

*Josh Geyer:*

Okay, hello everyone and welcome to the Multifamily Meetup. My name is Josh Geyer. I'm HUD Sector Lead for the Multifamily Sector of the Better Buildings Challenge and I'm delighted to be here with you today.

A few housekeeping notes. Today's session will be recorded and archived on the Better Buildings Solutions Center. We'll follow-up when the recording and slides are made available. Your audio lines are on mute. We ask that you remain on mute unless we call on you. If you experience any audio or visual issues at any time throughout today's session please send a message in your Chat window, located on the bottom on your Zoom panel.

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So let's look at our agenda today. First, I'll be walking us through our Multifamily Partners Progress in the Better Buildings Challenge this year and looking at some particularly innovative energy savings projects partners are implementing. Next, we'll hear from one of this year's Challenge Goal Achievers, Kranti Malik, from Bridge Housing. Then Ethan Handelman, HUD's Deputy Assistant Secretary for the Office of Multifamily Housing, who will give us an update on multifamily focused programs.

And because we hope to make this a true meet-up as much as possible in the second half of the session Michael Freedberg from HUD will be moderating an interactive discussion with Caitlin Rood and Rebecca Schaaf on how we can build upon all the good work you're doing in energy efficiency and begin to set and achieve low carbon goals. We'll open up the discussions to hear your questions and comments. We'd love to hear from you.

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To start hearing from you we'll use an interactive platform called "Slido." Please now go to [www.slido.com](http://www.slido.com) using your mobile device or by opening a new window in your internet browser. Today's event code is #DOE. Once you enter this event code please select today's session title, Multifamily Meetup in the dropdown Menu at the top right. The session is as I said Multifamily Meetup.

To ask our panelists questions or to make comments please submit them in Slido at any time throughout the discussion. You have the option to upload other attendee's questions.

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Just a bit about our upcoming Multifamily Summit sessions and we hope all of you can attend. Tomorrow is "Unleashing the Power of Community Solar in Multifamily Buildings." And Wednesday is "A New Frontier: Electrification in Multifamily Housing." And on Thursday, we have a "Workshop: Balancing the Benefits of Community Solar in Multifamily Housing."

Please join us for all of these sessions.

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So let's move onto the Challenge and some of the highlights of what our Multifamily partners have worked on this year.

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So the Better Buildings Challenge multifamily sector is comprised of 92 partners with properties all over the country, the vast majority of which are affordable housing providers.

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Almost half, 43 percent of the more than 712,000 housing units owned or managed by our partners or public housing, as our partners include 7 of the 10 largest public housing authorities in the country. Partners who own or manage multifamily assisted housing account for 35 percent of our sector housing units and the remaining 22 percent represent market-rate housing.

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We call participating housing organizations "partners," because we view the program as a true partnership. Partners commit to the overarching goal of the Challenge, which is to reduce their energy use portfolio-wide over by 20 percent over 10 years. They also commit to sharing energy data with us annually and then sharing their stories of how they achieve their goals to the public.

For our part HUD and DOE commit to partners by providing technical assistance in utility benchmarking in other areas by connecting partners to their peers in the program. Folks that might be facing the same barriers they can learn from each other. Also, connecting with subject matter experts to solve problems. We also

provide national recognition of our partner's leadership in energy efficiency and sustainability.

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To help all multifamily housing organizations benchmark their utility usage, whether or not they're partners, HUD has created a number of key tools in the HUD Exchange that we want to make sure you know about. One is the Multifamily Utility Benchmarking Toolkit, on the screen now, which has a step-by-step guide to benchmarking. An increasing number of cities and states require benchmarking. The toolkit includes a wealth of information that can be used to meet those requirements.

To check it out use the search term "HUD Utility Benchmarking Toolkit."

Next slide.

Another key resource is the Multifamily Energy & Water Efficiency Resource Library on the HUD Exchange. You can find it by searching for "HUD" and then "Better Buildings."

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So what is the state of our multifamily program at this point in time? The program is doing great. Our partners have achieved 21 trillion BTUs in cumulative savings since the start of the program in 2013 and nearly \$200 million in cumulative cost savings. This is across 712,000 housing units and 675 million square feet.

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This chart illustrates cumulative cost savings since the start of the program for all partners successfully reporting energy data to the program, broken out by public housing, assisted housing, and/or mixed housing, a mix of market rate in assisted housing. Based on this our partners saved an estimated \$200 million in avoided energy costs in 2020.

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One of the core functions of the multifamily sector is providing technical assistance to help partners overcome multiple barriers to benchmarking their properties under usage. This slide shows total numbers of partners in gray and the numbers that have successfully

benchmarked their properties in green. This year despite enormous operational challenges during the global pandemic 70 percent of our partners succeeded in benchmarking their portfolios and sharing their data with our program.

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This chart shows the total number of housing units in the program which are in blue and the units that were successfully benchmarked shown in light blue. This resulted in over 400,000 housing units energy data being benchmarked in 2020, the most data we've ever collected in this sector.

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The end of last year we formed the first Better Buildings Multifamily Steering Committee to ensure the program activities are responsive to the needs of multifamily partners. The list of committee members who have stepped up this year led by our Steering Committee Chair, Caitlin Rood of Mercy Housing, who we're going to be hearing from later in this session. We're really grateful to those of you who have volunteered to participate.

Next slide.

Our partners are participating in two pilots for the Better Building Program. The low carbon pilot launched this year. DOE is working with partners to show – is shown here to demonstrate real-world pathways to achieve low carbon emissions from buildings. Each partner has committed to working on at least two low carbon projects over the next two years and to share those solutions with the market.

The waste reduction pilot launched in 2020 as well. The partners on the right are working with DOE to set tech and meet a waste reduction goal.

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A critical part of the program is not just doing the great energy efficiency work that you do, it's also that as leaders in your field you share your stories and replicate strategies with your multifamily housing peers. So we ask all partners to publish case studies about their approach to portfolio-wide savings.

Here are the case studies partners published this year. Overall our partners have published nearly 100 case studies in the Better Buildings Solution Center, searchable by topic or barrier. We encourage everyone to check them out.

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Now I'd like to spotlight a few outstanding projects that demonstrate innovative leadership in high-performance buildings.

The first is WinnCompanies: Eva White Apartments, an affordable housing property for seniors in Boston, Massachusetts. WinnCompanies won a grant through DOE ABC Initiatives, to demonstrate a replicable approach to zero-energy ready retrofits in affordable housing. This project is still in the design phase, but will include a building envelope with prefabricated components built in the passive house standard; replacing the gas boiler with electric variable refrigerant flow heat pumps; a central energy recovery ventilator; converting gas domestic hot water to a central heat pump system; and LED lighting, induction cooking, and Energy Star appliances.

You can learn more about this project at the Summit's Wednesday, May 19th session called "Easy as ABC: How Advanced Building Construction Creates Efficient, Affordable, and Appealing Solutions for Low-Carbon Buildings."

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Due to COVID-19 this year's multifamily building operators have been challenged like never before. This next project demonstrates the approach of one partner, Cambridge Housing Authority, took to improving indoor air quality generally and reducing the risk of COVID to their senior residents.

Cambridge installed new high-efficiency heating and cooling units with fan coils and integrated energy recovery ventilator or ERV in each unit. They also installed UV lighting in the fan coils which inactivate airborne microorganisms according to ASHRAE guidance. They increased the outside airflow rate 30- to 50-percent by increasing CFM fan speeds and they installed higher-level MERV air filters in common areas and offices. Across the whole senior housing portfolio Cambridge installed 200 HEPA air filters in common areas.

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This next project by Jonathan Rose Companies is expected to be the largest passive house complex in the United States when it's completed. Sendero Verde in East Harlem will have 709 units of a 100 percent affordable housing with 30 percent of the units for extremely low-income rentals, including the formerly homeless.

The company expects energy savings of 60- to 70-percent compared to buildings of similar size in the city. Energy conservation measures include a virtually airtight façade, variable refrigerant flow heating and cooling system with individual units and a highly efficient and highly efficient and centralized energy recovery ventilation system. There will be an optimized hot water recirculation system to reduce the hot water heating and cooling loads. Finally, the team expects about 20 percent of common area energy needs met by solar arrays.

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Finally, Standard Companies recently completed a comprehensive LEEDs certified Enterprise Green Communities rehab at Fort Chaplin Apartments in Washington, DC. The campus of 45 buildings has a 1.3 megawatt community solar system. Participating residents are expected to see a utility savings of 50 percent over the next 15 years or up to \$500.00 per year in savings.

The main energy conservation measures included HVAC split systems with a SEER of 15.75 and an AFUE of 96 percent; 96 percent efficient gas-fired water heaters; Energy Star appliances and LED lighting; high efficiency insulated windows. The project features a green roof on the community building and a, and roof coatings to reduce heat-island effects.

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Now let's transition to talk about our Better Buildings Challenge Goal Achievers.

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The highlight of our year is celebrating the success of our Goal Achievers. In the past we've celebrated 9 multifamily Goal Achievers listed here. These are partner organizations who have achieved 20 percent or more energy savings across their housing portfolios. They've faced daunting challenges and have led the industry in finding solutions.

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This year we're celebrating the Cleveland Housing Authority in Cleveland, Tennessee, which achieved 21 percent energy savings across 420 public housing units through HVAC replacements, LED conversions, air sealing, hot water efficiency upgrades and solar PV.

Cleveland unfortunately could not be with us today.

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We're also happy to be celebrating Bridge Housing's goal achievement this year. Kranti Malik from Bridge is with us today and will provide more details on their impressive achievement of 9 percent average annual energy savings, which is equivalent of 49 percent cumulative energy savings since their baseline of 2010, very, very impressive.

Next slide. Take it away Kranti.

*Kranti Malik:*

Thank you Josh.

*Josh Geyer:*

Oh, oh let me, sorry, sorry, let me, let me introduce you Kranti before you start.

Kranti Malik is a Senior Portfolio & Sustainability Associate with Bridge Housing. Kranti leads energy efficiency, water conservation, solar, EV infrastructure, and battery storage projects for Bridge's portfolio across California, Oregon, and Washington State.

Thank you Kranti, go ahead.

*Kranti Malik:*

Thank you. So I want to start my presentation by sharing a little bit about Bridge Housing. Bridge Housing was established in 1983. We do real estate development, property, asset, and portfolio management. Until now Bridge, bridge has participated in the development of more than 18,000 homes and currently we have 12,300 homes under property and asset management across California, Oregon, and Washington.

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So why Bridge decided to participate in Better Buildings Challenge. Since we were already participating in the Stewards of Affordable Housing for the Futures Challenge Big Reach it made sense to also commit to BBC's Challenge. And of course an important factor and the main driving force behind the decision was to save on energy consumption and save on overall utility expense, which would be better for the properties and better for the environment as well.

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So what steps did we take to achieve our goals? It's now a straightforward path, but I would like to highlight some of the main solutions we deployed and some of the necessary steps I think will help others as well.

To begin with contracted with an energy management platform and in our case we used Yardi Energy Management to properly track data and monitoring utility usage throughout the year.

Around the same time we also created our profile in EPA's Energy Star Portfolio Manager.

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Another very helpful step that was taken and that we developed was something called the "Green Maintenance Guide," which basically included several different guides and protocols around installing energy efficiency appliances, LED lighting standards, and in-unit inspection and such. These are just some of the examples and I have listed down some different protocols around, under the main protocols.

We brought presentations to the copy staff member to fully inform about the newly adopted Green Guide protocols. So when our for example lighting has to be replaced at a property. Now the property staff can use lighting standard guide to install appropriate LED lighting, choosing the appropriate color temperature, camera lense, et cetera. Another example would be using, start using the in-unit inspection protocols to check the low flow rate of the showerheads, faucets, aerators, toilet flow, et cetera.

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So here we finally now getting towards the active work around energy efficiency. We conducted many energy efficiency retrofits

using different types of funding from state and local level rebates like BayREN , \_\_\_\_\_, PG&E, \_\_\_\_\_ PG&E, \_\_\_\_\_ is the most recent example. These are just a few examples, but there are so many that we utilized. In other cases if a property could not afford to pay for the retrofit we completed those as well using funding from the property.

Besides the full scale of energy efficiency retrofit I really want to stress on the ongoing operations I mentioned at our properties where a number of times property staff would change the appliances and lighting on their own. That's where the Green Guides come in pretty handy. A good practice here I would recommend is reminding your property staff annually about the guide, so any you know protocols that you may have in place. In our case we do this by, we do this quarterly and that's because we are also as I mentioned part of the Big Reach Challenge, which asks us to report any training changes that has taken place at a property. So we use that as an – you know segue to ask what changes were done at the property, but also how it was tracked. Some of the greening efforts that we may have missed. So that helps track all the actions taken on the property management side.

So what else? So these are some of the very may few highlighted examples. There's so many I am pretty sure other developers has taken.

So what's moving forward now that we have achieved this? We are continuing to conduct energy efficiency retrofit. We are looking to install solar on additional 34 of our properties using SOMA funding. We are in the middle of installing our first EV charging plugs at one of our properties. We're also using ASHRAE program to fund battery storage projects at our properties.

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I wanted to share a case study of property of ours, Steamboat Point, which is located in San Francisco that went under an energy efficiency retrofit in October, late October 2019. The scope of work included three new efficient domestic hot water boilers, variable speed pump on domestic hot water recirculation loop, low flow aerators in the kitchen and the bathrooms and the low-flow showerheads. We also did a full LED retrofit for all existing lamps. That resulted in an outstanding energy reduction of 42 percent and the cost reduction 36 percent.

We used local incentives. So half of the incentives were provided and so half of the cost of the project was provided to the incentives and half was paid by the property itself. So just some great example of you know using the local incentives and using the funds that are available to the property can save you a lot.

One point I want to make here is which my supervisor pointed out and actually recommended if we can have the energy efficiency you know scope of work and the budget already built in the budget these naturally helps somebody like in my position to utilize the money available at the property to complete these projects.

I believe that is the end of my presentation. I'd really like to encourage folks to join the session on balancing the benefit of community solar, where alongside one of my colleagues we will discussing solar on a deeper level and solar on overall.

Thank you everyone.

*Josh Geyer:*

Thank you Kranti. Just a hardy congratulations to you and everyone at Bridge Housing. I know you folks are, are an awesome organization and you're leaders in this field.

We'll now hear from Ethan Handelman. Ethan was appointed by President Biden as HUD's Deputy Assistant Secretary for the Office of Multifamily Housing, which administers FHA's Multifamily Mortgage Insurance Program and oversees more than 23,000 assisted properties. Prior to joining HUD Ethan was a Senior Policy Analyst at the Federal Housing Finance Agency, overseeing the affordable housing acts of Fannie Mae, Freddie Mac, and the federal home loan banks. Before that Ethan was a vice president for policy and advocacy at the National Housing Conference, finishing his time as acting CEO.

Must a reminder you can enter your questions for Kranti and Ethan in Slido.

So go ahead Ethan, thank you for come – for appearing here.

*Ethan Handelman:*

Well thanks for having me. It is a real treat to be here. I frankly love this stuff. You, you know not just the big picture, but also the building envelope and the you know deep-dive into the lighting and the water savings, this is stuff I've been paying attention to for a long time and I'm really glad to be sharing the stage with, virtually that is, with so many folks who are doing great work here.

You know part of that is that responding to climate change is a priority for the Biden-Harris administration and HUD's climate goals are a big part of that work. So I'll talk to you a little bit about kind of big picture perspective from HUD and happy to, to dive in on the Q&A period.

So you know I'm sure many of you know that in January President Biden established the National Climate Taskforce and that taskforce facilitates planning and implementation of key federal actions to reduce climate pollution. It's led by this special presidential envoy for climate, John Kerry and Secretary Fudge is a member of the taskforce.

The administration has set ambitious goals to decrease emissions, reduce utility costs, and increase the indoor air quality. This will be seen in our work with the housing that HUD touches in subsidies, for grant, for mortgage insurance programs. You know a lot of that's in multifamily, not all of it, but quite a bit of it touches other programs. But at HUD big picture we're part of shaping the built environment and we should do that in a very forward-looking ways. It's one of the reasons I'm so excited about this work.

Part of that is also making sure we're supporting property and community resilience to ensure that assisted and insured properties with especially the people who live there are prepared for the extreme weather events and natural disasters that we know can come and that will be an increased focus of our sustainability. Natural disasters disrupt the day-to-day life of Americans, often making it impossible for people to stay in their homes and that's a pain felt all too sharply during this pandemic.

Multifamily created a temporary disaster response team to help with the dozens of storms, floods, and fire over the last few years. We're in the process of building on that initial effort. A lot of that is kind of internal process stuff for us, but it's designed to help us be more efficient and effective in our response.

The administration is working on sustainability and resilience work that increases equity in environmental justice. Just as an example the President's budget blueprint included an \$800 million request across HUD programs to rehabilitate public and affordable housing and provide energy efficiency upgrades.

Already in the works at multifamily there's good stuff that I hope many of you know about, but if you don't definitely check it out. We have our Green MIT mortgage insurance program and that's

\$40 billion in originations since the program was introduced in 2016, ensuring that almost all new construction and much of the rehab being done under FHA programs meets the certification standards of one of several recognized, independent green buildings. We're also working with industry to implement CPAS and have published some guidance to support it and we've implemented the CNA that's the Capital Needs Assessment, e-tool with Vision 2.0, which is the web-based version of our property assessment tool, that includes an energy audit component and assess the cost and benefits of more efficient building component placements.

The Better Buildings Challenge and this is why I'm so excited to be with all, all of you, has brought together hundreds of multifamily and public housing owners who made this voluntary commitment to achieve energy efficiency and improvement goals in exchange for frankly just modest incentives from us, right? This is you guys pursuing the work that you care about and the incentives are important, but I recognize they are a small piece of the puzzle.

We have plans to expand and enhance the program. The BBC has been a program where some of the most responsible and forward-looking property owners have come together and share best practices. These properties and the models they show who, where, and how targeted investments and management can save resources in the long term.

You all have served as models for other HUD programs and properties and the broader housing market. So we want to find ways to expand that and expand participation in the BBC to find ways to incentives and reward the highest performers and to help all the other participants in our programs make improvements using the BBC approach. So we look to the participants here today as a source of ideas, inspiration, leadership. I hope you will take today and the sessions to come as an opportunity and the work to come as an opportunity to show us how to make a difference on this challenge. This is the real focus.

So thank you again for having me. I'm looking forward to hearing all of your thoughts.

*Josh Geyer:*

Thank you Ethan. We're not going to take questions from attendees from me, Kranti, or for me, Kranti, and Ethan. Again, please go to your Slido app at [slido.com](https://www.slido.com) and use today's event code #DOE. Once you enter this event select "Multifamily meet-up" and

dropdown Menu at the right, at the right. Then you'll be able to enter your questions or comments or up-vote other attendees questions that you like.

So to start us out we had a really good question for Ethan. This person's excited about turnkey solutions. What's the next phase in grassroots capacity building in the multifamily sector to really scale these solutions across housing portfolios?

*Ethan Handelman:* So it is a great question. I think the two sort of immediate opportunities for scaling up and this isn't specific to turnkey opportunities, although that is potentially an element of a lot of retrofit work. The two big opportunities for scaling up, one is the budget request, right. I talked about the budget blueprint. You know when the full budget comes out you will certainly see more detail in that as it's designed to do. The other is the American Jobs Act [audio break]. There is a lot of resources that potentially could flow from that. Both of those are aiming at more scale.

BBC has been great as a way to build knowledge and build capacity and show what can work. We all know that it takes resources to scale things up. So those are where I'm looking for resources to come to really make a big difference.

*Josh Geyer:* Great. So the next question is for Kranti: Kranti, what is involved in training your maintenance staff in green, in the Green Guide? Is staff turnover a problem in implementing the guide?

*Kranti Malik:* Good question. I like I mentioned the way we do it and I think it's a reminder more than you know a printing that every time that I send out a quarterly e-mails asking for the greening you know implementation they have done on their own, whether it's switching out you know incandescent lighting to LEDs or just water restriction conservation around that. Everything has in my experience has been reminding them to use the guide.

I, I think a good point that is brought in question is that how do you actually maintain the staff turnover? And I am over and over reminding the property supervisor to utilize the guide when they have their meetings with new staff I think is very helpful. It could be a reminder in your meetings that you guys have, might have you know as a company meeting or just a departmental meeting keeping bringing up the guide I think will be a very useful too.

*Josh Geyer:* Thanks Kranti. So there was one question that I can take pretty quickly: How can multifamily organizations join the Challenge?

My contact information I believe is going to be at the end of this presentation. So but if, if it's not you can, you can e-mail me at Joshua.m.geyer@hud.gov and I will talk with you on how to get, get in the challenge if that's what your organization wants.

So next question is for Ethan: Ethan what is HUD's thinking of like expanding benchmark into the whole inventory of HUD assisted housing?

*Ethan Handelman:* That's a great question, because I think there is real potential for making gains by expanding benchmarking. This is one of the areas where I think you know we, we think about sort of two prongs on this. One is think about the BBC by encouraging the high performers to be the highest performers and sort of push the envelope and figure out the ways to really reduce the climate impact of the built environment and simultaneously make people safer and healthier when they live in, in the stuff that we build \_\_\_\_\_. The other part is trying to get everyone up to that same standard or even or, or just closer to it and benchmarking is a tool for that.

You know I would, I don't want to make previews of anything you might see in, in the budget or, or the AGP in terms of the details, but certainly benchmarking is a, is a tool that could be incorporated in that sort of way.

*Josh Geyer:* Thanks, thanks Ethan. [*Chuckles*] Ah, I feel like, I am very, very excited as I think many, many people are just to see what we come out with on that front, because, because God knows it's needed.

So another one for Ethan: Is HUD considering an integrated output and outcomes incentives for energy efficiency or generation of cross-funding programs?

*Ethan Handelman:* So I'm the first one to admit when I don't totally understand the question and that's – I don't know what that framework is.

*Josh Geyer:* I'm not totally sure either.

*Ethan Handelman:* I feel slightly better then.

*Josh Geyer:* Yeah, yeah. I mean I guess what I would I, I'm thinking is like they're asking when are we going to – I mean I guess I would rephrase it as you know we're, you know Michael and I have in the Office of Environment & Energy have been talking about, thinking

about HUD's – in the same way that we encourage our partners to think about their entire portfolios when they're doing things.

We think that HUD should be thinking about our entire portfolio that you know 2.3 million physical units and then a total, with HCV it's 4.5. Like how can we think about... And you know benchmarking is, benchmarking is a part of that, but maybe if there's more you can say kind of beyond benchmarking?

*Ethan Handelman:* Ah, I see, okay. So that, no that's really helpful explanation there.

Certainly I am looking for ways just within the Office of Multifamily to take a more comprehensive view of not just energy usage, but that's certainly a big part of it, but also exposure to natural disaster and climate events. So some of that relies on the system improvements and making sure that we have the data we need to take advantage of the other resources that are out there to map risk and to assess progress on things like energy usage, water savings, \_\_\_\_\_.

So there's some amount of, ah, when we, if you want to talk about an integrated approach some amount of it that depends on system development that we are working on, but it will be, it will be a step-by-step process.

*Josh Geyer:* So I, I, I think this next one is and I think is the last one and it's for Kranti I think: So how can multifamily buildings leverage funds to subsidize the cost of new low-GWP central heat pump water heaters?

*Kranti Malik:* Great and very technical question. *[Chuckles]* I think that has to be dealt with and I, I don't think I can fully answer this, but it has to be dealt with your compliance senior leadership and also your other senior leadership to see how that can be related to subsidizing.

I think and if I understand the question right is it – I just want to clarify on the question whether if it's subsidizing for the tenants and then you know processing the cost towards them or just how to utilize it and how to use the funding available? Because depending on the funding so for example we have used a lot of local fundings. So far I haven't seen a single subsidize around domestic water, so maybe a little more clarification there, but I think that that question will not specifically go to me, but it has to come through a compliance department also if it's related especially to residents.

*Josh Geyer:* Yeah. Okay, well I don't think we're going to be able to clarify that question, but it's good that it got out there.

Okay so I just want to we're going to wrap up questions. I want to thank everyone for these great and very relevant questions. We're going to move on now to the second part of the program, an interactive discussion on building upon all this great work in energy efficiency we've been hearing about and building on it to then move to the next phase, which is achieving low carbon goals in multifamily housing.

Our moderator for the discussion is Michael Freedberg, HUD Senior Advisor to the Multifamily Sector of the Better Buildings Challenge. Welcome Michael.

*Michael Freedberg:* Thank you Josh. Great, great discussion. Really appreciate hearing from both you about the progress that we've made and our partners have made through the Challenge and also from Kranti as the Goal Achievement, let me add my congratulations for yours and then also hearing from Ethan Handelman about HUD's commitment to this agenda which is obviously encouraging to all of us who are in this business.

So just to move the discussion forward, for those of you who have attended our multifamily meet-ups in person, which hopefully we will do again one of these days, we tried to focus on a topic of importance to our partners, one topic that we can have a somewhat in-depth discussion about. We're going to try to replicate that today.

Today's topic is "Making the Transition From a Focus on Energy Efficiency," which we and our partners have been pretty single-mindedly focusing on as over the past few years, "to low or zero carbon building." You'll be hearing a lot over the next few days about the low-carbon pilot the DOE has launched and that includes as you pointed out Josh several multifamily partners who are part of that and who are committing to moving and demonstrating how that can be done in a couple of buildings in their portfolio. We're really excited that the multifamily family is part of the low-carbon pilot.

As Ethan mentioned also of course the administration is focused very heavily on looking towards a low-carbon goals in the building sector as a whole. I think there was a Biden campaign pledged to, to 50 percent carbon reduction by 2035 and there will be a roundtable this afternoon with some of the leading members,

cabinet, secretaries from many agencies on this subject. So I certainly encourage those of you who are interested in this to, to join that session.

I think the question for us today is: You know what is it going to take for us as a sector to reimagine our buildings, both on the retrofit side and the new construction side as zero or low-carbon buildings? So we're going to have a good discussion on that. We've invited a couple of our leading partners to lead us in this discussion.

But I thought I'd just start with a definition and there are multiple definitions, but what do we mean by "a zero carbon building"? So for the, just for the purposes of this discussion we're going to define "a zero carbon building" as one that is highly energy efficient, reduces onsite or procures carbon-free renewable energy in an amount sufficient to offset the annual carbon emissions associated with operations.

So I think we're probably going to be mostly focusing on operational carbon emissions here, not so much on the embodied carbon side for the purposes of today's discussion, although clearly that, that has to be part of the conversation as well.

So I think before we get to our discussion we wanted you actually to go to Slido and we have a Slido poll question. For those of you who haven't yet opened this [www.slido.com](http://www.slido.com), open a window and we have a poll question for you, which is: Which of these carbon reduction strategies have you implemented or have plans to implement in your portfolio? So have you electrification, transit oriented development, on-site renewables, efficiency retrofits? Everybody's done efficiency so we'd be interested in which of additional measures you might have taken.

So it looks like we're seeing significant numbers of you are either implementing or would like to implement on-site renewables, electrification, EV charging stations and at least on my screen off-site renewables doesn't show up.

So I guess the next question should be: Which of you actually implemented those and which of you, which of these you'd like to implement, but clearly there is an interest in all of the above.

So let's move on. Thank you for that response and keep in mind that we're encouraging you to enter your questions in Slido. So keep that screen going and we definitely want to have a discussion

and hear from all of you after we've heard from our two guest speakers.

So let me introduce our panelists. First, we're joining us is Caitlin Rood. Caitlin is Mercy Housing's National Environmental Sustainability Director and is also the Chair of our newly formed Multifamily Better Buildings Steering Committee. Is an environmental engineer with more than 20 years of sustainability experience and under her leadership Mercy Housing became a Goal Achiever last year with a 24 percent energy savings over 10 years. So we're great, great to have you with us Caitlin.

Also joining us is Becky Schaaf and Becky as many of you know is the Senior Vice President for Energy and Sustainability at SAHF, the Stewards of Affordable Housing for the Future, where she works with a network of multifamily housing providers with about 140,000 units of affordable housing. I see here that she worked extensively abroad in China, Russia, and the Ukraine as part of the Pacific Northwest National Laboratory's Global Research Program. Hopefully we're getting some of that international experience Becky here in the US.

So I'm going to start the discussion. We're going to have a few questions for our panelists and then we're going to open it up to all of you. The first question is for Becky. Becky the question is: What's the difference when considering energy, reducing energy consumption versus carbon emissions reduction, is there a difference in the way we need to be thinking and conceptualizing this work?

*Rebecca Schaaf:*

Thanks Michael and great question. Yeah there is some different thinking that we need to start looking at as we move towards thinking about emissions reductions. As you said efficiency comes first with all of these programs so all of the kinds of actions we've been taking to reduce energy for the Better Buildings Challenge, things like weatherization, high-performance envelopes, efficient equipment and appliances, green O&M that keep things running, working with residents on their energy consumption, all of these are core and super important work to reducing the amount of energy that we consume.

But as we switch to thinking about how we get to zero carbon we need to also be thinking about the reality that we'll still be using some energy. What we need is for that energy to be clean energy without carbon emissions. This means generating some of our own energy onsite, participating in community solar programs like we'll

hear about later this week or signing up for clean electricity programs. It also means realizing that our electricity use onsite is pretty much the only energy that has the potential to be clean energy and switching away from using natural gas or other fossil fuels towards electrification like we'll hear about on Wednesday.

Then the last piece that we have to start thinking about a little bit differently is that when thinking about emissions when you're using electricity matters. It's really the electric utilities that are charged with being the ones of cleaning up the electricity supply. But as they do that they're going to need customers to consume energy at times when the renewable energy supply is most available. So this means things like developing strategies for preheating or pre-cooling room, using smart water heaters that can automatically shift their loads or even simpler solutions like smart thermostats.

So how will get at these kinds of measures is probably going to be very similar to how we've gone about energy efficiency work. But the kinds of measures will be implementing are shifting a little bit.

*Michael Freedberg:* Okay, great, thank you, that's, that's a great start to the discussion. I think and I think of this transition, this whole challenge of time of day use and shifting to off-peak use to maximize renewables and electrical consumption is, is this sort of key shift, one of the key shifts that we need to make. So maybe we'll get back to that in the, in the next part of the discussion.

But I wanted to get Caitlin into the discussion with maybe a definitional question. You know we hear a lot about different types of carbon emissions and different programs have different requirements; Scope 1, Scope 2, Scope 3 carbon emissions. So we thought it would be helpful if you just set the table perhaps and you know what's the difference, what are they, and what, what do we need to be thinking about and focusing on when we, when we're looking at multifamily buildings?

*Caitlin Rood:* Thank you Michael. Thanks everyone for being here today. Yeah as we're shifting from this concept of energy efficiency to greenhouse gas emissions and we start talking Scope 1, 2, and 3. I've been in a lot of settings where this is new language. So we thought we would kind of start with the basics about what are Scope 1, 2, and 3 emissions?

So at a really high level Scope 1 are the direct emissions that come from your organization or your properties. So we're talking about

emissions that are happening actually in the buildings. So we're talking about things like gas-fired boilers, gas-fired heat pump water heaters, air conditioning leaks, that sort of thing.

Then when we start talking about Scope 2 emissions we're talking about the electricity that you purchased, because there are emissions associated with the generation of that power and that is being generated in order for your property to consume it. So for a power plant their emissions are Scope 1, but for the users of the energy that's a Scope 2 emission.

Then there's the Scope 3 emissions and these, these are the, the largest emissions of, of all of the emissions for our sources and they're, they're all the indirect emissions from activities from sources we don't own or control. This could be things like business travel, employee commute, procurement of products, your waste generation, resident commute and their access to public transit, and something that Michael mentioned that we wouldn't really get into today, but, but is in here is the embodied carbon of, of our, of our buildings.

So Scope 1 and 2 are largely captured. If you're capturing your portfolio-wide energy consumption for the Better Buildings Challenge Scope 1 and 2 are, are captured already, at the information needed to calculate those. Scope 3 however is not and, and that, that information is harder to gather, but really important because it is so much of, of our inventory.

There are a number of protocols out there for capturing this information. I think kind of the, the primary biggest name ones would be from the World Resource Institute and the World Business Council for Sustainable Development they have a greenhouse gas protocol which defines all of these Scopes and how exactly, very specifically one gathers and reports on those for various emissions.

In addition, EPA has a carbon inventory page and following this session we will send out a variety of links to some of the things that we've been talking about and the links to both of those will be included as resources.

One thing we would like everybody to think about and maybe comment on in Slido is whether anybody that's hear today are collecting and reporting on these Scopes in any formal way. Particularly if you've moved to Scope 3 and I'm also interested to know if anyone has science-based targets in their carbon emissions

eventually. So if you, if anybody has anything interesting to say on that we'd love to hear that in Slido.

Thanks Michael.

*Michael Freedberg:* What do you mean by "science-based information," isn't this all science-based? *[Laughter]*

*Caitlin Rood:* Right, but sometimes people just select a goal like, "We're going to reduce by 20 percent," but then there, there are ways of calculating using a specific method to determine what the target should be.

*Michael Freedberg:* Right, right, right. Just one quick other follow-up question: Do you know if any... We know about Local Law 97 I believe in New York that has a carbon goal. California I think has got some carbon, low-carbon targets. Do you know if those typically include Scope 3 or those are off the table for, for the most part when we're, when we're looking at, at zero carbon targets?

*Caitlin Rood:* I don't know the answer. I don't have any properties in New York and I'm not clear about that in California. Becky maybe you know more.

*Michael Freedberg:* Let's, let's hear from our friends in New York during the Q&A.

So I, I thought it might be interesting just to hear from you both about your own organizations' actions or activities in this space. You know what low-carbon activities are you now pursuing? Do you have a low-carbon goal? Why would you consider a low-carbon goal if, if you haven't already set one? Maybe Becky you can – I know you've been working with your board on, on this, so maybe you can start us off on that question.

*Rebecca Schaaf:* Absolutely. So the SAHF members have been pursuing low-carbon activities and it's something that SAHF has been kind of promoting and helping to facilitate along the way. So we've been doing some of these strategies as part of our energy efficiency work or as an extension of it. We see a lot of growing opportunity around renewables with prices coming down, with community solar opportunities arising in more and more states.

On certain utility programs, which is one of the main ways that we fund retrofits, are incentivizing fuel switching or things like smart appliances at this point. It's just starting so I would say you know as I think about all those checkmarks that we got to put at the beginning things are happening, but at different scales.

So the strategies aren't that intimidating. I think we can do this work. But we are going through a process for what does setting a goal look like. And one thing that complicates it is that the clean energy supply and the electricity sector really varies dramatically in different parts of the country. So it's hard to set expectations around kind of where that is headed and account for regional variations with you know our members having properties in different parts of the country.

We also definitely do not have good tools for measuring the time of use impact. We're all kind of calculating this off of our monthly electricity use and not on a kind of super-fine basis about when we're using energy.

Then the last piece is a little bit challenging is the prospect of baselining those Scope 3 emissions. So as Caitlin mentioned you know we have a methodology for Scopes 1 and 2 that's already available in Energy Star Portfolio Manager. It's maybe not perfect, but it's you know a good base to start from.

Around Scope 3 we might take a different approach than setting a percentage reduction target and come up with some set of actions that we commit to taking around Scope 3. So thinking about a slightly less quantitative approach to tackling those emissions.

*Michael Freedberg:* Well that's great. We were looking to SAHF being a leader here. You've, you've been a leader on the efficiency front so we're, we're expecting great things.

Caitlin did you have anything that you wanted to talk about as far as Mercy Housing is concerned?

*Caitlin Rood:* Yeah we're right in line there with what Becky was talking about. Largely Mercy Housing is looking at the economic, bottom line, dealing with split incentives that we saw a number of differently phrased questions in the earlier session with Ethan this morning. So those are definitely things that are facing our organization and watching regulation evolve with regard to electrification and incentives.

Mercy Housing did replace all in one fell swoop under a, under a contract with, a pay-from-savings contract with Affordable Community Energy Services Company and then Bright Power is the implementer. In 2017 we switched 6 properties to electric heat pump water heaters. 2017 is really early-days in the United States

for doing that kind of work. So we had some extremely some very notable success in that. One property that four years in has a continued 67 percent energy consumption reduction as a result of that shift. We've also experiences some challenges that we're, that we're learning as we go.

So we're continuing to look for where this makes economic sense and where the guidelines are pushing us and regulation. And, and certainly advocating for good environment work that makes good economic sense and that's kind of where Mercy Housing is standing on that. Then working with the SAHF Group that guides us so much in the work we do.

*Michael Freedberg:* Great, great. So you've, you've got your toe, toe, and dipped your toe in the water it sounds like with some, some success. Good, good to hear.

So back to Becky. What is the business case that needs to be made or you are trying to make for your board when you're talking about net zero in affordable buildings? How do you get your board of directors, your executive directors onboard so to speak?

*Rebecca Schaaf:* Sure. So in getting our board onboard starts with thinking about you know the why. You know we get to the business case, but we do start with that big picture "Why?" I think we all in this room know that climate change and turning the corner on climate change is the challenge of the decade. And it's something that's going to need everybody onboard to make this transition.

It's also true that it's something sounds like something charitable we're doing for a future generations or someone in some other part of the world, but I think as affordable housing providers in the US we know that that's really not true. That it's things that are happening today, things that are happening in our communities, directly affecting the properties, the assets we own, and the residents of our, or our buildings, that they are affected by heat waves, by water intrusion as rivers flood. This is happening now and it's, it's impacting us.

So the solutions to climate change are kind of not some lofty theoretical goal, it's a way of helping ourselves.

But getting to more of kind of the dollars and cents perspective that I think you were asking about. I would say that a lot of these solutions are not especially more expensive to implement, part of a new construction or a major rehab. I think several people on the

call have already mentioned passive house. We see a lot of potential there and some market transformation happening there as well. So as our construction and architecture partners get more familiar with this the kind of human cost of figuring it out goes down.

So we also expect the policy environment to be shifting to emphasize these more high-performance, low-carbon buildings as well. Green Building standards like LEED and Enterprise are already starting to address carbon emissions. I expect things like financing incentives will shift their focus over time as well. The same is true on the utility program side. The kinds of things that we're going to be able to access through utility programs are going to shift from these efficiency measures towards things that promote cleaning up the grid, stabilizing the grid, helping utilities manage a high renewable grid.

So there's, there's things that are driving us in this direction, the winds are shifting and our being part of this transformation means that we'll be able to get some early experience and can help design these policies to be both effective and meet the affordability needs that are you know entirely critical to affordable housing.

*Michael Freedberg:* Great, thank you. I have, I have one last question I think for Caitlin before we get to some Q's&A's, which is you know: What are the common barriers that you're likely to run into or that you've seen as you've considered moving towards electrification or low-carbon building?

*Caitlin Rood:* Great, thank you. Unfortunately there are a number of barriers that we're experiencing and I, I, I really appreciate what Becky said and want to reiterate how, how prevalent it is to me the disproportionate impact of climate change on our community in particular and how we, I feel and Mercy feels a responsibility towards, toward our residents and, and very supportive of working in that direction.

But we do have a number of barriers that we need to overcome in the world of electrification. They really fall into four main categories. Michael this list if, if you get to the point where you feel like we need to go to Q&A that's totally fine. So I'll give the four main categories and try to keep it high level, but if we need to move to Q&A please let me know.

So the four categories are financial, technological, workforce, and grid related. On the financial side we're talking about the fuel price

first of all, whether it's gas is more expensive than electric or electric more expensive than gas, that ongoing cost is a significant factor. Whether or not we have the capital to implement to do the fuel switch, whether or not additional transformers would be needed at our property and if we have the space and funds for that. And then whether or not fuel switching is even covered by incentive programs, because oftentimes the incentive programs will provide a more efficient gas boiler say, but not the incentive to switch to a significantly more efficient electric system. So having incentive programs that address that fuel switch is critical.

On the technology side we're talking about you know in some instances cutting edge and leading edge technology being implemented in our properties or at least in the United States for the first time and being willing to, to be involved in that is a decision that our properties need to make. Having an appropriate amount of backup power if the power goes down is a consideration. Specifically with heat pump water heaters handling recirculation water has been something that we've had to figure out that's different than heating the water that's coming in first.

Putting in heat pumps in extreme cold situations it sounds like that's getting better and I definitely hear in some settings that that's solved and in other settings that it's not quite solved yet. So making sure that these, these systems will operate in an extreme cold. Then having the physical space to actually fit them in the property when you're talking about retrofit. I've definitely heard about properties where we actually don't have a way to get a big piece of equipment say in an elevator down to the basement to do an electrification project.

On the workforce side we need to be developing contractors across the United States that have the qualifications to install and operate and maintain this equipment. This is kind of a big issue across the United States, not to mention being cognizant of taking care of the industry as we shift. Say making coal workers into people that are working on the solar side or pipefitters in gray water or what we're going to do, but building up the contractor qualifications in workforce and not leaving segments of the community high and dry. That's both for installation and operation.

Then lastly, on the grid side of things, the fourth point, we want to make sure that the grids have the capacity to handle this additional electric load. We're not really accustomed to and don't love having period of no energy in, in this country, so we want to not make that

worse. Is the grid clean? We don't want to move to all electric and then have that be a less environmentally preferable option.

And lastly, to the extent that the grid isn't clean and we're doing solar on our properties or in communities solar we need to have virtual net-metering or VM available which isn't in any location so that we can offset the use of, of our properties, as well as that of our tenants, which if course also means we have to do \_\_\_\_\_ intensive problem.

So I think that's a good place to stop for there.

*Michael Freedberg:* That is, that is a great list. We can have – I, I assume we've captured that in the discussion somewhere. We need to put that out as a sort of a road – we have to address all of those points as we, as we do our roadmap going forward.

It sounds, I'm told that we do have time for at least one more question from our panelists. I'm going to go back to Becky and if you could say a little bit more about the demand response strategies and you were talking about smart meters and other automated information systems that are going to be needed to make this transition, if you could say a few more words about that.

*Rebecca Schaaf:* Great, sure. So I got into this a little bit when I was describing the low-carbon strategies. But the really growing availability of connected devices and the so-called you know internet of things is really blowing up what's possible from demand response.

The utilities have always had programs they use where they pay customers to reduce their energy use at times of peak demands. For them not needing to bring on another power plant is worth a lot of money. So as they manage more intermittent supplies they're going to be looking for additional ways to drive down those peaks and kind of even out loads. Some of the things they'll be looking to do is things like incentivizing smart thermostats that you know without you're even noticing it may set your thermostat back a degree or a couple of degrees at times when the, the grid needs a little demand reduction.

Similarly there's smart water heaters, so it can, they can kind of automatically heat your tank of water at times and then turnoff that if there's kind of a need to, to reduce demand. So there's technology things that are really seamless from the user perspective, don't require a lot of active energy management use

that we can start moving to. Then there's also you know the potential for more of that active energy management use.

Utilities are more and more shifting to time-of-use rates, so there is the financial incentives to manage your energy use if you can kind of figure it out from the technology side, right? Like it's not simple to figure out who's going to be monitoring this? What do they do when they see kind of data coming in? But these devices help us know in real time and not at the end of the month when our utility bills comes in are becoming more and more available and are a real opportunity if we can kind of find solutions on that workforce side that promote us having a really you know great maintenance staff to help operate these high-performance buildings. It's a real challenge, but also I think a critical component of how we move forward with really kind of 21st Century green buildings.

Are you going for a new question?

*Michael Freedberg:* Sorry, I was on mute, okay. I was just saying thank you for both of you putting the workforce issue on the table, both in public and assisted housing. We, we hear a lot of people in those buildings or in those communities who could benefit from getting the training and the skills to operate and manage you know these new systems, so not to mention installing solar systems and so on. I think you'll be hearing more from this administration and HUD about that going forward.

I think in the Q&A we can perhaps get to some of the other questions that we thought we might want to present to you, but I'm going to actually ask perhaps a couple of our partners who are with us today just to give us a real-world sense of where you are. We've asked a couple of our partners who have been doing some work in this space just to add to this discussion.

I'm going to call on Lauren Zullo from Jonathan Rose. I don't know if you're on line Jonathan, Loren there you are, great to see you.

*Lauren Zullo:* I'm here. Hi, Michael.

*Michael Freedberg:* Great, great to have you with us. So yes what's, what's the, what are the Rose Companies doing? I know you've got some great passive house projects in the works, but you're also looking at how you can adopt this goal in your portfolio, so it would be great to hear.

*Lauren Zullo:*

Yeah that's right. Thanks for having me and thanks to Becky and Caitlin you guys are doing really awesome \_\_\_\_\_ and I appreciate the summary.

I wanted to, to talk to you a little bit about what we're doing as well. So Jonathan Rose Companies we are a privately held real estate firm with assets across the whole country. I think like so many we sort of seem to, we I guess would say started our climate work focused on energy efficiency and, and energy. Our initial goals had our reduction kind of in line with the Better Buildings Summit, a 20 percent reduction in energy use intensity and a 20 percent reduction in carbon, that we sort of you know had running parallel paths to our efficiency goals.

Then I think like so many we started to hear those alarm bells at this time an emergency really sounding. As we spoke to our executive leadership and we spoke to our investors within our private equity funds I think we were hearing just a much more intense focus on the immediacy of carbon reductions. So that led us to kind of shift our lens a little bit. So we dipped our toe into electrification using the low-income weatherization program in California I think like, like many with properties there.

That allowed us to kind of get our feet wet with electrification and understanding some of the, the challenges of and benefits of switching to electrified domestic hot water. We were able to pair that with solar in on-site solar in some of the properties there to help mitigate some of the cost implications.

Since then we've been looking at electrification in other markets. The climate in California is friendly to heating with electric, but in New York, in Boston that was a little bit different. So we're reviewing technologies there and we're happy to report that technologies are changing really quickly with some of these CO2 water heaters coming online that can operate in colder climates. So we're excited about those.

I'd also say you know Becky mentioned this, but it's so important the time of when we use solar or sorry when we use electricity is so important and that led us to look at opportunities to pair solar plus storage so that we can control our – the times that we're using electricity from the grid in a more discrete way. But it's an interesting challenge because as Becky said we're not accounting for carbon in that way. So even though we know fundamentally that will have an impact on sort of overall carbon emissions it may

not be something that we can then report out to investors, besides in a narrative form.

Then I guess finally one of the other things we've been doing is around green energy and ensuring that we're supporting the states that are putting responsible green energy policy in place. So we currently procure \_\_\_\_ \_\_\_\_ to offset all of our electricity consumption. We aim to do that from the market in which the electricity is actually consumed. Now we're transitioning to more direct procurement of green energy and community solar strategies. So we're pairing this kind of carbon reduction and electricity reduction along with responsible procurement.

So lots going on and so many different angles from which to tackle this kind of \_\_\_\_\_ project.

One thing, there was one other question that came up about Local Law 97 and whether it includes scope-free emission. I would say it includes a slice of some \_\_\_\_\_ emissions. It does look at whole building energy consumption and, and calculates your carbon emissions associated with that. So any scope-free emissions associated with tenant electricity use is captured, but not the sort of additional activities like commuting or waste.

So that's it for me. I'll turn it back to you Michael. I'd be happy to take any questions.

*Michael Freedberg:* Thank you, thank you. If you could stay on the line in case there's some questions we, we hopefully can throw them your way.

So we also wanted to hear – we have a lot of housing authorities who are part of the Better Buildings Challenge, some of whom are really doing pioneering work. The King County Housing Authority in the Pacific Northwest, Scott Percival. Is Scott with us?

*Scott Percival:* I am, hi, how are you?

*Michael Freedberg:* Great. Scott want to give us a quick update on where King County is at?

*Scott Percival:* Sure.

*Michael Freedberg:* And any reactions to what you've heard so far?

*Scott Percival:* Yeah, we are in a really interested point with regards to addressing carbon at KCHA, because we just finished or this year we will be

finishing a 5-year sustainability action plan. That plan was the first plan that had a carbon target in it. It was a 5 percent reduction for the energy at our buildings, the whole property perspective. So it did not account for a lot of the other sources of carbon in the operations of the agency. But during that time we did start to estimate what that with the green house gases and carbon looks like for other sectors of our work, including transportation. So we're preparing ourselves just through gathering that data to be able to try to set targets for other emission sources beyond energy consumption at our properties. So we're really looking forward to bringing that to, to turn into real targets.

Also at that time I'm, I'm looking at this with a bit of a kind of silver lining. We, we were hit with some wild fires on the West Coast really it's been the last four years, but last summer in the, in King County the air quality got so poor and coupled with COVID it really put our residents in some pretty tough situations where they couldn't really go to the gathering spaces that they're used to because of COVID, they couldn't really step outside because air quality was so bad, so they were very much stuck in their units, which was obviously far from ideal.

So it has been an opportunity to start talking about how do we decarbonize and address some of these impacts of climate change at our buildings? So you know naturally heat pumps have become really important to us to make sure that the units are comfortable in what other kind of weather, especially if it's you can't step outside due to that air quality. It's also been useful in connecting how our core mission of housing vulnerable populations is going to be more challenging because of the effects of climate change and how we have an obligation to lessen our impact on climate change, while also preparing for the effects of climate change at our properties.

So with that we're looking at solutions that really address both. So solar has been a great tool for us not only in decarbonizing our grid, but really making our properties more resilient to when there may be some outages. We're also looking at ways to recover as much energy as possible just to make our buildings run as efficiently as possible.

But even beyond that when we're looking at lessening our impacts just the ability to measure our transportation, commuting habits to-and-from work, what's going on with our fleet of vehicles, any sort of work-based travel and capturing that and just getting a sense of what that looks like is, has been a really important part of this conversation and then just leading to reduction goals. Without

having that information I think it would be a pretty difficult starting point to talk about this with our senior staff, because the, um, the significance of it isn't really that clear to them. So when we have this data even if it's not perfect as long as we follow pretty consistent methodology it's easy to demonstrate that you know there's a path to reduction and that this is significant.

So I'm really glad that we had already started that work and we have about three years of that kind of comprehensive data to work with to guide us in our next sustainability plan and, and setting goals and targets there.

*Michael Freedberg:* Great, okay great, thank you Scott. That sounds like great work and we'll be following the progress.

We wanted to quickly hear from one more partner, Mark Puchalski with the Tenderloin Neighborhood Development Corporation, San Francisco. They have been a leader in this space. I think you're also part of a low-carbon pilot, I think. But Mark if you're still with us.

*Mark Puchalski:* I am.

*Michael Freedberg:* Great, great. Maybe you can give us a quick –

*Mark Puchalski:* I'll, I'll do my best. So thank you Michael for having me.

*Michael Freedberg:* I've got some background screen here, I'm not quite sure.

*Mark Puchalski:* Can you, can you hear me okay?

*Michael Freedberg:* Yeah we can hear you. I'm just looking at the visual that we have.

*Mark Puchalski:* My camera was going a little goofy there, okay.

*Michael Freedberg:* Okay.

*Mark Puchalski:* Ah, there we go, hi everybody. So I joined TNDC about a year ago as a director of facilities and Ruchi Shah and Szymanska did a bulk of the work on sustainability. Sustainability is part of the facility's department. So when I came in it was to pick-up the mantle and keep moving forward with sustainability.

So I want to echo something that Scott mentioned, because this was a concern of ours as well, is the fires and the COVID. We have competing needs for our tenants as well and that was, that's

been a, a big challenges, because the prescription for both of those issues are polar opposites. So we're looking at new technologies to try to create one prescription.

If you have fires you, you typically want to put your building into, into a resert, you want to pull in less air. For a pandemic you want to pull in more air. So we have these, these conflicting issues that are happening on a global level, from the climate crisis to a pandemic and currently those prescriptions are different. So we're looking at new technologies for that.

I also want to talk about what Becky had deluded to in terms of control systems. Now a lot of the multifamily housing that we, we build we're now starting to incorporate control systems into the scope of work. We're trying to create a base foundation so that we can start expanding those control systems through capital improvement projects over the course of many years for that very reason is so that we can have some micro-measurements that we can start making quality business decisions on. You can't – we all know that the phrase "You can't manage what you don't measure." And so measurement and analytics are a big part of how we want to move forward so we can really understand and target our initiatives.

We're a nonprofit organization, as you know money is everything. So, so it's important for us to get that data so we can really pinpoint where we can get the most \_\_\_\_\_.

Within our housing development department also we're looking at sourcing materials that have a low carbon imprint. Of course high ash concrete for instance, laminate wood beam construction and, and other aspects of the construction field that can also start the process of reducing carbon right when we start digging into the ground. That should be carried through the life of, of the building.

But there's so much to consider when you're looking at sourcing products, how it's transported, how it's created, how it, how it's manufactured, how it's installed. There's a lot of information that has to be acquired to start looking at what really makes the most sense.

So we've been in this, we've been pushing as a leader in this industry for, for many, many years. We've reached our first goal of reducing emissions by 20 percent and now we have a new goal which is by 2038 we want to have a 50 percent reduction portfolio

wide. I think we're on track to doing that. We have a lot of support in housing development, to a lot of support with leadership.

We have some challenges certainly with local authorities that aren't up to speed on the new technologies. As fast the technologies are coming out there has to be some sort of communication between how those technologies impact in, in the aspect of building inspections and aspect of codes and compliance, because we're getting – we're running into some, some problems on that front with local authorities who have jurisdiction over certain things, right? So that's one of the challenges that we're currently dealing with.

Then you know the, the other aspect is you know we deal with very old buildings and what Caitlin was talking about is, is a big challenge of taking an old building that wasn't constructed with the mindset of green technologies. You know when I deal with a building that was constructed in 1906 there's a certain level of challenges that we have to, to face to get that building into a, into a scenario. A lot of the challenges comes right from the local authorities having jurisdiction over those properties.

If you take into account if I have a historic building I have, I have you know a group that is concerned with ruining the historic façade of this building, which might entail us not \_\_\_\_\_ [crosstalk] windows. So there's a lot of challenges we face.

Yes, thank you.

*Michael Freedberg:* Yeah.

*Mark Puchalski:* Sorry, I can go on. You know it's a \_\_\_\_\_ [crosstalk].

*Michael Freedberg:* Right. [Chuckles] Lots, lots to talk about, great work, but we're going to have to try to move forward. Thank you, thank you for the good work.

I'm just thinking we just if we could... Thank you all of the panelists. I wanted to get some resources that you might want to look at up on the screen for the next slide if possible.

These are just some of the resources that have been talked about today. We'll be, we'll be posting these slides on the screen, on the, on the web later. So there's, there will be some good, good follow-up resources available here.

We also wanted to mention before wrapping up today I want to thank all of the speakers and the panelists for participating. I don't know if we have time for additional questions. But we did want to mention the Better Buildings Solutions Center, which is a key resource for Better Buildings partners. We encourage you to go to that site for information both on, on this topic, as well as other topics. So Becca do we have that video? I think we have a short video.

*[Music]*

*Josh Geyer:*

All right, thank you. It's amazing what you can do with a marketing budget.

Just a reminder to sign-up for the other multifamily sessions in the summit which are going to be listed here. Ah-huh.

Also we'd like to invite you to attend our Better Buildings Summer Webinar Series starting in June. Partners will discuss some of the most pressing topics you're facing, shared best practices, and innovative new approaches to energy performance. To register go to the Better Buildings Solutions Center and click on Events and Webinars.

Last slide.

With that I would like to thank our panelists, Kranti, Ethan, Caitlin, and Becky very much for taking the time to be with us today and also a, a big thank you to our Zoom host, Becca and Marissa. We launched a short feedback survey in Zulo, oh excuse me, in Slido and ask that you please take a couple minutes to give us feedback on this session. Your answers will be totally invisible to other attendees. We rely on your feedback to design webinars, future summits, and more. The poll will be open until tomorrow morning.

If you'd like to learn more about the resources discussed today please check out the Better Buildings Solution Center or feel free to contact me at the e-mail shown.

Thank you very much everybody. Have a good day.

*[End of Audio]*