with this, but definitely electrical upgrades and building modifications are also needed, in addition to actually retrofitting the equipment. I mentioned the upfront cost for doing these retrofits can be rather high, you know, somewhere between $10,000 and $30,000 per apartment or per household.

A lot of education is still needed for, you know, communities, tenants, consumers, and contractors, and it's still a rather complex project for some of these. For example, like a large central system is going to need some engineering, design, and sizing support.

And then just the range of options. So I think a lot of these retrofits are replicable and repeatable, and we should definitely lean in on that and emphasize that where possible. But a lot of these retrofits and all these projects are rather complex. And so we're going to have to figure out as a state, you know, how do we help serve those properties? You know, is there a direct install approach that can help some of these more complicated or nuanced projects, or are they best served under an alternative structure?

So generally what we've been seeing from the multifamily side of things is that there is a lot of demand. So multifamily property owners are interested in electrification. I think historically there is a little bit of tepidness, but I think now things are changing. I think a lot of it is, you know, a lot of the regulations that are coming down the pike from the Air Resources Board around, you know, the future availability of purchasing new gas equipment, you know, people understanding that subsidies are available right now, and it's important, people wanting to get ahead of this transition, we're seeing a lot of interest across the board.

But at the end of the day, they need cost and subsidy support. So we've seen that in programs like LIHEAP and TECH, where there's a substantial waitlist of projects that want to participate and there just isn't enough funding yet in those programs. So I think everything that's coming down the pike from the CEC and from the federal government is really going to help unlock a lot of this potential that's out there in the multifamily industry.

But, again, these projects have needed a lot of support to kind of move forward in addition to incentives. And I really do think the direct install approach can work really well for a lot of these repeatable and semi-standardized measures that could occur across a lot of properties. And then how to tackle the more complex projects will have to be something that we figure out as a state.

And ultimately, again, I think the balance between breadth and depth is something that's going to be really important to figure out with this Direct Install Program. You know, is the state interested in, you know, doing very comprehensive retrofits on singular homes and buildings and then considering them pretty much complete for the next decade or two? But that's going to mean, you know, a lot of cost per home and overall limited number of households that are able to participate. Or do we want to tackle as many households as possible? But that may mean more limited intervention across the board just because of the relative complexity and cost for a lot of these projects.

And with that, I'll stop.

MS. CARRILLO: Thanks so much, Nick.

I really appreciate this panel. You all brought up some very key issues that we'll be grappling with as the program is designed.

I have a few questions for just the conversation. So I encourage all the panelists to turn on their screens so we can have a bit of a roundtable discussion.

But before I launch into my questions, just wanted to see if there are any questions from the dais.

Commissioner McAllister, have you had anything that you wanted to pose or follow up on?

COMMISSIONER MCALLISTER: You know, I do.

I really appreciate that key point that you just made, Nick, about sort of the tradeoff between, you know, highly detailed, deep retrofits on a smaller number of homes and kind of the ability to reach more broadly and, you know, spread these resources that are -- you know, it's a large pot but it's limited in terms of its overall impact relative to the size of our state.

I guess I'm wanting -- and I didn't hear everyone's presentations fully, so I just apologize in advance if I'm asking a question that's already kind of been answered. But for that reason, the fact that we've got limited, you know, important resources but limited in terms of where the footprint is going to be ultimately across the state with these particular resources, what's your sort of feeling about what these programs look like at the community level? What's your experience and sort of what would you recommend us to do? Should we be sort of, you know, using resources like what Mudit had talked about, which I'm super excited about, those kind of, you know, analytical tools that can help us target and optimize?

I think that -- in fact, I'll just say, I fully intend to have the Energy Commission put those basic baseline foundational resources to use from the get-go to both conceive and target these programs, and then also as tools to accomplish Streamline EM&V. And so I want to just set out that expectation to everyone that we are going to make that happen and we want, you know, everybody to tell us how we best do that.

But, you know, we've worked hard at the Energy Commission to become the state's clearinghouse for that kind of detailed granular consumption data. And we're in a position now to have an ecosystem of contractors around the Commission that can operate under permanent NDAs and sort of cut through a lot of the administrative bureaucracy that has impeded that kind of access to data in the past. So, obviously, very much taking care of that data in terms of PII and all of those very important, you know, cybersecurity, all of that, but kind of become the go-to resource for that kind of data to really enable the marketplace to use it for strategic purposes in a way that really hasn't been very possible in the past. I think TECH is, you know, blazing some trail here and we're happy to, you know, excited about working with that program and others.

Anyway, all this is to ask, you know, okay, we have this ability to target individual homes in a low-income community, should we target just the best homes that get us these outcomes that we're looking for programmatically so the programs look great and, you know, do everything? Or should we -- or really is it better to focus more broadly on each community and get deeper penetration there, you know, with all the diversity that we're going to find there?

MR. SAXENA: Yeah. Hi, Commissioner McAllister. I'm Mudit Saxena here. Yeah, thank you for the comment.

I just want to say, data is the water or the fertilizer for all of this stuff to grow.

COMMISSIONER MCALLISTER: I think of it as the red blood cells, actually.

MR. SAXENA: Exactly. It carries the oxygen. Exactly. So it is. It's so crucial that data is free and is made available for analysis, especially large-scale. Now that we have tools that can do this, having access to that data is critical, and it's going to be wonderful what we can do with it with the access that we will have.

So having said that, to your question about communities and sort of what the Commission needs to do, here's my two cents on it and the experience that we've had running some of the large-scale analysis and the XeroHome. What we found is that community engagement is critical and having -- bringing the homeowner on board. I think Jamie had a wonderful slide about that, which was, you know, engagement from the homeowner is critical. At the end of the day, they are the ones receiving all of this in their house. It is a very personal decision to say yes to.

For them to be fully aware of what's going on, why we're doing what we're doing, and what a wonderful deal it is for them to get this, it's a self-education piece. And it is very important that we empower homeowners with the right information. We don't talk down to them, we empower them. And there are ways that we've kind of experimented with that in a couple of cities, Sacramento being the one that we will be going live in January with our tool, but it allows a homeowner to kind of type in a home address and do analysis on their own, work with their own home. That's very empowering. We found that.

And then secondly, I think just reaching homes where -- especially when we're talking about, you know, low-income homes, some of them don't have access to the internet and the smartphone, being able to have volunteers and workforces that can go door-to-door and really engage with homeowners at that level, I think, is going to be critical. If we consider, you know, internet and access to information being critical, then we have to make it accessible to everyone.

Those are my two cents.

MX. KATZ: Great. And I'll jump in here as well, Mudit. I really want to echo a lot of what you shared, definitely on the same page, about a lot of that.

I think a couple of things that I'll add, sort of my initial inclination, is that a community focus has a lot of benefits. And I think, one, again, like we saw in the San Joaquin Valley pilots, because it's such a personal decision, that we found that residents really benefited from being able to go to their neighbor and see how an induction cooktop worked, see that a heat pump worked, that that all really helped.

We've also heard -- and you know, my expertise is not in labor issues, but I will say from talking to labor partners that one of the challenges in terms of sort of having, like you know, specifically thinking about smaller communities, having enough work to do, that sort of the contracting works to sort of have enough work for folks to do to sort of focus at more of a community scale can sort of help to do that. But again, I would encourage you to talk to labor partners about sort of more of the details there.

COMMISSIONER MCALLISTER: That makes a lot of sense.

Ericka or Nick, do you want to comment on this?

MR. DIRR: Only briefly.

Again, from the multifamily perspective is like, depending on the size of the multifamily building, they are in themselves almost a small community, and so I really think that's important. You know, a lot of the decision making at a multifamily property has to do with property owners or managers. But I think engaging with the tenants, you know, and helping them understand what their needs and interests or challenges have been and sort of helping to improve the livability of their home and getting them involved, you know, in sort of the project development stage is a good way to engage with, like, that community at the property level.

MX. KATZ: Oh, and I --

COMMISSIONER MCALLISTER: Great. I want to give Erika a chance to call -- or a chance --

MS. FLORES: Thank you.

COMMISSIONER MCALLISTER: -- if you want to, but no obligation.

MS. FLORES: Thank you so much for that. I mean, I echo what my colleagues here have said. I think that from NRDC's perspective, we are not the experts when it comes to community engagement. And so we do lean on our partners and the experts to lead those conversations and to guide how that engagement should look like.

But we certainly support and are in agreement that we have to ensure that the community -- this is, as everyone here said, it's a very personal decision and that they fully have all the resources and understanding of what it would look like, but that a community organization that they entrust is guiding a conversation --

COMMISSIONER MCALLISTER: Exactly.

MS. FLORES: -- and working closely with them.

COMMISSIONER MCALLISTER: So that's a perfect segue to my second question and then I'll pass the Vice Chair.

So one of the -- so we're going to be developing a guideline’s document, you know? So we do have an exemption from the Administrative Procedures Act, I think Deana might have mentioned it, but so we are we are going to follow a guidelines process, which means we don't have to build all these details into regulations. We can do it in guidelines and periodically update those guidelines and then that'll guide the sort of the competitive solicitation for program administrator, administrators.

And so we're going to -- we need to develop some criteria for what we will require of bidders in that competitive solicitation to include in their proposals. And the requirement for specific -- you know, the requirement for community engagement and building in of partners in their teams that have the credibility and the sort of ability to do that level of community engagement that you're talking about, I think, you know, I think we should include in some form in the program structure and the requirements for, you know, prioritization and scoring of proposals so that we end up with strong community partners. Those don't exist everywhere across the state.

And so I guess I invite thoughts about how we frame that narrative, because we are going to have some communities, a small subset of communities across the state, who have need. We are necessarily only going to reach a small subset of those communities.

And so any thoughts about how we sort of frame that and what requirements we might productively build in to ensure that we get that kind of sort of experience and credibility and presence and trust on the ground?

MX. KATZ: So just that I understand, Commissioner, is your question around how to ensure these programs reach communities that don't have sort of established CBOs or sort of like setting criteria for identifying those trusted?

COMMISSIONER MCALLISTER: Well, I mean, I think that's sort of inherent to my question is, you know, I think stronger proposals are kind of naturally going to come out of places that already have that trusted nonprofit on the ground doing some kind of community organization. Certainly, I think we should be open to places where it doesn't exist if there's a good program plan for creating that.

But I guess that's kind of the essence of my question is: How should we approach that in terms of getting proposals that really have all the skills on the team to have success on the ground in specific communities? Whether they exist already or not, I don't know, but that's kind of what I'm asking.

I mean, you know, I was a Peace Corps volunteer back in the day. And I think a lot of this is shoe leather, you know, on the ground, getting to know people and having coffee with them and getting them familiar with the whole thing. But, you know, I leave that to you and your and your colleagues to answer the question because I think it's very relevant. We need to build some knowledge base or sort of, you know, a framework for thinking about that so that we get it right.

MR. DIRR: Yeah. No, I think it's a great question. I certainly know that it's a challenge for, whether it's a, you know, like a smaller community organization that doesn't have sort of dedicated staff time to fill out these sort of solicitations, I think it's a great question that I want to think a little bit more about the right way to sort of strike that balance between like soliciting proposals, but then also sort of through using some of the other tools we've identified here to sort of do targeted outreach to identify folks who might not otherwise, you know, submit that submit that proposal. So that's --- but I'd have to think more specifically about some strategies for doing that.

MR. DIRR: Yeah, I think I would offer, I know there's, you know, discussion around what's the right regionalization of the Direct Install Programs; right? Is it a few larger regions or many smaller regions, you know?

And one possibility could be just within those regions, ensuring that there's broad participation across that region. You know, so there may be some communities with really strong current partners and engagement and those would certainly be, you know, a strong part of participation in that region, but there needs to be sort of solutions brought to bear for other parts of that region as well. And that would kind of be incumbent on the folks sort of proposing how they're going to serve that region and how they're going to work with maybe community partners that are already active, but work with them, or new partners to provide outreach to communities that maybe don't have access to those resources.

COMMISSIONER MCALLISTER: Great. Well, thanks. Lots of food for thought. And, you know, it might end up, it might be sort of like, look, whoever the prime is, whether that's the CBO or not, the prime contractor puts together a team, and on that team there have to be certain entities that have, you know, proven engagement with the communities of interest; right? So something like that. But anyway, we're going to develop some specific criteria, so really looking forward to everybody's comment on that.

I'll stop there. I could go on. But I think we've got a lot -- we have some questions in the Q&A. And wanted to give Vice Chair McDonald any opportunity to ask a question as well.

VICE CHAIR MCDONALD: Sure. Thank you, Commissioner. Make sure my voice is on.

I'm thinking about, while these conversations are happening, the data discussion. And it reminded me, and so I want to -- just brief sort of history lesson on tribes and energy policy; right?

And so I think if we don't know tribes now have the disadvantaged community, right, entitlement, I guess we'll call it that as, you know, as we discuss these programs, but we didn't always. And the reason that we didn't have that disadvantaged community protection, I'm not sure what the vernacular is, but was because it came from the CalEnviroScreen, right, and tribal data was not used to generate those, you know, those things.

So we had to, you know, some of our tribal leaders had to get together and make the comments that, hey, if you haven't used our data, then you can't say we're not disadvantaged; right? That was sort of the argument. There might have been some other things that were behind the scenes that have --

MS. FLORES: I think he froze. I think Vice Chair McDonald froze.

MS. CARRILLO: Yeah. Normally, typically, I'm like, oh, that must be me.

VICE CHAIR MCDONALD: We're including tribal data as we can get it; right? Some of it doesn't exist maybe in different captures but, if it doesn't, we need to be able to find it and identify it. And I certainly would like all the folks that are working on these to think about those tribes and inclusion of those data because even when it comes to larger things like where we build new energy projects or where we, you know, where we want to put different things, there are tribes that could be partners that might fit inside of the map.

So as we're creating the maps, there's an easy layer with federal boundaries, right, with tribal boundaries. And when things are close, they should be identified as such and I don't think that that's a big ask.

I'm trying to see if I -- these glasses, man, I'm telling you, I need the bifocals.

That's really it. I don't want to highlight too much on Chemehuevi history. We can save that for another time. But as we talk about data and those things are movers, that's really the point that I want to make.

And I’ll ask, have we done projects where we've included or not had tribal data? Maybe that's the question to ask the panelists, right, or have we thought about that, or are there partners that, in your area, might be good partners; right? Because it's a different thought process; right? And certainly if we're talking about social or environmental justice, right, I mean, and that's where I don't want to go because that gets us into some tribal California history, which I don't think is the intent today. There's no one here to kick me and I could probably do that, but I won't.

So anyways, to the panelists, I ask you because very articulate, but you're all sort of coming from a different -- I'm coming from a different lens. And I'm just curious to see what your thoughts are on that.

MR. SAXENA: And may I --

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

MS. CARRILLO: Mudit, do you have a --

MR. SAXENA: May I respond to that or --

MS. CARRILLO: Please.

MR. SAXENA: -- or out of time?

Yeah, Vice Chair MacDonald, thank you for your comment. I think what you highlighted is such an important piece, which is, you know, that data is really important to everything we do. And just by, you know, just by its nature, the richest data is collected for the densest cities because that's where it's most used. And as you go further out into the rural areas, the data becomes less reliable and less complete.

And so while -- you know, it’s kind of a -- it's almost imperative for us to kind of start from the outside in and think that we need to first look at data for the disadvantaged communities and see how complete that data is. From the way that we work, you know, we collect a lot of the public data of our homes, we build those energy models, and then we start doing the analysis. And if the data is not there or is incomplete, that handicaps us from the get-go.

So an important step, I think, that this particular project and this funding might be able to do is highlight where the data is missing and to help, perhaps, even fill that information so that we have -- we are going in there with, you know, with all our tools and we have all the visibility.

So, you know, you're highlighting a problem which we're very familiar with, which is data is usually very complete in the denser cities and then it gets less and less complete as we reach rural areas, which is where a lot of the need is.

VICE CHAIR MCDONALD: Makes sense, so thank you for that. I don't know if there's any other -- I see some nodding, but I'm just looking for some validation here, folks, you know?

MX. KATZ: Yeah. One thing I'll offer before we move on, again, I don't have an expertise in engagement with tribal communities, but I can share that I know that there's a lot of similarities to what I see to smaller rural communities that we work with. So I think particularly of the community of Tooleville as one whose pollution burden is not reflected in census tract level data, which is where CalEnviroScreen focuses. And so we're often having to uplift the needs of communities like that because, to Mudit’s point, like smaller communities data is not reflected as clearly in these tools, which is why having this sort of centering the voices of the communities who are not captured by some of these metrics is so important. So just there's some commonality there.

MS. CARRILLO: Yeah. And I think that using the IMD data that Commissioner McAllister raised, I think there will be data available.

And we did get, staying on the topic of data, we did get a few questions online.

And Mudit, as you went through your slides and showed kind of the overlay -- actually, I'm going to segue a little bit from data just for a minute -- but I'm curious as to this team's or this panel's perspective on how the state should be divided into regions? And as we look at that data, Commissioner McAllister mentioned, you know, the one question of do we focus on the biggest need building by building versus block by block?

And now kind of parsing that out a little further, if we were going to take a regional approach With -- as we're exploring with local CBOs to be that trusted messenger, how would you recommend dividing up the state from a regional perspective, recognizing that we still have that outstanding question of do we go, you know, deep in the retrofits or wide? It's a large state and there's a huge need. And while this is an amazing opportunity, it is just a drop in the bucket.

So with that preface, I don't know, discuss. How would you divide up the state by regions? Do you have any ideas there on how to prioritize or think about that question?

MR. SAXENA: I'll throw in my idea here or my thoughts. And then, of course, they're going to be different from Nick and Ericka and Jamie and I look forward to those.

To me, I don't see much sense in creating artificial boundaries, Northern California, Southern California. I know those are political boundaries sometimes, counties are political boundaries, as well, and there's a good reason to do that. But for me, I kind of look at everything from a data lens and I let the data guide that.

So if we go back to the layering that I was showing on my chart, which is just a thought experiment, you know, if we actually do that, we should be able to start to identify regions where all the checkmarks are there. You know, the utility rates are favorable. There's a high need for heating and cooling. That area is identified in CalEnviroScreen or other resources' status that that is a place that needs investment in electrification. And so if we start to do that, I think we can start to identify those areas.

And then once we've done that, once you've taken that step, then we can perhaps bring in some of the political boundaries and say, are we equally investing in Northern versus Southern states, Southern counties and so on. I would rather do data first and then political boundaries second as a way to identify where the dollars need to be spent rather than doing it the other way around. That's my two cents.

MS. CARRILLO: And by political boundaries, you're thinking about jurisdictional boundaries for permitting --

MR. SAXENA: Yeah.

MS. CARRILLO: -- and such?

MR. SAXENA: Jurisdiction boundaries, just contiguous boundaries that are, exactly, jurisdictional boundaries that where you can say permitting happens or counties or -- you know, exactly.

MS. CARRILLO: Great.

And how about others on the panel, any thoughts on, you know, given this initial amount of funding we have available, what regions specifically should be targeted or how that should be considered?

MR. DIRR: I think my recommendation would be, again, you often hear me talk about like balancing things, but I wouldn't want too many regions just because I imagine the administration would sort of increase in complexity. And then also, just in those areas where there's two regions that kind of border each other, there may just be some confusion from communities, contractors, that sort of thing. So I would say like, you know, probably not too many regions, but I think I support everything that Mudit said as inputs in determining those regions.

And I think the other input in determining regions is sort of building stock, you know, climate, like retrofit opportunities because that will enable those regions to sort of -- once they scale and are in the implementation phase, you know, a lot of the retrofit types can, at least like a portion of them, can be consistently applied across the houses in that region, you know, maybe areas that have a high propensity of propane or, you know, early 1900s build dates versus like 1970s build dates. Like a lot of those things will inform the actual retrofit work and that will enable it to sort of scale and be implemented quicker than if every single project kind of had its own unique set of characteristics.

MS. CARRILLO: So that's a good perspective from a building science approach.

Jamie or Ericka, any other thoughts from your perspectives?

MS. FLORES: That's a really good question and that's a very complex question because, ideally, we would like everyone in the state to benefit, every disadvantaged, disenfranchised, disinvested community to benefit.

And I think this ties to one of the previous questions that was asked by Vice Chair MacDonald, which is if you don't have the CBO representation that's able to submit a solicitation, for example, yet you have identified this region, how do you move forward with getting those incentives and those resources?

I mean, certainly, I think there's been discussion, of course, using the CalEnviroScreen to identify these communities and the communities that check most of the boxes. We know that the CalEnviroScreen screening tool is a great tool, but also sometimes it doesn't really capture all of the communities that need it the most. You have an incorporated area in the state of California where you have high percentages of communities of color, working class individuals who are not typically the ones who get resources.

So I don't know. I have to think a little bit more to that. It's such a complex question to approach. And for us, as always, again, listening back to our partners, how do we want to -- how do we envision the region being geographically broken down?

So I'm learning from this space as well. So thanks for asking the question.

MX. KATZ: And I think the last thing that I'll add, I think I'll echo a lot of what's been shared here.

I think the only additional consideration that I'll add is something that we hear from residents pretty consistently is one that sort of -- you know, I mean, often in programs like this like, for example, the San Joaquin Valley is kind of one giant region, and I think there's some reasons for doing that.

I think one consideration against that might be that residents, one, often prefer to have folks who are coming into their homes be from someone who they maybe already have some kind of existing relationship with, but also that when something goes wrong or they need to troubleshoot, like a new appliance, that having someone who's hundreds of miles away makes it much more difficult to do that. And so having sort of more regionally specific breakdown can be helpful in that way.

But, again, echo the point that there's a balance there that I certainly recognize.

MS. CARRILLO: Great.

So let's move to tenant protections. You know, with some of the deed-restricted, low-income, multifamily housings, it's less of a concern. But there is a big concern that, you know, we're going to be putting in dollars to improve homes and perhaps lead to gentrification of communities. It's a concern that was raised earlier today.

Any recommendations related to how to, you know, keep a program simple, streamlined, you know, balancing all of these challenges, and what type of tenant protections would be appropriate or have worked in the past given that split incentive between homeowners and perhaps tenants?

Open the floor to any ideas that this group may have on that issue, or we can pass.

MS. FLORES: I'm happy to open up this discussion because I had a slide on tenant protections, and yet we at NRDC, we are not the experts on tenant protections. And we learn from our partners as to what really should be getting rolled out on the ground and what communities need to be protected.

And so the items that I highlighted, the bullet points that I highlighted, are things from our partner organization SAJE, who are experts in leading this work. LAANE, who are also leading this with labor.

So I think to Jamie's point, there has been, I mentioned this, there has been a lot of distress from community, as well, when they're working with someone who they don't recognize and they don't know, especially communities of color who have not been seen and validated and given opportunities and resources in such a historic way.

And so I think that we have to lean on expert partner organizations, tenant rights organizations to help shape the conversation and to help guide us and tell us what it is and what type of protections we should be implementing when it comes to this. Certainly, I'll highlight what I mentioned previously, which is ensuring that the tenants have a place to move to.

If the housing, if there's going to be short term or long-term having to move from their home while these modifications are being made, that the information is provided in the language that they feel more comfortable speaking, not only in English, a lot of these communities are monolingual Spanish speaking, for example, and that there's constant information in a way that makes sense, that's accessible and digestible as well.

MX. KATZ: Yeah. And just want to echo everything that Ericka just shared, definitely agree with all of that.

I mean, I think, well, you know, again, The Leadership Counsel, we engage on some tenants rights issues, but certainly defer to some of our partners for whom that is their singular focus.

I think it's just important, when we're designing this policy, one, to incorporate some level of tenant consent in this process. I think that tenants often don't have a say, don't feel like they have or don't have a say in choices around the changes or lack of changes that the owners of that property make.

And also want to ensure -- I mean, because what we're talking about here is we're talking about the State of California investing in someone’s -- a private owner's property, like that's what we're doing. We're spending our tax dollars on that. And I think we should acknowledge that they're getting a benefit from that and that they shouldn't be sort of receiving -- shouldn't be able to then also pass additional costs on to renters in the form of increased rent, which of course leads to displacement, yeah, homelessness, and so I think that's really important.

So the details of how we design that policy, I think is sort of an open question, but I think going from the principle of when we as a state are investing in people's private property that they shouldn't also then get to charge more to the tenants who are there, especially when we're already in an affordable housing crisis.

MS. CARRILLO: Yeah. Thank you for raising those issues.

I am going to move on to a few of the Q&A. Well, one -- actually before I, I'm going to look at the Q&A.

But as I do that, I'm wondering if you -- if any questions rose up for any of you that you might want to follow up on in each other's presentations, just to open up that dialogue? So I invite that if anyone has an issue that they'd want to pull the thread a little bit more on.

MX. KATZ: I actually did have a question for Mudit.

You raised here, and I want to make sure that I understood this, I think it was one of your last slides said that with some of these upgrades that 80 percent of people would see sort of bill -- net energy bill decreases. And I'm wondering if there were sort of correlations that you saw in terms of who was or was not seeing those bill decreases?

I know it's probably a much more complicated question than we have time to ask, but just that jumped off the page to me. I'm really curious.

MR. SAXENA: That's really a great question, and one that's a very logical question when you see that graphs, like what are those 20 homes, those 20 percent homes? What are the characteristics of those 20 percent homes that are making it, making them have lower savings or lower, yeah, lower energy savings from electrification?

We haven't dived into that particular question for Petaluma. It's kind of fresh off the press here. We just completed that analysis a couple of weeks ago.

So one of the things that we are able to do -- but I can tell you that because the analysis is sort of ground up, right, so we do it for individual buildings and then we scale it up to the entire city, we have the ability to kind of color those dots with various properties of the home.

So, for example, I'm going to give you my best guess, those 20 percent homes are very likely newer homes with very efficient units to begin with, or they are homes that don't have air conditioning to begin with. That's my guess. Again, that's the best part about this. We make our guesses and go into the data and we see if our guess was right or wrong.

But newer homes that have very efficient units, your baseline is already pretty high, and then your incremental savings are smaller or sometimes negative; right? So, you know, you're not going to save that much savings. You know, you're switching to a more expensive fuel. You might see a negative bill or negative savings.

The other is, like I said, the homes that have no air conditioning are suddenly getting a load that they did not have before. And this large-scale analysis is going to say everybody gets a heat pump, right, for theoreticals.

It's like a potential -- it’s a potential study, so you're just saying everybody gets a heat pump. Then what happens with the homes that don't have air conditioning is they start seeing an addition to their utility bills because now they're cooling their home.

I would argue that that home is now a lot more comfortable and is also resilient and future ready. So there's a very important reason for it to receive that air conditioning system with a warming planet. That is a trend that we are seeing everywhere. So not always a higher utility bill should be seen as a negative thing. You have to kind of look at it very carefully.

But to answer your question, we haven't looked at that particular set of data, but we have the ability to pull information about each of those homes and pull out that kind of analysis. It's very empowering once you're able to do that because then you can start to -- then the city can kind of look at that and start building ordinances and exceptions around those ordinances that can -- that are based on analysis like the one we've shown.

MX. KATZ: Yeah, and I really appreciate that and certainly agree about your point about addressing homes that don't currently have a way to cool them. That's something that we hear from residents all the time. And I think that's, again, sort of seeing this program in the context of other work that's going on. We know that at HCD, they're just starting a process to look at rules for maximum indoor air temperatures for rental properties. And so we know, like we know the direction that this is going.

MR. SAXENA: Yes.

MX. KATZ: And, hopefully, you know, when we're talking about temperature, when we look at this, we know that that's something that's really needed.

MR. SAXENA: Yeah. Thanks, Jamie. Great question.

MS. CARRILLO: Great. So Mudit, there's a few other questions regarding our comments related to data and case studies.

One was related to your slides on the Petaluma case study and a concern that energy efficiency came second on your slide and not first, again, related to the 20 percent of homes in Petaluma whose bills would go up after heat pumps installed will experience a decrease only after those EE measures are installed.

So just a question. Was there like a loading order in that study? Were you thinking about heat pumps first and then efficiency or was it a more comprehensive approach? And I'm taking liberty at the question.

MR. SAXENA: Yeah. No. Thank you. I also just read the question, so thanks for the question also.

Yeah. Sorry, because it came out, as I presented this information, it looks as if there's a loading order and energy efficiency comes second. I was just trying to make a point that we can find energy efficiency measures to package with heat pumps so that nobody sees their bills go up.

My final conclusion after doing this kind of work with Petaluma, and we've also done this with San Luis Obispo and Sacramento and Santa Monica, having done this kind of analysis across multiple cities, the answer that I -- that we're sort of gravitating towards is electrification, along with some kind of either renewables or energy efficiency together, makes sense for everyone, not just for the homes where the bills are likely to go up. It just makes sense for everyone.

And that, then once you realize that, our next step is to kind of start to identify some simple packages, Package A, B, C, and D; right? Okay. So rather than saying, hey, it's whole building analysis, let's just take that, you know, liberty of doing that for every home and figure out a custom package for everyone, I'd rather come up with simple packages which the market can then coalesce around so the contractors can then start to say, okay, you're a home where analysis already shows you are either a B or a D, you know, B, C, or D. So let me go talk to you about B, C, and D and you pick one and I move forward with it.

I think that's the kind of simple solution that we should all be working towards. And I want to make this point that analysis is complex because buildings are complex, but the solution doesn't have to be complicated. The solution actually has to be simple. And it's upon us to make sure that we keep on working until we get the simple solutions because otherwise we would have failed. You know, just because there's a lot for us to think about and do doesn't mean that once the program hits the street, it should be simple enough that most contractors should be able to get their arms around it.

That's the challenge, if I were to describe it that way. We have to absorb all the complexity, do all the analysis, and spit out some really simple solutions that the market can then coalesce around. I think then we can take these dollars that we are being given, and we are so grateful that we have this opportunity, and then sort of leverage that so that the market can then move in that direction too.

So sorry if the slides came out saying that there's a loading order. There isn't one. My idea is that we should just bring energy efficiency and renewables together with energy to prevent electrification to really create these packages that the Direct Install Program and then further the market can adopt.

MS. CARRILLO: I think you coined it, where making it simple means absorbing the complexity.

MR. SAXENA: Yeah.

COMMISSIONER MCALLISTER: Commissioner McAllister, any other questions or comments from the dais?

I just wanted to totally agree with and endorse that idea that we need to arm. You know, we, certainly, we talk a lot about, and I agree, that we've got to educate the customer and the resident and the homeowner so that they understand and can choose in a relatively simple fashion and that can be workable without a lot of, you know, without a lot of cost in transaction.

But the contractors kind of need the same treatment. They need to know. I mean, they know buildings but they need to approach a building kind of knowing more or less what they're going to find and having, you know, packages of measures that achieve what we need the program to achieve but also offer what's going to help that resident.

And so all of this data that we have and all of this pre-analysis and targeting I think is aiming at exactly that, like we need to use it for good to make programs function better and not -- you know, it certainly shouldn't make things more complex. It should make things much, much simpler, so -- and I think we're there. I mean, we're in a position now that we weren't in even five years ago where we have these resources and we can do this kind of analysis and we can automate much of it. So I think it's just that we're in a very powerful position that can serve us well.

So anyway, I want to just endorse that idea of simple programs, you know, based on really savvy targeting.

I see Thomas Enslow.

MS. CARRILLO: Yeah, Thomas, do you want to turn on your screen, and do you have a comment here?

MR. ENSLOW: I do. I do. Thank you.

I wanted to go back to kind of Jamie's comment on, you know, what -- you know, about those installations that don't need -- you know, that don’t actually save energy and kind of the reasons for that.

I mean, I think, you know, all of the installations are at risk of not saving energy if there aren't workforce standards, you know, involved in who's installing these. I mean, the studies show, particularly for HVAC retrofits, which this essentially is, that 85 percent of HVAC retrofits are installed incorrectly and this results in up to 20 to 30 percent loss in energy efficiency.

We also see that in the green building sector where, you know, a study of 19 LEED certified green buildings found that 40 percent of them weren’t -- had like 40 percent more energy usage than expected. And this really goes toward the widespread use of under-trained workers and the need that, you know, the, you know, state agencies have been saying for over a decade but haven't been implementing and making sure that the installers are actually, you know, well-trained, know what they're doing, at least are experienced and that, you know, you make sure that people are actually going to achieve the savings that they're supposed to. Otherwise, you know, you're going to be installing -- you know, having low-income people replacing their HVAC units and paying more when they should be paying less.

So we want to make sure this works done right and done safely and achieves energy savings expected.

MS. CARRILLO: Thanks, Thomas.

We've got a few other questions in queue and then we'll open it up to Q&A.

And this is related to, Jamie, your presentation, what advice do you -- between the relationship between affordable housing allies and building decarbonization allies? And the question is:

“What advice do you have for folks working on local decarbonization policy efforts that are trying to make exemptions to affordable housing development? Any suggestions on how they effectively advocate?”

MX. KATZ: Yeah. No. It's a great question. I have a few thoughts. I will be frank that, you know, the local jurisdictions that we work with don't tend to have particularly ambitious building decarbonization targets.

But that said, I think there are a few key connections that I think are really important, one being, you know, highlighting the disproportionate impact of climate change on low-income communities that rely on affordable housing and, you know, living in a region that is out of compliance with Federal Air Quality Standards, you know, the benefits that these have on both indoor and outdoor air quality.

I also think it's important to highlight, you know, because I would imagine some of the advocacy to exempt would be around sort of so-called cost effectiveness. But of course, as sort of we've talked about today, there are a number of programs and policies pointing toward this is how housing needs to look in the future. And it is, frankly, cheaper and more efficient to do it all now versus as we're seeing retrofitting existing buildings. So I think I would elevate that.

I also think, as I sort of raised a moment ago, that there are sort of ongoing -- there's sort of a new process starting at HCD to, you know, set maximum indoor temperatures for residential property, and so that's going to be a requirement at some point, I would imagine, in the near future.

And I think finally, a thing that I think would be particularly helpful and that we're hoping as an outcome of this process is continuing to see signals from the state about the connection between affordable housing and building decarbonization policy. And that like for those of us who are working toward meeting climate goals and toward building decarbonization for all of the reasons that it is good in its own merits, that we are not going to reach our building decarbonization targets or climate goals writ large if we're not investing in affordable housing. And even though this pot of funding will not be used for that, to hear voices for those who are working on building decarbonization also calling for greater investments in affordable housing because it will help us to meet these climate goals.

So I think those are sort of my thoughts on it.

MS. CARRILLO: Great. Thanks so much, Jamie.

Another question we had is about the connection between water conservation and decarbonization. Do any of the panelists want to address that issue or share any thoughts?

MR. DIRR: I can start. Unfortunately, there's not like necessarily a two-for-one that I'm aware of, maybe with the exception of evaporative coolers, like for folks that have evaporative cooling in the Central Valley. That uses a lot of water, so converting that to a heat pump would result both in, you know, carbon reduction, potentially, as well as water savings, so that's like a two-for-one.

But otherwise, it's sort of around the overall comprehensiveness of a home upgrade. You know, so the water conservation opportunities would mainly be around, you know, the shower heads and aerators, which there is a little bit of dual benefit on that. But toilets, landscaping, those types of things are, you know, mostly going to be where the bulk of the water conservation is. And then leak repairs as well.

So there definitely is a nexus there, but it's really about, again, sort of improving and upgrading the home, you know, comprehensively. And that would be inclusive of both decarbonization, but also water conservation.

MS. CARRILLO: Great.

Do any of our other panelists want to address this issue?

MX. KATZ: I think I'll just say, sort of to echo Nick's point, that, I mean, I think some of this work can be really disruptive to people's homes. And so I think to the extent that when people are having one kind of upgrade done in their home, that if you're going to also do upgrades related to water efficiency and conservation, I think that can make sense. Which again, speaks to sort of coordination with trusted CBOs to sort of make those sort of arrangements. But yeah, I think that's it.

MR. SAXENA: Yeah. And I’d just add to what Nick and Jamie said, to the point that there's embodied carbon in every drop of water that's delivered to us, and so there's transportation and, you know, filtration and such. So there is a direct connection between conserving water and conserving carbon.

There's been some studies that have been done linking energy and water, the sort of energy-water nexus work that has been done by CEC and others. And I think that you could take that forward and connect that to carbon as well. So there is definitely a carbon content to every drop of water that we don’t -- you know, we based.

So I think making that connection would make it easier for us to bring water conservation under the same umbrella. I don't know if that has been done and whether the scope of the project includes that, but I would urge that connection can be made.

MS. CARRILLO: Yeah. I know it has. Water conservation measures have been included in some of the energy efficiency retrofits done by the utilities because of that nexus.

Okay, so I think we're going to open it to public comments. There's two other comments that we have in the chat. One is from attendee 154.

MS. NELSON: Sorry, Deana. I just want to give an opportunity -- sorry to interrupt. This is Jennifer Nelson --

MS. CARRILLO: Oh. Thanks, Jen.

MS. NELSON: -- with the California Energy Commission. I know Vice Chair Brian McDonald will be leaving the workshop shortly.

And I just wanted to ask Vice Chair if he has any departing comments or questions before he leaves?

VICE CHAIR MCDONALD: You caught me eating a chocolate.

MS. CARRILLO: Sorry.

VICE CHAIR MCDONALD: I do have to head on to my next thing. I appreciate everybody, Commissioner, for letting me to stay up here on the dais. I was looking forward to the next section. I had something come up.

Fabulous discussion. I encourage all of the agencies across California to be having similar conversations, so I feel like you guys are a step ahead of.

In my position, I get to work with -- you know, across the board. It's not just energy that impacts us; right? I think it's a fabulous start.

Thank you again for thinking of Chemehuevi. If there's anything the staff, the Commission needs from us, don't hesitate to reach out. That includes the panelists. I just appreciate the opportunity to be here.

COMMISSIONER MCALLISTER: Thank you so much for being here. I'm just really pleased to share the dais with you today. And, you know, I think there's a strong collaboration that we've been building for a while that is really going to, I think, bring a lot of fruits to the state and to the tribe. So thank you for helping lead that.

VICE CHAIR MCDONALD: Alright. Thank you all. Please continue and carry on. And thank you for letting me make my exit with saying goodbye. I appreciate that, you all, and I'm going to do that.

MS. CARRILLO: Thank you.

VICE CHAIR MCDONALD: Bye-bye.

MS. CARRILLO: Thank you for joining us, Vice Chair McDonnell.

And thank you, Jen.

MS. NELSON: Um-hmm.

MS. CARRILLO: Great.

MS. NELSON: So Deana, you are welcome to, if you want to lead, it sounds like you're heading us into the public comment period.

MS. CARRILLO: I was.

MS. NELSON: Great. So we have Dorothy, who will help facilitate that, so we can switch that over to her for right now and give maybe Deana a chance to rest her voice for a little bit.

MS. CARRILLO: Let me go grab some water.

MS. NELSON: Yeah.

MS. CARRILLO: Great, Dorothy.

MS. MURIMI: Alright. Thank you so much. Thanks, Deana.

And thanks, Jennifer.

So I'll go over instructions once again for folks. So once again, all comments will be part of the public record. Once you're called on, your line will be unmuted on our end. Go ahead and unmute on your end. State all your first and last names for the record.

For those on Zoom, use the raise hand feature. Looks like an open palm. And if you'd like to ask a question, use the Q&A feature. Please note we're continuing to monitor that, as you've noticed.

And for those joining by phone, go ahead and press star nine to raise your hand and star six to unmute on your end.

Comments may be limited to three minutes or less per speaker. And we'll show the timer on the screen, as you can see there.

So I'll start with attendee 150. Your line is unmuted. Please state all your names and give your affiliation. You may begin your comments.

MR. GASPARI: Hi, I think this is me. Can you hear me?

MS. MURIMI: Yeah, we can hear you.

MR. GASPARI: Great. So Al Gaspari from PG&E, G-A-S-P-A-R-I. I'm supporting Rachel, who had to drop off for a second. Just a couple quick comments. Really appreciate the discussion. Thank you to all the panelists. Thank you to Deana for coordinating it.

Happy to hear about equity being central to the just transition, both for, you know, participating customers, non-participating customers, and the contractors that do the work. We really need to make sure that we're focused on being extremely productive with this work.

The discussion on complexity, you know, my background, we've managed the On-Bill Financing Program here at PG&E and implemented pay per performance and some other things. Complexity in these programs, it's important where the complexity resides as much -- you want to reduce complexity as much as possible, but we know these are public dollars and we need to make sure we hit different criteria. But we really have to make sure that we're not putting any complexity on the participating customers and the contractors as much as possible, and we hold that complexity behind the scenes. And we'll provide some comments about that in the comment process but, you know, there are ways to do that in programs.

Really happy to hear about the CBO engagement. You know, this has been, you know, something that the CPUC has really done a great job with in our program. So we have a broad network of CBOs that the IOUs work with under our CPUC programs and it really does help to, you know, connect programs with the local communities and make sure that they are -- the communities are aware of these programs.

But also that, you know, I think I heard, I think it was Jamie mentioned, you know, the risk management aspects of this. Because if there's something wrong with the project, you know, you need to address that as quickly as possible. And an on-the-ground CBO can really help to do that, to minimize risks, and that's a really key point.

The last point I'll make is, you know, Rachel mentioned zonal electrification. So, you know, thinking about both the impacts on the gas and electric system is really important because, you know, we need to make sure that energy affordability exists for all of them are being as strategic as possible.

PG&E has a hundred gas projects in disadvantaged communities that we're looking at as part of the zonal electrification process that Rachel runs. You know, once those gas lines are updated, those lines are -- you know, that's a 60-year recovery period. So we really have to think about what it takes to enable zonal electrification, and we're looking forward to working with the CEC and partners on this.

You know, it's an interesting program delivery model where you have to electrify 100 percent of the buildings, 100 percent of the customers on the gas line in order to do this. And, you know, it raises all sorts of policy and program delivery criteria, but that's where we really free up some really strong funding opportunities.

And then finally, you know, making sure that we view these investments as load management because we really need to make sure that we're not creating additional impacts on the electrical system, so leveraging, you know, what we propose in the CEFO proceeding where these could be under managed service agreements to make sure that the customers are able to adjust their load to meet grid needs.

Thanks to everybody. I'm happy to take any follow-up questions, but great points.

MS. MURIMI: Thanks for your comments.

We'll move on to attendee 155. Please state, spell your name, give your affiliation. You may begin your comment. That's attendee 155.

We'll move on to attendee 146 and come back to 155. That's attendee 146. Please unmute and state, spell your name, give your affiliation. You may begin your comment.

MS. CARTER: Hi, Sakereh Carter, That's S-A-K-E-R-E-H C-A-R-T-E-R. Hi, thank you for the opportunity to comment. My name is Sakereh and I'm a Senior Policy Advocate with Sierra Club California.

We appreciate the comprehensive breakdown of each incentive program as it is beneficial for framing the building decarb work in California. We particularly appreciate the awareness of the intersection of environmental justice with building decarbonization, including tenant protections, affordable housing advocacy, considering the inconvenience associated with home retrofits, CBO engagement, rectifying program redundancy, community education, and the accurate prioritization of communities for resource allocations using data-driven research.

And I also think it's important to not leave out communities that don't have strong representation or advocacy via CBO alliance, which can be mitigated by targeting communities with the highest pollution burden and certain socioeconomic characteristics.

But ultimately, we encourage you to continue working under an equity-centered framework to advance building electrification and look forward to engaging further.

Thank you.

MS. MURIMI: Thank you for your comment.

We'll move on to Jose Flores. Please state, spell your name, give your affiliation. You may -- I'll pause. There you go. You may begin your comment.

MR. FLORES: Good afternoon. This is Jose Flores with Comité Cívico del Valle. Jose is J-O-S-E, Flores, F-L-O-R-E-S. We're out in the Imperial Valley.

I just want to voice support for the decarb funding earmarked for the Coachella Valley project out in the Eastern Coachella Valley. It would also be great if similar opportunities or projects would be considered for Imperial Valley as well.

Furthermore, it would be great if these energy-efficient measures are installed by using union labor.

Such retrofits improve not only our health, but are also climate resilient, and even more importantly in our distressed area, are a financial enhancement to communities that are disadvantaged, underserved, marginalized, and overburdened.

Lastly, a comment on possibility of ending fossil fuels by 2045. With the recent announcement by the White House and the Department of Energy, with the breakthrough infusion, hopefully we can begin to count down to the days where we will no longer be in need for these measures due to the lack of use of fossil fuels in our communities or in our entire world per se.

It's been a great dialogue. I've been with you since 9 a.m. I look forward to continuing to hear further conversation. And thank you for your time.

MS. MURIMI: Thank you Jose.

Next we have Gregory Sutliff. Please state, spell your name, give your affiliation, if any. You may begin your comment.

MR. SUTLIFF: Yeah, my name is Greg Sutliff, G-R-E-G S-U-T-L-I-F-F, and I am with a company called Alcal Specialty Contracting. We are a Sacramento-based company, and we've worked on direct install and rebate and incentive programs with organizations like the AQMD, CSD, and others in many of the DAC and EJ communities across California, like the Coachella Valley, L.A. County, the Central Valley, and the Bay Area.

Our experience has been that program administrators who are able to stack and leverage rebate and incentive monies from other sources will be able to stretch these dollars, the CEC dollars, and provide better stewardship of those monies. This also enables more homes to be retrofitted with these monies.

As Mrs. Flores said in the chat earlier, these other rebate incentive program monies should be viewed as a benefit and/or an addition to the CEC monies and not as competition for these program monies. It's kind of a sort of thing that can really provide a sort of a compounding effect to public monies like this, and it works really well in impacting more homes for every single dollar that's in each of the programs.

I also wanted to just comment that the loading order that Deana mentioned earlier is really critical when it comes to this energy efficiency work. And oftentimes we see this sort of hardware and equipment installation, whether it's heat pumps or solar, get prioritized, and the loading order is not prioritized. And the loading order really does have energy efficiency measures first, and these energy efficiency measures are the low-hanging fruit, you know, whether it's air sealing or duct sealing or improving that thermal envelope, the R-value insulation in the attic, everything else kind of flows down from there. Once those basic tasks are completed, and those provide benefits 24-7/365, then every other mechanical system that gets installed works a lot better. Oftentimes those systems can even be smaller, less costly to the program or to the homeowner who's installing them.

So, you know, I thought that, Jamie, your comments about reducing homeowner disruption were really key here because a lot of the energy efficiency, the envelope measures can be -- they are very low, low impact to the homeowner. And the larger impact system installs, if they're done after that or in concurrence, then you really do reduce that disruption to the homeowner.

So lastly, I think the EnviroScreen mapping tool has improved so dramatically in the last several years that using that as sort of a baseline foundation for targeting the areas that need these services the most should be made a foundational part of any programs that come out of these discussions.

So thank you all for your time. It's been a fantastic conversation today.

MS. MURIMI: Thank you for your comment.

Next we have attendee 155. Please state, spell your name, give your affiliation, you may begin your comment. We'll try that again. Attendee 155, please state, spell your name, give your affiliation, you may begin your comment. We seem to be having technical difficulties. Feel free to put your question or comment in the Q&A, as well, so let's wait one more moment. Attendee 155. We're having difficulty hearing you at this time. We'll put in our call-in information so you can be able to call into the meeting to be able to give your comment as well.

So with that, that concludes the public comment period.

Let's go on to the Q&A. There are two more questions left, if we can take those at this time?

We have a question from attendee 154.

> "Will CEC take into account future climate conditions to measure the cost-effectiveness of electrification, particularly with heat pumps in areas with no air conditioning currently?"

Thank you for that question, Attendee 154.

MR. TAYLOR: This is Gabriel Taylor with the Energy Commission.

Any interest in responding from the dais or from the panelists?

MR. SAXENA: Yeah, this is Mudit Saxena.

Yeah, it's a really interesting question, one that we have pondered over because we do have the ability to now look at weather files that predict future weather. Now is that something that the CEC may recommend us to do for this program or not? I'm not in a position to make that call. But just wanted to put it out there that there is now an ability for us to look at future weather in calculations, so there is a possibility for us to do the analysis in that way. Whether the CEC would recommend doing that for this program or not is a different call.

The other thing that you need to also consider and perhaps build into this question is the future rate changes that we expect to happen in the next 10, 15 years, because these heat pumps are expected to last 15, 20 years, maybe even more. And within those 10, 15, 20 years, we expect rates to go up, especially with the natural gas and such, so that might shift the cost effectiveness of a heat pump as it's being calculated today.

So these are all sort of decisions that the CEC has to make.

I just wanted to comment on the point of analysis, is that it is possible to bring future weather conditions into consideration and also future rates into consideration. So just want to put that thought. And I'll let somebody from CEC comment on whether that's something that they would advise for this kind of analysis or this kind of program.

MR. TAYLOR: This is Gabriel Taylor with the CEC. I would add two points.

The Governor's Office of Planning and Research manages the California's Integrated Climate Adaptation and Resilience Program that would provide some policy guidance surrounding this question.

And also with respect to buildings, especially frontline communities where there's no current air conditioning, there's clearly both an equity and an energy question with respect to providing heat pumps, and that's air conditioning. As the climate changes, they will likely need additional cooling services or if they don't already. And if it is not provided in an efficient way, it will likely be solved in an expensive but inefficient way.

So while the balance of energy consumption might increase slightly, addressing it in a whole house with including efficiency, including time of use efficiency and including full consideration of equity is certainly the most energy efficient way forward in most cases.

MS. MURIMI: Thank you, Dave.

We do have a couple more questions. We have Emma Tome from CARB. Following up with this point around identifying simple solutions as a process of observing complexity, Emma's curious on how this funding might focus on some of the most complex or challenging cases, which also often arise in historically disadvantaged contexts, and building capacity or models for addressing them?

MR. SAXENA: Yeah. Thank you, Emma, for your question, really a very thoughtful question there.

So I think you're absolutely right that the most challenging cases happen to be in places where historically disadvantaged context happens to be the case. So I don't have a great answer for you as in, you know, this is what people do. But I think your comment just weighs on the discussion earlier, which is that we need to really think through these complex issues. And that's what we should be really focusing our time on is how can we take out those complex issues and try to work around simple solutions?

In my opinion, that is time well spent on this kind of a project. If we can address those complexities and bring some collective thinking to resolve those into simple solutions, I think that's time well spent.

MR. DIRR: And I'll add, you know, I enjoyed the comments earlier around -- you know, based on certain prototypes and property types, geographic locations, et cetera, coming up with a Package A, B, C, or D that can be, you know, consistently applied to those projects, and working with the household, the occupant, to sort of, you know, help them identify which package would make the most sense for their property and their home.

You know, I think for looking at some of the more complex projects, I think a lot of the projects, the really complex ones, can generally be bucketed in their own certain categories of prototypes. And so I think they could over time also kind of have their own option, you know, F, G, and H, for certain retrofit opportunities.

So I think just intentionally bucketing some of these prototypes and then developing packages to layer on top of those, I'm concerned they work for like the easy and standard ones and the more complex ones.

MS. MURIMI: Thank you.

And we have one final question from Leonel Campoy. Apologies if I've mis-stated your name. "In regards to future weather, do you mean weather variability and impact on bill saving?"

MR. SAXENA: Hi. Yeah, I think this is related to the comment I earlier made about being able to do analysis on future weather. Yeah, that is correct. The weather variability and future weather predicted can be brought into analysis now. ASHA has done some work around that, so I was referring to that, but the answer is yes.

MS. MURIMI: Thank you, Mudit.

And then we'll go back to public comment. We have one raised hand here, Hortencia Lopez. Apologies if I mis-stated your name. Please spell your name, give your affiliation, and you may begin your comments. That's Hortencia Lopez. Seeing no comments from Hortencia, we can go back to Q&A.

So one question from Jenny Lowe.

"A number of valuable different layers, considerations, and perspectives is raised in the presentations and discussions. So will the original timeline share a share of contracts and draft guidelines roll out by Spring 2023 -- that's three to four months from now -- still be followed?"

MS. NELSON: So this is Jennifer Nelson with the Energy Commission.

I think the timeline is fluid at this moment. It will depend upon the comments that we receive in the docket, as well as to the request for information and how that timeline is adjusted. But I think what this workshop is showing is the complexity in trying to balance getting the funding out as soon as we can with developing a quality program that meets the needs of the occupants and the target for this program, as well as providing the time necessary for us to get through the solicitation and guideline processes.

Thank you.

MS. MURIMI: Thank you, Jennifer. And I hand the mic back to you. We've concluded public comment period.

MS. NELSON: Okay, great. So that is the conclusion of panel two. I want to thank all of the panelists for their time, their presentations, and the discussion. A very rich discussion, and I'm excited to see the comments that come into the docket, into the request for information. Yes, I am plugging that again and again and again. So hopefully, many of you will go home and be very excited about writing comments and submitting them to the CEC.

So thank you, Nick. Thank you, Ericka. Thank you, Mudit. And thank you, Jamie, as well as thank you, Deana, for facilitating that panel, so thank you, everyone.

COMMISSIONER MCALLISTER: That was great, everyone.

And I just want to point to the time and just note that we are exactly on schedule, so good planning, everyone. That is not always the case. And with such a robust discussion, with such great content, to be right on time just is pretty amazing, actually. So I want to just commend everyone for all that.

And, yeah, thanks to Dorothy for running a tight ship.

And Jen and Deana, thanks to you both and all the panelists, as well.

Okay, so next panel.

MS. NELSON: Great. So I will be -- let me go ahead and introduce Michael Sokol. He is the Director of the Efficiency Division here at the California Energy Commission, and he will be the facilitator for the third panel.

Before I pass over the microphone, I do want to remind people, if you have questions during the discussion, during the panel presentations, please utilize the Q&A feature to provide questions, and that there will also be a 30-minute public comment period following this panel.

And with that, I will now pass over the microphone and the camera to Michael Sokol.

MR. SOKOL: Thanks, Jen.

I'm Michael Sokol. I'm the Director of the Efficiency Division. I work closely with Deana and Jen and many others online here under the direction from Commissioner McAllister on the implementation of this Equitable Building Decarbonization Program.

And really just echoing some of the comments of the great discussion this morning and the panel preceding this that really did some good framing considerations for the overall program design. And a lot of focus, rightfully so, on the direct install as the most immediate priority. And really looking at that priority and the direction from the legislature to support the needs of low and moderate income customers first and help build traction in the market.

But know that there's a lot of ground to cover when we're talking about this rapid market transformation in low-carbon building technologies. And if we are going to achieve the 2030 and beyond greenhouse gas emission reductions goals, it's going to take a big, concerted effort with a lot of incentivization and attention needed across the board, and so a lot of ground to cover.

And we are fortunate that within the authorizing statute, we have this general incentive category of resources, too, to talk through, in addition to the direct install, with a focus on low-carbon building technologies, such as heat pumps for space and water heating, but other measures as well. There's broad direction in the statute that reflects both the scope and diversity of needs that will need to be addressed in the coming months and years to achieve the decarbonization goals.

We are looking at the broad needs across the market to consider the full stream from manufacturers to distributors, retailers, contractors, and consumers. Workforce considerations are going to be super important. Ease of access and transaction streamlining to make things simple and easier for consumers is also an important consideration.

We're not starting from scratch here, but there is a lot of ground to cover. There are some great models out there that exist that we might be able to leverage and build upon and certainly align with, but surely there are still gaps in the market that will need to be addressed and looking at ways that we can best leverage these incentives across the existing state, utility, and some of the new federal funding resources that were described earlier that are going to be coming to California soon. So with that in mind, I really hope that this panel, and we have a great suite of panelists here, will provide a good discussion and context on those needs and how best this general incentive funding can be targeted with both urgency and deliberately to scale quickly and achieve the greatest impact and benefits for Californians in short order.

And with that, I will go through the panelists and introduce, first, Alex Ayers from the Heating, Air Conditioning, and Refrigeration Distributors International.

Alex, if you would like to turn your camera on, introduce yourself and then go into the presentation?

MR. AYERS: Hey, everyone. My name is Alex Ayers. I'm the Director of Government Affairs for HARDI. So we are a nationwide trade association representing wholesale distribution within the channel for HVACR.

So if you could go to that next slide?

Our goal is to advocate on behalf of the wholesaler, but that does not stop us from also advocating on behalf of the entire industry. Generally speaking, when we advocate on behalf of the wholesaler, we're talking about one of two things, better products, so in those cases, really talking about the entire channel, but at the same time, ensuring that our business practices are protected, as well, so everything there from labor to tax policy and everything in between. But today, really going to be focusing on the products that we sell and how wholesale distribution, which we like to say is the channel of choice for HVACDR manufacturers and contractors, can help with some of these incentive programs.

So if we can go ahead and go to that next slide?

Like I said, we are a nationwide association. We represent about 1,000 member companies, about half of which are wholesale distributors of HVACR products, many of them being small businesses where they are just a few branches and some employees there. But at the same time, collectively, all of these companies employ 40,000 individuals nationwide. So, you know, really a broad collection of folks from small businesses all the way up to larger ones, as well, but majority on the smaller side.

If we go to the next slide, I do want to talk about kind of what HARDI's position is on decarbonization. And we see electrification as just one component of decarbonization. And while electrification makes a lot of sense for a lot of consumers, we don't view decarbonization through a 100 percent electrification lens. So we see this as multiple avenues. And I think California is already doing a lot of these things. Such things as switching to low GWP refrigerants is a great way to do decarbonization. Replacing older inefficient equipment, we heard, you know, some of the direct install earlier. And then also looking at when gas is appropriate, making sure that we're using those high efficiency gas equipment for whether it's cooking, water heating, or space heating. And the, of course, electrification.

So if we go to that next slide?

How HVACR, the wholesale distribution plays a role is that, you know, we are the one-stop shop for contractors who are then the point of sale to consumers. So we buy products from manufacturers, whether they are the equipment OEMs, you know, duct work, controls, all of those types of things, refrigerants themselves, all of those come from various suppliers and manufacturers. We then serve as that point for equipment and supplies, but also we become the source of knowledge for our customers, along with warranty work and training, which we see as a vital component to ensuring, you know, proper installation of equipment in homes and businesses.

So if we go to that next slide?

And so, you know, seeing this incentive program and how broad it is, I want to talk about kind of two different sets of incentives to look at, and the first one is incentivizing consumer behavior.

So if we go to this next slide?

Nationwide, heat pumps are a growing source of sales. More and more people are buying heat pumps. This trend has been going back for nearly a decade now. So it's not surprising to see incentives wanting to further accelerate some of these installs.

But if we look at California, which is on the next slide, that same growth just isn't happening here. And partly, I do believe, there was, you know, the investor-owned utilities doing various things, you know, several years ago, probably actually incentivized heat pump installations earlier than the rest of the country, but that's sort of slowed down that growth because you had early growth. And then as those programs phased out, that growth slowed down. So it really does show that, you know, there is some need for more incentives to continue the growth here.

But just to also give you a bit of a baseline, since 2013, 1.4 million heat pumps have been installed in California with what we determined as an installed base of about 1.75 million heat pumps. And when I say heat pumps, I'm talking about air source heat pumps for space cooling and heating. We don't track water heaters. We do have a sister association, the American Supply Association, that handles all things plumbing, essentially, So they do track that information. But I just, when I talk about heat pumps, unless I talk about water heating, I am very specifically talking about space heating or space cooling. But we do believe that there's going to be a replacement rate of about 80,000, especially in 2022, and roughly the similar than in 2023 here next year.

If we go on to this next slide?

And so this is where incentivizing consumer behavior is very important to bring that growth back to what we're kind of seeing nationwide. And there's kind of two ways to do this. You can do it directly to the home or building owner, depending if you're talking about, you know, a residence or a business, but there's pros and cons to both that, or a point of sale through the contractor. With home and building owners, there's typically a delayed financial incentive. So it’s, you know, you get it installed and then you get the rebate afterwards, is typically how we've seen this done in the past. So while there's delayed financial incentive, it is a much easier system of determining income verification or anything along those lines if those are necessary.

There is no third party required to determine income, anything along those lines. So if this is going to be a program where it will require income, sometimes it is easier to do the homeowner, but they don't have that incentive at the same time. And so fewer people maybe will use that incentive because they don't see that immediate financial impact.

On the flip side, if you do point of sale through the contractor, you do have that instant financial incentive. The downside of that though is it requires some form of income verification. And the worst form of that that we could see is where literally someone is just having to hand over a photocopied tax return to a contractor to do income verification. And so this is where there's -- definitely, it's a harder system to implement where you do get that instant financial incentive, but at the same time, there's more hoops to jump through for the contractor. And some certain contractors just simply won't want to work with this system.

And so it's going to be harder to get everyone that is -- and I'll talk about this more later, you know, whether it's a time versus financial situation, which one's more important to the consumer and to the contractor.

I do want to point out that, you know, we do see targeting the incentives to the either the consumer or the point of sale through the contractor is the most efficient method of doing this, you know, because it's making sure that the right people receive the benefit. When you do midstream -- and when I think of this stream, I'm talking about the wholesale distributor. Some folks do call contractors midstream to be there downstream, but again, I represent wholesalers. And then you have upstream incentives that would affect the manufacturers.

These really just don't solve demand-side problems in the same way that downstream ones do because there's less visibility of this rebate to the consumer to understand they are getting a beneficial financial incentive to install this piece of equipment.

When you're talking about upstream or midstream incentives, when you look at the behavior side of incentives, they're really only going to do it from what's called the, you know, outside viewpoint where, you know, you do see people that like to -- you know, they do get an incentive for buying a thing like an electric car. But at the same time, because they're driving that car, there's this outside viewpoint that they feel like they are being viewed as more environmentally friendly.

You don't have that in HVAC. HVAC is very much a hidden good. And so in those situations, that's where you need the direct-to-consumer or nearly direct-to-consumer-through-the-point-of-sale incentive to get them to do that because it's just not as visible that while I'm installing a heat pump or, you know, a highly efficient piece of equipment, you don't have that sort of incentive in the same way you do with financial incentives.

So if we go to the next slide?

And this is where we want to talk about balancing that time versus savings. And, you know, savings absolutely plays a major part. But unfortunately, and if we go to the next slide, we'll see that 80 percent of all sales through wholesale distribution are because of through add-on or replacement markets. And replacement is typically because of an emergency replacement or something broke. And so time there becomes much more critical, and incentives sometimes will be given up to make up for that time.

But overall, we see essentially four situations when it comes to HVAC demand. Starting in the top left, you have new construction of single-family homes. This is much more driven by comfort, so less about timing, so it's comfort and financial incentive a little bit.

More on the top right there, you have new construction of multifamily home. This is much more cost-driven, where they're trying to build as many units as cost-efficiently as possible.

In the lower left-hand side, this is add-on remodeling, so this is where someone is expanding their home or simply remodeling their home. Their current system has not broken. It's just they're upgrading because they want either a larger home or a more efficient home. This is much more comfort-driven, and incentives can help, but it's going to be more about their comfort.

And then lastly, in that bottom right-hand corner, this is replacement. This is our largest demand force through wholesale distribution, where it's typically an emergency, not always, but typically an emergency replacement of existing equipment. And so that's where you have to balance how this incentive program will work, where it'll work with the need for speed in replacing something that has broken?

So if we go to the next slide?

This is where, less so on the speed side of it, but also considering comfort. California has multiple climate zones. A simple Google search told me that Bodie, California is typically the coldest place in the state, and yesterday's weather forecast will tell you the same. It was 15 degrees there, whereas in Palm Springs, it was 52 degrees. It's almost a 40-degree difference from their high to their low today, if you look on those two highs and lows.

And so an incentive program needs to make sure that we're looking at California as a whole, not necessarily just where most of the population is. Obviously, most of the population lives in places that aren't like Bodie and very cold. They're going to live in places that are much warmer. But we need to consider people that are living in much colder climates than the average in the state.

And so if we go to the next slide?

One thing about how this incentive program is designed is to realize that when we look at -- essentially, we have to balance three points. Heat pumps are great in a lot of ways until you get to super cold, then you need a super cold -- or excuse me, a cold-climate heat pump. They do exist, but most people in the industry will tell you they are possible to build, but they're not cheap to build.

And so if you're trying to balance the, you know, efficiency, the cost, and then the heating capacity, that kind of three-way triangle, the best way to do that is to allow dual fuel, where you install a heat pump and a high-efficiency gas furnace for those times when it's going to take more energy to heat the home than, frankly, you're going to get out of the cold air outside with a normal heat pump. And this way, you are still maintaining that appropriate price point for low-income housing and still maintaining that comfort level for, you know, essentially life-saving heat in a building, at the same time, reducing the carbon that is used to heat that home.

And so, you know, some folks would push for 100 percent electrification, and it is possible, but it is very expensive. And so that's where I do believe that if we're going to balance those three things, dual fuel should be allowed and, you know, especially for those folks that absolutely do need that sort of backup source of heat through a gas furnace.

If we go on to the next slide?

One other thing that I do want to talk about from an incentive standpoint is that when we look at incentivizing consumers, we talk about two sources, one through the consumer directly or through the point-of-sale contractor. There is a third option that's rarely looked at, and that is going through financing. Financing kind of solves the best of both worlds, where it is directly at the point-of-sale, because financing is what actually pays for the install. And then because they're doing financing, they need credit checks, things like that, they already have access to income verification tools that make sure that there is a secure way to determine whether or not this person has the income that would qualify for an incentive if you're doing an incentive-based qualification.

The only downside is that not enough contractors are asking about financing when they do these installs. About 50 percent are almost never offering it whenever they do it. And unfortunately, a large part of that is because, that we've heard, is that folks don't want to assume that someone needs financing for a job.

Frankly, you know, I think we've all seen, whether it's Amazon or any other online shopping, financing is available for everything. People, no matter their income, are doing financing because it makes a lot of sense in a lot of situations. And so offering an incentive program through financing, I think, has the benefits we've already mentioned, but also helps spur contractors into using financing programs. And then that way, more products are financed, and you can get probably a better system installed through a financing system where they have to pay for it all up front. And that's regardless of whatever incentives are on top of that.

Next slide, please.

Now I do want to talk about -- I've spent a lot of time on, you know, consumers and those things, that I want to talk about what the wholesale distributor's response is to these downstream incentives.

So if we go to the next slide?

This shows, you know, how we respond to demand changes. Wholesale distributors typically load in once or twice a year. So they bring in a large amount of inventory in spring, fill the warehouse full of units, and then sometime in summer, they've seen what has been selling and what hasn't, and they can adjust what their inventories are based on what has been selling. Same thing with late season orders, where if they know they're going to run out of something before the end of the year, they can get some late season orders in. And then through winter, they sell their remaining inventory before they do another load in of that next model year's equipment.

With incentives that are known ahead of time, we can adjust what our ratios are of loading equipment. So that way we know, you know, when things like the TECH Initiative happen, many of our distributors brought in more heat pumps than they were planning for initially, because they knew those incentives would help lead to more sales, and they did. Every distributor I've talked to that's worked with the TECH Initiative has had glowing reviews of how much it increased their heat pump sales in some ways and ways more than they were expecting, and that's where the mid-season restocking, they were able to make up for that.

But if we go to the next slide, but one of the things that it did do is impact how the payments to distributors happen. One of the things that -- and this is a very complicated graph that we use and show our members about what the averages are for -- as cash comes in and cash goes out in exchange for products.

The important support of this graph for me in this context is these green side. This is when cash comes in, so product is paid for after it's, you know, it's left the warehouse, it's gone, it's been installed in the consumer's home. We are waiting for that contractor to then pay their invoice. And the average collection right now is 49 days.

If the incentive program goes where it is a point of sale and the contractor is waiting then essentially for a government check to bring that money in, that can slow that down, and that impacts how much inventory distributors have the ability to buy, when you get back to the top of that graph, and how much inventory we carry because we do have to have a certain amount of cash flow. So I do encourage any incentive program to be aware of what's needed there to make sure that it's very quick in how it moves cash through the system.

Next slide.

I think, yeah, the last part I want to talk about is incentivizing contractor behavior.

So if we go to this next slide?

To me the best thing that you can incentivize is training. We have companies that are pro-training. They highly believe in how it makes their technicians more efficient. It reduces warranty calls. And these are the companies that are most ready to transition to mildly flammable refrigerants. These are the ones that are low global warming, potentially low GWP, that we're transitioning to over the next couple of years.

On the flip side of that, however, we also have a lot of companies that are anti-training. They believe that training time is lost revenue. And so these are the folks that will avoid delaying -- avoid or delay switching to mildly flammable refrigerants to low GWP refrigerants and try and continue high GWP ones. Also very likely to delay necessarily using some of these incentives.

So providing incentives for technician training, where they're making up for that time not in the field, is a great way to ensure that technicians are trained for low GWP refrigerants, better installation of energy efficient equipment, so that way that energy efficiency is translating into being installed. The panel before us talked about that, how not as much equipment is installed as it should be, and so it's not getting that higher energy efficiency that's expected. And then at the same time, overcoming, frankly, the stigma of heat pumps that does exist in the contractual community.

I believe this is my last slide, but can we go to the next one if there is? Yes.

I believe the Q&A will be at the end, but happy to take any questions.

MR. SOKOL: Thank you, Alex. Very good presentation, covers a lot of ground there. So I think there's going to be -- I certainly took a few notes and have some questions.

We'll see if Commissioner has any immediate questions. I think --

COMMISSIONER MCALLISTER: No, let's just keep moving and we'll get to the end and do Q&A there. Thanks, Michael.

MR. SOKOL: Awesome. Yeah, not seeing it. So let's move to the next presenter and then we'll circle back for a discussion after we get to the presentations.

And next up is Thomas Enslow with Adams Broadwell Joseph and Cardozo.

Go ahead, Tom.

MR. ENSLOW: Thank you, Michael. My name is Tom Enslow. I'm an attorney with Adams Broadwell, Joseph &

Cardozo. And I've been representing coalitions of union and environmental equity groups, advocating for workforce standards for over a decade for energy efficiency programs.

I'd like to first thank the Commission for inviting me to speak today and for having this workshop to address the issue of equitable decarbonization at the outset of this proceeding, rather than as an afterthought, as is often the case for incentive programs.

For, you know, my clients and a coalition of groups that I've represented, workforce standards are key to ensure equitable decarbonization. Well-designed workforce standards ensure that taxpayer-funded building decarbonization programs create equity and economic opportunities for advanced communities and ensures that the work performed for these programs maximizes energy efficiency and greenhouse gas reduction gains and is safe and reliable.

You know, we have study after study over the last decade that's found that the lack of workforce standards results in energy efficiency measures that fail to meet their expected savings. One study, for example, found that 85 percent of HVAC retrofits are installed incorrectly, resulting in losses of up to 20 to 30 percent in energy efficiency. And this failure of energy efficiency measures to achieve their intended results can be directly linked to the use of poorly trained workers.

Reports prepared by California's utilities have found that the majority of HVAC installers don't have the technical knowledge, skills, or abilities to properly install systems. Contractors, you know, lower-level contractors simply aren't investing in the training of their workers. And as long as incentive programs are designed to encourage hiring the cheapest workers, contractors that invest in training will never be able to compete with the contractors that fail to invest in training and fail to retain good workers.

And because of this, it's not -- you know, we can no longer push off whether or not we're going to include workforce standards. Deciding not to include workforce standards is, in fact, a policy to support low wages and to support the avoidance of training and to support poor installation practices. Now California utility reports have found that poor quality installation is not the result of a lack of available training. The problem is that contractors are allowed to take advantage of public incentives, even when the installers have not been providing the proper training to their workers.

Because of this, for over a decade, study after study and state policy after state policy has called for adopting workforce standards for energy efficiency programs. In 2014, for example, a comprehensive workforce Standards Guidance Plan was prepared by the Don Brielle Center on Employment in the Green Economy. And that plan identified both the need for workforce standards in energy efficiency programs and set forth several specific recommendations, including imposing skilled workforce prequalification requirements based on requiring 60 percent of the jobsite workers to be comprised of apprenticeship graduates for larger projects, prevailing wage requirements so that contractors will be chosen based on quality rather than just price, and workforce skill certification requirements for installation of specific technology.

The guidance plan also recommended adoption of a responsible contractor policy for use across all energy efficiency programs. And this recommendation was codified in SB 315 in 2015, which required adopting a responsible contractor policy. But that policy was never actually adopted, and none of the Don Brielle Center recommendations have been implemented.

Now in the years since, the Energy Commission, the CPUC, the Workforce Development Board have continued to issue policy after policy calling to transform energy efficiency incentive work from the low-cost bidder framework to the lowest-cost qualified bidder framework through the incorporation of workforce standards. Yet despite these policy pronouncements, the state incentive programs continue their historic practice of rejecting workforce standards in order to maximize contractor participation. And this historic framework has to change. We can't solely look at how many contractors, you know, making sure every single contractor can participate. We need to make sure that in order to participate, you meet certain standards in order to incentivize change in how these contractors operate.

To ensure equitable -- you know, one of the things that we really, you know, need to make sure is that when we have subsidized projects, including incentive projects, that in order to participate, we need prequalification. That's a fundamental change that needs to happen. We need to make sure that anyone who is going to be able to use these incentives and benefit from these incentives demonstrate that they use workers that are actually trained and qualified to install the measures that are being subsidized.

We also want to ensure equitable access to the jobs created by these programs. This is public expenditures. You know, and the Commission should also require participating contractors to demonstrate that their hiring policies include outreach and training opportunities for disadvantaged communities through either, you know, participation in state-approved apprenticeship programs that have that sort of outreach built in, or through targeted hiring goals, along with first hire agreements with local job development entities. That's how we make sure that the jobs that are created are equitable as well.

Now implementing these requirements fundamentally means moving away from a framework that puts the onus of selecting a qualified contractor on the consumer and replacing it with the requirement to use a prequalified contractor. That's fundamentally the change that's going to have to be made. Now opponents of workforce standards often raise the claim that adding contractor standards beyond local permitting and licensing requirements will create barriers to program participation. But, you know, that's a feature, not a bug. We need to stop subsidizing low-road contractors in order to incentivize those same contractors to change their business practices.

Now that's not to say there's not barriers to implementing workforce standards and incentive programs, but we need to be committed to moving past those barriers. Now for a direct-install program, it's easier. Those programs are larger. They involve fewer contractors. They're generally prevailing wage work. And those programs should ideally apply the skilled and trained workforce requirements set forth in Public Contract Code section

2600, which sets forth a standard that can be adopted by local and state agencies that requires a certain percentage of workers on a site to be apprenticeship graduates, either union or non-union.

You know, apprenticeships are the gold standard for training, provide concrete skills, industry-recognized certification, both classroom and hands-on training. But, you know, we also recognize that for incentives targeted at single individual small projects, particularly residential projects, imposing a skilled and trained workforce requirement is more difficult and not always practical. For example, you know, no union contractor, almost no union contractors would bid on a single-home HVAC retrofit project, so it's not a big enough project for them.

This doesn't make it impossible, though. There's several paths to incorporating workforce standards into smaller incentive programs. You know, one is adopt a lighter workforce standards for small commercial residential incentives. You know, a lighter workforce standards and skilled and trained, you know, essentially, you know, it means that you've got to make sure there's at least some training.

You know, the consensus that has emerged from the labor environment and equity stakeholders I've worked with over the last decade on this issue is that at a minimum, you know, at least 50 percent of the workforce on a subsidized energy efficiency project, you know, should meet both experience and training requirements. They should have, you know, three to five years of experience, and then either have apprenticeship training or community college degree or, at a bare minimum, manufacturer training and then installation of the specific make and model of equipment being installed.

Now manufacturer training varies widely in scope and quality and on a broader basis. You know, we don't feel it's sufficient, but at least provides a bare minimum floor that can be applied to smaller single building retrofit projects, particularly in the residential area where, you know, I don't think the market's ready to handle a skilled and trained workforce requirement on a project by project basis.

Another approach that can be done is to bundle the work where it's possible to make it a bigger product for the bidding contractor. That will reduce overall costs and create projects more attractive to high road contractors and allow you to have higher standards. Community-scale projects where a contractor bids before multiple retrofits and are required to meet high road standards would create the sort of framework that would encourage participation of union and other high road contractors in that sort of work. Again, that's easier in a Direct Install Program, but it's not impossible in an incentive program as well.

Finally, incentive programs could prioritize high road contractors by given contractors that meet certain standards first crack at the pot of incentives and open up the incentives to other contractors only if the high road contractors are not able to use incentives. This addresses the concern that some people raise that, well, you know, are there sufficient contractors and workers out there to actually meet these standards and achieve the goals of the program? And we believe there are.

But we also believe it makes sense to, you know, have a backstop, which is let's give priority first to high road contractors. You know, if they can't meet all the needs, then let's open this up, you know, to another level. And you could have certain kind of levels of who meets this.

Finally, you know, we believe that pre-qualified contractors should either have to participate in an apprenticeship program or have adopted workforce diversity and inclusion goals, including a process to monitor and track the success of meeting those goals. And we think it's important that we are creating good, green jobs that disadvantaged communities have access to as part of these programs. You know, this is public funding, and I think the goals for this has to be more than just, you know, meeting the decarbonization. We want to create good jobs, provide access to jobs, and make sure that people get good work.

With that, I think I've used up my time, and I'm happy to answer any questions.

MR. SOKOL: Thank you, Tom. Certainly, a lot of important considerations on the workforce and contractor side of the equation. And again, I took a few notes, and I think we're worth following up in the panel discussion. In the interest of time, let's go through the other presenters first, and then we'll circle back to that discussion, if that works for you?

So with that, I will go ahead and call in the next presenter and panelist, who is Anne Niederberger from Enervee.

Anne, would you like to introduce yourself?

MS. NIEDERBERGER: Yes, I would, Michael. Thank you very much, and good afternoon, everybody. Thank you for hanging in there for a whole day workshop. This is great. We're going to switch gears a little bit here and talk about how to get incentives to under-resourced communities.

I'm Anne Niederberger. I head up Market

Development at Enervee, where I've been spearheading our efforts to drive equitable decarbonization, working together with state energy offices and utilities. And prior to Enervee, I was actually a consultant, and I worked almost exclusively in developing countries and emerging markets. And so this whole topic of how to serve under-resourced communities is really near and dear to my heart personally. Unfortunately, such communities also persist here in California. But as we're hearing today, we can really change that, so very excited about this.

Next slide, please.

So I took this quote from the notice for this workshop today, and I just want to give you a second to take a look at it, but I think it does a wonderful job of communicating why we're all here today. So we're here because equity will not just happen. We're here to ensure that underserved households and communities receive direct and intentional investment to remedy past inequities, and also to contribute to global climate protection. So we're here because the Equitable Building Decarbonization Program has two goals, to reduce greenhouse gas emissions in homes and to advance energy equity. And the fact is we won't achieve the first goal unless we achieve the second goal.

Next slide.

So for the Incentive Program, 50 percent of the funds are intended to benefit under-resourced communities. So I wanted to take a moment here to explain what that means. AB 209 defines under-resourced communities by referencing section 71130 of the Public Resources Code. And then this section, in turn, defines under-resourced communities as a community identified pursuant to either section 39711 of the Health and Safety Code that you see there on the left, or section 39713 of that Code, or a certain subdivision (g) of a section in the Public Resources Code. So it's any one of those qualifies as an under-resourced community.

And on the right side of the slide, I've put how under-resourced means are defined in each one of those code references. And so you'll see that there's five different definitions there that should all be included when we think about under-resourced communities. So this means to me that the CEC can and should include all of the geographies that meet any one of these definitions when tracking resources invested to benefit under-resourced communities.

And from the perspective of the private sector, it will be critical for the CEC to provide data tables or API access to make it really easy to unambiguously target, track, and then also report on spending and benefits that are going to these under-resourced communities. This is certainly going to be extremely important to accelerate market transformation, to have that ready access to know who our target audience is. And we heard a little bit about that before when talking about direct install.

So with the exception of the second bullet here, all of these definitions are geobased, which is a really good thing because individual participants then don't have to provide documentation of income. And that removes a significant source of friction and ensures that every eligible Californian can take advantage of this Equitable Building Decarb Incentive Program.

Next slide.

So now quickly turning to incentives, there's obviously a wide array of possible types of incentives and I've just listed a few of the more prominent ones that have been suggested. And you heard some other similar and different suggestions today. So we have a great deal of experience with rebates, for example, everything from the consumer rebates, either post-purchase or point-of-sale rebates that were just talked about. But we really have to ask ourselves how these rebates have worked for low-income and disadvantaged communities and whether we can tweak them to do better if we are going to go that route? Vice Chair McDonald, this morning, raised this very question to the panelists in the earlier session.

And then we have, also, some more maybe

innovative approaches that have also been teed up a little bit, like things related to financing, like for example, interest rate buydowns to enable zero interest financing. And then we've also heard about things like training and marketing, spending money on things like that as well.

So the CEC is obviously going to have to be very intentional about incentives to ensure that the statewide program both advances equity and really accelerates market transformation, rather than just doing more of the same because that's not going to get us where we need to land. And we also need to consider all the other programs and incentives that are already available or will become available, as we heard from Jennifer and Rory this morning.

So we need to be asking ourselves where are those gaps and how can we drive the greatest equity and carbon impacts now, but also to ramp that up in the future? Where can we have the greatest market transformation impact?

So everyone, of course, here is going to have the opportunity to weigh in on these questions, both today, we’ll have a lot of time for discussion, and also in response to the RFI.

Next question, please -- I mean, sorry, next slide.

So I just wanted to wrap up, just talk about one significant gap that I'd like to highlight, which therefore also represents a great opportunity. It's a big gap, and it's a great opportunity. And that is empowering all households to buy clean and efficient appliances and other plug loads on their own.

So both the SB 350 Low-Income Barrier Study, as well as the 2019 California Energy Efficiency Action Plan, called out the importance of addressing plug loads. So why is that? You know, we've heard a lot about the building, you know, major HVAC and central HVAC systems and heat pump water heaters, so why care about plug loads?

First of all, plug loads are responsible for well over half of electricity consumption and bills. And nearly 60 percent of energy savings potential for low-income households lies with appliances and other plug loads, according to the most recent Low-Income Potential and Goals Study, which I've cited here in this in this slide.

The second reason is that plug loads are bought by both renters and homeowners. And a recent study I came across for Marin Clean Energy found that over 70 percent of single family renters, and 25 percent of multifamily renters said that they actually have agency to make appliance purchases on their own. And that's why they have agency to make appliance purchases on their own.

And so, you know, listening to this morning to the earlier panel, you know, if we are going to be doing some real targeting on the Direct Install Program, appliances offers an opportunity to be much more inclusive, when people are investing their own money in making purchases.

And finally, the vast majority of plug load purchases are made at retail by individuals and don't require contractor installation, certainly not a licensed contractor that would be needed for something like a heat pump water heater.

So with millions of appliance purchases being made annually, incentives could be deployed rapidly to benefit under resourced communities and drive equitable decarbonization by allowing anybody who's in the market to buy something for an emergency replacement to make sure that they get the most efficient product in their home.

And then, last slide.

So how can we tackle plug loads? I mean, the reason why this is such a big opportunity, why the savings potential is still so big, is because we haven't effectively addressed this for the for the low-income segment. And I believe that zero-interest financing holds a lot of promise. I'm going to be talking a little bit here about the financing program that's already operational.

So even with interest rates between nine and ten percent, the statewide ratepayer funded GoGreen Home Energy Financing Program, which is administered by CAEATFA, I'm not going to spell it out, because it's always a tongue twister, but CAEATFA is an agency within the state treasurer's office that administers this ratepayer funded program. So even with those interest rates, the program has shown exciting equity outcomes from microloans for one off appliance purchases.

And here I just pulled out a couple of stats from a recent report. You see that the vast majority of microloans have gone to underserved borrowers. And those are both low and moderate income and people with very low credit scores. And you also -- we have also found that low and moderate income in DAC households are seeing a healthy share of the energy savings benefits.

So the statewide program could be augmented then with an interest rate buydown, for example, as an additional incentive to eliminate interest payments for these underserved audiences. And this can make efficient shopping for everybody the norm and not the exception as it is today.

And following up on what Commissioner McAllister was saying at the beginning, the Equitable Building Decarb Program, doing something like this could serve as a, really, as a Quick Start catalyst. And as an input to the

California Green Bank, when they actually go after some of the $27 billion that's available through the Greenhouse Gas Reduction Fund through the Inflation Reduction Act, if we could demonstrate this quickly now, they can use that for their application and have pulled in a whole other source of funding to do something like this going forward. So I think that's part of the part of the challenge thinking about what can we do now that will open up bigger opportunities for transformation going forward.

So just wanted to offer some food for thought. And back to you, Michael.

MR. SOKOL: Thank you, Anne. Very informative. And certainly need, you know, an eye on the immediate priorities with one eye on the longer term 2030 and beyond, so scalable models make a lot of sense. And, you know, I appreciate the recognition and shoutout on the Low-Income Barriers Study, which certainly has informed a lot of our thinking on equitable building decarbonization, so we can follow up on more of that in the discussion in just a moment.

But now I will turn to the next panelist, Helen Walter-Terrinoni from Air Conditioning, Heating, and Refrigeration Institute.

Helen, apologies if I stumbled through your name.

MS. WALTER-TERRINONI: No, you did fabulous, and thank you, Michael.

So my name is Helen Walter-Terrinoni. I'm the V.P. of Regulatory Affairs at the Air Conditioning, Heating, and Refrigeration Institute. So we represent more than 300 manufacturers of equipment that keep us all warm and provide us warm and cool and keep us in hot water.

So with that, I wanted to kind of talk a little bit. So I wanted to -- you've heard a lot of presentations today. It's been a great day, a lot of really great presentations, and so I wanted to kind of dive in a little bit into some of the questions that I think that we're all asking ourselves, or maybe we should be asking ourselves as we think about this effort.

So you know, firstly, somebody reminded me this week that, around refrigeration equipment that, you know, fundamentally, the number one priority is to keep food cool. And so like that, heating equipment is here to provide life saving warmth; right? So you know, as we think through how to think about incentives and how to think about spending money, I think, you know, we probably need to lay down some principles and priorities.

And so continuing the consistent supply of air and water heating at a reasonable cost, of course, is essential. And so I think that needs to kind of stay in the back of our minds as we think through this challenge.

You know, of course, this lends itself to water heating as well. So I would mention that, too, as a basic principle of, you know, before anything else, we want to, you know, kind of keep that in front of us.

Then Alex Ayers talked a little bit about emergency replacements, so that 80 percent of equipment sold is sold either for, you know, that emergency replacement or to kind of increase the capacity of the equipment. And so I've been thinking a lot about, you know, are there ways that we could think about taking the emergency out of emergency replacement? So could we approach this from a couple of different ways?

So if I think about this chunk of money that the state is going to be parsing out to folks, I think about this in a couple of different ways. It could be spent in a way that provides a lot of money to a very small number of people, relatively, or it could provide perhaps a smaller amount of money to a larger number of people, kind of preparing for readiness. So what do I mean by that?

So you know, one thought would be do you kind of set folks up so that when they replace their equipment, which may be on an emergency basis, they're prepared to use electric equipment, perhaps? And so, you know, do you run electricity to the room inside a house where the heating equipment is placed? Do you look at increasing the capacity of or adding an electrical panel for folks?

So that's just one way to think about, you know, could we engage more households if we were to kind of put them in an emergency or to kind of put the preparation in place for a future transition as equipment becomes kind of out of service? So one way to think about affordable heating for families.

Certainly, you know, there needs to be kind of some thoughts around the reliability and the shift of the peak demand load to wintertime versus summertime. And so my assumption is that the great State of California is kind of doing some work around this. And that from, again, being -- keeping in mind that folks need to have access to reliable heating, that that reliability is kind of being thought through.

So what do I mean by that? So if monies are going to be spent on a multifamily home or a large apartment building, you know, is there backup heating available for, is there sufficiency for peak loads? You know, kind of those kinds of thoughts to kind of consider as we think through this.

You know, finally, you know, I think we have done a lot of work at AHRI kind of preparing. Alex talked a little bit about the refrigerant transition. So you know, we've done a lot of work pulling stakeholders together to look at barriers to transition and trying to think through how to address those barriers. And we have found that that has been a very important way to eliminate opposition, as well as, you know, Alex talked a little bit about there is some stigma associated with heat pumps for some people, because of past experience or rumors or what have you. So, you know, do we need to kind of look at how we communicate with folks?

If we were to look at a variety of what are the barriers that exist? So, you know, ask ourselves, you know, why don't people use heat pumps today? You know, one reason for that is maybe I don't know about heat pumps. Another reason certainly could be financial, which the incentives can help to address, so communications, as well as incentives. One reason can be that, you know, I didn't choose a heat pump because I don't have the electrical hookups that I mentioned earlier. You know, another reason could be that, you know, that the contractor or technician didn't tell me about them. So you know, kind of getting to those fundamental basis, you know, to kind of think about those things and, you know, looking at barriers and trying to think through what would be needed to address those barriers may be helpful.

So I know that we don't have a lot of time. I think that -- but I did want to kind of lay out some of those questions for us to all be thinking about, as well as kind of the principles that we want to probably keep in front of us.

I know that, you know, in talking about incentives a little bit, you know, I know that this, on the surface, looks like a lot of money. But when you think about the number of heat pumps, the goal of the state, this really doesn't come out to as much as, you know, you might want to have in place to transition everyone to the 6 million heat pump goal.

And so when I look at this program, I would say, as well, that I do look at this as a little bit of a pilot program. It's a really big pilot program with maybe several test cases kind of being run under it. And I do think that it's important to do some data collection. So as we think about, you know, there was a conversation earlier around gentrification, you know, so maybe looking at kind of before and after pictures of neighborhoods, because I don't think this will be the last opportunity for incentives in the state.

And so, you know, kind of understanding what, you know, kind of what worked well and what didn't in certain neighborhoods and documenting that, I think, may be very helpful. You know, what's most impactful? Is it a small amount of money for a large number of people? Is it, you know, a large amount of money for a small number of people? And kind of documenting the success rates of those and the total impact of that, I think, is going to be something that could be very, very helpful.

So those are some of the things that I've been thinking about as I've been thinking about this transition for California. You know, how do we work together to, you know, kind of look for barriers and address them, kind of a gaps and needs analysis and make sure that we're addressing those things? And then also, you know, trying to look at this as a series of small experiments where we're documenting what works and what doesn't, as well as making sure that we're getting to kind of root cause of what the problems are and trying to address those.

So, Michael, I hope that's helpful. And let me turn it back over to you for the next speaker.

MR. SOKOL: That's great, Helen. Really helpful. Lots of food for thought. I think there are a few subjects that are emerging that are going to be good for follow-up discussion on some of what you touched upon there, as well, and so -- but we'll hold off on the detailed discussion until we get to our final panelist of this panel.

And I'd like to introduce Evan Kamei from Energy Solutions.

Evan, go ahead.

MR. KAMEI: Great. Hey, everyone. Thanks for having me. Really appreciate this opportunity to present and sit on the panel. My name is Evan Kamei. I am the Associate Director of Clean Heating at Energy Solutions and the Program Manager of TECH Clean California. And today, I'm here to talk about TECH. And it's California's flagship Market Transformation Initiative focused on clean heating for both space and water heating.

And just to preface this, I'm going to move through these slides fairly quickly, but fear not, I will provide some resources at the end if you're interested in learning more.

Alright, so moving on. So for those of you that don't know what TECH is, and I saw a lot of familiar names in the participant index there so this might be review, but for those of you that don't know, TECH has three pillars as part of our strategy.

And so the first is spurring the clean heating market through statewide strategies. That includes contractor incentives, which Alex Ayers explained just a few presentations ago. It includes workforce education and training. And really, the goal is to motivate the supply chain to make heat pump installations a core part of their business and to support consumer demand. And then to drive that consumer demand, we have a marketing campaign called

The Switch is On that's focused on driving that there.

The second pillar is focused on testing and assessing new strategies through regional pilots and our Quick Start Grants. So we basically have six pilots that we've launched. All of them are targeting a very specific key barrier facing the clean heating market. And so those are about two years long each. And then for any ideas that we didn't think of, we have had two solicitations for Quick Start Grants. Those gather a bunch of ideas and then we give out grants up to $350,000 to execute projects, write a report, and learn about some of these barriers and solutions to those barriers.

And then the last pillar is informing the long-term building decarbonization framework. And so this was touched on a lot. Helen just mentioned this. You know, we have a very small amount of funding to catalyze large scale change in California. And so one solution to that is TECH providing as much information as we can, both on the quantitative side through our data analysis, through our incentives, but then also qualitatively through our pilots and taking all these lessons learned and giving that out to our industry and to stakeholders.

TECH incorporates sales, meter data, and those lessons learned into our public reporting website. And so you can go there, you can download our data, you can learn about how we're quantifying decarbonization impacts so that, really, if you're trying to make decisions, you have what you need, you have the best, most recent available data possible.

So underlying these three pillars, we have some principles of speed, scale, simplicity, and sharing data. And today, I'm going to be just sharing some of our results and lessons learned that we've taken away from about one-and-a-half years of implementing this program so far.

Before I do that, I just wanted to recognize that TECH is implemented by a ton of different partners, each bringing a unique skill set and making it a success.

So moving on to some of the results and lessons learned. We launched statewide incentives in December 2021, and it was almost a hockey stick approach in terms of the demand. And I know Alex Ayers also mentioned this, you know, distributors really saw an uptick in the heat pumps they were selling. That's great. That was the intent of TECH. We just got a little bit faster than we thought. And so for the whole program, we expected about 300 contractors to enroll over, you know, the three, four years of the program would be running. We got 907 months [sic], and that number continues to grow. We have enabled 20,000 units to be installed through TECH. And you can see how quickly that ramped up over just a short period.

And so, you know, some of the key lessons learned are you have to work with the key supply chain market actors to unlock that participation. And then very clearly, what we're seeing across the board in many programs like this, such as New York, you really have to plan for more demand and scale than you think. And so this is on the single family market rate side.

And then shifting the focus a little bit to equity, you know, we could have chosen kind of like a kicker incentive to complement our market rate incentives. But instead, we were really trying to figure out, you know, how can we maximize the impact of the funds and target key barriers?

And so I mentioned the Quick Start Grants. In our first solicitation, 75 percent of those grants had some element of equity. In our second solicitation, we ramped that up to making it a requirement, so we actually saw that it went up to 100 percent of our spend going to equity communities. And then two of our pilots really focused on the low-income side. So we have our Low-Income Integration Pilot that provides up to $10,000 of remediation costs for the San Joaquin Valley DAC Pilot. It's also looking at integrating with other low-income programs as well. And then we also have the Low-Income Multifamily Pilot, which provides some technical advisory planning for multi-family building owners.

And all of this is to say that, you know, we want to take a very comprehensive approach to really identify those key barriers. And through this work, we kind of are on track to move to our goal of 40 percent of all of our benefits going to equity communities. So you can see a breakdown there across all the different key budget categories.

Heading into next year, we're using some of these lessons learned to put together a robust low-income, moderate-income effort for 2023 that will be under the TECH umbrella with the $50 million of additional funding that we're receiving through the state budget. But if you're back with us back at 9 a.m. in the morning, Rory Cox from the CPUC was mentioning.

Okay, one more cool thing before I'll end this is really wanted to highlight one of our regional pilots. It's our Customer Targeting Pilot. This is really being led by one of our TECH partners, Recurve. And we're piloting a method to identify high-propensity/high-impact customers to assess what kind of intervention strategies we can use to identify, target, and turn candidates into heat pump customers.

And so on the screen here, we basically ranked customers into the top 50 percent of annual electricity usage. And then from that 50 percent, we also wanted to look at the top 25 percent usage disaggregated as cooling. So of these high users of electricity, who's using a lot for cooling specifically? And so you can see at the bottom some of our results. And, you know, seven percent of these customers have over two times the cooling burden of an average customer. And they also have two times higher peak demand.

And so we're now just really starting to dig into this targeting to align our intervention strategies, figure out what our best approach is as we start to relaunch TECH incentives in Q1 of next year. And to reiterate what others have said, you know, there's a lack of understanding around bill impacts. California is very diverse. But now we have the tools in our industry to see things a lot more clearly. And this is just one example of how we can use the data, how we can use some of these tools to maximize the use of available funding. So we talked a lot about balance between breadth and depth. I think this is a pathway to go and get both.

Alright, so to wrap things up, six million heat pump goal by 2030, here are six things as some key takeaways. So start now and iterate. Expect demand. Keep it simple. Catalyze innovation. Measure performance. And align investments and milestones.

And with these, I will end my presentation so we can move over to the panel discussion. But just wanted to say thanks again. Please reach out via email if you're interested. And as I mentioned at the very, very beginning of this presentation, here's our website if you're interested in checking out the data that's available.

So thank you.

MR. SOKOL: Well, thank you, Evan. And thanks to all the panelists for the really thoughtful talking points and presentations.

At this point, I would like to invite each of you to go ahead and turn your video back on. And what we'll do is get into a little more of a discussion to follow up on the presentations and the scoping within the RFI.

Commissioner, I see you're on the line here. Do you want to chime in on the outset?

COMMISSIONER MCALLISTER: Yeah, I just want to say thanks to all five of you, just really great perspectives. All the panelists today have been wonderful. This one, I think, just has a really nice complementarity, each panelist giving a unique perspective and a lot of substance, so thanks for all of you.

I think there are a lot of pieces, a lot of puzzle pieces on the table, and I think we actually have them all and turned up, so we're looking at them at the right side up and everything, and we need to figure out how to fit them all together to make something that really makes sense for people. And so I think now I'm tempted to ask some questions, but I think I'm going to just make a quick comment.

And then I'm sure, Mike, you have some thoughts that you've been jotting down and that you can structure some questions. So I think I want to leave that to you because I know you're good at that.

But I think the theme we talked about in the previous panel that came up quite a bit was data. And obviously that is really throughout all of the presentations, actually, in this panel in different ways. And, you know, it's not just about interval meter data and that kind of information. It's also a lot of complementary information that we can now integrate. And so I'm really excited about these tools.

And again, I want to bring them to bear on these big investments and not just for this large pilot, Helen, you call it a pilot, so I hadn't heard that yet, but it sort of makes sense, given the scale of our state. But really ensure that this near-term effort results in a solid foundation that gives us knowledge that we can then build on; right? Because data is not knowledge. We need to actually extract that knowledge.

And Evan, just want to say kudos to the way that you've incorporated the sort of IMD and that individual household assessment and then sort of comparison and the way you're doing the M&V (phonetic) and stuff. I think it's just really powerful and it's going to teach us a lot, so thanks for getting that first program report out recently.

And obviously, Anne, you're using data for really interesting targeting and nurturing the low-income market.

And, you know, Tom, I think we need to take another run at figuring out how to do some equipment tracking in a way that helps bring some sunshine to the marketplace and helps ensure that we do get quality installations and that we have sort of contractors that know that there's some eyes on them so that they know that they have to get a permit and close out that permit and get inspected.

So I think there are a lot of pieces to this puzzle. And I just want to say thanks to all of you for your pieces and that, your parts. You're playing your strong roles in helping nurture this ecosystem that we all want to thrive. And, you know, I think we need you to help us figure out how we can best get this program assembled and out on the street and operating, so thanks again. I'm just, I'm going to keep listening and looking forward to the Q&A.

So, Mike, I hand it over to you.

MR. SOKOL: Well, thank you, Commissioner. And, yes, echoing the thanks to all the panelists as well.

So I do have some notes and some questions here. And just to get things started, really, a lot of food for thought here and a lot of different sort of options and considerations; right?

And I think one thing from the state perspective, knowing how much ground there is to cover and really that this is just the down payment within that sort of portfolio that we talked about, any suggestions from the group here on how to go about prioritizing the different considerations, the different streams, the different incentive types, and to which actors? And I think, you know, really the question: Is there sort of a single targeted silver bullet type of approach upfront as we scale and add additional supplementary pieces, or is it really this portfolio approach that's going to be the most beneficial, all roads simultaneously, but within that, where should we prioritize?

MS. WALTER-TERRINONI: Mike, I have some thoughts about that. You know, I'm a nerdy engineer, so I love a good matrix in Excel; right? And I was kind of thinking that a way to think about this would be to kind of look at the priorities of the state; right? So, you know, Anne talked a little bit, you know, she had a great presentation, she talked a little bit about, you know, some very targeted needs for equity and some ways to think about that.

But from a priority perspective, you know, is the goal to kind of look at -- like if I were to make some quadrants, like there's a group of folks that could ultimately be left behind long term. So is it a priority to kind of go look at that, or is it a priority to just get as many heat pumps on the ground as possible, or is the priority to kind of longer term do this readiness thing where you're kind of putting the electrical in place so that you can get more longer term?

And so, you know, I think you could look at this as a series of pilot programs to kind of test each one of these to see what you get out of it, or you could kind of prioritize, you know, based on that. Because I think you're likely going to have to make some tough decisions because, although it's a lot of money, it's not, you know, it's not a lot of money. So just some thoughts there.

MR. KAMEI: Um-hmm. Can I also add to that? Or, Michael, go for it.

MR. SOKOL: Yeah, go ahead, Evan.

MR. KAMEI: Okay. I was just going to say, to echo what Helen said, I think in addition to, you know, kind of figuring that balance between breadth and depth there, I think having a very clear definition of under-resourced, underserved communities is going to be really important. Because I think that will define like what regions you set, and that will drive kind of like, okay, what are the key barriers to those regions?

Because, you know, I think it's like you typically think of like manufacturers, distributors, contractors, customers, but like, you know, in specific target communities, what about the building departments that are doing the permitting? Like, you might uncover like very specific barriers, and it might, you know, turn the key intervention points on its head a little bit. And I think it's worth thinking about some of these other factors.

MR. SOKOL: That's really helpful.

And I would say -- so, Tom, I see you have a response on this one, and then I'll ask my follow-up question. Go ahead.

MR. ENSLOW: Yeah. Ss to, you know, kind of how to prioritize the type of incentives, you know, that are out there. I mean, traditionally, there's kind of been three types of incentives to manufacturers. It's really to try to get them to get the equipment to market. But, you know, I feel like, you know, now we have, you know, heat pumps are available, you know, the markets, you know, the availability of the equipment is there, maybe not the numbers we want but, you know, that technology has been developed. The others to retailers to reduce upfront equipment costs, and others to contractors/consumers to reduce actual big costs.

And I strongly feel it's the last one that is the most important because that's also, you know, when you attach the incentive to the actual contractor consumer, that's when you can also attach other requirements to make sure it's installed correctly, to make sure they pulled the permit, to really make sure that, you know, everything that needs to happen to make this a success has happened.

So I think as far as, you know, how, you know, how to prioritize the type of incentives, you know, I think that that's the type of incentive it needs to be.

And it's also, I know you have a follow up question, but I'm also curious, you know, I feel like one of the barriers, really, on low-income customers, you know, being involved in this is that, you know, when you have customers who are living really paycheck to paycheck, none of them are going to be replacing an HVAC unit before it's an emergency. So the real question is: How do we make this work on an emergency basis?

And I'm curious if, you know, if Evan has any experience with that, if they've been able to, you know, have their programs work for an emergency basis, particularly where there might be need to be a panel upgrade, as well you know, how can we make that a reality?

MR. KAMEI: Michael, sorry, just to touch on that --

MR. SOKOL: Yeah, go for it. Go for it.

MR. KAMEI: -- I wanted to share like a really cool Quick Start Grant. And I totally agree. Like I'm not saying like contractor/customer incentives are not the way to go. I think it has to be a multi-pronged approach.

But a really cool Quick Start Grant that we had was Barnett Plumbing. They're a contractor in the Bay Area. They had this idea to do a loaner heat pump water heater program. So basically, like as soon as something would break down, they would replace the, you know, the gas water heater with the gas water heater until they could get everything installed and ready so that someone's not there waiting with cold water for like two weeks. And we've actually seen them, you know, totally increase their sales of heat pump water heaters. And it's like figuring out really unique solutions like that, that I think will get us there.

But I agree with you, I think it's really going to be like a replace on burnout focus.

MR. SOKOL: That's really helpful. And let me add a little bit of context and then I'll call in from the other panelists.

But I think, you know, focusing back that this is the Equitable Building Decarbonization Program, right, and there's at least 50 percent, which really should be the floor for the low-income and under-resourced community beneficiaries, and understanding, I think, some good presentations that emergency replacements can often be the biggest driver of replacement of this equipment makes a lot of sense.

And knowing that we need to move the entire market, but really starting first on low-income, residences and low-income customer communities, you know, how do we really do that? I mean, how do we flip sort of the traditional model on its head and really say, okay, we're going to make it so that the emergency replacement, the first choice is, you know, a heat pump, space heater, as opposed to whatever's on the truck that day? And then have the resources, incentives, and financing and other tools to really support that across the board.

Anne, I think you had some good slides on this. I don't know if you want to speak.

MS. NIEDERBERGER: Yeah. Yeah. Thank you.

I just wanted to bring in another thought and it follows up on what Alex was saying about the behavioral approach. I think it's really important to think about who's making the buying decision; right? And I think there's two main decisionmakers here. There's the individual consumer, in many cases, is making the decisions. And in other cases, a contractor is making the decisions about what they want to recommend and install.

And so looking at it from -- I want to focus on the consumer perspective. So what we've seen under that GoGreen Home program is that if you meet the people where they are, then you can get them to buy the products you want them to buy, and if you address their barriers; right?

And so what we saw in this program is by offering financing and doing digital marketing, because people, when they're buying things at retail, they are going out there and Googling, also low- and moderate- income people, they're going out there and researching product purchases, even if they end up not buying online, they're still doing research there. And we were able to then find people when they were in the market to buy, bring them to an e-commerce platform where then they were able to buy more efficient product. And what we found is the people who took out financing, and like I showed you, 70 percent were low and moderate incomes, and 85 percent were underserved total, they also ended up buying more energy efficient products than people who just paid with a credit card, so wealthier people who could afford to just buy it.

And that shows me that if you really do focus on the barriers and meet people where they are, you can go a long way with even something just like financing. And then when you have incentive money, you can make it accessible to a lot more people, maybe farther down the income spectrum. So I think that consumer focus is super important and focus on barrier elimination.

MR. SOKOL: I think that's really helpful. And a quick follow-up question on that line is, you know, my understanding, and it’s come up in other proceedings, too, is that one of the barriers for low-income customer participation in certain programs is lack of internet access. And I don't know if that's something, you know, what the actual latest numbers are, or how that factors into the sort of like --

MS. NIEDERBERGER: Yeah.

MR. SOKOL: -- probably an omni-channel sort of approach that we need to be contemplating here.

MS. NIEDERBERGER: Yeah. And for Enervee, everything we do is really digital, besides when we market, when we work with different partners, like State Energy Office or with a utility, there's sometimes other marketing that's not digital. But we do, we provide digital marketing but -- oh, I forgot what your question was. Sorry. Can you remind me?

MR. SOKOL: Well, I think the lack of internet access is one of the challenges --

MS. NIEDERBERGER: Oh, right.

MR. SOKOL: -- that we've flagged.

MS. NIEDERBERGER: Yeah. And so what we're seeing is just over the past few years, the people who are making purchases, for example, on our e-commerce site, the vast majority of these purchases nowadays are being made through a phone. It wasn't like that three years ago, five years ago, but there's been a major shift over to the phone as the device that people are using to do research and even make major purchases. So I think that, of course, there's going to be some segment of population that's not that TECH savvy, then we have -- that's why we have all these other programs; right? We have these Direct Install Programs and other programs. We have the ESA Program. But more and more people are connected enough to take advantage of these digital channels. And the digital channels are what allow you to put all the complexity in the backend, so, yeah.

MR. SOKOL: Thank you. That makes a lot of sense.

And, Evan, kind of circling back to you for a second with the TECH understanding, too, and knowing that there's sort of a backlog and the program relaunching early next year should drive quick demand, but are there lessons learned on things that can be leveraged, particularly for low-income customers where this additional funding or supplementary pieces could accelerate sort of the outreach and the awareness and access to these low-carbon building technologies?

MR. KAMEI: Yeah. I think on the low-income side, I mean, Nick Dirr, who was one of the panelists, Nick Dirr from AEA, we've seen that there is a huge demand on the multifamily side as well. And I think that is a key area when you're talking low-income that you absolutely need to target, you know, like especially in consideration of the 25C tax credits. You know, you have to be -- you have to have taxes to get the credit. You also, I think, have to be a homeowner. And so there's going to be a big gap there of needing to focus on multifamily.

And I think through what we've seen with TECH, that scales really well in like targeting building owners and managers. And so I think that could be one of the ways that we really focus in on the low-income side and get the immediate scale that we'd be looking for.

On the single-family side, I think it's going to have to go through contractors, making sure that they have the right training and orientation, especially depending on the mix and like what we're presenting them, whether it's like the EE versus electrification measures, weatherization, PV. I think like making sure they're equipped to go out and work with those communities will be really important.

MR. SOKOL: Thanks, Evan.

And Alex, I want to engage you on the discussion, so go ahead if you have something out on this or we can change it.

MR. AYERS: Yeah. One of the things that we do need a better method and kind of an avenue towards is landlords, building owners where they are typically housing lower-income folks where they will qualify. And, you know, one of the nice things about this is that about this program is it allows not just specifically income-specific, but it's, you know, disadvantaged communities.

And that's a group that, you know, where if you go to the landlord and proactively say, hey, you don't have a broken system yet, but there are incentives to replace it in there, they're going to see that as an opportunity to not have to worry about what is their loss for a month where they're going through a replacement, they needed a new electrical panel and all of that. That's typically not just money out of their pocket but doing something for their tenant as well in lost revenue where if they could do it ahead of time as a planned changeover, they're a lot more likely to move in that direction.

On the single-family side, we have seen programs, not specifically in HVAC but in other times where, if we know a person already qualifies through another program, that there are groups that essentially -- I mean, unfortunately, they act like a telemarketer, but they call you and they tell you, hey, there is this incentive program you qualify for, can we give you more information? And making sure that they're aware of it before it becomes that time for that emergency replacement.

But I've also heard what Evan talked about, that loaner program works great, too, where, you know, people need heating and cooling at certain times of year, very much needed now, but you can come back later and get that more energy efficient system installed. And so I definitely echo what he said there.

MS. WALTER-TERRINONI: Michael, I also -- Mike, I also wonder if you considered like -- so, you know, I talked about and Evan just talking about, you know, taking the emergency out of an emergency, which Alex was just speaking about, as well, could you prep homes with electric? Is this loaner program a way to go?

You know, another way to think about this would be if you were to look at a housing development or a group of houses or buildings that were X and such years old and, you know, teetering on the brink of probably needing to replace a system, you may find that that little community could be, you know, kind of a test case for replacing early by six months or a year. And that might be a way to kind of take the emergency out but, you know, you're still not, you know, eliminating equipment before the end of its useful life.

But I think that a brainstorming session, and certainly comments around this, taking the emergency out of the emergency, is really -- replacement is really, I think, going to be key to being successful.

I also think on the point around the multifamily homes or apartment buildings or what have you with the landlord, I do think that you all are going to need to do some data collection to understand, you know, is it successful? Is there a negative impact to the residents? Are they receiving benefits, et cetera? I think it's a little bit of an experiment.

MR. SOKOL: So that's a really good point, Helen, and that tees up my next question perfectly, which is, you know, it's clear that the analytics, you know, the backbone of this program and this market transformation is going to be good data analysis and insights to inform the right opportunities at the right times. We've got, you know, pockets of the right kind of data, certainly a wealth of information with the TECH Initiative.

As we launch this program, are there key considerations on the data side and signals that we should be sending so that contractors, administrators down the line, everyone is aligned to feed into the state data ecosystem in a way that's going to prevent, you know, hard work on the back end, but also make sure we're positioned for this long-term trajectory?

MS. WALTER-TERRINONI: You know, it may be helpful to know whether or not a contractor has had a discussion with a building or homeowner around heat pumps; right? Like that might be a helpful piece of information to gather; right? That might be a place to start. And I'm sure that other people on this panel have more and better suggestions as well.

MR. SOKOL: And we've certainly heard a lot of good discussion on this earlier, but I wonder if there's anything to add on the data topic, sort of as we put the guidelines, pursue guidelines here, what should we make sure is in there in terms of data collection and analysis?

MR. AYERS: One of the things that is probably not thought about a lot, and this is actually data that

HARDI is starting to look through another organization, but it's in quotes, you know, when a contractor sends out a quote. There are now several service providers for contractors that are able to aggregate that data effectively and say, alright, here's how many quotes went out. We can then compare that, as HARDI, to our sales in those areas and know, you know, how much competition is there among contractors, things like that, but also get an idea of what kind of equipment are they quoting. Are they quoting heat pumps? Are they quoting air conditioners? You know, generally, we look at it as, you know, market competition, but that is some of the data that we are able to collect, and our market intelligence team is much better at talking about it than I am.

MR. SOKOL: Thanks. Certainly, I think and I hope this will be a hot topic in the written comments, because we certainly need a lot of input.

Helen, do you have something to add?

MS. WALTER-TERRINONI: Yeah. No, I think, Mike, you know, we're looking for success; right? I hope you didn't view it as disrespectful to call this a pilot project, but I think this is a series of pilot projects, and if you look at it this way, you may benefit very greatly from this. And I think you've got to find a way to measure success, and maybe a couple of different ways to measure success. And if success is just number of heat pumps, that's one thing. But if success is also equity, you know, that's another picture. And so I do think it's going to be important to take that measurement.

And Anne kind of talked about this whole income thing. And, you know, there are certain places where you don't have to look at income, so that, you know, it's a bit of a double-edged sword on that. In some ways that's great because maybe more opportunities are going to float the right people, but on the other hand, maybe you're not collecting data and you don't know if you've hit the right -- you know, if you’ve provided opportunity to the right folks.

So I do think it may be you may need to have a couple of roundtable discussions on this to see if you can get some brainstorming about how to get the right data and measure the right thing.

MR. SOKOL: Thank you. Thank you.

And I think with that, I'll ask one last question and open it up before we shift gears a little bit here, and that’s, you know, there's a clear focus in the statute on low-carbon building technologies and to achieve GHG reductions and provide access to low-income customers in under-resourced communities. But I think beyond that, there's a lot of considerations for additional, you know, metrics we may consider and how to properly incentivize those, such as encouraging load flexibility, how to best encourage low GWP refrigerant usage, or other factors as well.

And so I think the question, you know, and this is really meant to inform in depth in the written comments to come in more detail, but how should we be considering those sort of extras, maybe kicker incentive kind of approaches versus requiring certain attributes, and then at what specific level should we be looking at?

MS. NIEDERBERGER: I can say something about that. I think what we need, if we want to add on to target the incentives more than just what's in the statute is we need to know very clearly what's to be targeted, and there needs to be publicly available data on the thing so that we can promote it.

So for a long time, I know that ENERGY STAR, we relied on that database, and also your database, the MAEDBS database, for product information. And if there's not a requirement for manufacturers to, for example, report on what refrigerants or foam blowing agents should also be included that they're using, then we can't really target those products; right? We need to be able to get really updated information on these types of things in order to promote those products.

So that's just one thing I would say. It should be, it needs to be clear, and there needs to be a data source that we can rely on. Just one comment on that.

MS. WALTER-TERRINONI: Maybe, Mike, some really good news that Anne might be interested in. EPA just published, I guess today or tomorrow, they'll be publishing a notice of proposed rulemaking, kind of banning anything that would be above a certain level of global warming potential for foam blowing agents, as well as for refrigerants.

MS. NIEDERBERGER: Finally.

MS. WALTER-TERRINONI: So really good news there; right?

But just building on that, you know, is it table stakes that somebody has to pick up that refrigerant and show a receipt that they have recovered it? And I don't know if folks would think about that. I don't know if that's practical. But we are really struggling trying to make sure that recovery is taking place at the end of life.

MS. NIEDERBERGER: Yeah, and another thing that we can do through this, you know, we focus on the retail channel, so another thing that we can do is -- and we're doing this together with the State of New York, their State Energy Office, NYSERDA, is actually building in an incentive so that we can require recycling of the old device, haul away and recycling, at the time of the purchase. So the actual -- if this were LMI, actually, without that incentive in California, we're seeing about 40 percent of people paying for that service without any incentives. And so if we could make that free for LMI and DAC, that would be phenomenal. Then we would have 100 percent recycling integrated into it.

And we can also integrate pre-enrollment for demand response programs, too, and that can provide sort of a kicker incentive at the time of purchase as well. So again, with a digital platform, you can do a lot beyond, you know, maybe what was traditionally done.

MR. SOKOL: Thanks, Anne...

Oh, go ahead, Evan. I'll give you the last word, and then we'll wrap up for public comments. MR. KAMEI: What a privilege. Alright. And I hope you're not looking for answers, but I just had some like other like aspects we could think about.

But I think we hear a lot about bill impacts. So maybe like incentives around how you can help ensure that there will be positive bill impacts, or any type of -- especially for low income, I tend to think about consumer protection. So like if there's like a landlord tenant issue, like tenant protection, like making sure rent doesn't go up if the building is somehow getting incentives, I don't know how you could structure that. But like maybe also customer satisfaction. Like if they happen to be very unhappy with their new technology, like having some type of remediation there built in.

And then, you know, we hear about right sizing a lot, as well, so quality installation-type measures to compliment. Just a pure equipment incentive, I think, is really important to think about.

MR. SOKOL: That's really helpful food for thought. And I sure hope that stimulates some additional thinking for written comments for those that are listening in.

I have a whole list of questions myself, really, maybe can follow up separately, Tom, Alex, didn't get a chance to really close the loop with you. Anne, Helen, Evan, really appreciate and thank you for the participation here and the good discussion and look forward to following up with each of you soon.

At this point, we are a few minutes over for the public comment section of the afternoon. But again, thank you all and appreciate the discussion here.

MR. KAMEI: Thank you.

MR. ENSLOW: Thanks for having us.

MR. SOKOL: Well, let’s see, Gabe, are you going to handle the public comments here?

MR. TAYLOR: Yes, sir.

MR. SOKOL: Alright.

MR. TAYLOR: I'm sorry. Dorothy is going to handle the public comments. I'll handle the Q&A.

MR. SOKOL: Okay, Dorothy.

MS. MURIMI: Thank you, Michael.

Thank you, Gabe.

So moving on to public comment, once again, all comments will be part of the public record. Individuals will have three minutes or less to give their comments. And we'll show a timer. We'll show a timer on the screen, as you can see.

So once called on, we'll unmute your line. Please unmute on your end. Please state and spell your first and last name for the record. And then to indicate that you'd like to make a comment, go ahead and use that raise-hand feature. Looks like an open palm. And for those calling in, go ahead and press star nine and then star six to unmute.

Alright, we'll start with Brett Bishop. The line is unmuted. Please spell your name, give your affiliation. You may begin your comments.

MR. BISHOP: Thank you very much. Yeah, this is Brett Bishop with Franklin Energy, and that's spelled B-R-E-T-T B-I-S-H-O-P.

And my comments are that just we deliver equity-facing electrification in whole home programs now, and just some notes from the road, from an implementer's perspective.

One thing that occurred when the TECH Program launched was extremely difficult to schedule and find a HERS Rater. The TECH Program required a finalized permit. And I think what that exposed to our market is that we don't have enough workforce in the field as far as HERS Raters. So when we look at workforce education and training, I would highly suggest that we have some training and certification for HERS Raters as well.

And talking a bit to Thomas's points about how do we make sure that these new jobs that are developed create opportunities in disadvantaged communities and disadvantaged workers, we have delivered work in federal land in California that's not under the CEC's jurisdiction. And the way that we manage livable wages in federal opportunities is to employ Davis-Bacon wages. And Davis-Bacon is very, very practical in its implementation. It has defined income levels for, you know, apprentice all the way up to journeyman levels, so very practical in its application.

I would also like to take a moment to -- this is actually kind of directed at some of Helen's comments. I would be very interested in seeing the effects of low -- of cold ambient conditions and how that jives with variable refrigerant flow systems. Mini splits are very effective when they're running at partial capacity. And we now have a new host of equipment that is variable refrigerant flow for central systems.

And we also know that the market tends to oversize the capacity of systems. So if a system needed to be three ton, but a contractor installed a four ton, will the equipment functionally compensate for that oversizing? And then if we end up in a low ambient condition, can the oversizing actually help with mitigate second -- you know, mitigate second stage heat, whether it's a strip heater or dual fuel system?

Lastly, I would implore our industry to do thoughtful literature review before we start piggybacking tons and tons of data capture onto a program that's really designed for energy affordability. So let's do our due diligence and look at what we already know before we start requiring more data.

Thank you.

MS. MURIMI: Thank you, Brett.

Next we have Jose Torres. Your line has been unmuted. Please state your name, give your affiliation. You may begin your comment.

MR. TORRES: Hi. Good afternoon, everyone. Jose Torres here with the Building Decarbonization Coalition, California Director. Pronouns are he and his.

Yeah, just wanted to thank everyone for bringing this workshop together. We're excited to work with community-based organizations and the Energy Commission to create a good program design that can benefit low-income environmental justice communities and create a market for building decarbonization that prioritizes those who have experienced the burden of pollution. So we're looking forward to working out the design, and also ensuring that these jobs, you know, hopefully can be high-road jobs that benefit the workers as well.

So we're excited to work with you all and appreciate everything that folks have said and looking forward to creating the market.

Thank you.

MS. MURIMI: Thank you, Jose.

We would like to do one last call for public comment. Once again, for individuals that are on Zoom, go ahead and use the raise-hand feature. And for those calling in, you can press star nine to give your comment.

I see Lauren. Please state and spell your name, give your affiliation. Your line is unmuted. You may begin your comment.

MS. AHKIAM: Hi. My name is Lauren and I'm with the Los Angeles Alliance for a New Economy and use she or they pronouns. And I would like to thank all of the speakers for their presentations today. And like the earlier speaker, just reiterate enthusiasm and sense of opportunity for how these resources can go toward equitable programming.

We're especially excited about that possibility for direct installation and how that may be able to be targeted toward low-income and vulnerable communities and done in such a way that it also holds high standards for the workforce installing -- for the training for the workforce installing those measures as a way of both improving the health and safety of our buildings and their energy performance, as well as the health and safety of our communities through high standards around the jobs created by these investments and ensuring that these are creating great jobs that our communities can access.

So really appreciate a lot of the comments that have been made by the presenters today and all of the work of the Commissioner and the staff on making sure this program is fantastic. And we look forward to seeing the funds go out and appreciate everyone's time today.

MS. MURIMI: Thank you, Lauren.

Once again, for those individuals on Zoom who would like to make comments, use the raise-hand feature. And for those calling in, you can press star nine. Give that one moment.

No more raised hands. That concludes the public comment period.

I'll hand the mic over to Gabe Taylor to go into our Q&A session.

MR. TAYLOR: Thank you, Dorothy.

We just have a couple items in the Q&A. One is a question for Alex at HARDI.

"Is the voice of contractors survey findings available to the public? I saw they were behind a member password on your website. Is there a version that is available to the public or can it be requested?"

MR. AYERS: Some portions are but, for the most part, because we utilize it as a tool for our members to better understand their customers, not so much for a way for the customers themselves to try and game the system, that's why most of it is behind the password. But, yeah, if you reach out to me, we can try and get some of that information to you.

MR. TAYLOR: Thank you.

And a comment from Tom Phillips concerning the whole building approach to efficiency and decarbonization as mentioned earlier. He says, "I concur, especially if the health, energy, carbon equity, and cost objectives are all optimized. More info. The whole building approach is recommended by EU, Canada, et cetera, and also provides a link to a graphic."

Did any of the panelists want to discuss the whole building approach?

I think that concludes our Q&A. There are no open questions.

MS. NELSON: Great. So before I turn the microphone over to Commissioner McAllister for any final comments, I do want to remind people, we do have a webpage, Equitable Building Decarbonization Program, that carries information about the program, as well as access to the docket, including the request for information. We do request that comments to this workshop or this program, as well as the request for information, be submitted within the next month, so January 13th of 2022 -- or 2023, I apologize.

And if you have any questions, feel free to reach out to myself through this email, equitablebuildingdecarb@energy.ca.gov, or you can email me directly at jennifer.nelson@energy.ca.gov.

I want to thank all the panelists, and the facilitators, and the Commissioners, and the Vice Chair.

So with that, I will turn it over to Commissioner McAllister for final comments.

COMMISSIONER MCALLISTER: Great. Well, thank you very much, Jen. A great job today being the sort of master of ceremonies. I really appreciate that.

We have had an amazing day, really, in my estimation, just really a lot of creative thinkers, a lot of goodwill in the room. And just smart people with goodwill is a powerful force in our world that we need a lot of. And I think we really have it here in the engine room to build a great program and propel it forward. So I'm coming away with a lot of optimism, as well as an appreciation for the amount of work and the amount of collaboration we have going forward, we have to do.

You know, I won't go into sort of all the themes we heard, because it was a wide-ranging discussion, and I think there were, you know, a few that really jumped out as places for potential innovation, and also a lot of opportunity to build on the work that's already going on in the state. And so, really, I think we have a very full toolbox to really bring to bear on this.

Our staff is really focused on this. We have a bunch of really, you know, a number of really, really fantastic staff at the Commission on this. And, you know, we, I certainly, my office, and across the Commission, we want to just enable the staff to build the relationships and have the tools at their disposal to be able to be responsive to all the stakeholder comments and to really keep this ball moving forward.

Let's see, I want to just -- I think it's worth just thanking, really, everyone who participated today, certainly the presenters, all the commenters want to thank you.

But the first panel, Jen, great job. And Rory and Chuck, thanks for everything that you're doing. I mean, a lot of state agency competence here was evident this morning. And then Deana, facilitating the second panel on the Direct Install Program, and Ericka, Jamie, Mudit, and Nick, thanks for just everything you're doing. I think, you know, really, the expertise in the room, this panel, that first panel in the afternoon and the second one was evident.

And then just this last panel, Mike, thanks for running that program -- or that panel really well. And for Alex, Tom, and Anne, and Helen, and Evan, thanks for bringing all your deep experience to bear on this really, really excellent panel.

So I want to just really encourage folks to write down their thoughts. And we have a schedule and a due date and everything. But whenever your brilliant thoughts occur to you, if it's in the middle of the night after the comment deadline is over, I don't care, you should submit them anyway. And I just want to be really collaborative as much as possible. You know, there's just no bad communication. Whenever you have an idea and you want to, you know, put it into the process and do it, whether it's informally through the phone, whether it's on the docket, even better, because that puts it on the public record. But that's what the process is for.

In an endeavor this important and this long lasting, I mean, we're building something for the next two decades, I think that's how we have to think of it. And to Helen's point, I think we are going to learn a lot, and we need to fail quickly if we're going to fail and then pivot and build in the direction of success.

And so in that sense, yes, that pilot metaphor, I think is right. But we also are building a foundation that we're going to be building on for the next couple of decades. I think we really have to see it that way, because there's no way we're meeting our goals without scaling this effort and getting to all the existing buildings that need it. And that's roughly 100 times, you know, 50 to 100 times what we are going to get with these resources we're talking about today. So these programs are going to be lasting. I think we have to assume that and we have to build them with that in mind. At the same time, we get some trains running down some parallel tracks building on the existing programs that we've talked about today.

So really excited about all the potential and, I guess, humbled by the amount of work really that we have ahead of us. And I think, you know, we cannot do this alone at the Energy Commission, or even across the agencies. We really need all of you in the community of implementers, and many of them were not in the room today. The HERS Rater community, the local building officials, the, you know, individual contractors that are acting in specific markets and specific segments across the state, you know, were somewhat represented in the room today. But I think, you know, there's going to be nothing like getting out of Sacramento and going around the state.

So we also want to hear about ways that we should go out and listen and which communities we should go do that in. That might be a good. We didn't really talk about that today, but I think I certainly want to get -- go around the state myself, and also sort of enable staff to do that so that we can go really see what's happening on the ground and then fine tune and just get a sense of calibration for how these programs are going to look like on the ground. So out to the San Joaquin pilots, you know, riding on some trucks out there with some contractors, I think will go a long way towards helping some of that socialization happen as well.

So anyway, a lot of themes today, and I just want to thank everybody again, Gabe as well, and Dorothy, and all the staff behind the scenes, Hally, just a lot of folks. I want to thank everyone on the staff level because it was definitely a community.

But again, my Chief of Staff, Bryan Early, was instrumental in sort of helping develop the agenda as well. So I really want to just thank all the staff, you know, Mike and Christine and team, and Deana as well.

So with that, I think I just want to end on a note of solidarity. And, you know, we are all proud Californians. We all want what's the best for our state and our people. And specifically the folks who are least able to help themselves, who are historically disadvantaged and under resourced, we really have an obligation to make it work for them. And so that's what the legislature and the governor directed us to do and that's what we're going to do. And so really, really appreciate everyone putting their oars in the water and rowing hard to go forward together.

And so with that, encourage written comments. And again, just any way you want to inject your ideas into the process is more than welcome. We really need that.

So with that, I will pass the mic back to Jen, I think, and we can wrap it up or we just pull the plug.

MS. NELSON: I think we're just going to pull the plug.

COMMISSIONER MCALLISTER: Okay.

MS. NELSON: It's been a long day. It's a wonderful day.

COMMISSIONER MCALLISTER: Yeah.

MS. NELSON: I'm actually really excited.

COMMISSIONER MCALLISTER: Me too.

MS. NELSON: I'm a little tired, but I think the enthusiasm is building back up again after the conversations today.

COMMISSIONER MCALLISTER: Absolutely. So it's a long day, it's 4:30, and we stretched out all sunlight. We can now -- let's all go take some deep breaths and have some dinner and spend some time with our families and then get back to it.

MS. NELSON: Great.

COMMISSIONER MCALLISTER: So thanks everyone.

MS. NELSON: Thank you. We are concluded for the day. Thank you, everyone.

(The workshop adjourned at 4:33 p.m.)

CERTIFICATE OF REPORTER

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

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

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of January, 2023.

Martha L. Nelson

MARTHA L. NELSON, CERT**367

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Barbara Little
Certified Transcriber
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