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CALIFORNIA ENERGY COMMISSION

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IEPR COMMISSIONER WORKSHOP

RE: BUILDING DECARBONIZATION:

NATIONAL, REGIONAL, AND CALIFORNIA ACTIVITIES

REMOTE VIA ZOOM

Tuesday, May 25, 2021

10:00 A.M.

Reported by:

Elise Hicks

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P R O C E E D I N G S

10:00 A.M.

TUESDAY, MAY 25, 2021

MS. RAITT: Good morning everybody. Welcome to today's 2021 IEPR Commissioner Workshop on Building Decarbonization: National, Regional, and California Activities. I'm Heather Raitt, the Program Manager for the Integrated Energy Policy Report, which we refer to as the IEPR.

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

To follow along with today's discussion, we do have the presentations docketed and posted on our website, the Energy Commission's website.

And also, just to note, that all IEPR workshops are recorded. And both recording and the written transcript will be posted on the Energy Commission's website following the workshop.

Attendees have the opportunity to

participate today in a few different ways. For those joining through the online Zoom platform, the Q&A feature is available for you to submit questions. You may also up-vote a question submitted by somebody else. Just click the thumbs-up icon to up-vote. And then questions with the most votes are moved to the top of the queue. We'll reserve a few minutes near the end of the morning to take such questions. We're likely not to have to time to address all of them, however.

Alternatively, attendees may make comments during the public comment period at the end of the morning, and in the afternoon session. Please note that we will not be responding to questions during the public comment period.

Written comments are also welcome. And instructions for doing so are in the meeting notice. And written comments are due on June 8th.

And with that, I'll turn it over to Commissioner Andrew McAllister for opening remarks.

Thank you.

COMMISSIONER MCALLISTER: Great. Thank

you, Heather. Really happy to be here today and have been anticipating this workshop for a while. We're still a little bit in the first phases of the IEPR activities. We have a lot of workshops ahead of us on various themes. But primary, one of the primary themes of this year's Integrated Energy Policy Report is building decarbonization. I think it's a very auspicious moment to be having this workshop.

Recently, as many of you may know, at the Energy Commission, we released the 45-day language express terms -- for the express terms for Title 24, Part 6, the Building Energy Efficiency Standards for California, so that's really a milestone. And we're aiming to adopt those in August and pass those along to the Building Standards Commission for an effective date of January 1, 2023. And we really are pivoting strongly towards decarbonization technologies, especially heat pumps, by doing a lot of provisions in there to support electrification and decarbonization more generally, so that's very exciting.

And then, number two, the Draft Staff Report for AB 3232, which is a trajectory for

buildings to get to 40 percent below 1990 emissions levels by 2030, is now on the street. So all of you are very encouraged to look at that and have a read and provide us any comments that you have.

So, really, so both of those are sort of setting the stage for today's workshop. And the way we have conceived of it is to focus on national and non-California states in the morning, and then focus in on California in the afternoon. And so I'm really, really happy to be here with that framing because I think it's going to provide a great foundation for the rest of the IEPR cycle.

I really want to thank Heather, and Raquel, and Stephanie, and the whole IEPR Team for putting together this workshop and just making sure the level of professionalism is right up there as they, really, always do. And so thank you, Heather, and Team, for that.

And then, also, Efficiency Division Staff who are many and who have been involved in this workshop in assembling it, really, thank you to all of you for that.

And my Advisor, Bryan Early, who has

interfaced with our colleagues from the other states and from Washington, DC, so thanks to him, as well.

Buildings are about a quarter of the emissions.

Well, actually, before I launch into just a few sentences framing this topic, I wanted to thank my colleagues on the dais for being with us. Commissioner Gunda, I know, is here with us. I think we're expecting Commissioner Douglas, and Chair Hochschild at some point, as they can join. And then, also, Commissioner Rechtschaffen from the CPUC, and Commissioner Houck from the PUC, also, they may drop in as their time allows, as well.

It's worth noting that there is a workshop going on concurrently over at the CPUC on load flexibility today. And that has also been long in the preparation. We are represented there. We're going to talk about our Load Management Standards. And there's just a really great synergy with what's going on over there with load flexibility and buildings, and decarbonization. So they're all part and parcel of the solution for getting to zero carb, and

over time, and really transforming our building stock to support decarbonization fully.

So, let's see, so buildings are really a key part of the solution. They're 25 percent of the emissions. Roughly half of that is the emissions from the electricity they consume, which will be going down with SB 100 and decarbonization of the electric grid. The other half is onsite emissions. And you'll see us, see the Staff, talk about that in the 3232 Draft Report. But they are, also, a technology platform. And I think it's important to understand them as such.

You know, our EVs often are parked at buildings, we're-- in those buildings, and our EVs are parked right there, so they are a platform for the transformation of our electric -- or our transportation fleet. And they're a platform for all of these technologies with the mechanical systems, their water heating, are all technologies that can be part of the solution if they are both highly efficient and flexible, and increasingly electric. So being good citizens on the grid is, really, it's a requirement for the buildings of the future.

We really need to get to the buildings of the present and the past because they're still with us, as well, and so that is an ongoing challenge. And I think that's one of the reasons I wanted to broaden this workshop to include other states, and include British Columbia, actually, as well, who is being very innovative in this space, because we all need to share solutions here.

I was really happy to see the DOE release, their Roadmap for Grid-Interactive Efficient Buildings. It's exactly where we need to go. And I know that many of my colleagues were involved in that through, NASEO, the National Association of State Energy Officials, which is a really great organization that we'll hear from Jeff Genzer with -- sort of representing NASEO on this panel -- or on the -- during the course of the agenda today.

So you know, I think I just want to highlight, to close, collaboration. You know, we all, all the states that you'll see here, have very aggressive goals for decarbonizing, not only their energy systems but their entire economy. And while the contexts are different, the

solutions, I think, will often be shared. And so we need market scale. We need consistency. We need to get some successes under our belts at some scale and then scale those up in earnest in the coming, just few years, really. We don't have -- we really don't have time. We are in a climate crisis already. We're bracing for the summer peak.

Commissioner Gunda is here. He's really knee deep, if not higher, in the reliability issues, together with the CPUC and the Independent System Operator, to really plan and make sure that we mobilize every resource possible. And for this summer, to some extent, but the next summer and the summer after, load flexibility has to be a big wedge, a growing wedge of the solution of resources in the mix to enable that transformation to happen.

So that's, in sum, that's kind of why I'm so excited about today to really kick off this conversation and, hopefully, establish even deeper collaborations with our other jurisdictions.

I'll just mention, maybe for the benefit of them, and others who may be listening from out

of state, that the Energy Commission has several load flexibility initiatives. Load Management Standards, very, very exciting, sort of the third of the triumvirate of standards that we have it, buildings, appliances, and load management at the Commission, not often used, but the time for Load Management Standards has definitely come.

And then into our appliance work, we're incorporating a new authority to do -- to require flexibility, native flexibility, in device categories in developing individual rulemakings for, you know, groups of device categories going forward. And we're on the front end of that, but it's really taking shape and accelerating, so I'm very excited about that. It will provide solutions for scaled load flexibility.

We just funded $16 million of research and development, and then to inform the Cal Flex hub, so, really, research led by Berkeley Lab on that topic. And then I mentioned the Code, as well, which has load flexibility provisions in it. And increasingly, with each update, we'll have more of those.

So all this is to say, there is a synergy around buildings and everything that they can and

should be doing to help us transition to full renewables and manage peak loads, and to optimize and decarbonize, equitably, our electric system as it grows, as consumption of electric grows.

And so that's the background I wanted to just lay out for us before this workshop. And I've already taken, probably, too much time, so I will -- I'm not sure if the Chair has joined us. But if he has not, then I would invite Commissioner Gunda to take the mike from me as we continue on, so thanks, and to you, Commissioner Gunda.

COMMISSIONER GUNDA: Thank you, Commissioner McAllister. Thank you so much for having me in this workshop. I want to begin by thanking you for your leadership, continued leadership, and dedication to the building decarbonization efforts. And kind of, every opportunity I have I really need to kind of just put that out there, of like your decades-long leadership on ensuring that, you know, we have a vision for long term grid connectivity of buildings and what they mean for our energy system planning, so thank you for your work on this important issue.

I really would want to extend thanks to the IEPR team and all the Staff who have worked diligently to put this workshop together. As usual, Heather and her team are miracle workers, so thank you, Heather.

I also want to extend a thank you to all the speakers and the participants for your time and expertise today to help advance this important conversation.

A couple of points I wanted to just kind of mention, as Commissioner McAllister already pointed out but I want to reiterate, as Commissioner McAllister noted, this workshop is coming on the heels of two important workshops last Thursday and Friday, one kicking off the natural gas track for the IEPR 2021, and the other one was on AB 3232 Draft Report. And this couldn't have been a better time to have this conversation.

As everybody understands who have been here, who are here today, you know, decarbonizing buildings is essential. And the measures we have in the quiver today will profoundly affect the way the energy system planning is done, both on the electric side and the natural gas system, as

we move forward.

Specific to, as Commissioner McAllister noted, there's a couple of things here on the electric system as we think through the SB 100 goals of long-term system planning and how do we plan the resources to meet long-term demand in a 25-year time frame, but also thinking through kind of the peak short-term reliability concerns. I think the load flexibility has an incredible opportunity.

For example, the SB 100 modeling that, again, Commissioner McAllister helped lead that effort last year as a Commissioner, was, you know, kind of really meaningful in the sense of establishing the opportunity we have with load flexibility. There were a couple of scenarios that were modeled, with even a modest amount of load flexibility, helped the reduce the overall build rates required, and also the cost implications of that. So I think load flexibility is going to be an important part of the conversation as we move forward for the long-term system planning.

The second element that Commissioner McAllister touched upon is the reliability of the

electric system. As most of you tracked last year, you know, California had a pretty tough time getting through the summer in terms of the electric demand and supply balance. And one of the things we really relied on was the demand response and the load flexibility. Our critical state partner on that was the DWR, who was able to really move and flex the load significantly to help support the grid during that time.

So even in the short term, as Commissioner McAllister pointed out, as we manage the peak, but also the net-peak times in the reliability space, I think it becomes a very important conversation.

On the flip side, it's going to have a profound impact on how we plan the natural gas system as we decarbonize. And you know, parts of the decarbonization strategies as it pertains to buildings is definitely going to be a significant amount of electrification without the combination of other decarbonization measures. But that in itself, the reduced demand, both temporally, as well as geographically, will present different challenges in terms of the way we plan our natural gas system and help send the molecules to

the places they need to go to at any given time.

So it's a complex issue. And so grateful for Commissioner McAllister's leadership on this area. And looking forward to this conversation. Thank you.

Thank you, Commissioner.

COMMISSIONER MCALLISTER: Thank you very much, Commissioner Gunda. Great, great points.

And even more context, that there's a lot of food for thought these days in terms of how our various systems and our infrastructure, really our industrial policy, is kind of what we're talking about here. You know, the state's large tranches of investments in different parts of our economic. Today we're talking about buildings, but they all have to be coordinated under consistent policy, so thanks for that.

I neglected to actually mention our speakers, because I want to just thank, especially those from out of state, and that's -- we'll hear from Jeff Genzer, Vincent Barnes from the Alliance to Save Energy, John Williams from New York, NYSERDA, and Nat Gosman from British Columbia, Emily Salzberg from Washington State Department of Commerce, which is where their

Energy Office sits, and Keith Hay from the Colorado Energy Office. I just want to thank all of you. Your offices and your leadership has really been, I think, one of the drivers of my enthusiasm for -- my optimism, really, I'd say for how we are going to find solutions to this and other problems. And I think just your -- there's a public service ethic that -- ethos that you all just -- that your offices and yourselves just emulate -- or emanate.

And so I just wanted to thank everyone for taking some time with us to help California and to begin to collaborate even more deeply. So thanks for being here, again.

So I will then pass it off to Heather for -- to get us started with Jeff.

MS. RAITT: Okay. Great. Thank you, Commissioner McAllister.

So I'll go ahead and introduce our first presenter, Jeffrey Genzer. Jeffrey is the Counsel to the National Association of State Energy Officials, or NASEO, and he has been since the organization began. And he's been working on energy issues for 43 years. He represents NASEO before Congress and the Administration. He also

practices Energy and Environmental Law and is the Chairman of the law firm Duncan, Weinberg, Genzer & Pembroke.

Thank you for being here. Go ahead, Jeff.

MR. GENZER: Thank you. Thank you to Andrew. Thank you to Heather. Thank you to Commissioner Gunda. I'm very pleased to be here today. You have some great panelists after me. But I'll do my best in representing the National Association of State Energy Officials.

Andrew is actually a former Chair of the Association.

As mentioned, I'm a lawyer in Washington, DC at Duncan, Weinberg, Genzer & Pembroke. I do want to emphasize the disclaimer at the beginning that the views I'm presenting are not necessarily the views of any individual clients -- we do have a Sacramento office with our law firm -- but, I believe, fairly represent the views of the National Association of State Energy Officials, NASEO, which represents the energy offices, including the CEC, across the United States, the 56 states, DC, and U.S. territories.

Andrew has asked me to discuss building

decarbonization today. I'm going to divide my ten minutes into four categories: federal appropriations; infrastructure; energy and climate legislation; and administration action. So I'm trying to bring a national perspective of what's going on in DC.

I'll start with appropriations. With respect to federal appropriations, I believe that there will be increases in federal funding for Federal Fiscal Year '22, beginning on October 1 of 2021, increases for building decarbonization efforts, support for net-zero buildings, support for grid-interactive, efficient buildings. And these efforts may include a support for improved building energy codes. I expect federal appropriations for the U.S. Department of Energy's Energy Efficiency and Renewable Energy Branch to increase. They're presently below $3 billion on an annual basis. I would expect that to increase substantially.

The President will be submitting his budget to congress on May 28th. And I think when all the dust settles that, again, we'll see a substantial increase in the amount I've referenced at the Department of Energy, at the

Department of Interior, at the Environmental Protection Agency, and at the Department of Housing and Urban Development, among other places.

The Department of Energy will be moving forward on the 28 Appliance Energy Efficiency Standards that were delayed during the last federal administration. I also think you will see direct funding support for enhanced deployment programs, as well as the entire research, development, demonstration, and deployment continuum. Those programs include the State Energy Program which the CEC operates. The Low-Income Weatherization Assistance Program. The President, in that case, committed to address 2 million low-income homes, increase the energy efficiency of 2 million low-income homes.

There's another program called the Energy Efficiency and Conservation Block Grant that addresses local governments and cities and towns. I would expect that will get funding. And there is a strong possibility that a variety of tax credits and deductions for energy efficiency, renewable energy, electric vehicles, and other clean energy activities targeted to

decarbonization will be included in a final federal -- in final federal action in 2021.

Let me also now turn to infrastructure. You've likely been following the back and forth, more in Washington among the ten more moderate Senate Republicans and the White House over an infrastructure package. The President really divided his package into traditional infrastructure, clean energy that totaled $2.3 trillion, and then another couple of billion -- couple of trillion to deal with more social-oriented activities.

The Senate Republicans that I mentioned produced a $568 billion package, again as compared to the $2.3 trillion infrastructure package. Their package was more within the confines of what we would define as traditional infrastructure: highway roads, bridges, ports, and now broadband, but they are very far apart.

The President came down from $2.3 trillion to $1.7 trillion. The Republicans are, apparently, discussing going from $568 billion to $800 billion, but any way you slice it, a $1 trillion difference is a big deal. Whether they can reach a deal is very much an open question.

If a deal cannot be reached, and the White House can convince Senator Manchin, a Democrat of West Virginia, Senator Sinema, a Democrat of Arizona to stick with the Democrats, they may be able to move an infrastructure package through the Senate under what's called budget reconciliation, which is a process set up in the 1974 Budget Act and only requires 51 votes to pass, as long as it involves taxing or spending items, primarily, as opposed to the normal 60-vote filibuster majority. But that infrastructure package could include climate items, certainly building decarbonization, but again, so long as it primarily involves spending and taxing items, as opposed to authorizing new programs that are not related to those two things.

I do want to remind folks that under the American Recovery and Reinvestment Act back in 2009, to respond to the Great Recession, the Obama Administration and Congress worked to put $90 billion into clean energy programs, $11 billion of that was in the Weatherization Program, the State Energy Program, the Energy Efficiency and Conservation Block Grant.

So there is obviously a big difference between the proposal that has been discussed which is in the hundreds of billions in the clean energy category and that $90 billion. The $174 billion proposed for electric vehicles alone is almost double what was in the American Recovery and Reinvestment Act. But the President wants to address 2 million low income homes, wants to address 4 million buildings. Again, I don't want to predict at this juncture how far it will go but it is likely to be a substantial number.

I want to talk about energy and climate legislation now. That is going to be harder to pass independently. The House is narrowly divided, 218 to 212, with a 50-50 Senate with your former Senator, Vice President Harris, breaking ties. This would likely mean that it will be extremely difficult to pass a clean electricity standard. But the House Democrats have put forward their Clean Future Act and the so-called LIFT Act. The House Democrats intend to pull all their infrastructure pieces together, including the clean energy pieces, and they will try to pass it in July.

One of the most interesting bills that I

think I would certainly command your attention to is the Open Back Better Bill from Congresswoman Blunt Rochester and Senator Tina Smith. That would use federal funds, up to $17 billion or $18 billion, to fund mission-critical facility resiliency activities and use private financing to fund the energy efficiency/renewable energy activities in places like schools and hospitals. Decarbonization, using the State Energy Program, a very flexible federal program, again, the CEC runs that.

I want to last talk in my last minute-and-a-half here about Administration actions. We expect that the DOE Loan Office, run by Jigar Shah, will try to spend their $40 billion that they have available to them, and requires no further congressional action. The Administration will move on Appliance Efficiency Standards. They will promote low-carbon technologies, grid-interactive efficient buildings, and will increase those efforts across agencies, DOE, EPA, and across the federal government.

Beneficial electrification efforts, including expansion of load flexibility that was discussed earlier, energy storage, and

transmission is also another priority. As was also mentioned, heat pump technology deployment and tax credits for heat pumps is definitely on the agenda. The Administration proposed a variety of activities administratively last Monday, which I can discuss if there's time during question and answers.

I just want to say, in summary, that I expect more federal funding to support the activities you are undertaking in California for decarbonization in the building sector. I think, certainly, the Appliance Standards is another example. And I expect the funding will be greater than it was in 2009 but I think we won't really know until the third or fourth quarter of this year.

I'll stop and take any questions if there is time. And thank you to the CEC and the staff, and certainly to Andrew and the other Commissioners.

Thank you.

COMMISSIONER MCALLISTER: Thanks a lot, Jeff. I do have one quick question. I know we're a little bit over time but I wanted to just see if you could just comment very briefly about

the -- you mentioned this difference between the bucket of the Obama ARRA period, you know, $80 billion, and then let's say we get $500 billion. What's the discussion of how that money gets piped through the states effectively and out the door quickly?

MR. GENZER: Yeah, that's a great question, Andrew. Again, I think on Capitol Hill, I would say the use of existing programs and vehicles for which there are rules and guidelines is likely to be a method. The State Energy Program the CEC operates is a clear example of that. The Low-Income Weatherization Program, that's in a different agency, is another example of that. Creation of new programs through the reconciliation process is going to be more difficult.

So I think how the $174 billion, or whatever amount they use for electric vehicles, is distributed, does that go through DOT or through DOE? HUD and DOE, under the agreement last Monday, under the announcement last Monday, are instituting a pilot program. HUD and DOE haven't historically worked very well together. That will be an interesting test.

But there will certainly be increased use, I think, of state and local government vehicles. The Energy Efficiency and Conservation Block Grant is one of those examples. There is certainly an interest in doing more on the competitive side. But that will make it tough to get all states interested, and also will make it tough politically to pass on Capitol Hill.

COMMISSIONER MCALLISTER: Great.

MR. GENZER: Thank you.

COMMISSIONER MCALLISTER: Well, thanks a lot for that. It's really great to have your expertise in the room and, really, that institutional memory from DC that we all find so useful. So thanks, Jeff, for being with us. We really appreciate it.

MR. GENZER: And thank you, Andrew, for making me put on a tie and a dress shirt.

COMMISSIONER MCALLISTER: Anytime. Great. Thanks Jeff.

All right, so I'm --

MS. RAITT: All right. Thank you.

COMMISSIONER MCALLISTER: -- going to pass it back to Heather for the panel, so --

MS. RAITT: Great. Thank you. Thank

you.

So we'll move on to the panel on Regional Building Decarbonization Activities. And the Moderator for the panel is Jennifer Nelson. And she's a Manager for the CEC's Existing Buildings Office in the Efficiency Division.

So go ahead, Jennifer. Thank you.

MS. NELSON: Great. Thank you, Heather.

So first off, good morning. And to those in time zones that are to the east of us, good afternoon. I appreciate everyone joining us on the panel today and all of the attendees. I see we have quite a turnout which is always wonderful to see.

So with that, I will now go into the panel so we can get as much Q&A in after everyone speaks.

So first, we will be hearing from Vincent Barnes. Vincent is the Senior Vice President for Policy and Research at the Alliance to Save Energy. Vincent has over 20 years of policy and executive leadership experience with an extensive track record engaging members of Congress, participating in regulatory rulemakings, legislative development, and stakeholder

engagement.

After Vincent, we will hear from Nat Gosman. Nat is the Executive Director of the Built Environment Branch in the British Columbia Ministry of Energy, Mines, and Low Carbon Innovation. He also has probably one of the longest titles I've seen a long time. Nat is responsible for a portfolio of policies, regulations, and programs focused on improving energy efficiency and reducing greenhouse gas emissions in buildings and communities across British Columbia.

Next will be John Williams. John is the Vice President for Policy and Regulatory Affairs at the New York State Energy Research and Development Authority, also known as NYSERDA. John is responsible for providing oversight and guidance of energy policy development for NYSERDA and New York State. John also currently serves as the Vice Chair of the Board of Directors of the National Association of State Energy Officials, NASEO.

Following John, we will have Emily Salzberg. Emily is the Managing Director for Building Standards and Performance at the

Washington State Department of Commerce. Emily oversees the development of codes and standards for new and existing buildings, including administration of Washington State's Clean Buildings Law.

At the end we will be having a presentation from Keith Hay. Keith is the Director of Policy at the Colorado Energy Office. He leads a team developing legislative policies and strategies, as well as regulatory policies, to increase the use of clean energy, energy efficiency, electric vehicles, and beneficial electrification to reduce greenhouse gas emissions. Prior to joining the Energy Office, Keith worked at the Colorado Public Utilities Commission, and was a member of the Colorado PUC's Research Section.

I will now be turning it over to Vincent.

Before I do so, I just want to remind everyone -- this question comes up quite a bit during workshops -- the presentations have all been docketed. This is being recorded, so there will be a transcript later. If you're trying to listen and you can't take notes, don't worry, they'll have everything in writing, as well as

you can revisit the IEPR Workshop and listen to it again in the future.

So with that, I will turn it over to Vincent.

MR. BARNES: Thank you, Jennifer. Thank you. And thank you, Commissioners. Good morning and good afternoon. My name is Vincent Barnes, Senior Vice President of Policy and Research for the Alliance to Save Energy. The Alliance to Save Energy is the lead organization on national energy efficiency policy, ensuring adoption of energy efficiency policies as a priority resource for achieving carbon reductions and mitigating climate change.

Slide two. Perfect. Perfect right there where you are.

When we talk about energy efficiency, our focus is to maintain and increase current productivity levels in all we do while both using and losing less energy. This means driving to Sacramento to Los Angeles, burning less fuel but still driving at designated speed limits, cooling and heating your home over the summer and winter using electricity or natural gas but retaining the same levels of comfort, producing goods and

equipment through manufacturing and industry, operating at needed productivity levels to meet demand but burning less energy and using production to generate energy that can be used elsewhere.

Projections indicate that to avoid a climate change disaster we will actually need to reduce total US greenhouse gas emissions by as much as 80 to 100 percent by 2050. According to a 2019 report led by the Alliance to Save Energy and ACEEE, energy efficiency alone has the ability to get the U.S. halfway to its climate goal by 2050, reducing carbon emissions by 50 percent. In terms of energy savings, it's actually equals to more than $700 billion by 2050. And in terms of emissions reductions, energy efficiency alone would equal 2.5 billion metric tons.

Based on the study, about 46 percent of reductions will come through transportation and the nation's transition to electric vehicles, with buildings providing about a third of the reductions, and industry about a fifth. That said, buildings will deliver about 40 percent of the energy savings, followed by transportation at

32 percent, and industry at 27 percent.

Now, arguably, we are actually well on our way in identifying solutions to increase energy efficiency in transportation, though we have significant work to do as we seek to really ensure equitable access to future vehicle technologies, including charging infrastructure.

That said, as we look to building infrastructure, which will equal about a third of emissions reductions by 2050 and 40 percent of the energy savings, we have considerable work to do still in new construction and in existing building infrastructure, as well.

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With that in mind, I'd like to focus specifically on the residential space with a particular focus on low-income owner-occupied housing. I propose here to focus on low-income owner-occupied because the future of energy efficiency in general is technology based, both in the production of the latest insulation techniques, in addition to the production of the latest heating, cooling, refrigeration, washing, and cooking equipment. As such, to ensure energy efficiency is adopted and utilized across all

demographics, we must ensure to capture, if you will, we must ensure to capture the homes and consumers where affordability actually could be a barrier.

Without question, the future of energy efficiency is active efficiency which, in general, is the optimization of energy efficiency as we know it today, including integration and utilization of DER-enabled devices that communicate with each other, manufacturers, the consumer, and utilities, allowing our vehicles, as the Commissioner said earlier, equipment, and appliances to receive and shed load, using energy with optimized efficiency and rarely losing energy in the process, the ultimate of energy efficiency.

That said, before we get there, we have to ensure equitable accessibility. And this necessarily includes equitable accessibility, something that we don't normally associate with energy efficiency, and that is high-speed broadband technologies which, in fact, are the backbone of active efficiency. If we fail to meet both challenges, that is energy efficiency equipment and products in the home, and high-

speed broadband to facilitate optimization, we will run the significant risk of creating not simply a digital divide, which we're all familiar with, but also an energy divide.

While we've identified homeowners and renters in the low-income accessibility demographic, I want to focus primarily on the owner-occupied segment, mostly because this population is generally larger than what we might anticipate. And the adoption of energy efficiency or the adoption of the future of energy efficiency within this demographic is essential if we're going to meet a net-zero to zero-emissions goal by 2050.

The Alliance to Save Energy recently compiled data to kind of -- to really better understand the owner-occupied low-income population. And while we continue to analyze the numbers, the preliminary data helps us understand the work before us. Some key early takeaways suggest that the low-income owner-occupied numerical demographic is actually larger than anticipated, with the number of owner-occupied low-income under $60,000, nearly equaling the number of owner-occupied households making

$60,000 or more; that's about 35.2 million versus 39.3 million, respectively.

The focus on owner-occupied is significant as we attempt to understand how we achieve energy efficiency saturation today in a population that is challenged by income but controls or owns the residence. Now, really, is the time for us to begin to figure out how to reach the identified population before the future of energy takes off and the future of energy efficiency changes significantly. In brief, we'll need to think beyond weatherization programs and beyond tax incentives, though these programs and incentives will play a larger and significant role.

Next slide.

A number of states have embarked on innovative approaches to integrate energy efficiency within low-income communities, including owner-occupied housing. Some of these approaches include capital investments at the utility level that finance outreach, equipment placement, and retention. The impetus behind such programs are often state-imposed energy efficiency programs with a specific requirement

of universal access. Only through purposeful inclusion will we effectively reach all consumer populations as we think about building decarbonization. Moreover, we will need to be mindful of innovative solutions unique to low-income populations and even more unique to low-income homeowners.

Certainly at the Alliance, as we think about energy efficiency and as we prepare for the future of energy efficiency, a look towards equity and a look towards universal access is a key priority in our advocacy efforts.

I thank you for the opportunity to participate in today's proceedings and look forward to additional discussions in the future.

MS. NELSON: Great. Thank you, Vincent.

And with that, we will now move on to Nat Gosman.

MR. GOSMAN: Well, great. Thanks. My name is Nat Gosman. As mentioned, I'm from the BC Ministry of Energy, Mines and Low Carbon Innovation, a rather long title, I agree. We call it EMLI for short. I'm really excited to be here today to share an overview of BC's building decarbonization strategy, or the Clean Building

Strategy under CleanBC, the Province's overarching climate plan.

And I'm wondering if the slide deck is up? I'm not seeing the first slide.

MS. RAITT: It looks like we're having a little bit of a technical problem, give us a moment, please. How do I go up to --

MR. GOSMAN: Okay. Great. All right, so before I get into the strategy itself, let me first provide some background on BC climate policy.

Next slide please.

BC is a North American leader in climate action. This slide gives you a sense of how we line up relative to our peers in terms of the actions and attributes. Notably, BC has a $45.00 per ton carbon tax currently. That rate will go up to $50.00 a ton in 2022. BC's electricity system is 98 percent clean, a great advantage, and sometimes challenge, to our decarbonization efforts. I'll touch upon, despite this is and the carbon tax, natural gas remains significantly cheaper than electricity, a large challenge I will also address.

Next slide please.

The Province has legislative targets to reduce emissions in 2030, 2040, and 2050, respectively 40, 60, and 80 percent below 2007 levels. Despite BC's ambitions, these targets remain difficult to achieve.

Next slide please.

In late 2018, BC rolled out it's CleanBC Plan, including actions to reduce nearly 18.9 megatons of greenhouse gases by 2030, giving us about -- all the way to our 2030 target, roughly, 75 percent, and putting the Province on a path to meet our 2050 target.

Next slide please.

The 40 percent reduction target applied to the building sector requires reductions of about 1.52 megatons below reference case reductions.

Next slide.

About two-thirds of our efforts are focused on existing buildings as roughly two-thirds of those buildings standing now will be standing in 2050.

Next slide.

There are three pathways the Province is pursuing to achieve these reductions in the

building sector: energy efficiency of building envelopes and equipment; electrification, primarily heat pumps; and displacing fossil natural gas with renewable natural gas. I'm going to be addressing energy efficiency and electrification, primarily, in this presentation.

Next slide please.

So no doubt, similar to all of the jurisdictions here today, BC faces persistent and entrenched barriers to advancing energy efficiency and low-carbon electrification. We developed the Clean Building Strategy to address these barriers through five streams of coordinated action, including research, development, and demonstration; energy information tools; financial incentives; industry training; and codes and standards. I'm going to detail each of these streams in turn.

Next slide please.

This slide is a bit busy but places the actions in time and illustrates our market transformation principles. The goal is to build market share and industry capacity in energy efficient low-carbon technologies and practices through a series of interventions, starting with

R&D support, energy information measures and incentives to parallel with progressively more stringent codes and standards. So the codes and standards backstop progress over time and, at the highest level of efficiency, remove most emissions from the sector as stock turns over. Notably, program expenditures diminish over time as market share builds and codes and standards come into effect.

Next slide please.

This slide summarizes the goals for the Clean Building Strategy under CleanBC. Worth pointing out here that the majority of the strategies focused on electrification in homes and buildings which are the most cost-effective dollar-per-ton reductions in existing buildings, given the clean electricity we have up here in BC.

Next slide please.

As noted, the first stream of the Clean Building Strategy is research, development, and demonstration. The Building Innovation Fund supports projects across the Province that advance innovation in building design, construction practices, systems, materials and

products. The program focuses on projects that reduce emissions from building operations and/or have low embodied carbon, have potential to be scaled and, ultimately, be cost competitive with incumbent technologies.

The program plays a key role in increasing the availability, acceptance, and affordability of low-carbon solutions made here in BC, a small economy by North American standards but, nevertheless, one with a fairly advanced building sector -- manufacturing sector, I should say. At the same time, building industry capacity is growing to meet future codes and standards.

Next slide please.

The next stream in the Clean Building Strategy is energy information, providing information and support to tools to help British Columbians understand the value of energy efficiency and identify retrofit opportunities. One of the main platforms for this currently is our Better Homes BC web hub. The website is a one-stop shop that provides homeowners with a customized list of all incentives, including Provincial utility local government incentives

that are available to reduce emissions and improve efficiency in their homes.

Next slide please.

Under the same stream, the Province has committed, in CleanBC, to exploring home and building labeling requirements at the time of sale or lease with the objective of fostering an understanding the value of energy efficiency and GHG performance. We're just wrapping up analysis on our first -- sorry, on a variety of different rating approaches ranging from our current under-guide approach, which is a federal system, to a remote assessment methodology. We'll be bringing options to decision makers later this year.

Next slide please.

The next Clean Building Strategy stream is incentives. This is the largest area of focus in terms of budget allocation. The Province continues to make significant investments in programs to drive clean fuel switching, specifically electric heat pumps and envelope equipment upgrades in fossil-fuel heated homes and buildings. The goal of these programs are to reduce GHGs, improve affordability, ensure equity, and build market share and industry

capacity, and advance the future codes and standards.

The Better Homes Program provides prescriptive rebates, for example, up to $3,000 for a heat pump fuel switch. The program also partners with 21 local governments Province-wide to provide top-off incentives. So, for example, in the City of Vancouver, they currently provide a $6,000 top-off for heat pumps, making a total incentive of $9,000 in the City of Vancouver if you fuel switch to a heat pump.

The Better Homes Program also provides enhanced incentives and support for indigenous communities and income-qualified participants.

Next slide please.

The Better Buildings Program provides performance-based incentives for clean fuel switching and energy efficiency projects in large, complex buildings, and that includes both project and energy study funding. So this is a companion program to Better Homes.

Next slide.

In terms of results to date, we're seeing an increase in the sales of heat pump systems Province-wide year over year. That's said, our

Heat Pump Fuel Switching Program has been slow to ramp up and is tracking well below our targeted annual installs. Barriers include low consumer awareness and lack of contractor familiarity, and very much related to low-cost of natural gas relative to electricity. In many cases, the economics of fuel switching to heat pumps are not favorable.

Our solution to this slow ramp-up is to engage consumers and contractors on the multiple benefits of heat pumps, including heating and cooling. Given our northern climate up here, there's a need for both. And at the same time, we're working at different points of the heat pump supply chain to make sure we have the fullest range of the highest efficiency heat pumps available and the capacity to do the highest quality installations to make sure that the actual efficiency of those units are competitive with fossil fuel combustion technologies, specifically furnaces and boilers.

Okay. Next slide.

The next stream in the Clean Building Strategy is industry training and capacity building. We've been working with our utility

partners to conduct research on retrofit installation practices, develop best practice standards, and then training and certification regimes for retrofit contractors who participate in programs which we call our Program Registered Contractor framework, or PRC. The goal of the PRC is to build industry capacity, improve the quality of installations and the satisfaction of program participants.

Once the contractors are certified we include them on a list that is searchable by location on the Better Homes website, and you see an image of that here. Moving forward, the plan is to incentivize the use of the PRC alongside the actual rebates, and then make them mandatory for access to the program.

Next slide please.

Okay, the final stream of the Clean Building Strategy is energy efficiency codes and standards. So all of those market transformation initiatives are building towards these codes and standards.

It's worth spending a moment on the BC Energy Step Code, which is a unique development up here in BC. The Step Code is a voluntary

multi-step performance-based energy efficiency code that local governments can adopt in by law. The Step Code was developed to provide local governments with a standard set of above minimum code building options. They can choose a modest or ambitious step, depending on local industry capacity and political will. Each step aligns with a future commitment for the base Provincial Building Code, as you can see here on the right column of each of these graphs. And the code is, effectively a market transformation policy that provides a path and clear signal for builders and local governments to reach the 2032 net-zero energy ready target.

Next slide please.

At least 25 percent of BC municipalities at last count, this is a bit dated but, nevertheless, indicative, have adopted the Step Code in some capacity with 68 percent of new housing starts in those communities complying with above minimum code requirements.

Next slide please.

Okay, this slide details the future CleanBC codes and standards commitments. So for the Province-wide new construction codes, the

commitments are, respectively, 20, 40, and 80 percent improvements through 2032, harmonized largely with federal and national code commitments, and notably aligned with the Step Code steps. As I mentioned, the Province is now also consulting on the development of an alterations code for existing buildings that addresses energy efficiency, climate resilience, and seismic resilience to come into effect by 2024. The code is likely to have a phased implementation, similar to the Energy Step Code, but that remains to be seen.

Late last year the Ministry responsible for the Building Code was also tasked with supporting local governments to set their own carbon pollution standards for new buildings. So we're now, for the first time, seeing a shift from energy performance in the code to carbon performance, which is a notable development. This standard will also likely be applied like the Step Code, so voluntary steps to begin with. And then, finally, the Province will introduce its next round of Energy Efficiency Standards for space and water heating and residential electric water heaters. We're also exploring potential

demand response-enabled requirements for electric water heaters in these amendments.

Okay. Final slide here.

So reflecting on the overall challenges and opportunities for the Clean Building Strategy going forward, one of the biggest challenges we face is that program incentives remain the primary driver for the change under the strategy, yet the sustainability of those funds is not guaranteed. And even if it was, our analysis shows that achieving our goals through incentives alone would be prohibitively expensive, as this, our graph -- or rather this graph shows.

The solution to this problem is to continue to enact progressively more stringent codes and standards in parallel with those incentives, as I've described. To support those codes and standards, our market transformation approach must result in cultural and institutional shifts towards the recognition of the value of energy efficiency and carbon reduction in buildings by people in their everyday life, and by financial institutions who can help to finance the shift alongside or in the absence of incentives.

And that wraps it up for my presentation. Thank you.

MS. NELSON: Wonderful. Thank you, Nat. I was a little slow there because I was taking notes on some of your comments, and I appreciate that.

Next up we will be hearing from John Williams.

MR. WILLIAMS: Right. Good morning. Thank you, Jennifer, and thank you, Commissioners, for inviting New York and NYSERDA here. Great topic of conversation in terms of looking at building decarbonization and getting a good understanding on how you're looking at it in California. And happy to give a perspective on where we are in New York. It's kind of a lot of planning activities going on right now, but we'll kind of touch on one programmatic aspect that we're also looking to help to advance building decarbonization.

And the great thing about this kind of collaboration, and hopefully it can continue, is that, you know, what we're really looking to try to do, whether it's in New York or with other states, is really build markets for the products

and the services that are going to be needed to realize successful building decarbonization. And I think having a good perspective on what's going on in a lot of different places in the country and in the continent would be -- is always very helpful and provides a good collaboration opportunity.

So next slide.

So the first thing I'll talk about that we're working on now is we have a Climate Action Council that is in the process of developing a scoping plan designed to meet the statutory requirements of our new climate act, our Climate Leadership and Community Protection Act. That is putting New York on a course for 40 percent emission reduction from 1990 levels by 2030, and 85 percent emission reduction by 2050, with a goal towards carbon-neutrality, as well.

Part of the Council process was to break down into advisory panels, sector-specific advisory panels, to try to understand strategies and approaches that the Council can consider in its scoping plan. And I'll reflect on actions that were recently recommended for the Council to consider from our Energy Efficiency and Housing

Panel. And this panel was comprised of state agencies, and our housing, energy agencies, as well as buildings industry representatives, labor, environmental, and environmental justice interests all coming together to deliberate issues, try to reach consensus if we can. And I'll reflect on the recommendations suite that they recently presented to the Council.

So the next slide.

And so what the panel also then did was take account of, well, what does that mean to be a decarbonized building sector in New York? And in New York, it's going to be very tightly tied with electrification. We do have a 100 percent zero-emissions electricity requirement in our Climate Act, 70 percent renewables by 2030, and then moving on to 100 percent zero-emission by 2040.

Piggybacking on that system is going to be key in terms of how we get it to electric -- how we get to decarbonization in buildings. So the movement of a lot of thermal load and other load from our building sector onto the electric system is really going to be the key on how we get to that as also tying in some significant

energy efficiency improvements, as well. So that will be primarily the combination that we'll look at. And you know, that is -- that's got a big goal at the end, too; right? It's an elimination of onsite GHG emissions from the combustion of fossil fuels in the entirety of the building sector, residential, commercial, and institutional. Big goals.

Next slide please.

And just a bit of scale, what we're talking about in New York, probably, and maybe in order of magnitude, a little bit less than California. We do have 6.2 million buildings in the state. And they do span quite a spectrum of building types.

The one thing that we do need to think about is what is it going to mean to get to the buildings -- an appropriate buildings' contribution for that 40 percent emission reduction by 2030? What that will mean is that we will need to retrofit 200,000 homes every year to all-electric and energy efficient, as well as take 370,000 commercial and institutional buildings off of fossil fuel. That is, as Commissioner McAllister stated at the beginning

in his comments, means we are moving directly to scale-based activities. There's not a lot of time to really think about incremental approaches to what type of programs work.

And in order to do that, and in order to ensure that we've got an equitable transformation at scale, means we need to call on private capital and get that capital focused on that highly-efficient building outcome. We need to make sure our public incentives are geared towards adoption and getting that behavioral change that Nat was just talking about. So how do we have a relatively limited amount of public incentives, encourage adoption of these new approaches, and then how do we ensure that we have appropriate public resources that are electrifying buildings for low- and moderate-income New Yorkers?

Next slide please.

So what I'm going to do is there's -- so the panel pulled together recommendations in a number of different categories, and these are specific mitigation strategies that the panel had come up with. These are really groupings of it. There's a ton of recommendations behind each of

these segments.

Maybe I'll just call out the first one in terms of how we think about phasing out fossil fuel use in buildings. This ranges in a lot of activities from legislation that would remove what are current subsidies for natural gas system uses, literally paying for the last 100 feet of natural gas system expansion to get to the building connected to a distribution system. The panel is recommending that we really do need to take focused action on that as it does create complications in our calculations on the benefits of heat pumps and electrifying the building otherwise.

It requires us to take a strong, hard look at building codes. New York currently has a cost-based code. The recommendation is to shift that to a carbon-based code and to do that in a relatively short period of time, we only have about two cycles of code advancement in order to make sure we are embedding carbon approaches, so that we can utilize the carbon code as a tool to get to decarbonization.

Appliance Standards is another one in helping us to phase out fossil fuel use,

essentially mandating over a period of time that when you do have fossil-based equipment and it comes to its end of life, that our standards will require that the replacement has to be electric technology.

And then there's also a lot of recommendations on how we should be organizing our system benefits supported programs, as well.

So that's kind of just an example of these mitigation strategy sets that the Advisory Panel is recommending to the Council, similar to our benchmarking-type activity, shifting that reliance from fossil gas to a clean energy system. Also taking focus on HFCs. And given that what we have in New York in our carbon accounting approaches, we do see an increased percentage of the buildings' emissions coming from HFCs adopting a 20 percent global warming potential. And that really kind of changes some of the equation and the impact on the way we look at HFCs in our overall buildings emissions contributions.

Next slide.

Aside from our mitigation strategies, we also have these enabling strategies. And this is

really building the market around support for decarbonization of our building segments, so that is looking at public financial incentives. How do we think about financing for our building sector? And that is looking at public and private financing and looking at it in all different types of building typologies.

Workforce issues that come to the fore, ensuring that educating our consumers and getting the energy consumer ready for changes in the system that they may not be used to thinking about or seeing, that is going to be a key to success.

Also need to think about technology innovation, as well as how do we look at embedded carbon into our building products? And how do we utilize new policies that account for embedded carbon as we think about decarbonization.

Next slide please.

And so we've got a lot of like the levers turned up very high from these recommendations. But even at that, I will say the challenge is really confronting us full on as we think about it in New York. But when we look at our baseline buildings' contributions in 1990 versus the

projected output from this full suite of recommendations from the Advisory Panel, moving from 103 million tons to 75, that actually is only at about 38 percent of the emissions reductions that we would look to.

You know, buildings is also considered among the full -- when we look at our full economy and the contributions that we need to seek from all of the building sectors, we actually were hoping to get a little bit above 40 with buildings by 2030. So, clearly, we've got a big challenge in terms of how we think about emissions from our building sector, even with us going kind of full throttle.

Next slide please.

Aside from our Climate Action Council, we also have two roadmaps that we're working on at NYSERDA. One is a Carbon-Neutral Buildings Roadmap -- next slide -- which is intended to take a long-range perspective on how we can think about and galvanize towards building decarbonization.

On the left, you'll see this roadmap is taking a sector focus. It's looking at four building typologies which represent about 50

percent of building energy use in New York State. And we're looking to try to develop, you know, both a common approach and a common understanding of what it means to be a carbon-neutral building, and then develop the practices, the standards, as well as the solution sets, all of which will be necessary to move forward with that. That is really the purpose of this roadmap, taking a very long-term approach. Also ensuring we have an equity and environmental justice emphasis in this approach will be key to success in creating a roadmap that is implementable.

Next slide.

Maybe this is just a way of looking at the various complexities of the issues that we need to account for in this roadmap, whether it's looking at how we get electrification done, to resilience implications, the equity considerations, as well as making sure that part of the process and the way we think about solutions is also accounted for, so what's the nature of the stakeholder engagement that we should look at?

Next slide.

And the roadmap is actually coming to a

common set of solutions, perhaps fairly well known. But the good point of the roadmap is making sure everybody does get on the same page and can think holistically about all of these options as we look to building decarbonization strategies. So efficiency, electrification are clearly two critical aspects.

There was a lot of talk earlier about load flexibility and making sure that the buildings are looking at that. And then how we integrate distributed energy resources, whether it's PV, batteries, et cetera, into the building is key.

Maybe just flipping up fast, I see I'm at time, we do have a Building Electrification Roadmap. Maybe if we could just jump ahead in the slide? A Building Electrification Roadmap which, on the next slide, shows it's a ten-year perspective on how we think about electrification strategies. This will also be something that we want to make sure that we are looking at all -- on the next slide -- looking at all of the policy analysis and strategy development activities that are needed to get building electrification, primarily looking at heat pumps, involved in all

markets.

On the next slide, it's just talking about one program aspect is Retrofit New York, which is looking to get net-zero energy retrofits in existing buildings in New York State. And it's looking at building envelopes, all of the mechanical systems, onsite distributed generation, grid interactivity with both EVs, as well as load flexibility, as well.

And on the next slide what -- the key of Retrofit New York is really to look at getting all of the providers of these services together in one space to be able to provide collective resources as their solution set. So who are the solution providers? Who are the component manufacturers? And getting them connected with the building owners is the key to getting Retrofit New York up and off the ground, but then also creating a replicable model so that scale of the implementation of net-zero energy actions can take place in, really, quite an accelerated pace. And that replicability is the key to how we are going to be advancing decarbonized solutions in New York. And, hopefully, Retrofit New York can be a successful model with that.

And I will conclude there. I've left, on the last slide, just some links to some of the resources that I've identified here today. Thanks very much.

MS. NELSON: Thank you, John. That was wonderful.

Just a reminder to the attendees, if you have any questions for any of the panelists this morning, please click on the Q&A button at the bottom or top of your screen, and then type them out. And then we will make sure or hope to address them during the Q&A period.

And now we will move on to Emily Salzberg.

MS. SALZBERG: Great. Thank you, Jennifer. All right.

Good morning everybody. And thank you, Commissioners, for having me here today. My name is Emily Salzberg and I lead our Buildings Standards and Performance Team at the Washington State Department of Commerce. So my goal in the next 10 to 12 minutes or so will be to talk about building sector decarbonization as a key component of our state's energy strategy. I'm also going to highlight one key activity that we

have currently underway in Washington, which is the first in nation statewide energy performance standard for existing large commercial buildings.

Next slide.

Commerce's purpose is to strengthen communities. Washington State Energy Office is situated within the Department of Commerce.

Next slide.

Before we get going, I want to briefly set the backdrop for building decarbonization in Washington. In 2019, the legislature directed the Department of Commerce to revise the State Energy Strategy, which was last updated in 2012, to align the strategy with the requirements of the Energy Independence Act, the Clean Energy Transformation Act, and the state's greenhouse gas emission reduction limits. Commerce was responsible for convening a 27-member Advisory Committee which consisted of legislative members, utilities, community-based organizations, business leaders, and others to provide guidance and feedback to Commerce in the development of the strategy.

Next slide.

Our state law declares that a successful

state energy strategy needs to balance three goals, to maintain competitive energy prices that are fair and reasonable, to increase competitiveness by fostering a clean energy economy and jobs, understand and address the needs of low-income and vulnerable populations, and to reach and respond to both urban and rural communities.

Next slide.

So the final goal, to boil all of this down, is to meet the state's emissions reductions limits, which is in statute. These limits are shown here on the slide. The results of the economy-wide decarbonization modeling that was completed in the strategy development indicates that we can get there but we need to take swift action.

There are five key strategies that underpin in all of the decarbonization pathways that we analyzed, those are energy efficiency, clean electricity, electrification, clean fuels, and carbon sequestration.

Next slide.

This net-zero 2050 graphic depicts the five pathways to achieving net-zero emissions by

2050 which include 100 percent clean electricity, clean electric energy-efficient buildings, flexible low-carbon transportation, innovation to enable a low-carbon industry, and carbon sequestration.

Next slide.

So I would like to briefly talk about equity because it is woven throughout our strategy. A few specific approaches to equity that we deeply considered and are now working to incorporate into the very fabric of our work are procedural equity, distributional equity, and structural equity.

So just to provide a few examples of what I mean by that, with procedural equity we want transparent, fair, and inclusive processes that require us to think differently about how we engage with the public and, most importantly, communities that are disproportionately impacted by climate change. This means that stakeholder work and public meetings may need to happen outside of the 8:00 to 5:00 schedule. It may mean traveling to be within communities, to hear concerns, and engage in meaningful and hard listening to inform how we move forward.

With distributional equity, in Washington, we have the ability to target some of our resources to overburdened communities specifically. Our Washington State Department of Health has a data tool that we use to identify environmental health disparities within communities and within census tracts. We can use this tool to not only distribute resources to these communities that most need them, but we can also track our progress in providing those much-needed resources over time.

Next slide please.

So shifting our focus, just a bit, back on buildings, so this slide really encompasses where we need to land. This is the end state for the building sector, clean electricity fueling very efficient and healthy electric buildings.

In Washington State, we have the Clean Energy Transformation Act as foundational policy. This law commits Washington to an electricity supply free of greenhouse gas emissions by 2045. Our work then becomes making buildings, both new and existing, as efficient and electrified as we can. So we need to shift from fossil fuels to electricity to power commercial and residential

buildings. We need to accelerate the path to net-zero buildings. We need to weatherize and retrofit existing building stock. And we need to fundamentally reform existing programs, codes, and standards.

So none of this information is new or groundbreaking. It's very consistent with the things we've heard from the other panel members. Pretty much, every strategy and roadmap out there covering the building sector includes these recommendations.

I do want to take a moment, though, to note that there are few bigger picture and less clear-cut items that we need to consider if we are to move forward in a productive way. Here are a few additional examples of recommendations from the building's chapter of the strategy. The one key component is aligning greenhouse gas limits or carbon goals with code, utilities, and program mandates.

What we have seen emerge as states have prioritized carbon emissions is that traditional energy codes, utility conservation programs, and efficiency programs that have been around for quite some time lean on energy reduction as the

primary metric. We aren't going to actually have all-electric new construction if we don't fundamentally change the way we look at fuel source in codes. So it was great to hear some of my fellow panel members speaking to that carbon metric in codes. We don't have that in Washington State and that's the next step that we need to pursue.

So let's think about the same paradigm within workforce and leadership. In Washington, we're asking ourselves, what does it look like to build leadership capacity for building decarbonization? This is a complementary but fundamentally different approach to our work. What will it take to train a workforce to speak to homeowners, for example, about the connection between natural gas ranges and indoor air pollutants and asthma? What will it take to build leadership at the state level and across state agencies and local governments to guide the market forward in the direction that we know we need to head? Now I don't have answers to all of those questions, but we certainly have been spending a lot of time thinking about them.

Next slide please.

So in Washington, much like California, buildings are actually -- they are the second greatest contributor to greenhouse gas emissions. And they are the fastest growing source of emissions by sector here in Washington State. Greater efficiency and electrification in buildings has both short and long-term benefits. It avoids the need for clean fuel investments. And it results in significant reductions in energy demand. We have a lot of work to do.

Next slide. All right.

I thought it might be helpful to briefly highlight a key effort that we have in Washington State that's underway in the building sector.

So in 2019, the Washington legislature passed the state's Clean Buildings Law which is energy performance standard for existing large commercial buildings. So this is a mandatory performance standard for buildings over 50,000 square feet. And it uses ASHRAE Standard 100 as a reference with Washington state amendments. All buildings in the state need to benchmark and then complete energy management and operations and maintenance planning.

The buildings that are found to be over

the energy use intensity target by building type must then make improvements and changes to that building to bring the energy use down within or below the target that Commerce has set by that building type. Compliance is a building owner obligation and it's on a five-year cycle. The building owners need to submit documentation every five years to comply with the law.

Commerce has authority to fine buildings for noncompliance, so this law is enforceable. There are some exempt buildings and conditions, such as agricultural and industrial uses. We do have exemptions for financial hardship, recognizing that not all building owners have access to capital to make changes to their buildings. And compliance for the mandatory portion of this law starts in 2026.

So currently underway, we're launching an early Adopter Incentive Program on July 1, so just a couple weeks away now, to provide financial assistance to building owners for early compliance with the standard. We have $75 million available for this program. The Incentive Program has been a key component for us to get the standard launched. We have a five-

year period to work more closely with building owners, to provide technical assistance where needed, and to partner closely with utilities on the administration of this program.

While the incentive funding was authorized by the state, it's paid to building owners by the utilities, and then the utility claims a tax credit within a two-year period following the incentive payment. The state portion can be paid in addition to utility-funded conservation programs.

Multifamily buildings are not subject to the mandatory compliance but they can participate in the incentive program.

So we have equity considerations built into the design of the Incentive Program to the best of our ability and in alignment with the authority that commerce has in statute.

Our team did extensive stakeholder work in the design of this program. We have a first-come, first-served portion of funding for building owners. And then we have a reservation system for building owners that meet criteria to participate in the equity and inclusive portion of our program. Buildings with the highest

energy burden, affordable housing providers, and those in rural and overburdened communities can all access incentive funding through this reservation system, in addition to additional technical assistance.

We're also working to create a Washington State building registry using data from all of our 39 county assessors in Washington State. This registry is the foundation of the database portals, that we're going to be launching here in just a couple weeks, to track participation in the Incentive Program and mandatory compliance over time.

So just a couple of key takeaways from this process over the last two years, the importance of stakeholder work, and an inclusive public process. Our stakeholders, at this point, are sick of us. They have our team on speed dial and they give us an earful when they don't like a decision that we've made. Our team takes this as a compliment that we've built up the trust necessary to design a program together that will work as well as possible for the state as a whole.

Next slide.

Great. I want to thank you for your time. And I'm happy to answer any questions that come up during the Q&A portion.

Thank you so much, Jennifer.

MS. NELSON: Great. Thank you, Emily. It's interesting to see what Washington is doing and some opportunities where we can learn from what you're doing. It's wonderful.

And with that, we will now move on to our last speaker -- or presenter.

Keith Hay, I will pass the baton over to you.

MR. HAY: Good morning, Commissioners. And thank you to everyone for having me and having Colorado here to share with you our experiences on building decarbonization. I wanted to walk a little bit through the statutory language that underpins some of the work that we are doing here, share with you a bit about our equity work, as well as some of the analytical work we've done over the last year-and-a-half here in Colorado, and then finish off talking about current policy here in the state. And for those who don't know, we are nearing the end of Colorado's legislative session. And so much of

what I will share is still a work in progress and in flux and won't be done until we get to the end of our session in mid June.

So next slide please.

So just quickly, the mission of the Energy Office here in Colorado is to reduce greenhouse gas emissions and consumer energy costs by advancing clean energy, energy efficiency, and zero-emission vehicles for all Coloradans.

Next slide.

So in Colorado's 2019 legislative session, we passed 14 different bills that were intended to help the state reduce greenhouse gas emissions. So it really started with making sure that our Department of Public Health and Environment was setting a really solid 2005 baseline. And for us here in Colorado, at least part of that challenge had to do with data related to emissions from our oil and gas production sector. We also adopted statutory language requiring emissions reductions of 26 percent by 2025, 50 percent by 2030, and 90 percent from 2050, really built off of that 2005 baseline.

In addition, there was statutory language that gave our Air Quality Control Commission, our air regulators, broad authority to adopt rules to reduce greenhouse gas emissions in every sector of the economy. And the way that the administration and the Air Commission are working is really on a sector-by-sector basis. And so this year, we've got one set of rulemakings that will be dedicated to the built environment. We are working through two different sets of transportation rulemakings, working through a rulemaking for the industrial sector.

So far we have not looked at adopting rules in the electric power sector. And that is really as a result of an additional bill that passed in the 2019 legislative session that directed the state's largest utility, Xcel Energy, to meet at least an 80 percent emissions reduction by 2030 in their next electric resource plan. And that was filed on March 31st of this year.

But in addition to requiring Xcel to file what we are calling the Colorado Clean Energy Plan, it allowed any other electric utility in the state to file a clean energy plan meeting at

least an 80 percent emissions reduction target by 2030. And if a utility did that and the plan was approved by the Commission, and the emissions reductions were verified by the Air Quality Control Commission, then that utility would be free from any additional regulation on its emissions through 2030.

So that's the foundation on which a lot of our work in the built environment is coming from.

Next slide please.

So in 2020 we took on a couple of different things here in Colorado. And I'll speak next about a roadmap process that looked at emissions reductions. But we also started a conversation coming out of that 2019 legislation around adopting a climate equity framework here in Colorado. And it's really built off of these six principles.

And similar to the work that's happening in Washington, we are also building a climate equity data viewer that will allow the state to look at census tract-level data on different economic, health condition characteristics, emissions in those areas, so that as we build out

different climate policies we are able to target those communities for either initial investments or significantly greater levels of investments.

And just recently our Public Utilities Commission adopted a decision in Xcel Energy's Transportation Electrification Plan proceeding where my office advocated that the Commission require the company, a public service, to use these six principles to go into these communities using the data viewer to identify them and work with those communities to explore how best to make investments to electrify transportation in those communities. We also advocated for at least 25 percent of the total budget being spent in those communications once they're identified and once that process is completed.

We're still working through some of the finer points of those details but, ultimately, the Commission did adopt that decision. And so at least $25 million over the next three years will be invested in heavily impacted communities, what we here are calling high emissions communities before our PUC.

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So we also conducted, with the help of

Energy and Environmental Economics, a Greenhouse Gas Pollution Reduction Roadmap here in Colorado. And the intention of the roadmap was, first of all, to help us assess where we were as a state in our emissions, then to help lay out a trajectory or set of scenarios that would help us meet those commitments from that 2019 legislation, and finally to help us adopt a near-term action plan.

During the course of the more than year that we were conducting this, we did have one hiccup. Most of our modeling had been conducted by the time the COVID-19 pandemic started. And so we actually needed to step back and re-evaluate a lot of that initial modeling and you'll see that reflected in the next slide. But during that process we conducted several community workshops. We were able to hold them online, had more than 600 people attend those workshops, as well as received several thousand emails.

So the result of that showed us that the Colorado buildings are the fourth leading source of emissions overall. Transportation is the highest, followed by electric power sector, then

our oil and gas development, and finally the built environment.

And this set of graphs just shows where we are in terms of emissions trajectory. And that 2019 action scenario in the middle is really the current path that Colorado is on based on the outcomes and the implementation of all of that legislation from the 2019 session.

If you'd like to go to the next slide?

So the really big takeaway for us here in Colorado, and this is no different than you've heard from many of the other speakers today, is reaching our climate goals really starts with continuing the swift transition away from coal to renewable energy, increasing building efficiency and electrification, and doing both of those things while addressing issues, equity issues, in the design of the policies to achieve those goals.

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So I just wanted to take a moment to share with you the progress that Colorado is making on that clean energy transition. Over the course of the last year-and-a-half the six utilities in our state that operate 99 percent of

the fossil generation have publicly committed to at least an 80 percent reduction by 2030. Xcel Energy, which filed its plan in March, is targeting somewhere between an 85 and an 87 percent emissions reduction by that time frame. And Tri-State Generation and Transmission, which also has a resource plan before the Commission right now, has an initial proposal to reach an 84 percent emissions reduction.

We are working with the other four utilities listed here to determine when they will file their clean energy plans and the process that will be used at the Commission to verify those emissions reductions, so that we anticipate within the next one to two years all six sets of plans will have gone through Commission approval and will then be enforceable, guaranteeing that we will get the emissions reductions that we are anticipating. But this really is a cornerstone of both the state's overall decarbonization strategy, but also our building strategy.

Next slide.

And the last piece of our analytical work that we did in 2020 was we conducted a beneficial electrification study looking at both the sets of

potentials, as well as the market barriers, in a set of policy recommendations here in Colorado. And that helped frame both some of the work that we did in the roadmap, as well as what we are doing in the current legislative session.

Next slide.

So this is just a quick list of the near-term actions that were laid out in the roadmap. I think the key is that this set of policies is intended to get to about a 2.5 million to 3 million ton reduction by 2030, which gets us about three-quarters of the way to the overall goal that we need from the built environment in order to stay on track to meet the 50 percent target by 2030.

Next slide.

So a lot of what I have to say about benchmarking has probably already been said from the folks in Washington. And, actually, as I was talking with you this morning, just got a note that we've passed second reading on this bill. But we are currently running legislation that would target buildings over 50,000 square feet. We think that, when implemented, the policy will reach roughly a million metric ton greenhouse gas

reduction and lead to some initial savings, as well.

I think what was an interesting transition for us as we looked at the benchmarking and performance legislation is that we have implemented now, instead of just an energy performance standard, really targeting an emissions reduction standard to meet the 2025 and 2030 climate goals. And so as the bill stands now, we would start building benchmarking this year. And we would also, in October of this year, stand up a task force that would look at different pathways that covered buildings could use to meet those emissions reductions of about a five percent reduction by 2025, and a 20 percent reduction by 2030. That task force has about a year to work and then it would make recommendations and we'd adopt a rulemaking.

Next slide.

We're also looking at legislation that would require covered utilities to file plans with the Public Utilities Commission to implement electrification through rebates and incentives to homeowners.

Next slide.

We are also looking at adopting clean heat legislation that would focus really on the transition in the gas utility side of emissions reductions. It would put in place a 22 percent emissions reduction by 2030. It also targets about a six percent emissions reduction by 2025 and provides a flexible of set strategies and pathways for utilities to meet those emissions reductions standards, including efficiency, electrification, hydrogen, and a set of recovered methane sources. It would also remove a prohibition that's currently in PUC rules that prohibits fuel switching.

Two more bills that I would highlight is we are focused on also providing stimulus funding through state stimulus of about $50 million, that most of that would flow into our Clean Energy Fund, or Colorado's Green Bank, to help with the transition in both residential and commercial environments. And a small portion of that $50 million would also flow into a loan program that my office runs to help income-challenged Coloradans make energy efficiency and renewable energy investments.

The last two pieces of action that I

would really highlight is that our Public Utilities Commission currently has an open miscellaneous docket in which they are pursuing investigations on decarbonization strategies on the gas side. And as a result of a settlement in a recent gas rate case, my office and other parties came together and filed a petition for rulemaking with the Commission to implement short-term planning rules.

So let me stop there. And I look forward to the conversation and discussion. And thank you all.

MS. NELSON: Thank you, Keith.

With that, that concludes the panel presentations. I want to thank Vincent, Keith, Nat, John, Emily. Your presentations really highlighted some of the leadership and the work and the strategy that's going into this, you know, the question of how do we decarbonize our communities and our buildings? And it's wonderful and exciting. It's a big lift and I appreciate all of your time today to share that with us.

I also want to pass it over to our virtual dais for some questions. In addition to

Commissioner McAllister and Commissioner Gunda with the California Energy Commission, we've also been joined by California Public Utilities Commission Commissioner Cliff Rechtschaffen. Thank you. And I will give you the panel for if you have any questions or comments for any of the panelists this morning.

COMMISSIONER MCALLISTER: Thank you very much, Jennifer. Agree with your assessment, that was fantastic. I'm really glad we are getting this broad perspective because I think probably all of us here in California have been taking copious notes. And thanks for, really, all the well organized and thought provoking and, really, commendable activities that your -- your presentations, but also the actual activities you're talking about in your states and province.

Let's see, I guess I'm going to -- so we have until the hour, we have until noon, according to the agenda, so we've got a good 20 minutes for questions from the dais. We don't have to use all of it. I see we have a bunch of questions coming in from the attendees, as well, so that's great. Lots to think about it.

So I guess I wanted to just -- I have a

ton of questions but I'm only going to ask one, and then I'm going to pass it to my colleagues on the dais here.

Thank you, Commissioner Rechtschaffen for joining us.

So you know, you've talked -- you've all talked about in some way, most of you anyway, about the sort of new strategies, including performance-based, either incentives or mandatory standards, you know, challenges for sort of developing equity and using metrics there, which is fantastic. I think there's a ton to talk about in equity. I want to just commend Washington State. And I know Michael Furze and all the team there is really dedicated to kind of unpacking the equity issues and getting -- making progress through that lens. And really appreciated Vincent's focus on that, as well.

So the question is, underpinning the direction that we need to go, we all know that we need to go faster and faster, what efforts or maybe challenges are you undertaking and maybe face with respect to data access? In California, we're doing a lot. And I think there's probably no one size fits all. But you know, individual

meter data, maybe that's one way to look at it to enable third parties. But you know, even just the performance -- you know, getting data from buildings so you can actually even benchmark them, I think, is a challenge in different ways across the nation. And I guess I'm wondering what your perspectives on that are, and how much of a challenge, and how you're trying to solve it?

So maybe we go in the same order that you presented but with -- you know, for whoever wants to comment? Thanks.

MR. WILLIAMS: I can start you off, Commissioner McAllister. So this is John from New York.

And data is an enormous issue and enormous challenge. And I think we, in New York, were kind of at a cusp of trying to, you know, put into a place a system that allows us to at least get to the data, and then make sure it's accessible so we can see some of this solution finding happen. So it was, I want to say, it was perhaps like mid last year the Public Service Commission did take on the data issue and asked NYSERDA to create what we're going to be calling

our Integrated Energy Data Resource, or our IEDR.

And we recently just sent out some solicitations to try to get some contractor support that will help kind of both build a database, but then it's also looking to get services of who we're calling like a Utility Data Advisor to really kind of tell us, you know, what that data means and how can we provide the data in a way that allows for people to understand what they're looking at and then utilize the data to craft solutions.

So I think the key is, is like, you know, what we're doing in New York is just kind of making sure that we've got an architecture set up that allows for that data to be providable, kind of in an objective forum. And then what we can do is help to provide a little bit of kind of advisory services, so there's an appreciation and an understanding of what that data is really kind of telling everybody.

COMMISSIONER MCALLISTER: Thanks John.

Anyone else have a data itch they want to scratch?

MR. HAY: I'm happy to jump in and provide just a brief overview of what's going on

here in Colorado.

I think you're right that data is significant. I would say for us here a real focus has been trying to get more data and insight from the utilities and to put that before our Public Utilities Commission and our interveners. And so we currently have a distribution system planning rulemaking in process where we are trying to get a lot more insight into the utilities distribution system as we think about the implementation of different DERs and non-wires alternatives. A big part of that would be important to the building decarbonization, and our transportation decarbonization as we electrify.

We're doing a very similar thing on the gas planning side, as well. And so that clean heat legislation that I referenced has a lot of requirements for the utilities to provide information to the Commission around the gas system. Colorado, to date, hasn't done any gas system planning at all. It's, I would say, we're dipping our toes in the water. But I think we're about to take a big giant leap if a lot of where our Commission is going and our legislature is

pushing us comes to fruition at the end of this year.

So for us the focus has really been trying to get data before the Commission so that it can make informed decisions around the best pathway forward for decarbonizing the built environment.

COMMISSIONER MCALLISTER: Thanks. Thanks a lot.

Anybody else on that question? I want to get -- I want to pass the microphone to my colleagues on the dais.

Commissioner Gunda, Commissioner Rechtschaffen, jump right in if you have questions for our panelists.

COMMISSIONER RECHTSCHAFFEN: Thank you, Commissioner McAllister. This is Commissioner Rechtschaffen.

Keith, you touched on this just a minute ago, but at the end of your slides you said you have an open docket looking at decarbonization strategies in the gas sector, or at least I think you said that. And I just wanted to find out if that's the case, what's the time frame on that?

And I think otherwise, the clean heat legislation and the emission reduction standard for buildings that you were discussing, I want to confirm that those are -- both of those are still in proposed legislation that has not yet been adopted in Colorado? So I guess there's two questions.

MR. HAY: Yeah. Well, and thankfully, Commissioner Rechtschaffen, I'm not in the box, so I can actually answer compound questions today. As a former Commission Advisor, I would often remind my Commissioners to try not to do that to witnesses, but happy to answer.

So Commissioner Megan Gilman does have an open docket as a Hearing Commissioner. It's docket 20-M-0439-G (phonetic). And you know, she has held now, I think, a series of four or five different Commissioner meetings where the Commissioners are trying to gather different sets of information. The utilities have presented, as have national experts, on pathways to decarbonizing the gas sector.

With respect to the legislation, it very much is an active bill. We anticipate actually that it will be up in Committee tomorrow morning for some additional amendments and revisions in

its first House. And we have until June 12th to get that across the finish line.

COMMISSIONER RECHTSCHAFFEN: Great. And that's the -- that includes the emission reduction standard for buildings?

MR. HAY: Yeah. And it's Senate Bill 21-264 here in Colorado. And so the standards that I referenced, actually, are not in the current bill because they are part of the coming set of amendments that are being drafted right now.

MS. ROTHSCHILD: Got it. Got it. And as an attorney, I appreciate that you did not object to the compound question, so you proceeded to answer them. Thank you, Keith. I appreciate that.

COMMISSIONER GUNDA: Commissioner McAllister, I have a quick question.

COMMISSIONER MCALLISTER: Please.

COMMISSIONER GUNDA: I will try no to make it a three- or four-part question, because you could ask so much to this incredible panel.

I just wanted to thank all the panelists again for really kind of highlighting the key areas that you're tackling and the amount of information and the work each of your states are

doing. Just congratulations to all the work, and good luck to start with.

I do want to note, I really appreciated Emily's presentation, specifically on equity. And I think, you know, I kind of like that you made it a focus to talk about that as a slide in your presentation. So specifically on that issue, Emily, one of the things you called out was the structural issues that, you know, kind of making past wrongs correct and such. So think here is kind of a two-part question. And then, please, kind of keep it as succinct as you want to be.

So one is as we think through the equity implications of the clean energy transition, what are the guiding kind of principles or kind of the guardrails you're putting in to ensure that, one, if electrification is going to be an important strategy for buildings, that there is access to all communities for electrification? And two, the implications of the broader energy system?

So I think I'm just going to wait. I'm going to tie John and Nat to it a little bit. And the both of you talked about taking, you know, the sector-based approach for building

decarbonization, and I'm sure that's coming at kind of an economy-wide. And as you kind of construct your answer, if you can just think through, just kind of help understand how we're allowing and thinking through the equity implications, and how are we then transitioning the conversation to a broader economy-wide and cross-sectorial work?

So if, Emily, you could start? And John and Nat, and then others, jump in.

MS. RAITT: Emily, I think you're muted. There you go.

MS. SALZBERG: I think I got it now. I had the double mute.

So thank you so much or that question. And, wow, I feel like we could spend a whole other panel just talking about equity, so I'll do my best to touch on this really high level. I would make myself available and, actually, many of the talented colleagues that I work with, to talk in more detail at some point if that's helpful.

Yeah, you talked about the structural components, you know, with equity. And I think that those are sometimes the most difficult ones

to get to. Like structural racism, structural discrimination, how are the systems and the policy frameworks that we operate within perpetuating those systems?

You know, I'll speak from the perspective as a state administrator, that requires us to completely rethink the way we do our work because we need to engage with communities. We need to listen to hard conversations. And we need to be willing to, you know, be thoughtful in how we design programs, support policy, and provide technical assistance and capacity building.

So I just want to acknowledge, I don't really have a great answer to your question there around structural equity because it's really one of the hardest ones, I think, really, to get to. I'm encouraged that we collectively are raising visibility around, you know, the structural components and making progress towards that end and that work.

Just a couple key pieces I really want to call out from an equity standpoint with our work. And, again, invitation for follow-up conversation. Within that Clean Energy Transformation Act that passed in 2019, there was

a section within that piece of legislation that requires us to look at energy burden and energy access with the Clean Energy Transformation. And so with utilities, they are required to basically put together a plan to address energy burden in their service areas.

Sarah Vorpahl has been leading that work here in Washington State and would love to connect with you to talk more about that. But there has been data acquisition activities, there's been community engagement and, you know, active listening, and just a whole lot of learning through that process. So, again, just we'd be happy to talk in more detail.

And then I just really want to acknowledge the disparity between the needs that we have with low- and even moderate-income households. I'll speak in the State of Washington from that perspective and the funding that we have available to address those needs.

You know, in Washington State, we have over 700,000 households that are living in, you know, in poverty and would qualify for low-income services. The current funding that we have available only serves a fraction of those

households. So I think we just have to acknowledge the gap that we're working within, think about how to be more strategic and flexible with the fund sources that we do have available. And really just, you know, set some goals, and start making progress.

In our State Energy Strategy, we actually put forward a statement, like we ought to be serving ten percent of this eligible population, you know, each year, and that is such a big leap with where we are today. But you've got to put those goals out if you're going to start measuring progress and making progress towards that.

So I know that answer was like horribly like inadequate to actually address the issue. But hopefully it touches on, you know, I think some of the highlights of the work that we're doing and really just working to build our collective, you know, awareness and capacity to do this kind of work.

MR. WILLIAMS: And Commissioner, maybe just briefly, in New York, you know, I think it's similar approaches I'm hearing in Washington, as well, you know, to get from the structural

inequities to build the structures that ensure you're at least addressing the issues. So our Climate Act does have, built into it, the creation of a new Climate Justice Working Group and an Environmental Justice Working Group. They are stakeholder-populated groups. And they're now kind of permanent additions to the way that New York agencies need to consider and confer with these groups as we look at outcomes, whether it's from a policy perspective, but they're also resources for programmatic decision making.

Our statute also requires a minimum of 35 percent of benefits that are coming from our investments in clean energy. And that clean energy means anything from electrification programs to clean transportation programs, you know, really running the gamut, you know, need to inure to disadvantaged communities.

So again, agencies are now, you know, very, you know, cohesively targeted with, you know, doing -- you know, ensuring that they are meeting those standards of the new statute.

And just the last point, also, is, you know, even kind of a shift in the way, like we have to think of administrative law and how

agencies consider what their outcomes need to be, was also directed through our Climate Act, not only to look at emissions but to look at all of the parameters of the Climate Law, which include how we are looking at, you know, trying to repair some of the structural.

MR. BARNES: Commissioner, Vincent Barnes here. I'd probably just add a few things to that.

One, certainly, it's a term that we've used a lot as we kind of think about energy efficiency, and that is universal access; right? And so it's kind of like purposely identifying that the clean energy strategy is going to purposefully be made available across all income demographics. That is a purposeful decision that can certainly be made at the state level, that there's going to be universal access to the clean energy strategy, be it energy efficiency, be it a renewable energy strategy, be it an electrification strategy or something else.

The other piece, another piece that's important, is that the energy strategy is connected to job development and training and opportunities inside the state and inside the

cities, as well. And so if there's a purposeful energy efficiency strategy to ensure that energy efficiency is universally accessible, that individuals being hired come out of the community and there's a purposeful strategy connected to that to train those individuals to perform that work, including the outreach work that is sometimes going to be required before the contractor can actually get into the home.

And the third piece that I would mention is also connecting a business diversity component to it, as well. And oftentimes a lot of these, a lot of the performance that's going to be required in terms of energy efficiency, and also in addition to other strategies that might be employed locally or at the state level, these are small businesses performing a lot of these functions. And when we kind of purposefully go out and identify diversity within our supplier community, that is another way for states to kind of, if you will, identify opportunities for inclusion and, at the very same time build trust with the overall community as well.

MR. GOSMAN: Maybe I can just jump in there, as well. I'm going to build off of most

of the comments, I think, we've heard from Vince and Emily and John. But actually, maybe what I'll do is I'll just take it to a specific example, if I can. Because I think we discussed electrification and how do we apply an equity lens to electrification?

And BC, as I noted, our grid is pretty clean up here. And so our decarbonization strategy hinges on clean fuel switching to heat pumps in large part. One of the challenges we have is the low cost of natural gas. And so if we are to make electrification, unofficial electrification available to low-income, indigenous communities, marginalized populations, et cetera, we also have to do so in a way where we make sure that they are not negatively impacted, given that cost differential and the MPV differential. And so that's a tough nut to crack because sometimes the economics can actually be pretty glaring between natural gas and electricity heating equipment.

Our approach to date, which is evolving, is to offer, basically, high-value incentives to offset that MPV over time and support the direct install-type approaches, primarily, and also to

fund, basically, compatible energy efficiency upgrades that can manage energy bill increases at the same time.

What we're seeing in a number of communities, particularly in our indigenous communities, and we have a large number of remote indigenous communities in British Columbia, in fact, the greatest number in Canada, there is a growing interest in heat pumps from a kind of comfort and health perspective, in addition to the decarbonization aspects. And so as demand for those heat pumps grow in those communities, we are making sure our incentives are on par and, again, addressing any potential cost increments that those communities might face.

So just kind of a practical application of that. So on the one hand, we want to make electrification available to these communities. On the other hand, we need to make sure that electrification doesn't negatively impact those communities.

COMMISSIONER GUNDA: Thank you all so much. And I will, absolutely, will take you up on your offer to follow up and have some more conversations on this. Thank you.

COMMISSIONER MCALLISTER: Great. Thanks for those very thoughtful comments, I mean, all around. I want to just -- I could ask a lot more questions but I think I can follow up with you later for my own questions. So I want to, actually, I think probably end there. We're basically right at time for dais questions if that's okay with Commissioners Gunda and Rechtschaffen? Great. Okay. And pass along the microphone.

I believe Kristy is going to be organizing the Zoom questions. And give us a few minutes for the Zoom attendees to ask some questions, some written questions, and then, after that, we'll move to public comment.

MS. CHEW: Good afternoon. This is Kristy Chew with the Energy Commission. There are a few questions that have come in through the Q&A.

I'll start with Alice Sung. She asked, "How will any national funding be allocated at the local levels centering equity, not only in locational investments, but also through Program management and administration, procurement and contracts and planning, design implementation,

and operating jobs going to the currently unemployed or underemployed small women-owned businesses and minority or BIPOC communities?"

That sounded like a question for the national level.

MR. BARNES: I'll start off. And I don't know if Jeff Genzer is still on, but Jeff is probably a good person to respond to that question.

But more likely than not, as we look at programs like -- or legislation like Open Back Better Act, I believe, by Lisa Blunt Rochester, a lot of that funding is going to be coming through the state energy agencies, and then from the state agencies into communities, much like some of those funds act now.

Jeff, I don't know if you're on, but did you want to add anything to that?

MR. GENZER: Thanks Vincent.

I think the Administration in DC is certainly committed to 40 percent of all the funds in a variety of these energy programs, clean energy programs dedicated to low- and moderate-income communities, neighborhood communities. To the extent funds, for example,

through the new Weatherization Competitive Program that was set up in the Energy Act of 2020, to the extent the Administration has discretion, I think the will try to dedicate those funds to the LMI communities and EJ communities. That may be the case with the competitive portion, if there is a competitive portion, of the Energy Efficiency and Conservation Block Grant.

The major limitation in any language coming from Congress and the Administration is the complexity of the Budget Act of 1974 and the extent to which the money is distributed to the state and local governments in accordance with open-ended language or more restrictive language that might not be allowed in what we call budget reconciliation.

I used a lot of unfortunate Washington speak in answering that question. And I can certainly respond to any follow-up if it was utterly confusing, but happy to respond.

COMMISSIONER MCALLISTER: Thanks a lot, Jeff. And I noticed you've lost the tie, so good for you.

MR. GENZER: I did gain my Hawaiian

shirt. Thank you.

COMMISSIONER MCALLISTER: Exactly.

So I wanted to just step in quickly and make sure to talk about, one, Scott Blunk asked a couple of great questions there about compliance. Well, let's see, one of them got -- one of them looks like it went away.

But to build on something Jeff said, just in the California context, the ARRA funds, you know, those of you who were around during that period, those flowed, in part, through the Energy Commission. CSD, the Department of Community Services and Development does the Weatherization Program. They got a big slug. And then the Commission will, you know, did and will again, I think even more so, focus on how to get those funds to local governments.

So if the State Energy Program is a vehicle for large flows of funds, we certainly will build on programs like the Local Government Challenge and others that really have been successful at accessing and providing resources to relatively, you know, small, low-income communities with a high level of disadvantaged residents.

So I wanted to just note that, that that model is in place. And I think we have a good way to ensure that it comes along with the right kind of incentives to do the things that Alice asked about. So I'm hopeful that we can -- that will take place but, you know, obviously, we'll see.

I wanted to see -- I wanted -- so Scott Blunk asked a question. Oh, there it is. So, "So much of the solution is in the existing buildings." And, you know, some sort of a code trigger to electrify only works if people pull permits. And that on-the-ground local government, just kind of vigilance around, you know, their responsibility to enforce the law, basically, you know, is, I think, generally not what it ought to be. And I wanted to just make sure that that question got asked, if you could describe how you're confronting just making sure that the building stock is held to some standard and that your policy goals actually can be met through programs.

MS. SALZBERG: Well, I'm happy to start fielding this question.

So in the State of Washington, our Clean

Buildings Law, as I mentioned, applies to buildings over 50,000 square feet, and it's on a five-year compliance cycle, so it isn't connected to major retrofits, renovations, or equipment changeouts. And it's a building owner obligation.

I just want to recognize with this question, like, you know, absolutely, existing buildings is one of the toughest nuts to crack with building decarbonization because we lock in efficiency at the time of building construction or at the time of equipment upgrades. I really don't believe we can make meaningful progress towards building decarbonization without figuring out how to address existing building stock. And major retrofits and equipment changeouts just aren't going to get there.

So I think the challenge becomes how can we create and craft programs that provide incentives and provide supportive mechanisms and pathways for existing buildings to make forward progress on efficiency. It's been difficult here in the State of Washington. And we will continue to learn more and more about the barriers and obstacles for building owners. But it's, you

know, it's a state mandate. And it applies to even publicly-owned buildings, not just privately-owned buildings.

And so, yeah, I think that's all I'd have to share for now, but I'm curious what other thoughts the panel members have.

MR. HAY: Yeah, I'll go ahead and hop in for a little bit.

You know, our Building Benchmarking Law is very similar to Washington's and, I think, largely covers the same set of buildings, and takes a very similar approach in terms of the compliance obligations being on the building owner. And I think for us, when we look at the residential sector, we really face significant challenges here in Colorado. We are a home-rule state where every municipality, by and large, has, you know, its own set of requirements and jurisdictions, so it's very hard at the state level to do things like implement a statewide building code, or something like California's Energy Code.

So we've really focused on trying to work collaboratively with the utilities for the non-jurisdictional utilities, or for those that are

regulated, to put in place requirements for them to go before the Public Utilities Commission to have plans, either to decarbonize on the gas side or to file beneficial electrification plans to help on that side.

But you know, the local jurisdiction permit issue is really hard to think through a solution that comes from the state level when you've got home-rule jurisdictions.

MR. WILLIAMS: And maybe I'm just going to kind of riff off of that, Keith, because I think, you know, part of the solution really does also reside in like how do we get the community to actually own the outcome itself; right? And I think what we can do at the state level is provide all of the resources. And if there's training that's needed, or if there's standards that we can try to help communities think about for themselves, that's all fine and good.

But what we're finding is effective in New York is trying to get the community engaged in its own outcomes. And you know, we have what we call our Clean Energy Communities Program. And it kind of sets some parameters around, you know, what we would like to see a community do,

and whether it's kind of doing, you know, some implementation training for building code inspectors or, you know, creating model solar codes, there's a list of things that we've come up with.

And to the degree that the community can itself come to the program with a number of initiatives already identified, that's when we can then convert and try to understand like what state resources are valuable to accelerate even further progress in those states. And communities tend to be quite responsive. You know, the citizens in those localities want the climate outcomes, as well. And so getting the community to own in and become their own participants in the outcome I think is also key.

COMMISSIONER MCALLISTER: Thanks everyone.

I think, oh, Jeff, did you want to chime in there briefly?

MR. GENZER: If there's time. The Green Communities Program in Massachusetts, your program in California, John's program, the Clean Energy Communities Program in New York, are models that we have suggested nationwide, that

those model programs be adopted through the Energy Efficiency and Conservation Block Grant Program, that's one.

Two is the Department of Energy is intending to update the Manufactured Housing Standard, which was last updated in 1994. Fifty percent of new rural housing is manufactured housing. That's an important ingredient to decarbonization.

The Shaheen-Portman legislation, Senator Shaheen and Senator Portman, bipartisan, includes a provision for $100 million per year to be sent to the states, locals, building code officials for digitization of the building permitting experience, plus technical assistance to builders, architects, others. That can be a huge help. Incentives for residential efficiency, retrofits, through the Hope for Homes legislation introduced by Congressman Welch, a Democrat of Vermont, and Congressman McKinley, a Republican of West Virginia, would work with contractors, state energy offices, and others.

And the 25C, Internal Revenue Code, Federal Tax Credit for Residential Efficiency, is the sixth suggestion I have in this area.

Thank you. Sorry, Andrew.

COMMISSIONER MCALLISTER: No. Thanks so much, Jeff. That was helpful.

Let's see, I think I'd pass it back to Kristy, but Heather was also suggesting that we go, I think, to open discussion amongst anyone of the panelists that want to ask each other questions. We don't have a lot of public comment, and so we can eat into that time a little bit, so maybe we put five or so minutes if we want to have a little roundtable here.

MS. CHEW: The next Q&A public question was: "To what extent, if any, is British Columbia exploring or implementing residential fuel cell technologies for building electrification and heating?"

COMMISSIONER MCALLISTER: That's direct, for British Columbia directly, obviously.

MR. GOSMAN: Sorry. Can you read that once more?

MS. CHEW: Yes. "To what extent, if any, is British Columbia exploring or implementing residential fuel cell technologies for building electrification and heating?"

MR. GOSMAN: So, currently, we are not.

Because we have such a clean grid and, you know, large infrastructure investments over the last century, our electricity prices are, actually, relatively low. So from a cost-effectiveness perspective, tapping our existing clean grid electricity is our kind of go-to formula for decarbonization. There are exceptions to that, particularly in remote communities and communities that are end-of-line, where we're looking at a variety of different technologies to ensure that those communities have reliable power but for the main, kind of, lower main lands in the centers of population we're mostly relying on the clean grid.

MS. CHEW: Great, and the next question is also for you, I believe, from Scott Blunk, "What is the level of code compliance in BC for existing homes replacing a water heater and/or HVAC?"

MR. GOSMAN: Hmm. That's a good question. I might have to get back you with a stat on that.

I think, you know, where you're -- so we're talking about gas appliances, there is a high degree of compliance. Where we're talking

about electric equipment, there's probably a lesser degree of compliance. Unfortunately, I don't have those stats at my fingertips for you.

MS. CHEW: Next question is actually from Simi George. She asks -- this is for NYSERDA, John. "Thanks to John from NYSERDA for a great presentation. One of the slides said, "Release" -- I think it's slide 14 -- "Release of the first draft of the Building Electrification Roadmap involved 2021, the slide deck, as the first deliverable for stakeholder input. Is the slide deck available now or can you provide a sense of when it might be issued?"

MR. WILLIAMS: It is actually -- thanks for the question. It actually will be. The slide deck will serve as our first draft, so hang on until fall of this year. And the purpose for kind of releasing that draft in a slide deck is actually to make sure that it's a report that's digestible by most people; right? Like we don't want to be coming out with a first report that is going to be kind of big volumes with a lot of tables that, you know, that might be hard for all stakeholders to sift all the way through. So the initial draft will come forward as a slide deck.

Hope to see that in fall of this year. We'll look forward to all of the input on that. And then that will help us to frame kind of our more formal final report after that.

MS. CHEW: Great. Thank you. Two more questions.

The next one is from Elliot Hoffman. "Certainly, building systems and materials are critical to energy efficiency and carbon reductions. What role does human behavior change play in your initiatives and decarbonization goals?"

Does anyone want to take on the human behavior change question?

MR. GOSMAN: I think it's --- oh, sorry. Go ahead, Vincent.

MR. BARNES: Yeah, and that is if energy efficiency is working at its most optimized level, you don't even know it's happening; right? You're not -- I mean, if the strategy is to have the LED lightbulb sold and only the LED lightbulb sold, or the most efficient LED lightbulb, or the most efficient lightbulb sold, I should say, then that's the lightbulb that the customer is going to buy. And that's going to be the thing that's

operating at its most efficient level.

If it's the equipment, if it's the refrigerator, or if it's the front-loading washer, or if it's the television, if it's the cable box, and all of those things are finely tuned to their highest efficiency level because that's what's been required or that's what's been adopted, then a lot of this stuff happens without the consumer having to really think about it. Most of us don't think about the LED lightbulb that's burning in our home, and we don't think about the front-load washer that we're utilizing, how much saving energy, other than, perhaps, when we made the purchase in the first place.

And so I think ideally, particularly when we start to begin to think about how DER-enabled devices will work in the future, this will be something that consumers won't have to think a lot about once they get the equipment into their homes.

Now there is this aspect, and this has been touched on some today, there is this aspect of that large swath of properties, of residential properties, that are owned by individuals of moderate and low income, with those homes needing

probably -- and I don't have the numbers in front of me -- but significant retrofitting before you can actually begin to implement or provide adoption opportunities for other energy efficiency equipment.

I apologize. I now have to run to the House Ways and Means Committee for a discussion on tax and labor, and so on. I thank the Commission for the opportunity to be here today and look forward to working with you.

COMMISSIONER MCALLISTER: Thank you so much, Vincent.

MS. RAITT: Thank you.

COMMISSIONER MCALLISTER: Really great contributions, so thank you very much.

MS. RAITT: And this is Heather. And, actually, I think we probably should move on to public comment, if that's okay, Commissioners?

COMMISSIONER MCALLISTER: That is absolutely fine.

I wanted to thank all of you on the panel. That was very thought provoking. There's a ton to follow up on. You know, great minds think alike, I guess, in many ways. So all of our states' processes are getting us to a similar

direction, but the details really matter, as we all know. So I think there's a lot to coordinate on and tease out the solutions, really, that we're all coming up with in our own context. So, really, thanks to all of you, John, Nat, and Emily. Thank you so much for being with us. And Vincent, who I think had to drop off. And I'm missing someone. And Jeff and Keith, thank you very much.

And, yeah, thanks everyone for their questions, too.

And I will say thanks to Staff, as well, who have been fielding the questions that come in on the Q&A and answering some of those, many of those live, so really appreciate that, as well. So well done.

And I think now we can -- and thanks to Commissioners Gunda and Rechtschaffen, as well. I think Commissioner Rechtschaffen had to drop.

But let's open up to public comment. And raise your hand if you want to make a public comment and the team will organize that and call on you.

MS. RAITT: Great. So this is Heather. And I just was going to suggest RoseMary Avalos

from the Energy Commission's Public Advisor's Office will be moderating the comments.

So go ahead, RoseMary.

MS. AVALOS: Okay. Thank you, Heather.

And I will call on Zoom raised hands first. And when I call on you, please state your name, your affiliation, and spell your name for the record.

And I'll call on Tanya Barham. Your line is open. You may speak. Go ahead.

MS. BARHAM: Hello. Thank you, Commissioners, for this opportunity to talk. My name is Tanya Barham. I'm the CEO of Community Energy Labs. My name is spelled T-A-N-Y-A B-A-R-H-A-M.

Thank you for this really engaging forum. Everything that was presented was very thought provoking. And I think it's great that the state is looking at best practices from around the country.

I wanted to echo what Alice said in the comments, and Vincent Barnes emphasized in his comments, as well. The importance of -- as somebody who was an early -- I worked on the Solar for All Schools Program in 2002, before the

ITC, before net metering. It's a program which has now commercialized building technology around grid-connected solar which, at the time, was considered dangerous by linemen. They said, hey, this is going to electrocute everyone. We don't want to interconnect these systems. It was considered not very cost effective. Of course, these are the same people who are really excited about, you know, solar now being a huge part of our generating mix. So, you know, this stuff takes a lot of change.

And there was a ton of work that we did before there was a megawatt of demonstration solar on schools in 200 schools in the U.S. And it was primarily around labor and outreach, like Mr. Barnes said, to building inspectors, to community members, to builders, contractors, trade allies, if we are eliminating gas, outreach to pipefitters, retraining programs.

And then as Alice so deftly pointed out, there are a lot of issues on the business side. We know that VC-backed tech companies are -- fewer than four percent of those are run by women, and less than half a percent are run by BIPOC or Black founders. So we need to be

careful in how we advantage businesses that participate in this energy transition. I know that all of the states and the panelists involved are trying to be very intentional about how business diversity is being procured in our procurement processes, and how outreach is happening to communities to sort of co-create this change. I want to applaud that and continue to emphasize that it's integration into this conversation at every single point, whether we're talking about interoperability, whether we're talking about retraining, that equity is part of -- that's a lens that we're using in all conversations throughout the ecosystem of energy transition and building decarbonization.

So thank you for the opportunity to speak. And I will cede the rest of my time.

MS. AVALOS: Thank you.

I'd like to give a reminder to those on the phone to use the star nine dial in order to raise your hand. And if you're on Zoom, use the raise-hand feature. I'll give a few seconds for those who would like to make a comment.

COMMISSIONER MCALLISTER: Thanks. Thanks RoseMary.

And thank you, Tanya, for those comments.

I wanted to just maybe suggest that we put the slide up --

MS. RAITT: Yeah. Sorry, Commissioner.

COMMISSIONER MCALLISTER: -- just so those people know what to do.

MS. RAITT: Yeah. This is Heather. Sorry, Commissioner. Unfortunately, I would love to do that, but we're having a technical problem.

COMMISSIONER MCALLISTER: Oh, okay.

MS. RAITT: And the person with the slides needs to restart their computer, so --

COMMISSIONER MCALLISTER: Oh, okay.

MS. RAITT: -- we're working on it.

COMMISSIONER MCALLISTER: Okay. Okay. Great. All right. We're in sync.

MS. RAITT: Thanks.

COMMISSIONER MCALLISTER: Thanks a lot.

MS. AVALOS: All right. And seeing that there are no raised hands on the phone or in Zoom, we conclude public comment now.

So go ahead, Heather. There are no --

MS. RAITT: Okay.

MS. AVALOS: -- raised hands.

MS. RAITT: Okay. Great. Thank you,

RoseMary.

So I will just -- I wanted to just make a really brief announcement before moving to the closing remarks that the Energy Commission is seeking nominations for its Clean Energy Hall of Fame Awards. And so this is an award to honor individuals and entities making exceptional contributions to help California achieve a 100 percent clean energy future for all. And the categories include Lifetime Achievement, Clean Energy Champions, and Youth Game Changers -- Youth Game Changer, excuse me. Nominations are due June 25th. And for more information, just go to the Energy Commission's website. Sorry, I don't have the slide to show you that. But anyway, you just go to the Energy Commission's website and we can get your Clean Energy nominations.

So with that, Commissioner McAllister, go ahead.

COMMISSIONER MCALLISTER: Great. Well, thanks. I think we're ready for our closing comments.

Again, I want to just thank all the presenters, really good stuff. And you can just

tell how much care has gone into the prioritization, and also the integration. And those two things are not always -- they're not easily compatible often, so really great work in a bunch of progressive and proactive states on decarbonization. So I'm looking forward to future collaboration and maybe even future workshops in the IEPR cycle and appreciate all your contributions today and going forward.

Commissioner Gunda, would you like to make some wrap-up comments?

COMMISSIONER GUNDA: Yeah, Commissioner. I just wanted to, you know, echo your comments, you know, thank you. I think this is a wonderful way of doing the workshops to really bring the overarching national perspective. I think this is a good model for future topics in the IEPR, so I just wanted to thank you, again, to the speakers today, the panelists. What an amazing panel we had. And I'm just really grateful for your thoughtfulness, your expertise and, you know, kind of, you know, way of sharing it to help advance this conversation, and to all the people who were asking questions.

And Jennifer, I think you had the amazing

opportunity to moderate the panel.

So thanks everybody. Thanks, Heather, and Team.

COMMISSIONER MCALLISTER: Thank you, Commissioner Gunda.

And I will not do any summary comments in terms of the themes of the day. But I will point out, actually that this was an international roundtable on decarbonization. We have our incredible friends from British Columbia who -- I mean, that was amazing, just, you know, all your doing in British Columbia, Nat, is just really affordable. And I think I might be due for a field trip of something up there to really see it in person. So once we can do that again --

MR. GOSMAN: Always welcome.

COMMISSIONER MCALLISTER: -- yeah, once we can do that again, which is almost here.

So I want to just wrap up by just pointing out that the last year-plus has been extremely challenging for all of us. You know we've had to readjust the way we work, not just in the energy field but much beyond that. And I have been so heartened with just the volunteerism and our Staff at the Energy Commission,

leadership at the Commission, all the Commissioner offices and Executive Office, and in particular the Executive Office, in the adjustment that we had to make because of the pandemic, and then just the kind of nurturing of the agency through all those times.

And I know that all of you, the presenters today, in your respective states have faced equal tasks. And just the fact that we were able to keep -- not only keep the wheels on the bus but, I think, in many ways really take advantage of the opportunity of being in one place for a while to take a thoughtful approach and really improve our policy and do some planning, and really figure out these difficult questions.

We're not there, existing buildings, we've all got our heads together constantly, but I just want to point that out, that as we emerge from the pandemic, I think we've learned a lot about how to be effective and really visionary and stay that way in our energy policy and implementation.

So with that, I will wrap up, and just thank everybody again, thank Heather and all the

Staff, Jen and the Efficiency Division Staff who helped put this together, nice job, well done. And we will keep this conversation going.

Back to you, Heather.

MS. RAITT: Great. Thank you. And I'll just mention that the conversation will resume at two o'clock this afternoon, so we'll be looking at --

COMMISSIONER MCALLISTER: Yes.

MS. RAITT: -- the California perspective.

COMMISSIONER MCALLISTER: Yes. Exactly.

MS. RAITT: -- and California's activities.

COMMISSIONER MCALLISTER: We're not done for the day, so --

MS. RAITT: Right.

COMMISSIONER MCALLISTER: -- yeah, we're going to drill into California. I would actually invite, you know, if our friends from the other states, would like to attend, you're more than welcome to attend the afternoon and get a deep dive on what California is doing, so that might be interesting, as well.

So thanks again, everyone, and we are

adjourned for the morning, and we'll see you at two.

(Off the record at 12:30 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 17th day of August, 2021.

Elise Hicks

ELISE HICKS, IAPRT

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

August 18, 2021

MARTHA L. NELSON, CERT**367