

DOCKETED

Docket Number:	21-IEPR-06
Project Title:	Building Decarbonization and Energy Efficiency
TN #:	240006
Document Title:	Transcript 8-24-21 for IEPR Commissioner Workshop on the Role of Energy Efficiency in Building Decarbonization - Session 2
Description:	TRANSCRIPT - SESSION 2 OF 2-IEPR COMMISSIONER WORKSHOP ON THE ROLE OF ENERGY EFFICIENCY IN BUILDING DECARBONIZATION - The Future of Energy Efficiency
Filer:	Raquel Kravitz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	10/7/2021 4:39:12 PM
Docketed Date:	10/7/2021

STATE of CALIFORNIA
CALIFORNIA ENERGY COMMISSION

In the matter of,)
2021 Integrated Energy Policy) Docket No. 21-IEPR-06
Report (2021 IEPR)) Re: Energy Efficiency:
) The Role of Energy
) Efficiency in Building
) Decarbonization

IEPR COMMISSIONER WORKSHOP ON THE
ROLE OF ENERGY EFFICIENCY IN BUILDING DECARBONIZATION

REMOTE ACCESS ONLY

TUESDAY, AUGUST 24, 2021

SESSION 2 OF 2: The Future of Energy Efficiency

1:30 P.M.

Reported By:
Elise Hicks

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Patty Monahan, CEC Commissioner

Genevieve Shiroma, CPUC Commissioner

Darcie L. Houck, CPUC Commissioner

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Panelists Panel 1

Ingrid Neumann, CEC, Moderator

Kapil Kulkarni, CPUC

Mazi Shirakh, CEC

Bruce Ray, Johns Manville

Panelists Panel 2

Cliff Majersik, Moderator, Institute for Market Transformation

Katy Hatcher, ENERGY STAR

Barbara Locci, City of Chula Vista

Emily Curley, Montgomery County, Maryland

Sara Neff, Lendlease Americas

Public Comment

Nehemiah Stone, Stone Energy Associates

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P R O C E E D I N G S

1
2 AUGUST 24, 2021

1:30 P.M.

3 MS. RAITT: Okay, I'll go ahead and get started.

4 Good afternoon, welcome to today's 2021 IEPR

5 Commissioner Workshop on the Role of Energy Efficiency
6 and Decarbonization.7 I'm Heather Raitt, the Program Manager for the
8 Integrated Energy Policy Report, or the IEPR for short.9 This workshop is being held remotely consistent
10 with Executive N-08-21 to continue to help California
11 respond to, recover from, and mitigate the impacts of
12 the COVID-19 pandemic. The public can participate in
13 the workshop consistent with the direction in the
14 executive order.15 This afternoon is the final session for this
16 workshop. To follow along with today's discussion, the
17 schedule and presentations are available on the Energy
18 Commission's website. Just go to the 2021 IEPR website
19 page.20 All IEPR workshops are recorded and the
21 recording will be linked to the CEC's website shortly
22 following this afternoon. And a written transcript will
23 be available in about a month.24 Attendees have the opportunity to participate
25 today by asking questions or upvoting questions

1 submitted by others through the Zoom's Q&A feature, or
2 making comments during the public comment period at the
3 end of the afternoon, or by submitting written comments
4 by following the instructions on the meeting notice.

5 Written comments are due on September 7th.

6 And with that, I'll hand it over to Commissioner
7 McAllister. Thank you.

8 COMMISSIONER MCALLISTER: Thank you, Heather. I
9 am Commissioner Andrew McAllister, leading this year's
10 IEPR generally, and then also the building
11 decarbonization track within the IEPR. So, really happy
12 to be here. This is one of a whole series of workshops
13 we are in the middle of with respect to building
14 decarbonization.

15 And I think it's really proving to be the right
16 moment for this conversation. And I think across the
17 board, really, in other states, and federally, and
18 certainly here in California it's just becoming
19 increasingly clear that our buildings are a key part of
20 the solution. And that there are some really innovative
21 things going on that we need to hear about, and build
22 into our programs. And also, that the challenges are
23 fairly significant.

24 And so, we had some really robust conversations
25 this morning and I'm looking forward to this afternoon.

1 So, we're going to talk first about the program
2 environments. We have three presentations around
3 different program approaches and the impacts of
4 different programs.

5 And then following that, we have a session on
6 building performance standards, which is an issue whose
7 moment is here, really. And one of the, I think,
8 increasingly important tools in our collective toolbox.

9 I will also just point out on Thursday we have
10 another workshop on building decarbonization that is
11 focused on, in the morning, embedded carbon in our built
12 environment, and then in the afternoon,
13 hydrofluorocarbons, the refrigerant question around,
14 really focusing on what we do about HFCs as a complement
15 to the proliferation of heat pumps that we need as part
16 of our electrification and decarbonization pathway in
17 the building sector. So, looking forward to that.

18 And then, on the 10th of September we have
19 another workshop about existing buildings and quality
20 installation, another couple key -- well, existing
21 buildings are a huge, huge challenge and we just have to
22 really make progress there, and along the way and ensure
23 that the work that's being done in those buildings is a
24 high quality, and produces the savings that we need it
25 to.

1 And then finally, tomorrow there is a Utility
2 and Commerce -- Assembly Utility and Commerce hearing on
3 the existing buildings, sort of teeing off of the
4 recently finalized Existing Building Decarbonization
5 Report that the Energy Commission adopted last
6 Wednesday, or the last business meeting two Wednesdays
7 ago. And that AB 3232 Report is worth a look. It's
8 come up a number of times already today and I think it's
9 setting a nice baseline for the path forward in terms of
10 our electrification pathway that really is essential for
11 meeting our building decarb goals.

12 So, I'm really happy to welcome Commissioner
13 Shiroma from the PUC to the dais this afternoon. So,
14 thank you for joining us, really appreciate it.

15 And again, we have Commissioner Houck, as well.
16 Thank you again for joining us. So, two of our really
17 key Commissioners on this topic from the Public
18 Utilities Commission.

19 And then, I believe we have Commissioner Monahan
20 as well, from the Energy Commission. So, thank you
21 again for joining us.

22 And I think Commissioner Gunda had another
23 commitment, so he had to focus attention on that, so
24 won't be with us this afternoon. But really appreciate
25 his engagement on this as well.

1 With that, Commissioner Monahan, did you have
2 any opening comments for the afternoon? And then, we'll
3 move to Commissioner Shiroma and then Houck.

4 COMMISSIONER MONAHAN: Thanks Commissioner
5 McAllister. Well, as you well know I'm the lead for
6 transportation and so buildings is, for me, a place
7 where I'm learning and listening, and really trying to
8 take in as much as I can. And also to really figure out
9 how we can make these systemwide links between, you
10 know, transportation, buildings, and our grid. I mean
11 we want to make this a seamless future. Right now it's
12 not, it's clunky.

13 And so, just really appreciate the morning
14 session and look forward to the afternoon as well.

15 COMMISSIONER MCALLISTER: Commissioner Shiroma,
16 did you have any opening comments? Really, really happy
17 to have you here this afternoon.

18 COMMISSIONER SHIROMA: Yes, thank you. Thank
19 you, Commissioner McAllister. I'm very honored to be
20 with all of you this afternoon and I'm honored to be the
21 assigned commissioner at the CPUC for energy efficiency.
22 I'm pleased to join you, and Commissioner Monahan, and
23 my Bagley-Keene partner at the CPUC, Commissioner Houck,
24 on the dais for this afternoon's workshop.

25 As you all know, the CPUC regulates the energy

1 efficiency programs as administered by the large
2 investor-owned utilities, the regional energy networks,
3 and the community choice aggregators. We identify
4 potentially achievable cost-effective energy efficiency
5 savings, and establish targets for the electric and gas
6 utilities to achieve.

7 I understand that in the morning session our
8 CPUC staff, Coby Rudolph and Jessica Allison, from our
9 Energy Division, discussed energy efficiency goals and
10 the CPUC decision we adopted out in May of this year
11 that will transform policy for energy efficiency
12 programs in three significant ways to better align with
13 reducing greenhouse gas emissions, address customer
14 equity, and create long-term energy grid stability.

15 Following what really I feel was a landmark
16 energy efficiency decision, we also adopted a decision
17 in June authorizing \$2.2 billion to the four large
18 investor-owned utilities to administer the Low-Income
19 Energy Savings Assistance Program, the ESA program. And
20 that program reduces hardships of income-qualified
21 Californians and the communities with the greatest need
22 to lower their energy bills, combat climate change, and
23 improve healthy, comfort, and safety.

24 I'm pleased that on the panel for this afternoon
25 that our CPUC staff, Kapil Kulkarni, a Senior Regulatory

1 Analyst with our Energy Division, will be presenting.
2 I've had the pleasure of working very closely with Kapil
3 and he'll present policy changes to the energy savings,
4 or ESA program for income-qualified customers, including
5 a staff proposal adopted this summer to achieve deeper
6 energy savings and authorization of two new utility
7 building electrification pilots. All is very exciting
8 to see the opportunity that pilots present and how they
9 can then become mainstream.

10 So, look forward to today's discussions. Thank
11 you. Back to you, Commissioner McAllister.

12 COMMISSIONER MCALLISTER: Great. Thank you very
13 much, Commissioner Shiroma. And I think we did hear a
14 lot about the equity imperative this morning, and your
15 leadership on that front is just essential. So, thank
16 you as well for that.

17 Commissioner Houck, thanks being again with us
18 this afternoon. Any opening comments?

19 COMMISSIONER HOUCK: I'm just wanting to again
20 state how much I appreciated being able to hear from the
21 folks this morning, a great set of panels. And I'm
22 really looking forward to hearing from those this
23 afternoon. And with that, I will turn it back to you,
24 Commissioner.

25 COMMISSIONER MCALLISTER: Great, thank you very

1 much. And the alignment across staff and just the sort
2 of dovetailing of different themes, and clear
3 communication that results in that, that alignment, is
4 just great to see. So, we really appreciate the staff
5 from the Public Utilities Commission being with us and
6 helping us dig into these issues. That's really, really
7 essential. So, thanks to both of you.

8 So, with that let's kick off our first panel.
9 Maybe I'll just pass it back to Heather in case there's
10 anything else, but we have our first panel on programs.

11 MS. RAITT: Yeah. Great. Thanks Commissioner.
12 This is Heather.

13 COMMISSIONER MCALLISTER: Perfect.

14 MS. RAITT: Yeah, the first panel on Energy
15 Efficiency Programs and their impacts. And happy to
16 have Ingrid Neumann back this afternoon to moderate
17 that. And so, Ingrid is with the Energy Commission's
18 Energy Assessments Division. Go ahead, Ingrid.

19 MS. NEUMANN: So, I'm very excited to hear from
20 all our panelists this afternoon. We'll start with
21 Kapil Kulkarni. He is a Senior Regulatory Analyst with
22 the California Public Commission's Energy Division. And
23 he leads the oversight of energy savings assistance
24 programs. He previously has experience with energy
25 efficiency consulting, as well as at a municipal

1 utility.

2 It's all yours, Kapil.

3 MR. KULKARNI: Thank you, Ingrid. And thank
4 you, Heather and Commissioners for the invitation to
5 present today. My name is Kapil Kulkarni, Lead Analyst
6 for the Energy Savings Assistance Program at the Energy
7 Division, at the California Public Utilities Commission.
8 And my presentation focuses on the Energy Savings
9 Assistance Program that Commissioner Shiroma mentioned
10 earlier.

11 Next slide, please. Before I give some
12 background on the ESA program I wanted to provide some
13 additional detail on what Commissioner Shiroma mentioned
14 and what my colleagues Jessica Allison and Coby Rudolph
15 presented earlier. They presented on -- Jessica
16 presented on the portfolio segmentation that will take
17 effect for the market rate programs.

18 My presentation focuses on the income-qualifying
19 program energy savings assistance that's available for
20 households that are at 200 percent of the federal
21 poverty guidelines, or less.

22 Those households are also eligible for the CARE
23 discount program, California Alternate Rates for Energy,
24 that provides an electric service discount, as well as a
25 gas service discount, up to 35 for electric charges and

1 20 percent for gas.

2 So, for example, a family of four making less
3 than \$53,000 per year can sign up to receive -- sign up
4 for the CARE program, receive that rate discount, and
5 then sign up for the ESA program to receive no cost
6 energy efficiency and weatherization upgrades. And
7 these are for the four large investor-owned utilities.

8 The ESA program has been around since the 1980s.
9 And since 2002, the utilities have spent more than \$4
10 billion to treat about 4 million households, or about
11 \$1,000 investment per household.

12 And around, after that point, around 2008 or
13 '09, statute was enacted to have the IOUs treat all
14 eligible low-income households by the end of 2020.

15 Prior to the pandemic, the utilities were on
16 track to meet this goal. The pandemic did put a
17 temporary stop to the program and made it a little more
18 challenging to do in-home, in-person visits. But the
19 utilities were able to resume the program after a
20 temporary hiatus and still treat households, you know,
21 to a greater extent based on the increased demand for
22 the program following increases to unemployment and loss
23 of income to these households.

24 And so, based on the fact that the utilities
25 were on track to meet this goal then the CPUC issued

1 guidance to the utilities for the next program cycle,
2 running from 2021 to 2026, to include in their
3 applications ideas about deeper energy savings, as well
4 as a comprehensive multifamily whole building program.

5 So, the next slide, please. And based on the
6 decision that was approved by the CPUC, as Commissioner
7 Shiroma mentioned, in June of this year, the utilities
8 now have new goals. So, deeper energy savings per
9 household, as well as portfolio energy savings goals,
10 which is a change in the program from the previous goal
11 to treat based -- you know, kind of a volume-oriented
12 goal, based on number of households treated.

13 So, what this does is it tried to increase the
14 savings per household, which previously was around 1 to
15 5 percent per year, depending on the type of household
16 and the geography of where the house was located. And
17 now, we're looking at going beyond that 5 percent
18 maximum that was there before. And in some cases,
19 trying to achieve up to 15 percent savings per
20 household, as well as up to 50 percent for our pilot
21 program, which I'll discuss as well.

22 And what this also is looking to do is kind of
23 move the program beyond what it was previously in terms
24 of the most common measures being LED light bulbs, smart
25 power strips, water and energy nexus measures such as

1 faucet aerators and low-flow showerheads. And really go
2 into measures that save more energy, look at different
3 packages or combinations of measures such as insulation,
4 HVAC, building shell measures and appliances to achieve,
5 you know, beyond 5 percent rate up to, say, 15 percent
6 or 50 percent.

7 The other thing that these new goals are tied
8 to, and that's the second bullet there, is really
9 focusing on the ESA customer. Previously, the goal was
10 around a volume treatment goal. Now, we're looking at
11 all the different segments that, you know, ESA customers
12 belong to.

13 So, we're looking at, you know, customer
14 characteristics, demographic characteristics such as the
15 type of home, whether it's single-family, multifamily,
16 mobile home, whether they participated before and may
17 have received some measures before versus a new
18 participant that maybe hasn't received anything over the
19 last 20 years, and may have more needs than someone
20 who's been in the program, you know, say five years
21 earlier.

22 As well as kind of financial characteristics.
23 Has this customer been previously disconnected or at
24 they at risk of disconnection? Do they have -- are
25 there affordability concerns over their average bill

1 and, you know, what types of measures or packages of
2 measures are more appropriate for this customer based on
3 where they are and how much their bill is?

4 Other characteristics include geography. So,
5 whether they're in a disadvantaged community, in a rural
6 area, or a tribal area.

7 And then, health condition. Are they a medical
8 baseline customer or do they have other issues related
9 to respiratory illness relating to air quality, and what
10 types of measures may be appropriate for them.

11 So, in addition to the reporting that we'll
12 receive from the IOUs based on which segments they're
13 treating, we also want to look at what the activity is
14 by each of these segments so that we can start to
15 determine, you know, what packages of measures make
16 sense. What types of segments should be prioritized.
17 You know, we'd like to prioritize all the segments that
18 ESA customers fall into, but trying to figure out which
19 combinations and packages make the most sense.

20 And below that I have the energy savings goals
21 that the utilities will be required to achieve over the
22 next 5 plus years. And these are the kind of first year
23 annual savings, you know, for the measures that will be
24 installed. Next slide.

25 So, of the \$2.2 billion that was approved for

1 these programs that Commissioner Shiroma mentioned,
2 that's about \$400 million per year, including specific
3 initiatives on the deeper energy savings pilot that will
4 -- hopes to achieve up to 50 percent savings per
5 household. That will be, you know, a more targeted and
6 more specific program for deeper energy savings.

7 Also, \$50 million for two electrification pilots
8 that Southern California Edison will be administering,
9 which I'll get into in a second, as well.

10 As well as the guidance that we issued based on
11 having a comprehensive multi-family whole building
12 program, \$350 million over the next five plus years.

13 One program will be in Northern California, led
14 by PG&E. And the other program will be in Southern
15 California, jointly implemented by Southern California
16 Edison and Southern California Gas Company, with the
17 lead IOU being San Diego Gas & Electric.

18 And a few other things that I've included here
19 is kind of new items to ESA is, you know, with all the
20 changes to the program, previously the focus was on
21 getting customers treated and meeting that 2020 goal.
22 And now that that's been achieved, and now that there
23 are a lot more programs and even technologies that were
24 not around in 2007 or '08 such as, you know, low-cost
25 solar, smart thermostat programs, we're looking at all

1 the different universal programs available to low-income
2 customers, including programs such as the Self-
3 Generation Incentive Program, Solar on Multifamily
4 Affordable Housing Program. You know, programs that are
5 administered by -- or overseen by the CPUC, as well as
6 other programs such as those overseen by CSD, and really
7 looking at what -- you know, how all these programs can
8 work together.

9 You know, for example ESA could be the gateway
10 program for these customers. And then, since the main
11 mission for ESA is on weatherization and energy
12 efficiency, if it turns out that these customers could
13 also benefit to reduce their bill by receiving solar, or
14 receiving a battery then what other programs can they be
15 referred to.

16 And so, one of the initiatives that came out of
17 this decision was for the IOUs to have a kind of a clean
18 energy and low-income programs workshop, which will be
19 in late September, the end of next month. And which
20 I'll provide more details later on.

21 And the idea from that is to bring together all
22 the different program administrators that provide
23 programs to kind of the similar target audience and see
24 how leveraging can work, coordination, referrals, in
25 order to make sure that, you know, we don't have one

1 program providing all the funding, and that you don't
2 have kind of silos being built up around the various
3 programs.

4 In addition to that clean energy programs
5 workshop, another initiative about this decision is a
6 universal application system that we have asked the
7 utilities to develop, that will provide kind of a one-
8 stop-shop similar to what California Air Resources Board
9 is developing for transportation programs, and bringing
10 that over to energy efficiency programs.

11 Next slide. So, this slide has information on
12 the pilot program for deeper energy savings, \$104
13 million over five years to achieve up to 50 percent
14 savings per household.

15 Similar to the workshop that will be about clean
16 energy programs this September, there will be another
17 workshop at the end of September relating to the IOU
18 program designs for this effort. So, look out for
19 information on that. Next slide.

20 So, the next few slides are on the Southern
21 California Edison Building Electrification Pilots. This
22 slide refers to the \$40 million that the CPUC approved
23 for a retrofit program for single-family homes in
24 disadvantaged communities that are high using in terms
25 of energy.

1 And the target measures will be heat pump for
2 space heating and heat pump for water heating. And will
3 reach about 2,700 homes with an average investment of
4 about \$15,000 per household. Next slide.

5 Then, the second pilot that Edison is running is
6 similar to the BUILD program, the Building Initiative
7 for Low Emissions Development that's being run by the
8 CEC and the CPUC, targeting new construction and
9 electrification measures.

10 And we designed this program to not be
11 duplicative, but to work together to reach areas that
12 are not targeted by the BUILD program, including areas
13 that are not in non-IOU gas territories. And this is
14 about 10 and a half million over the next five years.

15 And the next slide has my contact information
16 relating to if you need information about the upcoming
17 workshops that we're having. So, please contact me if
18 you have questions about the presentation. Thank you.

19 MS. NEUMANN: Thank you, Kapil.

20 Our next speaker is our own Mazi Shirakh. He is
21 a Senior Mechanical Engineer here at the Energy
22 Commission. And he served as the ZNE lead for the 2019
23 cycle of the Building Energy Efficiency Standards. He
24 also served as the building decarbonization lead for the
25 recently adopted 2022 standards. Previously, he was the

1 project manager for the 2008, 2013, and the 2016 cycle
2 of the standards.

3 Mazi has worked with staff and the statewide
4 CASE team, and their team of consultants to couple heat
5 pump technology with efficient envelope, lighting, and
6 mechanical systems, as well as PV and storage systems to
7 make decarbonization and ZNE goals in California
8 buildings a reality.

9 All yours, Mazi.

10 MR. SHIRAKH: Well, thank you Ingrid. Thank
11 you, Commissioners and attendees. I'm Mazi Shirakh. As
12 Ingrid just mentioned, I was the building decarb lead
13 for the newly-adopted 2022 standards, which included the
14 measures like new tools that, you know, we developed for
15 this cycle of standards, and heat pump, and space
16 heating. Heat pump for space heating and water heating.
17 Baselines and PV and battery storage system.

18 So, today I'm going to be talking about the
19 tools and the metrics we've developed for the 2022
20 standards to align the goals and objectives of the
21 standards with the state's environmental goals.

22 The next slide, please. So, the goals we have
23 for the 2022 standards is very similar to the goals that
24 we've heard all day today from different Commissioners
25 and presenters, in supporting building decarbonization

1 goals as established by SB 100. Supporting building
2 energy efficiency goals as established by SB 350.

3 But beyond that, you know, we also wanted to
4 maintain and encourage certain signals within the
5 standards, and that includes encouraging a thermal-
6 resilient building envelope, because building envelope
7 is our first line of defense. It works well in both
8 heating and cooling climate zones. And it's also very
9 effective as the climate changes, and the planet warms
10 up.

11 And on top of that, we also wanted to encourage
12 self-utilization of the onsite PV generation, and
13 encourage demand flexibility, and grid harmonization
14 signals.

15 So, I think as mentioned by other commenters or
16 presenters, while efficiency and decarb goals often
17 align, but there are notable exceptions. Such as
18 resistance heating where you could have a very strong
19 building decarbonization signal, but it could actually
20 end up increasing the monthly energy cost to the
21 occupants.

22 So, because of this, you know, the tools and the
23 metrics we developed for the 2019 standards and before
24 were really inadequate to meet all these four objectives
25 at the same time. So, you know, we had to adopt a new

1 approach. Next slide, please.

2 So, to meet these challenges, you know, we used
3 our good old Time Dependent Valuation, TDV, which has
4 been in use since 2005. But, you know, we updated it,
5 both natural gas and electricity for the 2022 standards.
6 And TDV basically serves as the currency for the
7 tradeoffs in our performance path when builders use our
8 software tools to determine how they're going to comply
9 with the standards.

10 And on top of that we had to add a new hourly
11 source energy. And so, this is a new long-run marginal
12 source energy which also has been added, which this
13 metric actually provides the strong building
14 electrification signal.

15 So, you may wonder why we need two metrics. I
16 think the next slide will explain that. So, while the
17 hourly source energy defines the building carbon budget,
18 TDV ensures that, you know, we meet those targets, those
19 carbon targets in the most cost-effective way, while
20 protecting monthly energy bills for the occupants, and
21 preserving demand flexibility, and grid harmonization
22 signals.

23 Each one of these metrics by itself has its
24 strengths and shortcomings. For instance, the hourly
25 source energy, while it's really good at, you know,

1 providing strong signal for building electrification,
2 and efficient use of gas appliances, it really has a
3 very weak, or modest, or sometimes even a nonexistent or
4 negative signal for building envelope, protecting
5 building envelope features such as windows, you know,
6 attic insulation. And it also does not provide a very
7 strong grid harmonization and demand response signal.

8 TDV, on the other hand, is really good at
9 protecting the monthly energy bills and it has a very
10 strong efficiency signal, and a strong demand
11 flexibility and grid harmonization signals. But it only
12 provides a very modest building electrification signal.

13 So, once we put the two together, it's like, you
14 know, we can have the best of both worlds. But
15 depending, I mean, how we set up the relationship
16 between the two metrics, we can actually have all of the
17 above. Low monthly energy bill cost, we can have strong
18 energy efficiency signals, while we maintain the grid
19 harmonization and demand flexibility. Next slide,
20 please.

21 So, TDV is an hourly metric and it changes for
22 every hour of the year. And we update that for every
23 code cycle. And it has several components that are
24 listed here. And again, it's a good tool, you know, to
25 avoid high energy cost and it works really well for

1 measures that save energy on peak in midsummer
2 afternoons, reducing cooling loads, and also for demand
3 response measures that shift away from these high
4 cooling load hours. Next slide, please.

5 So, this slide shows the different components of
6 TDV and their relative value. And what is also
7 interesting, it shows how TDV changed between 2016
8 standards, 2019 standards, and 2022 standards.

9 You know, the pink bar and I would say the gold
10 bar, they represent the 2016 and 2019 TDV. And you can
11 see the newly-adopted 2022.

12 And so, they do actually change from cycle to
13 cycle depending on the relative worth of various
14 components that you see on the right. Next, please.

15 So, the hourly source energy, like TDV is also
16 an hourly metric, and it actually assumes that the
17 utility meets the RPS and other climate change
18 obligations.

19 And so, one of the implications of hourly source
20 energy is whenever a renewable resource is on the
21 margin, like solar, the source energy value actually
22 goes down to zero. And in the hours where renewables
23 are not available, it's basically the heat rate of the
24 natural gas power plants that may be on the margin.

25 And what we found is that the marginal, the

1 long-run marginal source energy is actually a very good
2 metric to approximate the GHG emissions from the
3 building. And, therefore, we are actually using this
4 metric as a proxy for GHG emissions. Next, please.

5 So, the source energy comes in many different
6 flavors. The first one is a source energy which was a
7 flat metric that did not change by the season or by the
8 hours. What we wanted was something that would change
9 hourly.

10 So, there are three flavors of it, the average
11 hourly source energy, the short-run marginal source
12 energy, and the long-run marginal source energy.

13 So, the one that we picked and it is now in our
14 simulation models, both CBECC-Res and CBECC-Com is the
15 long-run marginal source energy. And the difference
16 between the short-term and the long-term marginal source
17 energy is that the long-term actually captures the
18 impact of RPS goals and SB 100 goals as the grid changes
19 in the future and we're adding more renewables.

20 And that also happened to align better with the
21 TDV to, you know, to encourage demand response measures.
22 So, again, we use the long-term and that's what is in
23 our tools. Next slide, please.

24 So, another tool that we use in the building
25 standards is what we call the Energy Design Rating, or

1 EDR. And basically what we do is we compare the
2 performance of the proposed building to a reference
3 building, which is the 2006 IECC compliant home. So, a
4 2006 IECC represents the EDR score of 100.

5 So, this EDR score can actually capture the
6 performance for energy, which is therms, kilowatt hours,
7 or TDV, or emissions. So, you know, we can use it for
8 both.

9 And, you know, a ZNE, a full ZNE building, which
10 basically has an EDR score of zero. And we can use the
11 same metric to measure how the carbon metric is
12 performing relative to the reference building. Next
13 slide, please.

14 So, the recommended approach for the 2022
15 standards is as follows. We have two independent
16 metrics, source energy and TDV. And based on those,
17 we've developed two EDR targets.

18 So, EDR1 uses the long-term marginal source
19 energy to establish a carbon budget for the building.

20 EDR2 establishes the carbon -- the targets for
21 the TDV.

22 So, for a building to comply, it must comply
23 with both EDR1 target and the EDR2 target. And there
24 are some rules. And one of them is that no tradeoffs
25 are allowed between EDR1 and EDR2.

1 This is a very important point because if you
2 allow tradeoffs between EDR1 and EDR2, the whole thing
3 falls apart. So, you know, having two independent
4 metrics, one establishing the carbon budget and the
5 other one making sure that we get to that target in the
6 most cost-effective way, that's the way this works.
7 And, you know, we ran many, many simulations and this
8 really came out as the best approach. And next slide.

9 So, the previous slide described the approach
10 for low-rise residential buildings that used EDR as the
11 target. For high-rise residential and nonresidential
12 buildings we do not use the EDR targets. You know, we
13 didn't have a reference building that worked well.

14 So, instead what we use is the total TDV and
15 source energy standard and proposed design budget to
16 demonstrate compliance. But in reality, it works almost
17 exactly the same as how EDR worked for the low-rise
18 building.

19 I think that was my last slide. Next. Yeah,
20 thank you.

21 MS. NEUMANN: Thank you, Mazi.

22 Now, for our final speaker of today's panel,
23 I've heard a little bit about what this program is
24 achieving and I look forward to hearing more from Bruce
25 Ray. He serves as Director of Governmental and

1 Regulatory Affairs and Associate General Counsel at
2 Johns Manville.

3 Bruce works extensively on energy efficiency
4 policy and innovation, including formation of new
5 business models, and new channels to market for Johns
6 Manville's insulation products.

7 Bruce joined the company in 1990, after holding
8 several positions at the USEPA and the U.S. Department
9 of Justice.

10 All yours.

11 MR. RAY: Thank you, Ingrid. Can you hear me
12 okay?

13 MS. NEUMANN: Yes, we can.

14 MR. RAY: Can you hear me okay? Okay, very
15 good.

16 Thank you and thank you, Commissioner McAllister
17 for the invitation to participate today and share with
18 everyone what we're doing in residential retrofit in
19 California. And also thanks to the Energy
20 Commissioners, and PUC members and staff who support
21 these programs. If we could go to the next slide.

22 Just some of things I'm going to talk about
23 today. I want to talk about how to use energy
24 efficiency to achieve emission reductions.

25 I'm going to talk about the AQMD Coachella

1 Valley Projects, Phase 1 and Phase 2. The unique and
2 important benefits that that approach brings.

3 And then, I'll talk about how we're going to use
4 efficiency to enable energy storage and integration of
5 further solar power.

6 And, you know, basically I want to talk a little
7 bit about what we did, what we're doing now, and what we
8 plan to do in the future. If you'd go to the next
9 slide.

10 As JM, Johns Manville, we're a manufacturing
11 company and we have three business divisions,
12 insulation, roofing, commercial roofing, and then fiber-
13 based engineered products. And fully two-thirds of our
14 products go into energy efficiency end use applications.
15 So, we focus a great deal on innovation and energy
16 efficiency, as Ingrid said, new channels to market, and
17 new business models.

18 Now, as an old EPA guy, I've followed how EPA
19 allows states with nonattainment areas to make
20 reasonable further process of meeting the NAAQS, the
21 National Ambient Air Quality Standards. And since their
22 initial guidance in 2002, and then their updated
23 guidance in 2012, EPA has allowed energy efficiency
24 enhancements to qualify for SIP-credit, full emission
25 reductions.

1 Now, thinking there are 85 million single-family
2 homes in the U.S., with an average age of 32 years, this
3 means that there's tens of millions of homes that are
4 under-insulated and likely inefficient. And we heard
5 earlier this morning that California sure has its share.

6 So, how would you approach using energy
7 efficiency retrofit of those existing homes to achieve
8 SIP creditable emission reductions? Next slide, please.

9 Well, the approach is actually quite easy to
10 describe. You retrofit homes. More is better, a lot.
11 You quantify the energy savings, usually through
12 modeling up front, then you use an EPA- and state-
13 approved attribution method, like E-grid, to quantify
14 the corresponding emissions reduced or avoided to get
15 your result.

16 And remember, use the power of large numbers.
17 That the more homes you retrofit, the less it matters
18 how much energy is saved in any given home. So, while
19 the approach is easy to describe, the actual
20 implementation not so much.

21 There's lots of wrinkles to deal with, as you
22 can imagine. Just as for example, how do you do lots of
23 homes in a short period of time and how do you do it
24 cost effectively? Next slide.

25 So, we figured if you want to use energy

1 efficiency retrofits to achieve emission reductions, the
2 opportunity is going to be the greatest where the air
3 quality is the worst. And so, we selected the L.A.
4 Basin, which has been persistent noncompliance with both
5 the ozone and fine PM.

6 You know, we had some discussions with the
7 management of the South Coast Air Quality Management
8 District, which regulates air quality in the L.A. Basin.
9 They encouraged us to submit a proposal in response to
10 an RFP they had out for projects that could help offset
11 the emissions from the newly-constructed Sentinel Power
12 Peaker Plant. This is in Desert Hot Springs.

13 So, we did this. Long story short, received
14 enough AQMD funding, along with important utility
15 rebates, to complete retrofits in 2,100 homes in the
16 Coachella Valley of Eastern Riverside County.

17 And you see there we did just two measures, air
18 sealing of the attic floor and adding additional
19 insulation up to R-38.

20 You see the results there. We got about 10
21 percent savings at each home for under \$2,000 average
22 cost per home. It's important to note that this not,
23 not a low-income program. But it was focused on the
24 AQMD's environmental justice area.

25 And you see on the bottom there we were

1 heartened that this approach was adopted by the AQMD as
2 a formal air pollution control measure really geared at
3 achieving the ozone standard.

4 And I do have to salute the AQMD for its out-of-
5 the-box thinking on this. As far as we know, this is
6 the first energy efficiency residential retrofit project
7 of its kind that was funded not by a utility to save
8 energy, but an air quality regulator to achieve air
9 quality and health benefits from those energy savings.

10 The next slide. So, you know, we were able,
11 fortunate enough to get some additional AQMD funding and
12 going forward with some additional utility co-funding.
13 And we started doing more homes in the Coachella Valley,
14 adding more energy efficiency features.

15 You see there the one that's important that we
16 added, really, is the Nest learning thermostat and then
17 we're also deep-burying the flexible duct insulation in
18 the new loose fill insulation. Next slide, please.

19 I want to give a shout out to our installer
20 partner, Alcal. Johns Manville makes the insulation,
21 but we don't install it. I mean it's one thing to come
22 up with a concept, but I think it's quite another to
23 actually make it happen. And for that you need a very
24 experienced, talented partner that actually puts boots
25 in the attic and does the hard work, and we're pleased

1 to be working with, really, what we feel is one of the
2 best installer-contractors, that's Alcal, who is led by
3 Greg Sutliff, who is their Director of Home Services.

4 On the Coachella Phase 2 project we did sharpen
5 our focus on environmental justice areas and
6 disadvantaged communities. And in fact what we did, to
7 be more precise we used the CalEnviroScreen tool to
8 identify those communities in Eastern Riverside County
9 that had high EnviroScreen scores. The higher the
10 score, the more disadvantages the community has. Next
11 slide, please.

12 So, you can see this is a heat map, an
13 EnviroScreen heat map for the Coachella Valley where we
14 focused on the red and orange areas with EnviroScreen
15 scores of about -- 75 percent or above. Next slide,
16 please.

17 So, you know, you've probably heard a lot of
18 stories like this. We started the work just before the
19 pandemic hit and we completed only 124 homes with the
20 additional energy efficiency features. But our approach
21 of Phase 2 was to gather a lot more information and data
22 so we could be very quantitative in reporting our
23 results to the AQMD.

24 So, you can see here on the slide that the
25 energy savings were gas, electric through general

1 savings and TDV savings that Mazi referred to.

2 You can also see the financial metrics. Those
3 look pretty good, at \$4,500 per home, you're looking at
4 pretty good numbers for SIR, IRR, and then your ROI.
5 Next slide, please.

6 So, we also wanted to see how we fared cost-
7 wise. And here, again it looks pretty good. We were
8 able to quote-unquote deliver electricity via efficiency
9 at a rate of 6.3 cents per kilowatt hour, which is
10 pretty good compared to the higher residential utility
11 rates.

12 And then, of course, we carefully quantified the
13 emissions reduced and avoided because that's so
14 critically important to the AQMD. Next slide, please.

15 Before we go any further about how we're
16 changing and adjusting our approach, I want to discuss
17 the benefits of this approach to energy efficiency
18 retrofits.

19 There are a lot of benefits here. First of all,
20 we're seeing cost-effective energy savings, cost-
21 effective emissions reduced and avoided, not just of
22 NAAQS pollutants, but also greenhouse gas pollutants.

23 This approach is scalable. You can do four
24 homes a day or you can do 400 a day. It just depends on
25 how many crews you want to run. Every home gets the

1 same measures, the same way. There's no customization
2 so that the labor gets very, very good at doing these.

3 Also, we talked about doing deeper retrofits.
4 Everything that we did in each of these homes, 124
5 homes, lays the foundation for future upgrades.

6 Also, unlike other programs, like grid-scale
7 solar, grid-scale chemical battery storage, and electric
8 vehicle charging infrastructure, these retrofits provide
9 direct benefits to disadvantaged communities.
10 Obviously, through lower cooling and heating bills, but
11 also through -- by air sealing the attic floor, better
12 indoor air quality, increased comfort and safety, and
13 actually increased home value. For many of these
14 people, their home is their largest asset and by doing
15 the retrofits they get an increase in value there.

16 And in addition, very important, you get
17 promotion of climate justice, and climate equity, and
18 then also climate resilience. And we're very, very
19 proud to have received the support of Comite Civico Del
20 Valle, which is an EJ organization located in Brawley,
21 down in Imperial County, led by Luis Olmedo, their
22 Executive Director. They do great things. They do
23 really great things. I would encourage everybody to
24 look into all the great work that they do. Next slide.

25 You know, as good as this approach is and the

1 benefits, I think we feel the need for improvements and
2 further optimization.

3 We're seeing a time when we're going to see
4 energy efficiency is going to be valued by its temporal
5 and locational value, and we have to address the duck
6 curve problem. The solution is basically to use
7 efficiency to enable DR, DR to enable kind of thermal
8 energy storage. Next slide, please.

9 You know, it's funny, some people are scared of
10 ghosts and monsters, and I think there's other people
11 who are starting to get scared by the supply situation
12 in California.

13 A couple of things to note on this graph here,
14 that dark bar towards the bottom, that's Diablo Canyon,
15 2,200 megawatts that's going away soon.

16 The blue line is large hydro. That's a great
17 carbon-free resource that's diminished by the drought.

18 The orange line is natural gas and a lot of
19 that's going away, especially the OTC plants on the
20 coast.

21 And then looking at that big green bump there, I
22 mean it sort of resembles the drawing from *The Little*
23 *Prince*, if you remember that, of a snake that swallowed
24 an elephant. Next slide, please.

25 So, the solar resource is under utilized, but we

1 have to find a way to really use it well, use more of
2 it. And you can see that sometimes we even see that it
3 goes below -- our imports go below zero, which mean
4 we're actually exporting excess power. Next slide,
5 please.

6 So, here's where we think we can contribute to
7 implementing what is in essence a thermal energy storage
8 system.

9 We used the Coachella Valley Phase 2 data to
10 model what would happen to those 124 homes if they were
11 in Fresno, in the Central Valley, on a peak day in the
12 summer.

13 The blue line represents an unretrofitted home
14 with AC set at 78 degrees. The orange line is a
15 retrofitted home and you see its getting energy savings
16 throughout the day. But the dotted orange line is the
17 thermal energy storage system, and you can see that we
18 are using that abundant solar resource to precool the
19 home in a very optimized way. And then we're coasting,
20 starting at five o'clock, and we can coast for a full
21 two hours, and then get a 50 percent AC reduction run
22 time for the final. Go to the next slide.

23 I'll run through these very quickly. The next
24 slide is the results on a cooler day. Next slide.

25 This shows the cooling loads for the entire

1 cooling season with the cool and coast, and the thermal
2 energy storage system. Next slide.

3 This slide shows the emissions or the energy use
4 over the cooling season and you can see some significant
5 energy savings. Compare the blue line on the left with
6 the hashed line all the way on the left side, and you
7 can see some of that. Next slide.

8 And then, this is the emissions profile. You
9 can see we're getting the reduced emissions.

10 So, in short, we think that we can optimize,
11 further optimize this approach. We can deliver energy
12 savings and avoided emissions during the evening, and do
13 so while delivering all of the environmental justice,
14 environmental equity benefits that we described earlier.

15 So, we're very anxious to get a pilot on this
16 project and we think it holds great promise.

17 Of course there's a lot more, but I know my time
18 is up. But I would certainly be happy to take any
19 questions you might have.

20 MS. NEUMANN: Excellent. Thank you so much
21 Bruce, and Mazi, and Kapil.

22 So, next we have Commissioner discussion with
23 the panelists and questions for the panelists. So, if
24 you could show yourselves. I'll hand it off to the
25 Commissioners.

1 COMMISSIONER MCALLISTER: Great. Thanks so
2 much, Ingrid. I really appreciate your doing double
3 duty today, and giving the presentation this morning.
4 So, thanks for that.

5 Let's see, so thank you to the three of you.
6 You complement each other extremely well. So, I'm going
7 to try to be brief here with just, I think, one or two
8 quick questions. And then, give my colleagues on the
9 dais a chance to ask their questions as well.

10 You know, Bruce, I really appreciate your being
11 here, you know, keeping -- I liked the expression "boots
12 in the attic," that's a nice twist.

13 And one of the reasons, you know, I wanted to
14 kind of give this platform for your program is that I
15 think it has the makings of something that is, as you
16 say, scalable, and targetable in ways that really do
17 check a lot of the boxes that we have to check, and that
18 we want to check, and that we must check in our programs
19 going forward.

20 And in particular, you know, the disadvantaged
21 community focus, also the thermal storage and just to
22 sort of dig into that a little bit, this precooling.
23 And if you insulate a house, it actually becomes much
24 easier for them, for the conditioning system to be
25 turned off for longer periods of time and not have to

1 cycle as quickly, right. So, that opens up
2 possibilities for coasting through the net peak time,
3 when the system is most likely to experience some
4 stress. And not just that time, but for example.

5 Also, it could be a platform for
6 electrification. Now, I know you're not replacing the
7 HVAC system or the water heater, but I guess I'm
8 interested in sort of exploring that a little bit.

9 So, you're getting NOx savings by virtue of the
10 efficiency, per se, just, you know, reducing gas
11 consumption. But, you know, with electrification you
12 could actually get many more reductions through fuel
13 substitution.

14 And then, you know, all this as you kind of
15 imply could be automated, if we use sort of a program
16 like this as an onramp for demand response.

17 So, just a lot of potential here that, you know,
18 gets a lot of us really excited.

19 Having said that, you know, you don't want to
20 make this kind of a project too complex and, you know,
21 so that the different components of it are kind of
22 falling over themselves.

23 So, I guess I'm interested in kind of your
24 pragmatic read on kind of how -- how much we could
25 accomplish with this model at some scale. You know,

1 like the kind of pros and cons, or the potential issues
2 that would have to be planned through from a
3 programmatic perspective.

4 MR. RAY: I think -- thanks for your question,
5 Commissioner. I think in terms of scalability I have
6 had some discussions with Greg Sutliff at Alcal, and you
7 know, I think you can scale this up very quickly and do
8 a number -- so many homes over the fall, winter, and
9 into the spring that you could really move the needle to
10 assist grid reliability in what we expect is going to be
11 a challenging summer in 2022.

12 It also supports electrification. Certainly,
13 the retrofits become easier if you move to electrified
14 water heating because you don't have to worry about
15 combustion appliance zone testing, and some of that in
16 addition. But by doing the fuel switching, you no
17 longer have a -- burning natural gas on site for water
18 heating and space heating, so you reduce those NOx
19 emissions.

20 And then you also -- you're going to be using
21 more electricity, of course, but that electricity will
22 be preferentially supplied by renewable or carbon-free
23 resources.

24 So, what we're doing is -- can fit, I think,
25 hand-in-glove with decarbonization and with

1 electrification requirements. And I would say, as we
2 heard this morning, what we're doing is really laying a
3 very good foundation for the deeper energy efficiency
4 retrofits and energy savings to come. Such as, you
5 know, changing to heat pumps, things like that. So, I
6 think from the pragmatic side I think it fits. I think
7 it fits very well from the scalability side.

8 It is inherently designed to be simple and
9 scalable.

10 COMMISSIONER MCALLISTER: I guess in terms of
11 just what it would take programmatically to get into the
12 mechanical systems and replace water heaters that would
13 be a different contractor most likely or, you know,
14 those kind of complexities, you know, I want to be a
15 little bit -- I want to be circumspect about how much of
16 that we really want to do without creating unnecessary
17 barriers.

18 But you seem to think it's very possible to go
19 and combine forces like that.

20 MR. RAY: Yeah, I think it is. It's like
21 building a house. The first thing you've got to do
22 before you put in any of the appliances, you've got to
23 do the foundation and you've got to do the walls.
24 That's what we're doing. And we're really -- you have
25 to make the home ready for these deep energy savings

1 work and, frankly, the more expensive work that comes
2 later.

3 COMMISSIONER MCALLISTER: Great, okay. Well,
4 thanks a lot.

5 And I guess I wanted to get -- Kapil, your
6 presentation I really liked and it was super
7 informative. I'm really happy to see about the -- hear
8 about the multifamily initiatives and those pilots.
9 Certainly looking forward to coordinating on the deep
10 savings pilots, that's really exciting.

11 And then, you know, you mentioned the SCE pilots
12 as well. I'm wondering, in terms of sort of
13 coordination with other agencies, such as South Coast in
14 this case, you know, how much synergy might be possible
15 there? I'm inviting you to speculate a little bit. But
16 I guess, you know -- I've actually talked with Wayne
17 Nastri over at South Coast about this program. And, you
18 know, he needs all the NOx reductions he can possibly
19 get. They're doing incredibly aggressive things to look
20 for -- just to look for new sources of NOx reduction and
21 this is one of them. An area source, you know, you've
22 got all this combustion going on in homes. You know,
23 obviously, transportation's the big Kahuna, but this is
24 also important.

25 So, I'm wondering about any opportunities for

1 synergy there and for collaboration across agencies in
2 the South Coast, for example.

3 MR. KULKARNI: Yeah, thanks Commissioner, that's
4 a great question. And I really enjoyed Bruce's
5 presentation just because it's something that we're
6 trying to incorporate more into ESA, kind of moving
7 beyond the initial measures of LEDs and smart power
8 strips.

9 And I think that we're looking, as part of that
10 deep energy savings pilot, as well as the
11 electrification pilots is, you know, looking to add
12 insulation, looking to make the home more efficient so
13 you can then replace the appliances, and replace the
14 heating and cooling systems.

15 And you know, we're looking for, not ESA to do
16 all that work but for, you know, this type of
17 coordination to where you have, you know, multiple
18 agencies. And even if, you know, their goals are more
19 focused around air quality, you know, they're still
20 providing energy savings that could contribute to the
21 energy savings goals that we've set out for the IOUs.

22 So, I could definitely see that happening to
23 where, you know, we want the IOUs to kind of do some
24 targeting. And, you know, in my presentation we talked
25 about doing the insulation based on the household's

1 need. And Bruce talked about the customization.

2 There definitely is a need for addressing the
3 thousands of households in different parts of the state
4 that are under-insulated and are -- you know, could be
5 candidates for further electrification measures. So,
6 you know, we'd want this type of customization and cost
7 control that can come from, say, Bruce's program. And
8 then you have the IOUs' contractors and, you know, other
9 agencies, and have administrators coming in to follow up
10 on that. So, I think that's a great example.

11 COMMISSIONER MCALLISTER: That's great. And,
12 you know, there's so many income qualification stuff
13 maybe it could be done alongside without, you know --
14 Bruce's team could go in and do all this in every house,
15 you know, in a given area. And then, the sort of -- you
16 know, the accounting and the eligibility, and income
17 qualification could kind of be done on the side without
18 really being a threshold for participation, right. So,
19 that seems like programmatically, hopefully, there could
20 be ways that that could be navigated.

21 And so, I'm going to stop there. I have a bunch
22 more questions, but I'm not going to ask them right now.
23 But I think there are just -- you know, we heard some
24 really innovative ideas. Really glad to see what's
25 happening at the PUC and looking for ways to connect

1 some dots there. You know, particularly between air
2 quality and, you know, carbon emissions.

3 And in this case, for example, that we talked
4 about cooling as an equity issue, well this one kind of
5 has -- this isn't new cooling, right. This is doing
6 better with the existing cooling. So, in that sense
7 it's sort of the best of both worlds.

8 So, with that I'll open it up to my colleagues
9 on the dais. Let's see, perhaps Commissioner Monahan?
10 Or, I guess I'm -- I tend to want to go with our Energy
11 -- oh, there you go. Patty, did you -- or, Commissioner
12 Monahan did you want to ask a question or can I go with
13 Commissioner Shiroma?

14 COMMISSIONER MONAHAN: No, Commissioner Shiroma,
15 first.

16 COMMISSIONER MCALLISTER: Oh, great.

17 COMMISSIONER SHIROMA: Oh, thank you.

18 COMMISSIONER MCALLISTER: Go ahead, Commissioner
19 Shiroma.

20 COMMISSIONER SHIROMA: Thank you. Ah, excellent
21 presentations, thank you Kapil, Mazi, Bruce.

22 Bruce, I may have missed this, I apologize. But
23 did your company come up with this proposal and take it
24 to the South Coast Air Quality Management District or
25 did the South Coast AQMD approach you?

1 MR. RAY: Thanks for the question. No, for the
2 original work that was done, even starting at 2015, I
3 went to meet with the management of the AQMD, South
4 Coast AQMD. And really kind of pitched to them that
5 they have this sea. If you go out of L.A., east and
6 south out of L.A., into the Coachella Valley, there's a
7 sea of tens of thousands of older, poor-performing
8 homes. And I said, you know, you should think about
9 using energy efficiency retrofits in those older homes,
10 especially the EJ areas to help you, you know, make
11 reasonable further progress in meeting the fine
12 particulate, as well as the ozone standard.

13 I pitched that to them. I think -- I don't --
14 I'm not sure if they had thought about that before but,
15 you know, they very much encouraged us to submit a
16 proposal in response to the RFP to get money from the AB
17 1318 fund that was established to fund projects to
18 offset the new emissions from that Sentinel Power peaker
19 plant there in Desert Hot Springs. So, we reached out
20 to them.

21 COMMISSIONER SHIROMA: Okay.

22 MR. RAY: But, you know, it was out-of-the-box
23 thinking on their part to provide the funding for us and
24 we very much appreciated that.

25 COMMISSIONER SHIROMA: And do you foresee that

1 the powers to be, AQMD, Edison, Imperial Irrigation, and
2 so forth would take this program into the Imperial
3 Valley? I have spent some time both in the Coachella
4 and Imperial Valley through my Agricultural Labor
5 Relations Board tenure. And, by the way, I grew up in
6 one of those homes in the Northern San Joaquin County
7 area, no insulation whatsoever.

8 Do you foresee that there's the potential for
9 going into the Imperial Valley? You've got the Comite
10 Civico del Valle stamp of approval.

11 MR. RAY: Absolutely we see -- sure, we see
12 actually great opportunity in the Imperial Valley. If
13 anything, the homes seem to be older there. And if
14 anything it's hotter down there.

15 COMMISSIONER SHIROMA: Yeah.

16 MR. RAY: And in addition, what we like to try
17 to do, you have to air seal the attic floor. What that
18 does is it separates the unconditioned attic from the
19 conditioned living space. If you don't have that seal,
20 every time you slam a door or you turn on your TV too
21 loud, you get some of the fine particulate that's
22 settled in the vented attic, it kind of intrudes down
23 into the conditioned living space and contributes to a
24 poor indoor air quality.

25 One of the things we know about the Imperial

1 Valley down there is that especially a lot of the
2 agriculture and the Salton Sea evaporation, we're seeing
3 high rates of asthma down there. And so, we're thinking
4 that improving indoor air quality could be a real
5 benefit to families down there. And we have --

6 CPUC COMMISSIONER SHIROMA: and the smell of the
7 dairies at night--

8 MR. RAY: Oh, yes.

9 COMMISSIONER SHIROMA: -- pervasive through El
10 Centro

11 MR. RAY: Yes, yes. So, we've had very
12 preliminary discussions, just a while back with IID.
13 And doing this Phase 2 of the Coachella Project, we were
14 able to use the attic insulation rebate to leverage the
15 AQMD funding to do more homes down there.

16 So, we'll be reaching out to them again. And in
17 addition, I've reached out to, you know, again, recently
18 here to Luis Olmedo at CCV about making sure that we can
19 see what we can do down there and bring maximum benefit
20 to the disadvantaged communities down that way.

21 COMMISSIONER SHIROMA: Thank you.

22 COMMISSIONER MCALLISTER: Great. Commissioner
23 Monahan, do you have a question you'd like to ask?

24 COMMISSIONER MONAHAN: No, I don't have a
25 question. I just really appreciated the conversation

1 and the questions you all are asking with more expertise
2 on the building side.

3 COMMISSIONER MCALLISTER: Great. Commissioner
4 Houck?

5 COMMISSIONER HOUCK: I don't have any questions,
6 either. But again, appreciate the presentations.

7 COMMISSIONER MCALLISTER: Great. So, let's see,
8 I feel a little bad, Mazi, we haven't given you a
9 question. But I feel so connected to the building
10 standards that I kind of had all my questions answered
11 over the last year.

12 But I want to just point out, again, that there
13 is great synergy between the two commissions in terms
14 of, you know, not maybe on exactly every detail in terms
15 of metrics, but that we're both headed down a very
16 similar parallel path that values both the emissions
17 reductions and really takes the cost effectiveness and
18 consumer impacts just as seriously.

19 And so I think different contexts, and so have
20 slightly different solutions, but they're both robust
21 and I think work very well together.

22 Ingrid, did you want to ask a question?

23 MS. NEUMANN: Yes, I had one question for Mazi.
24 I think that might help lead us into the one question
25 that I see here on the Zoom Q&A.

1 And I know you've showed the slide with the TDV
2 changing from 2016 to 2019, and also with 2022. And it
3 was kind of a busy slide and I haven't been following
4 the update for 2022 as closely as before.

5 So, I was wondering if you could tell us a
6 little bit more about what changed and why for the 2022
7 TDV update.

8 MR. SHIRAKH: So in general, you know, that --
9 you know, I showed all those different components that
10 makes up the total TDV. So, each one of those variables
11 changes, you know, because we do update this every three
12 years. And, you know, the cost of generation,
13 transmission, distribution, you know, they all change.

14 But actually was very significant between 2019
15 and 2022 was the addition of large amount of solar, both
16 on the grid side and building side. So that's why you
17 kind of see that flat dip in the middle of the day.
18 That's where the solar basically makes a big difference.
19 So, that was the biggest difference between the 2022 and
20 the 2019.

21 COMMISSIONER MCALLISTER: Great. Thanks a lot,
22 Mazi.

23 I actually had a couple more, maybe a comment
24 and a question. So, you know, we heard in the morning
25 about the, you know, infrastructure discussions at a

1 high level in Washington, you know, and the
2 reconciliation conversation, and there is the likelihood
3 that some federal money will come to California. And I
4 have to be clear, I have my eye on some programs where
5 we might, you know, channel some of that money to
6 worthwhile things that really focus on many -- you know,
7 on equity, kind of moving the needle on equitable
8 participation in these programs and all the other things
9 we worry about. So, fingers crossed on that.

10 So, you know, one thing throughout is this seems
11 like a great potential collaboration with the AQMD to
12 channel some federal resources, too, and get some scale.

13 I was just doing some quick math. So, Bruce, I
14 think I -- when we talked before, I think I saw that you
15 believe or your evaluation is showing that you're
16 getting some peak production, 7/10ths of a kilowatt per
17 house, something like that, which is significant. Sort
18 of doing the math, you know, you're basically about a \$6
19 million investment per megawatt hour of movable
20 capacity.

21 And in the context of the proclamation, where
22 we're really looking for places where we can get
23 capacity, you know, wherever it is on the system, it
24 seems like that might be an attractive one.

25 So, I just wanted to make that comment. So,

1 yeah, it's not -- if it were only capacity per se, it
2 would look pretty expensive. But if we can do all those
3 other things along the way, then it really might be a
4 great dovetailing of a bunch of priorities for the
5 state. So, I wanted to just throw that out there and
6 get us all thinking more about that.

7 And then the question, again it's for Bruce,
8 have you gotten a sense for sort of the -- you know, you
9 mentioned the SIP at the beginning, you know, the State
10 Implementation Plan, and the Federal Implementation Plan
11 process just by virtue of the fact that South Coast is
12 not compliant, you know, with ground-level ozone, and
13 NOx, and PM. Is that becoming functionally creditable
14 to South Coast? I mean is your evaluation helping that
15 actual crediting to take place? I'm just wondering how
16 real that's going to end up being.

17 MR. RAY: I'm sure it is helping them out. And,
18 you know, as you said, Commissioner, the South Coast
19 AQMD, the money that they used to fund the retrofits
20 basically comes from penalties and other charges outside
21 of their normal budget. Because their air quality
22 challenges are so great, and so persistent that,
23 honestly, they've literally run out of emission sources
24 to regulate with their existing legal authorities. So,
25 they have to go beyond what they're, you know,

1 authorized by law, the sources to regulate, and look at
2 new things. And, you know, look at innovative ways,
3 out-of-the-box thinking in order to achieve the emission
4 reductions that they're going to have to achieve if
5 they're going to meet the fine particulate and the ozone
6 standards.

7 And I'm sure this is helping them, honestly,
8 especially under the Biden Administration, so EPA, where
9 I'm sure that they -- with President Biden's executive
10 order on environmental justice and equity, certainly
11 they would want-- I'm sure they would want to encourage
12 emission reductions that directly benefit disadvantaged
13 communities.

14 So, I think the regulatory environment for using
15 retrofits to achieve SIP creditable emission reductions.
16 That regulatory environment I think is very good right
17 now.

18 COMMISSIONER MCALLISTER: Great. Great, thanks
19 a lot for that.

20 I want to just poll the dais one more time, if
21 there are any follow-up questions folks want to ask.
22 And then, we'll pass it to Ingrid to see if there are
23 any Zoom Q&A questions.

24 Looks like not. So, Ingrid, anything on your
25 end?

1 MS. NEUMANN: Yes, we have one question here
2 from Cory Downs about how the IOU-proposed NEM 3.0 might
3 effect the cost effectiveness of the adopted 2022
4 building standards?

5 So, I looked at this and it seems like the NEM,
6 just 3.0, has gone out and it is actually encouraging
7 not just solar, but a combination of solar and storage.
8 And I know that that was incorporated in some way in the
9 building standards before, like as a compliance credit,
10 I think. But I don't know how that might affect --

11 COMMISSIONER MCALLISTER: That's actually --

12 MS. NEUMANN: So, that's --

13 COMMISSIONER MCALLISTER: Sorry. Sorry, Ingrid.
14 We do have a Commissioner from the PUC here, which I
15 believe that's an open proceeding, so I just wanted to
16 point that out.

17 But also, I know that we -- so, Commissioner
18 Shiroma, if you have any comment or non-comment on that,
19 you know, we're open for that, obviously. We have done
20 a fair amount of analysis in the context of the building
21 code, which I'm sure Mazi can talk about.

22 COMMISSIONER SHIROMA: I'm going to defer to
23 Mazi to provide a response.

24 COMMISSIONER MCALLISTER: Great.

25 MR. SHIRAKH: Okay, I can only speak for our

1 analysis, not for any proceedings. So, when we started
2 contemplating PV and battery storage for high rise,
3 multifamily, and nonresidential buildings, from the get
4 go we realized we need to -- we needed to minimize the
5 amount of hourly exports from the buildings. And
6 because we recognize that causes certain problems, like
7 nonparticipant cost, impact on the local utility
8 infrastructure and, you know, other problems.

9 So, what we did -- I mean, also we had in mind
10 the possibility for NEM reform in the future, by the
11 CPUC.

12 So, what we did is we came up with a strategy
13 that severely minimizes the hourly exports. So, if a
14 building installs the prescriptive PV size and battery
15 storage size, they should not export, on an annual
16 basis, more than 10 percent of the total generation. In
17 other words, 90 percent of the production from the PV
18 will be self-utilized.

19 And the very little exports that we had, the 10
20 percent, we assumed they get compensated at avoided
21 cost.

22 So, my answer is as long as the NEM reform
23 compensates behind-the-meter self-utilization at retail
24 or near retail, all of our conclusions for cost
25 effectiveness will hold for all buildings, including

1 low-rise residential, multifamily, and commercial
2 buildings.

3 COMMISSIONER MCALLISTER: All right, thanks
4 Mazi.

5 Commissioner Houck, did you want to comment to
6 this? Just wanted to make sure.

7 COMMISSIONER HOUCK: No, I think that's -- as
8 you mentioned, it's an open proceeding, so I'm not going
9 to comment.

10 COMMISSIONER MCALLISTER: Great. Thank you very
11 much. Understood.

12 Let's see, a couple of new questions coming into
13 the Q&A and so, Ingrid, why don't you help dispatch with
14 those and then we'll wrap up.

15 MS. NEUMANN: Sure.

16 COMMISSIONER MCALLISTER: Thank you.

17 MS. NEUMANN: Sure. I think this is informative
18 to all of us who haven't been following as closely, so I
19 had just pulled up the proposed decision.

20 Okay, let's see, we have a question here about
21 getting a reference or a link to learn more about South
22 Coast Air Quality Management District's compliance
23 challenges here. This question's from Phillip Stephens.

24 Maybe this is something we can drop into the
25 chat, if you have a link.

1 MR. RAY: I'll see if I can find a link. But I
2 know that they're still in nonattainment for fine
3 particulate and ozone.

4 And then, of course, for the ground-level ozone,
5 they're trying to regulate both NOx emissions and VOC
6 emissions, which combine in the presence of UV light to
7 make ground-level ozone.

8 MS. NEUMANN: And then we have -- thank you for
9 that. We have one question here from Marc Costa: As
10 the line between codes and standards, energy efficiency,
11 and demand flexibility blur, how can the Energy
12 Commission and/or other agencies further drive the
13 adoption of storage?

14 And he explains that energy efficiency during
15 any time of the day is valuable in the presence of a
16 battery. And I'm not sure how that's accounted for in
17 codes and standards metrics, or in the integrated
18 resource plans, or other policy areas.

19 So, anyone who could speak to that?

20 MR. SHIRAKH: I could speak from the codes and
21 standards perspective. Our metrics actually do value PV
22 plus storage, and has a very substantial credit for
23 storage, with or without PVs, for both TDV and source
24 energy.

25 So, this is definitely an option that builders

1 can use to comply with the code and they are using, and
2 they will continue to do so.

3 The biggest barrier, of course, is the storage
4 is still rather expensive. So, as the cost will come
5 down, you know, the builders definitely can use that to
6 comply with the standards.

7 And the indications we got from the builders,
8 both the nonresidential and residential, that they are
9 definitely interested in this. And again, our software,
10 both the CBECC-Res and CBECC-Com, fully account for the
11 benefits on both the TDV and the GHG side.

12 COMMISSIONER MCALLISTER: Great. Anybody else
13 want to chime in on that, Kapil or --

14 COMMISSIONER SHIROMA: I'll just reinforce that
15 indeed at the CPUC we have a number of open proceedings,
16 integrated resource planning, as we are preparing for
17 summer reliability for 2022 and beyond, various offices
18 have issued rulings, and scoping memos. And so, you
19 know, folks can check out our website, check out our
20 docket. You know, really geared towards efforts to
21 leave no stone unturned in terms of how do we true up
22 what's happening on a diurnal daily basis, what's
23 happening with net peak. What other resources are out
24 there that can be garnered?

25 So, again, there are just many opening

1 proceedings and that's about as much detail as I can
2 give you, given they are open proceedings. Thank you.

3 COMMISSIONER MCALLISTER: Thank you,
4 Commissioner. And I would also chime in just that the
5 state is moving towards time-based pricing increasingly
6 and that, in and of itself, is an incentive to use
7 storage and demand, generally, judiciously throughout
8 the course of the day. And so, that's inherently
9 valuing storage and efficiency on a time basis. So,
10 that sort of, you know, a market mechanism that's
11 beginning to address that problem as well, as the
12 programs like SGIP and others that promote these
13 technologies. So, thank you for that question.

14 I think that's it. Ingrid, are we done for the
15 session?

16 MS. NEUMANN: We are, yes. I just want to thank
17 all our Commissioners and our speakers for another
18 engaging panel discussion. I certainly learned a lot.

19 COMMISSIONER MCALLISTER: Thank you, Ingrid, we
20 really appreciate your stepping in to moderate. And
21 Kapil, and Mazi, and Bruce thanks a ton for your
22 insights and your effort on this, really appreciate it.

23 So, Heather, back to you and we'll get through
24 our next panel. We're just a few minutes behind
25 schedule. Apologies for that. It's hard when the

1 conversation is so good. So, here you go.

2 MS. RAITT: All good.

3 COMMISSIONER MCALLISTER: Thank you.

4 MS. RAITT: So, thank you. So, this is Heather.
5 I'll go ahead and introduce. Our next panel is being
6 moderated by Cliff Majersik. And Cliff is Senior
7 Advisor to the Institute for Market Transformation, or
8 IMT. And under his guidance, IMT became a trailblazer
9 in the energy efficiency field, recognized across the
10 globe for igniting greater investment in high
11 performance buildings.

12 And Cliff is a pioneer in integrating building
13 performance into corporate investment policy, appraisal,
14 green leasing, and building codes, as well as developing
15 building performance policies.

16 He's a LEED accredited professional, and former
17 software entrepreneur, and management consultant.

18 So, thanks for being here, Cliff. And he's
19 going to start off with a presentation and then he'll be
20 moderating the panel. So, go ahead.

21 MR. MAJERSIK: Thank you very much. Thank you
22 to Commissioner McAllister and both commissions for
23 inviting me. Next slide.

24 Building performance standards are a cornerstone
25 of climate policy. Next slide.

1 First, a bit about my organization, the
2 Institute for Market Transformation. Our mission is to
3 catalyze widespread and sustained demand for high-
4 performing buildings. We envision a world where
5 buildings dramatically lower greenhouse gas emissions
6 and support our physical, social, and economic wellbeing
7 regardless of where we live, work, or play. Next slide.

8 We're perhaps best known for our work helping
9 jurisdictions around the country adopt building
10 performance policies. Every jurisdiction colored on
11 this map has adopted a building performance policy,
12 specifically benchmarking and transparency requirements,
13 like California's AB 802.

14 Now, the jurisdictions shown in purple have gone
15 farther than that. They are requiring, in addition to
16 benchmarking and transparency, actions by building
17 owners to save energy.. Next slide.

18 The most powerful of those actions are building
19 performance standards. Six jurisdictions, Washington,
20 D.C., New York City, Washington State, St. Louis,
21 Colorado, and Chula Vista, which we'll be hearing from
22 in a moment, have adopted building performance
23 standards. These standards go well beyond other
24 building performance policies. Next slide.

25 They fundamentally change how we approach buildings.

1 They are the most powerful policy tool available to
2 drive improved performance among existing buildings.

3 Unlike building benchmarking and transparency
4 laws, where a building can simply publish that it has
5 very poor performance, building performance standards
6 establish minimum performance requirements, comparable
7 to equipment standards.

8 And unlike traditional building policies that
9 require a trigger, like a building owner seeking
10 building permits, building performance policies
11 complement building codes by taking effect when there is
12 no trigger. So that there's a time certain requirement
13 on buildings. Next slide.

14 So, there are a number of principles that should
15 guide the development of such a powerful policy. And
16 first and foremost you want to begin with the end in
17 mind. Make sure that the policy is going to deliver on
18 your commitments, including the climate commitments.
19 So, work backwards from climate commitments to
20 understand how your building performance standard will
21 contribute to achievement of those commitments.

22 As with all things, we want to make sure that
23 building performance standards are advancing social and
24 racial equity. And because they're so powerful, they
25 need to be designed with great care and with all

1 stakeholders at the table from the beginning to assure
2 that equity is advanced.

3 Regulatory fairness. All affected stakeholders,
4 all building owners should have a comparable level of
5 effort required of them.

6 Of course, jobs and economic growth are always
7 important.

8 And to achieve that certainty is really
9 important. We need for building owners to make long-
10 term investments in their buildings, value-creating
11 investments. And in order for expect long-term
12 investments, they need to have long-term certainty of
13 what will be required of them.

14 Transparency of the process, transparency of the
15 outcomes always important.

16 And here, we need to strike a balance between
17 driving early action because the climate crisis requires
18 it, and accommodating building lifecycle events, so that
19 building owners can work around things like tenant
20 turnover, refinancing mortgages, end of life of
21 equipment, that will allow them to achieve energy
22 efficiency and other goals at a lower cost and more
23 effectively.

24 And with any policy, we need to make sure that
25 it's simple and easy for building owners and others to

1 comply with, and as easy as possible for government to
2 implement. Next slide.

3 So, what makes a building performance standard
4 different? Well, because it requires improvement across
5 a wide range of buildings and it can yield deep
6 retrofits at scale. It can move a great swath of
7 existing buildings to better performance. It can drive
8 private building owners to make value-creating
9 investments in their own buildings, using private
10 capital, not public money.

11 And it can balance flexibility and immediate
12 action by sending a long-term signal to the market. It
13 can provide a comprehensive approach to address not only
14 energy and climate, but other important goals. Next
15 slide.

16 So, of course building performance standards can
17 be used for decarbonizing the built environment. They
18 can provide, also, a number of other important goals,
19 including advancing grid reliability and flexibility,
20 utility bill affordability, resilience, and public
21 health, and even inclusiveness and equity. Next slide.

22 So, learning from all of the jurisdictions that
23 have already adopted building performance standards, and
24 the many jurisdictions with whom we're working, that are
25 in the process of developing building performance

1 standards, and you'll hear from one of those, Montgomery
2 County in a moment, we have developed a model building
3 performance standard ordinance. It's available for
4 download from our website. And it's being used by
5 multiple jurisdictions as they adopt their building
6 performance standards.

7 It's taking advantage of the lessons learned
8 from these early adopters. And we also consulted widely
9 with a broad range of stakeholders, governments,
10 community-based organizations, equity experts, building
11 owners, affordable housing, utilities, and service
12 providers as we developed the model building performance
13 standard ordinance. Next slide.

14 So, based on that input and these lessons
15 learned, we have gone beyond what is in place with the
16 existing building performance standards. Each of those
17 six has one and only one performance metric, all
18 centered on energy or climate.

19 We have put in place multiple performance
20 metrics, similar to the way CEC uses TDV and HSE to
21 drive the multiple -- towards achieving multiple goals.

22 So, the model ordinance uses site energy use
23 intensity to drive energy efficiency. It uses onsite
24 thermal greenhouse gas emissions to drive
25 electrification. It uses coincident peak demand to

1 drive grid flexibility and reliability. And it uses
2 water use intensity and indoor air quality metrics,
3 which are now more important than ever, of course, given
4 the pandemic.

5 We also have a comprehensive strategy around
6 advancing social priorities in equity. So, the building
7 performance standards should be packaged with tenant
8 protections, like anti-displacement, and affordable
9 housing, and tenants' bill of rights.

10 We also built into the model building
11 performance standard throughout, provisions that will
12 help advance equity. For example, building owners can
13 seek additional flexibility in meeting their building
14 performance standards. You'll hear an example of that
15 in a moment from Emily Curley, from Montgomery County,
16 Maryland.

17 When they do so, they're required to look at
18 advancing community priorities as well. For example, a
19 building could offer up itself as a cooling center for
20 the surrounding community in times of heat emergencies.
21 Next slide.

22 This is guided by an innovation within the model
23 ordinance, a community accountability board. These
24 folks advise on what will benefit their communities,
25 disinvested communities. It's composed of appointed

1 experts in social and racial equity, and representatives
2 of local community organizations.

3 And it's tasked with reviewing the impact of the
4 ordinance on those communities, allocating funds
5 generated by the ordinance for the benefit of
6 disinvested communities. And determining whether offers
7 by building owners, in exchange for additional
8 flexibility, are truly benefiting those communities.
9 Advising on the selection of members of the building
10 performance improvement board that guides
11 implementation, especially technically, around the
12 building performance standard, and provides advice on
13 complementary rules and programs. Next slide.

14 So, at the center of the model building
15 performance standard ordinance is the trajectory model.
16 Next slide.

17 We start by setting final performance standards
18 many years out into the future. And this is an
19 innovation that is an evolution from what's in place in
20 the New York City Building Performance Standard. By
21 many years we mean 15, 30 or more years into the future.

22 These are the levels of performance that are
23 expected of each building based on building type. So,
24 for instance, multifamily buildings would be expected to
25 achieve one particular level of performance, whether

1 that be for water, or site EUI, or onsite greenhouse gas
2 emissions. Offices would be expected to achieve
3 different levels.

4 These final performance standards will be the
5 same for all buildings of each type.

6 Interim performance standards are needed because
7 we know that building owners will kick the can down the
8 road, if the only requirement is 30 years or more away.
9 So, because buildings tend to do capital planning on
10 five-year cycles, our interim performance standards
11 occur at every five years. Next slide.

12 But the interim performance standards are not
13 the same for all buildings. We recognize that buildings
14 start in different places. And referring back to our
15 principle of regulatory fairness, we want to accurately
16 distribute the level of effort across all buildings. We
17 also want to provide long-term certainty, another
18 principle.

19 So, the long-term final performance standards
20 provide that certainty. The interim performance
21 standards are customized for each building, depending on
22 where it starts.

23 In this example, this is site energy use
24 intensity, lower is better. So, all buildings are
25 expected to achieve the same level of performance as the

1 dot on the right, but each building is permitted a
2 different performance level in the interim.

3 And as you can see, Building A starts using the
4 most energy and it's required to improve at the fastest
5 rate. But at every interim period, it's permitted to
6 use more energy. And this way we create an equitable
7 playing field where we're asking all building owners to
8 make approximately the same level of effort to comply
9 with their buildings, and we're rewarding buildings that
10 have already achieved high performance. Next slide.

11 We know that buildings don't improve in straight
12 lines. This is an example, just one example. Every
13 building owner knows their own buildings best. This is
14 not prescriptive, every building owner can choose which
15 mix of measures and what sequence makes the most sense
16 for them.

17 And in this example, a building owner makes a
18 lighting upgrade, produces a big, quick improvement,
19 then the building's performance plateaus for a little
20 while. They do an envelope upgrade. Then they do a
21 mechanical upgrade. At every point they're below that
22 line, so at every point they're in compliance with the
23 building performance standard. Next slide.

24 Thank you very much.

25 Now, I'm going to introduce the other members of

1 this panel. And I'll introduce them in reverse order.

2 So, first we'll have Sara Neff, who is Head of
3 the Environment, Social and Governance, ESG, for
4 Lendlease Americas, where she provides leadership and
5 management oversight in developing, implementing, and
6 driving Lendlease's corporate sustainability framework
7 in the Americas region.

8 Prior to that role she served as Senior Vice
9 President of Sustainability at Kilroy Realty
10 Corporation. Under her leadership, Kilroy has been
11 recognized as a leader among publicly traded real estate
12 companies on sustainability in the Americas by GRESB for
13 seven of the last eight years, as well as being
14 recognized by the National Association of Real Estate
15 Investment Trusts, and it achieved carbon neutral
16 operations at the end of 2020.

17 Another panelist will be Emily Curley, who is
18 the Commercial Energy Program Manager for Montgomery
19 County, Maryland's Department of Environmental
20 Protection. She's responsible for the management and
21 implementation of policies and initiatives, like energy
22 benchmarking and building performance standards, to
23 promote the county's sustainability goals within the
24 commercial building sector.

25 Previously, Emily worked on energyc consulting

1 in the private sector, Sustainability Management at
2 American University, and Energy Efficiency Advocacy for
3 the Alliance to Save Energy.

4 And I should say that she's with Montgomery
5 County, Maryland, which is a million-person county in
6 Maryland.

7 Next, we will hear from Barbara Locci. She is a
8 green building professional, who has worked on
9 sustainability programs for 12 years in various roles.
10 Barbara has worked for the City of Chula Vista for seven
11 years on energy efficiency and sustainability programs
12 for commercial buildings and businesses.

13 Barbara has helped businesses in the city
14 achieve energy savings and implement CalGreen
15 requirements during tenant improvements of commercial
16 buildings. As a LEED APONM, Barbara has helped the City
17 of Chula Vista achieve LEED certification of three
18 buildings and organized green building trainings.

19 And we'll hear from Katy Hatcher, who is EPA's
20 Environment -- that's the U.S. Environmental Protection
21 Agency's ENERGY STAR Public Sector National Manager.
22 Katy works with states and local governments to help
23 them advance energy efficiency and decarbonization of
24 commercial buildings through the use of ENERGY STAR
25 tools and resources, including the use of Portfolio

1 Manager to implement benchmarking and building
2 performance standard requirements.

3 Handing it off to you now, Katy. Next slide.

4 MS. HATCHER: Great. Thank you, Cliff. And
5 thank you, Commissioner McAllister, for inviting me to
6 present today.

7 As Cliff was mentioning, I'm with EPA's ENERGY
8 STAR program. And I've been there for 20 plus years.
9 And I'm very excited to talk about this topic of
10 benchmarking and building performance standards.

11 Recently, we teamed up with a sister program in
12 EPA, called the State and Local Energy and Environmental
13 Program, to create this benchmarking toolkit for -- and,
14 sorry, building performance standards toolkit for states
15 and local governments to help them implement these types
16 of requirements. Next slide, please.

17 And so, the toolkit has many sections. But
18 before I get into that, I'll just step back for one
19 second and say that the ENERGY STAR program has a long
20 history in terms of fostering partnerships. And so,
21 we're partnering very closely with states and local
22 governments, as well as our building owner partners to
23 try to understand the intersection that we're here to
24 talk about today in terms of states and local
25 governments being interested in advancing

1 decarbonization of buildings. And building owners then
2 being held accountable to meet those requirements and
3 participate.

4 So, after working for ten plus years with local
5 governments implementing benchmarking requirements, and
6 then the growing trend of building performance
7 standards, we decided to pull together this resource to
8 help policymakers think through all the different
9 aspects of this, so they could then implement policies
10 that were easier for the building owners to then comply
11 with.

12 So, the toolkit has, as I mentioned, a section
13 on benchmarking, a section on building performance
14 standards, a section on state and local coordination
15 which I'll talk about more today. As well as one about
16 data access. And what that has to do with is automated
17 data access, as well as aggregated whole building data
18 from the utilities into our main tool called Portfolio
19 Manager. Next slide, please.

20 So, what did we define a building performance
21 standard to be? There's been a range of definitions
22 across the country as people have been thinking this
23 through. But a simple way of looking at it is that it's
24 a policy that requires building owners to meet
25 performance targets by actively improving their

1 buildings over time.

2 As you just heard from Cliff basically, you
3 know, that's the tenet of their model ordinance as to
4 set interim targets, and long-term targets, and help
5 building owners actually move toward those as they're
6 then required to do so by the state or the local
7 government.

8 And a building performance standard actually,
9 we've been talking about energy and carbon today, but
10 some local governments are actually using Portfolio
11 Manager to set targets for water use. And so, that's a
12 growing area as well. Next slide, please.

13 So, of the local governments and states that are
14 moving in this direction, the common tool that's being
15 used is Portfolio Manager, which is free and available
16 to anyone, building owners, as well as the states and
17 local governments as a benchmarking tool. And now,
18 there's growing use to use it as a tool to implement
19 building performance standards.

20 In its basic form, it helps an organization
21 track energy, water, and even waste and recycling
22 information. And you can also get a 1-to-100 ENERGY
23 STAR score, which is a measure to compare your building
24 to other similar buildings nationwide.

25 And data quality is a giant issue. And so,

1 there's all sorts of features of Portfolio Manager that
2 actually help a building owner, or someone who's
3 benchmarking a building for a building owner, to
4 understand and troubleshoot all those data quality
5 issues. Next slide, please.

6 So, as this building performance trend began to
7 grow, and we were helping some of the states and local
8 governments implement them, basically we started to
9 begin to understand that there was a lot of choices
10 about metrics. And that the metrics you choose would
11 matter because you're going to get a different outcome,
12 potentially, depending on what you require. And it's
13 possible that really what you might need is a suite of
14 metrics to use. Or, in one area of the country you
15 might want to prioritize a few metrics over some other
16 metrics.

17 And so, what we did was we drafted this white
18 paper, called Understanding and Choosing Metrics for
19 Building Performance Standards. And within this
20 resource, which I encourage anybody who's really
21 interested in digging into the weeds about the specific
22 metrics to go and read through this, this white paper.
23 And we actually do still have a survey where you can
24 submit comments that we've gathered. We are reviewing
25 the comments that were submitted already up to our

1 deadline. However, we left it open so others, if others
2 wanted to send us comments, they could.

3 And so, what we're trying to do is think through
4 -- next slide, please -- how the metrics that we
5 reviewed in thinking through the white paper are sort of
6 received and interpreted by the policymakers and the
7 building owners out there that then would be subject to
8 a building performance standard.

9 And so, there's different considerations for all
10 of these metrics. And within the white paper there's a
11 table that actually goes through the various
12 considerations. And like one example of a consideration
13 is that in terms of investment decisions and choices
14 about how a building owner might affect direct emissions
15 or, you know, emissions that are generated on site, are
16 more in control than emissions related to indirect
17 electricity emissions.

18 And so, in parts of the country it could be that
19 a state or local government might want to prioritize
20 onsite or direct emissions as a metric, and couple that
21 with an energy efficiency metric, such as the ENERGY
22 STAR score, or site energy use intensity.

23 You'll hear from local governments today that
24 have different approaches to how they're thinking
25 through what their building performance standards will

1 be.

2 So, after we review the comments that have come
3 in from the white paper, we are going to then make some
4 edits to the white paper, and then circulate that out
5 and post it. And so, you'll be hearing more from the
6 ENERGY STAR program as it relates to metrics and the
7 considerations of the choices of metrics, or suite of
8 metrics that you might want to use to then get to the
9 policy intent of your building performance standard.

10 Next slide, please. So, in addition to the
11 metrics, there's a lot of other things to consider when
12 you're designing a building performance standard. One
13 of which is the covered property list. And so, this
14 actually kind of relates to thinking about the
15 relationship between local governments and the state
16 government, where there might be a benchmarking mandate
17 statewide. There might be a few local government
18 benchmarking mandates.

19 And then, the next evolution is that some of
20 those local governments might then adopt a building
21 performance standard, or some beyond benchmarking
22 activity such as building energy audits, and so forth.

23 And so, it's really important to think through
24 how that all fits together with things like what's your
25 covered property list, what are the exemptions and

1 accommodations, and so forth. And also, the compliance
2 approaches and pathways.

3 And then, of course, it's super important to
4 then think through as you potentially have a covered
5 building list that gets down to the smaller buildings,
6 how would the local program or the state program then
7 support the effort of that building owner of the smaller
8 buildings benchmarking initially to understand their
9 energy performance, and then moving on to potentially
10 complying with a building performance standard.

11 And certainly back to Portfolio Manager in terms
12 of reporting mechanisms and requirements, Portfolio
13 Manager is the go to tool that's being used across the
14 country for benchmarking programs, and commercial
15 building, existing building performance standards. Next
16 slide, please.

17 And so, one thing to think about in terms of the
18 state and local coordination is the flexibility for
19 local governments. If they're going down to potentially
20 a building level where the building covered list is a
21 smaller square footage than might be captured by a
22 statewide building performance standard, and then making
23 sure that the building owner only needs to report once
24 to one entity for both things, potentially, if that's an
25 option.

1 And also, it could be that a building owner has
2 many buildings across the state. So, to flip it around
3 from the other perspective, a building owner with a
4 larger portfolio that has buildings across the country,
5 or buildings across the state, you know, is there any
6 kind of standardization in terms of what the building
7 performance standard is that they have to meet, or is it
8 going to be different in each of the local governments?

9 So, there's a lot afoot -- this is very new and
10 it's all unfolding. Next slide, please.

11 So, what we provide is we provide technical
12 support from the ENERGY STAR program to help the states
13 and local governments to think through everything I was
14 just talking about. From the selection of metrics and
15 the interrelationship of those metrics, to things to
16 consider for their covered property list. And largely
17 actually, about the -- how a user would go through the
18 process in terms of -- and this would be how would a
19 building owner go through the process to either
20 initially benchmark, sort out any issues with their
21 data. Because, obviously, data quality is super
22 important. And if you don't have good data going in for
23 benchmarking, then you're not very likely to have good
24 data going in for complying with the building
25 performance standards. So, it's important to work

1 through all those things.

2 And then, ultimately, what we have an eye on is
3 the same thing that all of you do as well, that we've
4 heard from throughout the day, is that these buildings
5 are likely to be improved in terms of larger things like
6 their heating and cooling systems once between now and
7 the final long-term goals the building performance
8 standard might be trying to achieve.

9 So, it's important to try to figure out how to
10 affect that investment decision. And that's where the
11 ENERGY STAR program can help, along with the rest of our
12 stakeholders at the state and local level, to try to
13 help take information about the energy performance of
14 the building into Portfolio Manager, turn it into usable
15 information to help those building owners understand
16 their investment decisions. So, next slide.

17 And so, this slide is just so that when people
18 go back to this deck later on, you can click on these
19 links to get to the home page for the toolkit.

20 And thank you very much. That concludes my
21 presentation.

22 COMMISSIONER MCALLISTER: Cliff, you might be on
23 mute.

24 MR. MAJERSIK: Thank you, Katy.

25 Barbara Locci will now present the perspective

1 from Chula Vista.

2 MS. LOCCI: Hello, good afternoon. Thank you,
3 Commissioner McAllister for inviting me to speak about
4 our ordinance. And so, let me get right to it.

5 Our City of Chula Vista Climate Action Plan was
6 approved by city council in the year 2000, and then it
7 was updated many times after that. And the last time
8 our Climate Action Plan was approved was in 2017.

9 That 2017 version calls for building performance
10 reporting and public disclosure. So, we decided to of
11 course work on an energy benchmarking ordinance. Also,
12 because the Climate Action Plan set a target to retrofit
13 20 percent of multifamily and commercial space to
14 achieve a 50 percent savings by 2035.

15 So, we decided to work on this ordinance in
16 order to comply with our Climate Action Plan.

17 So, the next slide, please. Our research. Our
18 research began in 2018 with the help of an energy policy
19 consultant, who really helped us research all the
20 different policies that we had in the United States. We
21 looked at energy policies that were more stringent,
22 others that were less stringent. We asked all kinds of
23 questions to other jurisdictions, how their experience
24 was. And so, we decided to take steps to make our
25 ordinance more stringent.

1 The two main reasons why we decided to do this
2 was because, number one, the City of Chula Vista,
3 although is the second city, the second largest city in
4 the County of San Diego, it is also a smaller city in
5 the sense that our commercial buildings are not as big,
6 as large. And so, we decided to lower our square
7 footage threshold to 20,000 square feet, instead of the
8 50,000 that are required by AB 802.

9 And the second reason was because we have older
10 facilities, older commercial buildings in the city, and
11 so we wanted to kind of tackle the inefficiencies in
12 those buildings. And so, that's how our ordinance came
13 about. Next slide, please.

14 So, as you have seen this map already, the
15 United States has a lot of energy benchmarking policies.
16 And our policy is part of those that are more stringent.
17 So, it is one of the purple dots.

18 And like I mentioned earlier, we did talk with a
19 lot of these jurisdictions to kind of shape up our own
20 ordinance. Next slide, please.

21 So, benchmarking and disclosure, why is it
22 important? This process is important because the
23 building owner in this case is basically, I don't want
24 to say forced, but the building owner has to really pay
25 attention to his energy consumption.

1 So, when a building owner is tracking his or her
2 energy consumption, has to kind of figure out ways to
3 conserve and save energy. So, over time, over the 12-
4 month period, a building owner may see spikes in their
5 energy consumption and when they're really paying
6 attention to it, they do save energy.

7 And so, in fact in a study from the EPA
8 conducted in 2011 showed that most buildings that do
9 benchmark actually save 2 to 3 percent energy. And
10 then, of course, they also save on their bottom line
11 over -- each year. And so, this really helps because
12 measurement equals transparency and energy efficiency.

13 So, and another reason is being able for a
14 tenant to know or for a buyer to know how that building
15 performs makes that building more valuable if it
16 performs better. And also, makes the possible tenant or
17 buyer more powerful in the negotiation process as well.
18 And so, a more efficient building is always more coveted
19 to get.

20 So, energy conservation and building performance
21 ordinances are important because not just by
22 benchmarking a building can improve its energy
23 consumption, but once the building is also required to
24 have made progress, then we can see more improvements.
25 So, that 2 to 3 percent can become even 5, 6, 10

1 percent.

2 So, it's important to know that these type of
3 policies also require audits, may require retro-
4 commissioning, and performance standards that are
5 different, you know, from city to city or county to
6 county.

7 And so, let's take a look at the City of Chula
8 Vista's benchmarking policy. Next slide, please.

9 So, the City of Chula Vista's policy requires
10 buildings that are 20,000 square feet and above to
11 benchmark.

12 These buildings, after five years, if their
13 score was below 80 points in the ENERGY STAR score, they
14 have to improve their energy performance. So, they have
15 to first go through an audit. We're going to require,
16 basically, and ASHRAE Level I audit.

17 And then, after the next five years if they're
18 still not improving their performance, they're going to
19 have to act on that audit. And basically, whatever was
20 found in the audit, for example older equipment that was
21 inefficient may be changed. And, of course, it has to
22 be -- make sense on a return on investment basis. Next
23 slide, please.

24 So, our multifamily buildings are also covered
25 by the ordinance. But the tenant spaces that are built

1 pre-2006 will have to comply with our single-family
2 ordinance. And the common areas will have to comply
3 with the benchmarking ordinance for commercial spaces.
4 And so, that's the only little exception to the whole
5 building energy benchmarking for multifamily buildings.
6 And so, next slide, please.

7 So, this is an ordinance comparison which shows
8 how the City of Chula Vista really is cutting edge among
9 other cities in the country, and we're very proud of it.
10 And so, it shows how basically we have requirements for
11 buildings that are above 20,000 square feet to also go
12 through public disclosure and audits if they're not
13 performing as well, and performance improvements. Next
14 slide, please.

15 So, our requirements. We require all buildings
16 above 20,000 square feet to submit their energy data to
17 us annually, starting next year. So, in 2022. The
18 ordinance was approved this year, but it will take
19 effect next year. And, of course, they will have to
20 report 2021 data.

21 And everybody will have to disclose and they
22 will have to provide benchmarking reports to their
23 tenants and their prospective buyers starting next year,
24 2022.

25 And then for, as I mentioned earlier for those

1 buildings that have not been performing, those buildings
2 will have to go through an ASHRAE Level I audit after
3 the fifth year.

4 And as you can see it says beginning in 2023,
5 because some buildings have been already reporting since
6 2018 because of the AB 802. So, those buildings have
7 already energy data, so they will have to prove that
8 they have a good score earlier than those that are going
9 to start benching marking now, for example.

10 And then, after ten years they will have to take
11 steps and show that they are actually more efficient and
12 act on their audit. Next slide, please.

13 And that's it for me.

14 MR. MAJERSIK: Thank you very much, Barbara.

15 Next, we are going hear from Emily Curley of
16 Montgomery County, Maryland.

17 MS. CURLEY: Thanks everyone for having me
18 today. So, I'm the Commercial Energy Program Manager in
19 Montgomery County, Maryland. I'll share some
20 information about our climate planning efforts in our
21 proposed energy performance standards that are a big
22 piece of that puzzle. We're one of the first
23 jurisdictions that has proposed a policy similar to
24 IMT's model, so I'll talk through those details.

25 Just for some context for those that may not be

1 familiar, we are just north of Washington, D.C. We're
2 the most populous county in Maryland, have over a
3 million residents. Within the county we do have quite a
4 mix of building types and purposes. So, we have a lot
5 of urban core around the metro and transit hubs,
6 suburban areas with retail and housing. And then, also,
7 a lot of rural area and farmland up county. So, we
8 really have a diverse mix in our county. Next slide,
9 please.

10 So, the county has long held ambitious climate
11 plans. These were accelerated in 2017. At that point,
12 our county council declared a climate emergency. And at
13 that point we increased our emissions reduction goals to
14 80 percent by 2027 and 100 percent by 2035.

15 So, as you can see on the chart, we've made some
16 progress since our 2005 baseline. We see about 19
17 percent communitywide reduction since then. But, you
18 know, since we have much more ambitious climate goals,
19 we're looking for ambitious solutions to those. Next
20 slide, please.

21 And again, just some context on where our
22 emissions come from. So, despite kind of our mix in
23 development in the county, energy use in the building
24 sector from electric consumption and then also onsite
25 fossil fuel combustion for heating, water heating, and

1 cooking that accounts for about 50 percent of our
2 communitywide greenhouse gas emissions. And that's
3 split about evenly between residential and commercial
4 buildings.

5 So, per our Climate Action Plan, which was
6 recently released, we are really trying to find ways to
7 reduce emissions from existing buildings, and we're
8 looking to do that by improving energy efficiency in
9 those buildings. Next slide.

10 So, one major way that we're looking to reduce
11 emissions is via Bill 1621. This was introduced by our
12 county council back on April 1st. It has not been
13 enacted, yet, but it should be up for a formal vote
14 before the end of the year. There's still some
15 legislative procedures to go through.

16 But a couple of key points in the law is we've
17 had an energy benchmarking and disclosure law since
18 2014. So, we're looking to modify that existing law to
19 accomplish a couple things.

20 First, expanding the number and type of
21 buildings covered by the benchmarking law. So,
22 currently we cover nonresidential buildings 50,000
23 square feet and greater. We're going to drop that to
24 25,000 square feet and also bring in buildings that have
25 not previously been covered, such as multifamily housing

1 and warehouses. There's a few other building types that
2 we plan to bring in.

3 Second, and most importantly, which we're
4 talking about today, is adding building energy
5 performance standards for buildings that are covered by
6 this law. And then, finally, we would also establish an
7 advisory board to help our office, the Department of
8 Environmental Protection on best implementation.

9 So, as you've heard by now, we feel that BEPS is
10 one of the most powerful policy tools we have to drive
11 improvements in energy consumption and emissions in
12 existing buildings.

13 One thing I'll just note is that, you know, of
14 course our Climate Action Plan has other measures that
15 we're looking into around building codes, and grid
16 cleaning, and that sort of thing. But without BEPS,
17 there's really no reason for the existing buildings to
18 interact with our county or to improve their energy
19 performance. So, by enacting something like this, you
20 know, we finally have a touch point for existing
21 buildings which are, you know, a bulk of our emissions
22 right now.

23 Just as a general approach to our legislation,
24 we're creating a framework to establish BEPS. This is
25 kind of signaling to the market that these standards

1 will be coming. We still have a number of items to
2 establish via regulation. This has been what we've seen
3 in some other jurisdictions as well, where you know,
4 specific standards and kind of formats for different
5 pieces of the legislation come later.

6 Critically, we also engaged stakeholders in
7 discussion of various policy recommendations, and those
8 stakeholders informed a lot of the elements of the
9 legislation. I'll touch on that in a minute.

10 And really underpinning all of our policy is
11 this desire to spur immediate climate action. We know
12 we really need to get moving to meet those 80 percent
13 and the 100 percent goals, but do it in a way that makes
14 the most sense for building owners.

15 So, providing flexibility to allow them to
16 decide how to best achieve these within their buildings,
17 but also providing that long-term certainty that Cliff
18 touched on, so they know what to expect and how to plan
19 for their businesses. Next slide, please.

20 So, as I mentioned, before we drafted and
21 introduced any legislation we convened stakeholders over
22 about a 9-month period. IMT was of great help to that
23 process.

24 And we included commercial, multifamily building
25 owners, both market rate and affordable housing, and the

1 support communities and companies that serve them. So,
2 energy contractors, utility representative, some climate
3 advocates and other building advocacy groups, and county
4 representatives.

5 So, I'll say that over the course of our
6 meetings we definitely had some clear policy preferences
7 shake out. So, you know, one of them was this long-term
8 performance standard with the interim check-ins. I
9 think this helps kind of inform some IMT's model
10 legislation, but I can't emphasize this enough, owners
11 really appreciated having more certainty, as opposed to
12 some kind of standard that resets the target every few
13 years, and kind of leaves it uncertain as to whether
14 they will be in compliance, or if they have to restart
15 and kind of start running again towards a new standard.

16 We presented options on metrics and our
17 stakeholders were very much in favor of a site energy
18 use intensity metric. They felt that it tracks the
19 impact directly controlled by the building owner. You
20 know, so regardless of how clean our electric grid is,
21 or how fast it cleans up in the future, you know,
22 efficiency is kind of in control of the owner or at the
23 asset level. They felt it's a bit more easily
24 understood, it's directly calculated from utility bills.
25 And in many cases, in all cases for covered buildings

1 they're already gathering and reporting that information
2 to us.

3 And I'll say that site EUI also encourages
4 electrification, so that's not kind of a mandated
5 strategy, but it is a strategy that owners can use to
6 realize better efficiency within their buildings. And
7 so, site EUI was beneficial for that as well.

8 Understandably they want to -- the stakeholders
9 wanted to reduce administrative burden, so they agreed
10 that using the ENERGY STAR Portfolio Manager and
11 reporting, you know, as they normally do already for
12 energy benchmarking would be most ideal.

13 And finally, we talked a lot and heard a lot
14 that there's a need both for technical and financial
15 assistance. And this is particularly important for
16 under-resourced sectors. So, we're thinking about
17 affordable housing, nonprofits, houses of worship, other
18 small businesses. And, you know, that's something we're
19 still working out now, but that message was heard loud
20 and clear that, you know, the county in sort of a lesser
21 degree, but maybe the state is going to have to come up
22 with some strategies to help owners with this
23 requirement.

24 And there's a link to the Stakeholder Report
25 here, if you want to read more. Next slide.

1 So, you'll see what we came out with mirrors
2 almost exactly the IMT model best policy. So, our
3 proposal sets a long-term site EUI performance standard
4 for each building group. So, offices, multifamily,
5 retail, et cetera, based on the building stock in our
6 county. Each of those groups would receive their site
7 EUI.

8 We are not prescribing how a building, you know,
9 gets to that target, but they have the long-term
10 certainty that they need to plan.

11 Each building covers by the law receives a
12 baseline based on their own historical energy use.
13 Again, which we've collected via the energy benchmarking
14 law. Buildings will continue to report each year using
15 ENERGY STAR Portfolio Manager as they normally would.

16 But every four years, that was a little quicker
17 than IMT's model, our county executive was keen on that
18 number. Every four years properties are evaluated as to
19 whether they're in compliance.

20 And, you know, one thing I'll say is there's no
21 numbers on this slide. That actual standard is
22 something we're working out in regulation and that
23 should be done by next June.

24 And I'll say one other policy mechanism we're
25 exploring is crediting onsite solar, just as another

1 potential way to meet the standard and to incentivize
2 that for commercial buildings. Next slide.

3 Of course, buildings don't operate in a straight
4 line. So, another piece of IMT's model policy is this
5 concept of a building performance improvement plan. So,
6 this is a bit of release valve where if a property can't
7 reasonably meet one of the interim standards, they can
8 file a BPIP with the county.

9 And so, in the example here you can imagine, you
10 know, at the first standard they're not meeting the
11 target, but there could be something like a major tenant
12 turnover -- or a major piece of equipment, or energy
13 using system in the building that's already planned for
14 replacement or upgrading. So, by filing a plan with
15 their known or planned conservation, or efficiency
16 measures, and then carrying that out we would consider
17 them in compliance, and kind of get them back on track
18 for savings. Next slide.

19 I won't spend too much time on this, but with
20 our amendments we would be covering the vast majority of
21 commercial building area in our county, with multifamily
22 making up the bulk of the newly covered buildings. Next
23 slide.

24 I won't spend too much time on the details, but
25 just in terms of timeline, buildings that are already

1 subject to energy benchmarking would first phase in to
2 the performance standards. New buildings would be
3 phased in to benchmarking first, with larger buildings
4 going first. And then eventually phased in to being
5 required to performance standards.

6 I think the key thing here is that standards for
7 each group are, you know, at least 12 to 15 years in the
8 future. And so, you know, we're really looking at
9 striking the balance between aggressive standards and
10 time allotted to comply for owners.

11 It looks like I'm out of time. If you go to the
12 next slide, I just have some takeaways. I won't spend
13 much time on this, but if you want to refer back to the
14 slides of just some highlights there that we've been
15 looking into while we developed this policy.

16 And I hope you'll stay tuned as this advances
17 through our county council.

18 MR. MAJERSIK: Thank you very much, Emily.

19 Now, last but not least we'll hear from Sara
20 Neff of Lendlease.

21 MS. NEFF: Hello everybody. I hope people can
22 see me. I don't have any slides and I'm your last
23 speaker of the day, so I hope to keep this fairly
24 casual.

25 So, I'm Sara Neff. I'm the head of

1 sustainability for Lendlease Americas. Lendlease is a
2 large Australian company. We've got 11,000 employees
3 worldwide, 1,500 of us are in the U.S. We are huge
4 builders of real estate. We also operate about 40,000
5 military homes, including some in California. And we
6 are also development and investment managers.

7 And so, the big takeaway, if you take nothing
8 else from what I'm saying, is that building owners, so
9 I'm representing the building owner perspective, you
10 know, the person who's actually going to have to comply
11 with all of this legislation we're talking about, is
12 that building owners also want high-performing
13 buildings.

14 Those of us who operate real estate also see the
15 benefits of high-performing buildings. And it benefits
16 our tenants, it benefits our bottom line. And I'll get
17 into other stakeholders and where that pressure is
18 coming from right now.

19 So, I wanted to just take a second about what
20 we've been up to at Lendlease. I'm new to the job,
21 hence so no slides yet, so I'm at about week seven. But
22 I can tell you this, we have about a current \$400
23 million multifamily portfolio that is already carbon-
24 neutrally operating. We have 40 installed megawatts of
25 solar on our military housing communities, including

1 those in California. Those that are in San Pedro.

2 And we are constantly, constantly pushing the
3 bar on sustainability, on building energy performance
4 standards.

5 But we're also a national company, so we're
6 already complying with benchmarking standards around the
7 country. We know that we'll be complying with New
8 York's Local Law 97, the legislation in Boston, you
9 know, buildings in Chicago. And so, we are not
10 unfamiliar with building energy performance standards.

11 And I'm happy to answer questions about where
12 our concerns will be.

13 But I want to talk to you a little bit about
14 what the market is currently looking like, for those of
15 us who own real estate. The world has woken up to the
16 fact that 40 percent, as we've heard this number a lot
17 of times today, of global climate emissions coming from
18 the real estate industry. Real estate, as everybody
19 knows, is a very distributed industry. You know
20 somebody, a grandmother passes and then leaves them, you
21 know, a small apartment building and all of the sudden
22 you're a real estate owner.

23 You know, it doesn't work the same way in auto
24 manufacturing, it doesn't work the same way in many
25 other industries. But real estate is very, very

1 distributed, many owners, a lot of them who don't have a
2 deep expertise on how to run real estate.

3 But these days what has been happening is that
4 for anybody who has any exposure to public markets
5 there's a lot of pressure to be performing on
6 sustainability.

7 The investors. I've been doing sustainability
8 for a long time, and I know Cliff has too. The investor
9 community has is quite silent with real estate and
10 sustainability for a very long time. They are no longer
11 silent.

12 We've seen the impact-investing industry triple
13 in size in the last eight years. And those investors
14 want to see results. And those results they want to
15 see, a lot of them are around data and energy
16 efficiency.

17 We're also seeing ratings agencies get a lot
18 more sophisticated on all things sustainability. They
19 are asking questions. They are, you know, taking into
20 account sustainability factors, especially energy into
21 their performance evaluations of a company.

22 And we're also seeing much more sophisticated
23 tenants. Our tenants very much, depending on the asset
24 type, know a lot about sustainability. They want to
25 know that they are in sustainable buildings and they

1 have questions about that.

2 Tenants are not all made equal, as everybody on
3 here knows. At least our experience with the asset
4 types that we deal with, and I should say that Lendlease
5 does not have an industrial portfolio. But we find our
6 life science tenants to be probably the most
7 sophisticated, followed by office. Individual residents
8 may know something about ENERGY STAR, not quite sort of
9 understanding, maybe LEED is a little bit unfamiliar to
10 them, and then retail is still the preferred market to
11 reach in terms of tenant understanding of
12 sustainability.

13 But we are feeling the pressure. It is the time
14 where real estate is really being asked by many, many
15 stakeholders, not just our governments, to really step
16 up and make sure that our buildings are performing in
17 the way that it's the lowest possible amount of carbon.

18 And this is possible. I'm happy to say that of
19 the -- I'm doing my math and do not quote me on this, so
20 we have 17 million square feet of real estate that we're
21 developing in California, all of it is all-electric.
22 All of it is designed to be gold or LEED platinum. Lots
23 of onsite solar, really fun stuff happening on water
24 that I can't even tell you yet.

25 So, it is possible and there are companies who

1 are profit-focused driven companies that really still
2 care about sustainability and want to make it make
3 sense.

4 And so, I'll tell you a bit about how we feel
5 about building performance standards. You've heard most
6 of all of these sort of recommendations from previous
7 speakers, so I'll just run down the top ones, but you
8 heard many more.

9 One of them is we're talking about data.
10 Ultimately, buildings will be compared against some sort
11 of benchmark. We want that data to be reliable and we
12 want it to be credible.

13 So, I'll give the example of New York, which
14 didn't take occupancy into account, so there are vacant
15 buildings in its baseline. And this had made a lot --
16 this has created a lot of skepticism around how
17 reasonable their targets are. And so, we -- you know,
18 we, the building owner community, wanted to feel that we
19 were being held to a reasonable standard.

20 We also want to see that the entity that's
21 really controlling, financially, the meter of the
22 building is the entity that is going to be subject to
23 fines. So, you know, I operated many buildings in my
24 previous role at Kilroy, where not only did we not have
25 the meter, only through green leasing did we get access

1 to data, and we certainly were never allowed into the
2 buildings to make any improvements. That's fine,
3 certain tenants need that kind of sort of privacy, I'll
4 say.

5 But really it should be then those tenants who
6 are really need to be complying and paying fines.
7 Certain leases allow that, certain don't.

8 And then fines are great. We also talked
9 incentives. We talked a lot about incentives. I love
10 to see a lot of my utility friends have been on this.

11 I will say this about incentives. There are
12 incentives that make certain projects quote-unquote
13 free, and certain incentives that don't. I will say
14 that those of us who have done sustainability in real
15 estate for a long time have learned the hard way that
16 there is a big difference between a free beer and a free
17 kitten in terms of incentives. We're looking for
18 incentives that don't have strings attached. We're
19 looking for incentives that aren't performance based.

20 The reason I say that is not because we don't
21 think that our projects will perform but frankly because
22 if we don't think an incentive will materialize, it will
23 never factor into the up front financial calculations
24 for whether or not that project pencils. And so,
25 incentives need to be guaranteed in order for them to

1 influence decision making.

2 Similarly, incentives that are -- you know, will
3 get you 90 percent of the way there are great for a lot
4 of customers. Not great for those that will never have
5 that final 10 percent. So, as much as incentives can
6 cover 100 percent of a project cost, the better.

7 And the last, as you heard very well from many
8 folks, is just a plea that the data be reported in
9 ENERGY STAR Portfolio Manager. This is the lingua
10 franca of American real estate. It is what we all
11 understand. It is what all of our disclosures go
12 through. And so, that is what we want.

13 But we are here for energy efficiency.
14 Buildings can comply. They do better when they comply.
15 They see lower operating expenses, they see fewer
16 capital, dramatic capital upgrades, such as when
17 equipment fails because there's more preventative
18 maintenance. So, we're allowed to, you know, get a
19 sneak peak into the future and replace equipment before
20 and not after end of life.

21 And, you know, we see bumps in rental rates, we
22 see the reduced vacancy, we're really able to make
23 the - basically the value proposition. Take a space in
24 my building and the overall value is not just what
25 you're paying in rent, but what you're paying in

1 operating expenses. And if you can reduce operating
2 expenses you can say even with competitive rental rates,
3 you're still getting better overall value. That's an
4 argument that real estate is increasingly being able to
5 make. And we know the building performance standards
6 will help us get there.

7 So, just in closing, and I'll keep my remarks
8 brief. So, real estate does realize that it's
9 contributing about 40 percent to carbon emissions.
10 Leaders, like Lendlease, we're already focused on
11 building performance and we think good policy will help
12 bring the rest of the market along. We're delighted to
13 be participating today. And thank you so much for
14 having me.

15 MR. MAJERSIK: Thank you very much, Sara. Thank
16 you to all of our panelists. And I guess now we will
17 take questions, if there are any, from the
18 Commissioners.

19 COMMISSIONER MCALLISTER: Well, Cliff, thanks
20 for your presentation, and your thought leadership on
21 this, and your moderation services today. So, really
22 appreciate it. We're getting multiple value streams
23 from you today, so thank you.

24 So, there's so much to talk about here. I just
25 want to say, you know, wow to all five of you just in

1 terms of the innovation and just the can do attitude,
2 and the real results. You know, real estate producing
3 real savings is what we're after. So, thanks to all of
4 you.

5 And just a couple of comments, really. I'm so
6 happy to see these timelines of proactive planning out
7 to 2038, 2040, 2045, 2050 because I think it really
8 highlights the fact that we have to be intentional about
9 this. And I think we just heard from Sara that
10 consistency, you know, transparency, you know, a real
11 program that has legs for the long term and is going to
12 be understandable, and with which it will be possible
13 and clear how to comply is just, you know, job one of a
14 good program design.

15 And so, it sounds like all these programs really
16 have worked through those issues and done that.

17 You know, California would really be maybe
18 relative to New York, and not as much as some of the
19 others, but it would really be a different scale. And
20 so, you know, we're talking millions of transactions of
21 a statewide building performance standard.

22 And so, I guess I'm interested in any of you,
23 maybe starting with Cliff, but just managing those
24 transactions and making sure that every single building
25 that's eligible or, you know, under which to which the

1 building standards would apply, performance standards
2 would apply knows what it's goals are and actually has a
3 place to interact with to comply. And then, of course,
4 to get technical assistance and things along the way.

5 But just the compliance infrastructure for this,
6 could you just describe how -- what your recommendation
7 is, Cliff, and just kind of if there are any differences
8 across the programs? That's really a nuts and bolts,
9 issue from the point of view if we did ask our
10 Legislature to put in place something like this
11 statewide, you know, we'd have to work through all of
12 that.

13 MR. MAJERSIK: Sure. Yeah, that's a great
14 question. And you're right, you know, Washington State
15 and Colorado are a lot smaller than California and
16 they're early in the process of figuring things out.
17 So, California really is going to be breaking new ground
18 if it goes down this road, and I hope it will.

19 I think that AB 802 can provide a good model in
20 terms of state locality cooperation. You know, the
21 localities have strong relationships with their building
22 owners. They have regulatory relationships with their
23 building departments. They have taxing relationships.
24 The building owners are in the habit of knowing that
25 they're going to have to comply with local regulations

1 for their buildings.

2 So, I think that just as AB 802 recognized that
3 a number of cities already had benchmarking and
4 transparency laws, et cetera, if you comply with a law
5 that meets certain minimum requirements, you'll be in
6 compliance with 802. And new cities could come in and
7 have their laws certified.

8 I think that that makes a lot of sense from a building
9 performance standard perspective as well, with a state
10 law as a backstop for those jurisdictions that haven't
11 adopted a sufficient building performance standard.

12 And then there's all kinds of infrastructure
13 that the state can provide in terms of technical
14 assistance, both assistance to building owners, but also
15 assistance to localities that want to adopt and
16 implement their own building performance standards.

17 In terms of data, back end, you know as we've
18 heard, we've heard loud and clear over and over from
19 building owners, like Sara and others, that they really
20 want to use Portfolio Manager as the tool for them to
21 comply for the energy and water. But there still needs
22 to be some back end for storing it, and sort of customer
23 relationship management for tracking building owners,
24 and contacting them, making sure that they know they
25 need to comply. And then, following up for compliance.

1 But a lot of that, there are economies of scale
2 to do that. I think at the state level, and make it
3 easier, and less expensive for each locality that wants
4 to be able to implement.

5 But you can really take advantage and think of
6 the relationship that the localities have with their
7 building owners.

8 At the same time I think the state can provide
9 some consistency. We've also heard from building owners
10 they really want consistency. They don't want radically
11 different laws within each city within California. So,
12 I think you could provide some broad guidelines like
13 around performance metrics. You know, you can choose
14 one or more of this list of performance metrics, but you
15 can't have a completely different one because that could
16 add a lot of complexity for building owners.

17 So, there's some real opportunities there and
18 we'd certainly be happy to work through those questions
19 with you or your Legislature. But I think California
20 could really be a model.

21 And we're going to see this probably in
22 Colorado. Denver is pretty far along in developing
23 their own building performance standards and it will
24 follow on the state one. Seattle's working on one. So,
25 you won't be the only place where there are going to be

1 interplay between state and local building performance
2 standards.

3 COMMISSIONER MCALLISTER: Great. Thanks a lot.
4 And I agree, the 802 model. And for those who aren't
5 aware, we already have a benchmarking program statewide
6 in California that uses 50,000 square feet and up, and
7 it does include multifamily and commercial. And so, we
8 have quite a bit of infrastructure and, you know, a fair
9 amount of compliance going on with that. So, that could
10 be a backbone.

11 But in terms of like telling, you know, really
12 confirming measures have been installed and, you know,
13 sort of the really the management of the day-to-day
14 activity at the building level, it seems like this would
15 be, potentially, quite a bigger kettle of fish. And so,
16 we'd want to be proactive about that with our local
17 jurisdictions and beyond. So, thanks for that.

18 Anybody else have any observations to make about
19 just implementation challenges, or needs and
20 requirements? You know, Sara, you talked a little bit
21 about that. But I'm interested in the conversation in
22 Montgomery County and Chula Vista, as well.

23 MS. NEFF: Yeah. I mean we just need to -- I
24 think there's a level where it needs enforcement, you
25 know. I mean how, what is going to be the teeth? I

1 mean there's a reason that people pay attention to the
2 fines. And I say this in my environmental hat, not my
3 Lendlease hat on. The fines in New York City are in the
4 hundreds of thousands of dollars. You know, is the
5 State of California people willing to really put teeth
6 behind this? I mean, that's what I think about it.

7 And the other thing I would say, and it's been
8 touched on many times today, but not to exclude the
9 affordable housing.

10 COMMISSIONER MCALLISTER: Yeah.

11 MS. NEFF: You know, those folks in affordable
12 housing deserve lower energy bills. They deserve to
13 have their equipment upgraded. They deserve not to be
14 in inefficient spaces. Lendlease operates a lot of
15 affordable housing and is building affordable housing,
16 you know, in L.A., San Francisco. It's very important
17 to us and we do not see a reason why that sector should
18 be carved out.

19 COMMISSIONER MCALLISTER: Great. Thanks for
20 that. Agree.

21 Anyone else want to take a stab and then I'll
22 pass it to my fellow Commissioners.

23 MS. LOCCI: I can speak for Chula Vista. We are
24 building a database with all the buildings represented
25 in there. And, of course, there is going to be the

1 public disclosure. But also in that, built into the
2 database they will have to basically turn in their audit
3 papers, and they will have to be in touch with the city
4 to show that they are actually going through those
5 steps.

6 MS. HATCHER: I'll just add that EPA and the
7 ENERGY STAR program, in terms of working with all the
8 entities that are already benchmarking and have been for
9 years, and then now embarking on these building
10 performance standards, we've been sort of systematically
11 thinking through data quality issues and how we can work
12 together to try to overcome those.

13 And then, again, how that translates back to a
14 building owner's experience.

15 And there's a lot I think we can do. I think I
16 would say that it's important to begin working out the
17 kinks, or the data quality issues that there are, you
18 know, with just the benchmarking program, right, before
19 you then have performance requirements that kick in.

20 And that -- we see this potentially as an issue
21 for the local governments that are mandating lower
22 benchmarking thresholds than AB 802, and also building
23 performance standards at the same time, right?

24 So, what you then have there is you've got new
25 folks benchmarking with smaller buildings that are newly

1 exposed to the idea and process, and also then a shorter
2 window of time, potentially, for them to meet a building
3 performance standard requirement.

4 So, the folks that have been benchmarking for
5 years, and also might be in the bigger buildings and
6 more sophisticated, have probably already worked out
7 their data quality issues.

8 And so, in terms of thinking through what kind
9 of resources the local government or the state
10 government can bring to the table to help those newer
11 benchmarkers in the smaller buildings try to sort out
12 any kind of data quality issues.

13 Because again, at the end of the day it's about
14 trying to help them make investment decisions that help
15 decarbonize those buildings and make them more energy
16 efficient at the same time.

17 And so, you know, if you've got bad data, then
18 what does that do, right? It doesn't really help.

19 COMMISSIONER MCALLISTER: Thanks a lot, Katy, I
20 really appreciate that. And I have to just say thank
21 you for all the work on Portfolio Manager. I mean it's
22 underpinning, it's the backbone of so much of what we're
23 talking about. So, just couldn't be more helpful.

24 And I'm going to just ask Commission staff,
25 Energy Commission staff to just pin in the idea that as

1 we talk with interested, you know, members of the
2 Legislature, not that staff will be doing that, but just
3 sort of develop this idea we are considering -- you
4 know, the plan, part of the plan eventually, you know,
5 at some point here, hopefully soon, is to lower the
6 threshold for the statewide 802 benchmarking program to
7 20,000 square feet. And we might want to try to
8 dovetail that with sort of an initial effort or a
9 coordinated effort on the building performance standard
10 as well. And maybe the time has come for that to do
11 both at once, and in a coordinated fashion. So, you
12 know, just an idea.

13 But with that, I think I'm going to pass the
14 microphone to any of my fellow Commissioners here. I
15 see Commissioner Shiroma and Houck, any questions from
16 either of you?

17 CPUC COMMISSIONER HOUCK: I do have a question.

18 COMMISSIONER MCALLISTER: Great. Go ahead.

19 CPUC COMMISSIONER HOUCK: Well, two actually.
20 One, I wanted to thank Emily and Sara for talking about
21 the affordable housing. And if others had any thoughts
22 about how to incentivize programs where we can get
23 resources for ways to incorporate more affordable
24 housing, I'd be interested to hear others' thoughts.

25 And also, the other question I have is in

1 regards to whether you found that there's any
2 opportunities or challenges given what we've been
3 dealing with, with the pandemic lately, and how that's
4 affected investment or incentives in doing -- doing
5 more, with less space, as we've got more people wanting
6 either flexibility or, because of circumstances, working
7 more from home rather than in the office over the last
8 year, and what your thoughts are there.

9 MS. NEFF: Yeah, I can answer a couple of those
10 questions. I just want to say this is not -- what I'm
11 about to say has nothing to do with Lendlease's
12 affordable (indiscernible) -- or new.

13 So, but what we hear in the conversation amongst
14 operators of affordable housing is that you have a lot
15 of fear that if you basically trigger the need to pull a
16 permit and a building inspection, if you want to, say,
17 fix a leaking roof, then an inspector's going to come
18 and see 800 other, you know, things that need to get
19 fixed and all of the sudden that can't be paid for. And
20 then there's, you know, all sorts of stuff. And so the
21 feeling is let's not, you know, poke the bear,
22 essentially. But that then leads to upgrades not
23 happening. So, it's one of the reasons I actually --
24 you know, favor of this kind of legislation for
25 affordable housing to sort of get over that problem.

1 But also, I think it needs to be a conversation
2 with how buildings and safety are going to deal with
3 those. And I don't have an answer, but I'm saying
4 that's a lot of the issue.

5 The second question was about COVID. So, the
6 environmental community did not slow down because of
7 COVID. Investors did not slow down because of COVID.
8 There's not less programs, less incentives, less
9 anything. There's less people in our buildings, so our
10 data doesn't make any sense.

11 And I think when we talked about datasets, you
12 know, I think honestly it's going to be probably before
13 2020 -- you know, reporting year 2024 before we even
14 have data that means anything. So, I'd be very careful
15 about how to set a building energy -- a building
16 performance standard based on benchmark data taken over
17 these last couple of years.

18 Those of us who operate multifamily have had
19 this increase as people are home all the time, and
20 office use is dramatically down. Everything is very up
21 in the air. But I would say the pressure, the
22 incentives, the programs, the reporting requirements,
23 none of that has blinked an eye. It has just kept
24 going.

25 MR. MAJERSIK: I would agree with what Sara has

1 said. The pandemic has changed occupancy patterns. And
2 I think it's incumbent on the jurisdictions to provide
3 some flexibilities with building owners in view of that.

4 What some of the jurisdictions have done is
5 said, you know, we're going to let building energies
6 multiple years, they can choose from multiple years as a
7 baseline. Particularly, you know, given you've got AB
8 802, and you have pre-pandemic baselines, allowing
9 building owners the option to use a pre-pandemic
10 baseline that represents something closer to full
11 occupancy is a good idea.

12 And really thinking the building flexibility in
13 going forward, and as you're benchmarking against
14 buildings you don't -- you know, you don't want to
15 penalize people for very unusual circumstances.

16 On the multifamily, affordable housing side, I
17 would agree also that it's really important that we
18 focus on that and we focus on benefitting people in
19 affordable housing, and providing the resources to help
20 these buildings improve their performance, and also
21 comply with any law. Rather than just exempting them or
22 holding them to a lower standard.

23 And recognize, you know, some owners like
24 Lendlease have lots of resources, they have great people
25 like Sara to run programs. But a lot of affordable

1 housing owners not only lack money, but they lack
2 capacity to run programs. And so, doing something
3 innovative where you're providing, effectively, like a
4 general contractor that is going to be an option for
5 affordable housing owners that need that, that will do
6 the work and be on the hook for delivering results. And
7 then, keep some of the savings that result from that
8 work.

9 And we did a lot of work with a variety of
10 service providers and others in sketching out how that
11 would work with jurisdictions. And we'd be happy to
12 work with California on that.

13 MS. HATCHER: I'm going to add something else to
14 what everybody said, instead of repeating the great
15 things that were just said. I think that the pandemic
16 has really brought to the forefront the incredible
17 importance of truly integrating indoor air quality
18 management into energy efficiency and facility
19 management.

20 And so, if one of the things that we're all
21 trying to do together is influence HVAC and ventilation
22 improvements, and in these properties, basically that's
23 our opportunity is to integrate those two things.

24 And I think what we have seen as some of the
25 early guidance came out, kind of was pointing toward,

1 you know, increasing energy consumption in terms of the
2 way these buildings were operated.

3 But I think that what we need to do is move
4 indoor environmental quality management into ongoing
5 management just like -- and continuous management just
6 like we are moving energy efficiency into continuous
7 energy efficiency management, and manage the two things
8 in a very integrated way.

9 MR. MAJERSIK: Yeah, I would agree with that.
10 There is a real danger that folks are going to be just
11 making retrofits that will help from a health
12 perspective, which is obviously critically important,
13 but that could cause some energy penalties.

14 You know, the pandemic will drive new investment
15 in ventilation, in heating and cooling systems. And
16 there's opportunities to leap frog, to go through very
17 high efficiency equipment that provides direct outdoor
18 air systems to manned control ventilation, a heat
19 recovery ventilation. All kinds of technologies that
20 can allow us to both have better air quality and have
21 energy efficiency. And the pandemic can be a trigger to
22 drive that, especially if it's combined with building
23 performance standards that are sending a strong market
24 signal.

25 MS. HATCHER: And I'd also like to add that

1 basically investment grade energy audits, or audits have
2 been focused on lifecycle cost effectiveness of energy
3 efficiency improvements. And those audits do not have
4 -- they're essentially blind to carbon, and carbon
5 impact, as well as anything related to indoor
6 environmental quality.

7 So, bringing indicators in to estimate the
8 potential that those -- that the lifecycle cost
9 effective improvements that can be made after an audit
10 need to also think through the carbon impact and the
11 indoor environmental quality impact.

12 COMMISSIONER SHIROMA: Commissioner McAllister?

13 COMMISSIONER MCALLISTER: Go ahead Commissioner
14 Shiroma. Thank you, yeah.

15 COMMISSIONER SHIROMA: Okay, thank you again.
16 Another excellent panel discussion. I'm learning so
17 much. You know on that last point, Katie. if you're in
18 Northern California, oh my gosh, the smoke is
19 horrendous. Indoor air quality is definitely top of
20 mind.

21 And a little shout out for Commissioner
22 McAllister's work on AB 841, on the Schools Energy
23 Efficiency Program, which includes air quality filtering
24 at schools, besides HVAC and so forth.

25 And by the way, also, garbage in, garbage out,

1 you can have the best designed tool but if you don't
2 have good data, how can you trust the results? Very
3 key.

4 My question is for Barbara. Kudos on the far-
5 reaching Climate Action Pla. And my team and I were in
6 Chula Vista pre-pandemic. We were having a public
7 participation hearing at your library. We had an
8 interesting conversation with folks who attended.

9 It had to do with the San Diego Gas & Electric's
10 General Rate Case, the Phase II, how the budget's
11 allotted.

12 And so, my question is in your efforts with
13 multifamily, are you coordinating with San Diego Gas &
14 Electric? This morning we talked about -- or earlier
15 today, earlier this afternoon we talked about the energy
16 efficiency programs, the Low-Income Energy Savings
17 Assistance Programs. There are monies that are going
18 into these efforts for multifamily. Are you tapping
19 into that as a city?

20 MS. LOCCI: Yes, yes. And those are programs
21 that we have always promoted in the city. We have had
22 other programs. I don't know if you heard of the very
23 famous 3B program, which was very efficient here because
24 we used to visit businesses, and educate them on energy
25 efficiency, and they would sign up for the Business

1 Energy Solutions Program, for example. They did direct
2 install.

3 And so, we collaborate with San Diego Gas &
4 Electric all the time and we're always current, you
5 know, on those programs. Yeah.

6 COMMISSIONER SHIROMA: Great. Glad to hear,
7 thank you.

8 MS. LOCCI: Yes.

9 COMMISSIONER SHIROMA: Back to you, Commissioner
10 McAllister.

11 COMMISSIONER MCALLISTER: Thank you very much,
12 Commissioner Shiroma.

13 I have to just riff on that last exchange
14 because I used to live in San Diego and actually worked
15 quite a bit with the City of Chula Vista back in the
16 days of Michael Meacham and Brendan Reed. I don't know,
17 if, Barbara, you were there and overlapped with them.
18 But the thought leadership that's come out of Chula
19 Vista over the decades is really just tremendous.

20 And it's particularly valuable because Chula
21 Vista is a city that faces problems that many, many
22 cities across the nation actually face. Lots of -- some
23 open land, lots of, you know, new construction, new
24 development, land use pressures, and also a lot of
25 marginalized, historically marginalized communities, low

1 income, disadvantaged.

2 So, really, the solutions you're helping to
3 build in Chula Vista really are relevant way beyond your
4 borders. So, that leadership is incredibly valuable.
5 So thank you, particularly to you, Barbara.

6 But I think Montgomery County, also, you kind of
7 speak for yourself in terms of your thought leadership
8 as well, because you're already nationally known. So,
9 but thanks for yours as well.

10 I think, Cliff, do you have any questions, or
11 comments, or sort of what have not we talked about here
12 in this session that you think is important to get on
13 the record here?

14 MR. MAJERSIK: Thank you. This has been a great
15 session. I think, you know, thinking about the needs of
16 affordable housing is really important. Making sure
17 that communities have a seat at the table when designing
18 a policy like this. And that there's adequate resources
19 to help those who need it most, affordable housing and
20 others, as we've talked about.

21 I guess I'd be curious to hear from Sara, you
22 know, what factors she thinks from a building owner's
23 perspective would most impact compliance with building
24 performance standards.

25 MS. NEFF: Yeah. Well, obviously, having -- you

1 know, well, the enforcement mechanism is going to be
2 really critical to incentivize compliance.

3 We want it to make sense, so you heard a lot
4 from Emily, and Katy, and from Barbara as to which
5 metrics are used. I think (indiscernible) is a great
6 one. No need to reinvent the wheel here, that's
7 something that everybody understands.

8 I know there's a lot in market transformations
9 (indiscernible) code. There's a lot of metrics, some of
10 those are more understandable and some not. These
11 things have to be paired with incentives that are
12 usable.

13 And then, anything that can sidestep,
14 essentially, green-leasing issues. So, my previous
15 company, you know, has been a green lease leader since
16 2014, and Lendlease is right in there. In terms of
17 being able to get the data, being able to do anything
18 about, being able to do capital improvements. Laws that
19 come up against issues in green leasing are just going
20 to be harder to comply with, and definitely anything
21 that doesn't use ENERGY STAR Portfolio Manager will also
22 be incredibly difficult.

23 But, you know, we're in California, we
24 understand how to do this. And the other thing I will
25 say is there has been -- how do I say this delicately --

1 but not all of previous legislation around this area has
2 been well enforced throughout the state. And so, it is
3 has created skepticism. Oh, this is this next thing
4 that everybody scrambled on and thought, you know, they
5 were going to have to comply with and then didn't.

6 And then, you know, the next one comes along
7 and, you know, does it feel like a you're crying wolf
8 this time around? And so, I think there is going to be
9 a lot of education to say, no, when we have a statewide
10 building performance standard it's real, it's going to
11 stick, it will be enforced, and to follow that through.

12 Because, you know, from the building owner
13 perspective we've seen quite a few of these come
14 through. Some of them have been meaningful, but not
15 all.

16 MR. MAJERSIK: I would definitely echo that. I
17 mean there's going to need to be resources put in. We
18 can provide information about how much resources. But
19 other jurisdictions, when they've adopted building
20 performance standards, they have had to staff up to not
21 only enforce that, but also do the rulemaking, and do
22 the outreach to the community to make sure that they
23 know about it.

24 I think utilities can play an important role.
25 It's going to be sort of new territory. Obviously,

1 you're talking about a mandate on building owners, but
2 you need to do it in a way that utilities can play a
3 positive role, their resources can help not only with
4 building owners improving their performance, but
5 potentially also with jurisdictions that need additional
6 resources to implement these laws.

7 And, you know, to the extent that you adopted a
8 law and asked localities to take the lead, if you could
9 make the utilities whole, so provide the resources that
10 the localities would need to do that, they could make it
11 a lot more attractive from the locality perspective, and
12 it might really take advantage of state/local synergies.

13 MS. NEFF: It's very meaningful, also, when
14 state and local government buildings comply first, just
15 because there's a lot of lessons learned in that
16 process, and that's the kind of leadership that the
17 building owner community likes to see.

18 COMMISSIONER MCALLISTER: Great. Thanks for
19 that interaction. I guess I did actually have one other
20 question. We're running a little over time nominally on
21 the schedule, but that's okay because I think we don't
22 have a ton of public comments. And also, we do have
23 some Q&A I do want to get to. But we have until 5:00
24 with some open space there, if we want it, and we don't
25 have to use all that time.

1 But I wanted to ask Katy, actually, you know,
2 now that kind of the resource availability seems to be
3 less of an issue at the federal level for the EPA
4 generally, and you know, yay, for Portfolio Manager,
5 hopefully, as well, is there anything -- are there any
6 new partnership opportunities that you see that states
7 and localities can just sort of focus on more
8 concertededly than in the past few years?

9 MS. HATCHER: Well, I think that --

10 COMMISSIONER MCALLISTER: With ENERGY STAR and
11 around Portfolio Manager, yeah.

12 MS. HATCHER: Sure. Yeah, I think it's more of
13 like an expansion into some other arenas. Like, for
14 example, I'm talking with Cal Water Board about, you
15 know, statewide benchmarking and things like that. And
16 so, I would say that there's potentially partnerships to
17 be created with EPA and ENERGY STAR that are not just
18 energy related. So, it's energy and water.

19 And then, there's also the renewable energy, you
20 know, in terms of RECs, and purchasing of green power,
21 and like how does that kind of fit into the framework of
22 what we're doing. And trying to just ensure that
23 everything is really, really coordinated.

24 And I guess another partnership that we're
25 trying to grow with Portfolio Manager is our

1 relationship with public utility commissions as it
2 relates to access to data.

3 One of the issues that's very important and real
4 is trying to get aggregated whole building data, because
5 building owners don't have access, necessarily, to
6 tenant level data. But then, they're potentially going
7 to be held -- required to pay these fines and et cetera,
8 and they don't really have the whole building
9 performance.

10 You know, as Sara pointed out, there's other
11 issues related to that, that I won't go into here.

12 But basically, I think there's stronger
13 partnerships with utilities that we'd like to forge
14 across the country, and public utility commissions is
15 another piece of it.

16 COMMISSIONER MCALLISTER: Great, thanks for
17 that.

18 We do have a number of questions in the Q&A, so
19 let's -- Cliff, do you want to moderate the Q&A? And
20 actually, I see a question from Alex Chase that goes to
21 the discussion we were just having.

22 MR. MAJERSIK: Right.

23 COMMISSIONER MCALLISTER: Why don't we start
24 with that?

25 MR. MAJERSIK: So, Alex asks Katy or me: What

1 metrics can Portfolio Manager support? Can it support
2 tracking of the five metrics in IMT's model building
3 performance standard?

4 So, Portfolio Manager is excellent from an
5 energy and water perspective. It can support the site
6 EUI that we are working with ENERGY STAR on the
7 possibility of normalizing site EUI for business
8 characteristics.

9 It can support the water metric, the water
10 intensity metric.

11 And with a little bit of backend work from a
12 jurisdiction like California, or at local levels, it can
13 support the onsite greenhouse gas emissions metric.

14 And what it won't do is it won't support indoor
15 air quality or coincident peak demand metrics. So,
16 those would currently have to be done outside of
17 Portfolio Manager. But, you know, using Portfolio
18 Manager I think as the compliance mechanism for all the
19 energy and water metrics.

20 And Katy, did you want to add anything on that?

21 MS. HATCHER: Well, I would say that we do have
22 -- we're thinking through the metrics that are currently
23 provided in Portfolio Manager very carefully with our
24 stakeholders across the board. IMT is one. You know,
25 the commercial real estate industry is another. And the

1 state and local policymakers are -- you know, we're
2 trying to put it all together and think through what we
3 can and cannot do, and what actually makes technical
4 sense.

5 And where do metrics, when you start creating
6 them, do they actually lose meaning? Do they actually
7 serve the intent that we're all hoping that they do?
8 What's overkill? I can use a simpler metric instead of
9 creating something really complicated.

10 And so, and then we're also trying to think
11 through what is doable now and what's doable a little
12 bit into the future. And then, what would be doable by
13 the time these long-term final goals are coming into
14 being?

15 And so, with a tool that's so widely used across
16 the country, we really have to think through everything,
17 you know, in terms of the here and now, and what data is
18 available here and now. And then, how does that relate
19 to how everybody will move together into the future when
20 we can bring more metrics potentially online. And then,
21 how does that translate to people having consistency of
22 understanding interim and long-term targets.

23 So, it's actually really incredibly interesting
24 to think about and very challenging at the same time.
25 So, I'm really excited about the pathway that we're

1 going on with this.

2 MR. MAJERSIK: Thank you.

3 Robert Muldoon asked: Is there any debate
4 between using EUI versus greenhouse gas per square foot
5 as a metric for BEPS?

6 Yes, both paths have been used. New York, for
7 instance, uses greenhouse gas. And most other
8 jurisdictions, including the most recently adopted
9 policies, as well as the pending policies are using EUI.

10 Chula Vista uses ENERGY STAR scores, as does
11 Washington, D.C. So, there's some variety there.

12 As Emily referenced, stakeholders have let us
13 know that they really want long-term certainty. And any
14 time a building owner is going to be affected by the
15 decarbonization of the grid or the lack thereof that
16 introduces additional uncertainty, which has been a big
17 complaint about the New York City law. While they have
18 certainty on other levels, because they don't know what
19 the kilowatt hour to greenhouse conversion factors will
20 be in the future, it's introduced a lot of uncertainty
21 and made it difficult for them to make long-term
22 investment decisions.

23 So, that's why a lot of jurisdictions are opting
24 for the site EUI, which is counter intuitive because all
25 these jurisdictions are adopting site EUI as their

1 metric also have greenhouse gas targets. So, the
2 logical thing would be for them to have greenhouse gases
3 as the metric for their buildings. But in deference to,
4 you know, the need for certainty for building owners and
5 a desire to really focus on the buildings themselves,
6 which is what these jurisdictions are more in the habit
7 of regulating, a lot of them are going down the site EUI
8 path.

9 And Emily, did you want to talk about, you know,
10 the feedback that you got from stakeholders?

11 MS. CURLEY: I really think you've covered it
12 pretty well, Cliff. But, yeah, between the certainty,
13 the understandability, and kind of the ease of
14 calculating that for building owners, it's in within
15 their control.

16 I think for us, you know, we do have a carbon
17 neutrality goal, but we're not necessarily looking at
18 BEPS as sort of the only strategy. Right. So, kind of
19 like focus on efficiency, focus on things within a
20 building owner's control. Or, you know, looking at
21 community choice energy and some other sort of grid-
22 related emissions reductions. So, it's kind of one
23 thing at a time.

24 Not that you can't or shouldn't use greenhouse
25 gas metric but, you know, our stakeholders were pretty

1 clear in that and we wanted to be responsive and
2 receptive to that.

3 MR. MAJERSIK: Good.

4 MS. NEFF: Yeah, and I have to say this is a
5 little bit of a hard one for me. Because on the one
6 hand Kilroy was carbon neutrally operating through its
7 own power purchase agreements, it had batteries, all
8 that stuff, none of that factors in when we're talking
9 about building performance standards. Lendlease's
10 multifamily portfolio is already carbon neutrally-
11 operating, the whole Americas Region has to get there by
12 2025. And the whole company by 2030 and the absolute
13 zero by 2040. So I have my work cut out for me.

14 But yeah, there are certain things that's become
15 disincentivized. You know, we've heard a lot about
16 battery storage today. That doesn't factor in to site
17 EUI. Some folks earlier talked, I believe Emily talked
18 about, you know, onsite PV. Does that factor in? It
19 doesn't always.

20 And so I think you have to be careful what
21 doesn't get to, you know, be in the sandbox because then
22 you're much less likely to care about those behaviors.

23 You know, for example I know that battery
24 storage is really important for the greening of the
25 grid. You know, there's not an incentive here to make

1 that happen.

2 MS. HATCHER: I was just going to say that we're
3 saying BEPS, so what does the E stand for? Does it
4 stand for energy? Is it environmental? Because
5 building performance standards is, you know, what I
6 think we're really kind of circling around because
7 sometimes it could be a water performance standard.

8 So, I think that it's -- if the E stands for
9 environmental, then maybe it captures it all, I don't
10 know.

11 MS. NEFF: Yeah, and like what about an electric
12 building? We've also heard about electrification, we're
13 big believers in electrification here at Lendlease.
14 That doesn't -- again, you know, a building that has the
15 same EUI using no gas versus some gas, I think there's a
16 difference of how we would feel about the value of those
17 two buildings in terms of meeting the state's standards.

18 I think, you know, there's other pathways that,
19 you know -- there's a lot of quirks. And unfortunately,
20 what the building owners hate is quirks. They want
21 certainty but, yet, if you go with certainty, then
22 you're going to disincentivize a lot of the behaviors
23 that we'd really like to see.

24 MR. MAJERSIK: And in our model ordinance we've
25 tried to address both the certainty and the

1 electrification with having two metrics. One being the
2 site EUI and the other being onsite greenhouse gas
3 emissions, and setting that at zero at some point in the
4 future to say, look, all buildings are going to be
5 expected to be -- not built burning any fossil fuels at
6 some point. But you're going to have a long ramp
7 because we know that's going to be a difficult
8 transition and we want to give building owners the
9 ability to make that transition at the time that works
10 best for them, given tenant turnover, or equipment end
11 of life, and mortgage refinance, and other variables
12 like that.

13 COMMISSIONER MCALLISTER: It looks like we have
14 a couple other questions.

15 MR. MAJERSIK: Alex asked a question and I think
16 this one may be one that would take a lot of
17 conversation. But he asks: One concern is that BPS --
18 and we use the term BPS, by the way, to describe B-P-S.
19 So, the e is kind of pronounced, even though it doesn't
20 appear in B-P-S.

21 One concern is that BPS will increase the
22 baseline for incentive program rules. How are
23 jurisdictions making sure that a BPS doesn't negatively
24 impact building owners' ability to take advantage for
25 utility or program administrator incentive programs?

1 Well, I think looking at this at the state level
2 gives you a lot of ability that you wouldn't have
3 potentially have at the local level, because the state
4 is regulating those utilities.

5 Washington State, for instance, when it passed
6 its BPS it actually provided \$80 million to the
7 utilities to spend to help building owners comply with
8 its BPS before the deadline, so early compliance.

9 But, you know, any BPS law that is passed at the
10 state could specifically direct utilities to take
11 supporting actions and give them attribution, with an
12 appropriate sort of long runway.

13 So, I think, you know, if you're mandating
14 energy savings by building owners, you want to give the
15 utilities some way to contribute to those savings, and
16 get attribution for it, and not be in a position, which
17 I think Alex is concerned about in his question, of
18 potentially just withdrawing support from the market for
19 energy efficiency. Because, you know, traditionally if
20 it was mandated, utilities had trouble getting
21 attribution.

22 So, I think that's a really important point.
23 We've got to think about this holistically, with
24 utilities being incented to be part of the solution.

25 MS. CURLEY: Yeah, and at the local level I'll

1 say that we're careful about including prescriptive
2 measures in our policy, right. So, we're not
3 controlling the PSC or how these things are set. So,
4 you know, that is a consideration with looking that, you
5 know, if we do mandate some sort of prescriptive list of
6 projects, you know, we could be running into that issue.
7 So, we're trying to stay away from that as a compliance
8 pathway.

9 MR. MAJERSIK: The last question in the Q&A, and
10 I don't have the answer to this, so I hope someone else
11 does, but: Was there a presentation about pairing the
12 ISA program with self-generation rooftop solar as a one-
13 stop measure for low-income communities?

14 And Senait has written that he's had to drop off
15 for another meeting during this presentation.

16 COMMISSIONER MCALLISTER: I imagine he's talking
17 about the ESA program, the Energy Savings Assistance
18 Program from the PUC, not the ISA program.

19 MR. MAJERSIK: Yeah.

20 COMMISSIONER MCALLISTER: Yeah.

21 COMMISSIONER SHIROMA: So, we at CPUC, we are
22 looking to un-silo programs to look at connectivity
23 between our various programs. And we -- I am not
24 recalling exactly what we said about solar in our
25 recently voted out CARE, FERA, ESA decision, all these

1 acronyms. It's our low-income energy decision for
2 discount energy bills and then the weatherization and
3 appliances in homes, hardening our efforts.

4 But what we're looking to do is that if there
5 are -- it's really the solar efforts of the IOUs that
6 can be paired with ESA if there's an opportunity to do
7 that in the low-income communities, multifamily and so
8 forth. But we are looking to encourage that and seek
9 that out.

10 Just do a search of our decision to see exactly
11 what we said about it. But we definitely have a core
12 value, pairing of that. I'll also do a shout out for
13 another active proceeding. It's the financing
14 rulemaking, where we're looking at, for those who aren't
15 necessarily income-qualified for the ESA program, to
16 look at how we can get the word out about the various
17 financing options that are out there, whether it is for
18 energy efficiency, or microgrids, or storage, or solar.
19 So, that is also in our docket. Thanks for the
20 question.

21 MR. MAJERSIK: I think that was the last of the
22 Q&A questions.

23 COMMISSIONER MCALLISTER: Well, great. Thanks
24 so much, Cliff. And really, this panel has been I think
25 our -- maybe our longest and our heftiest one of the day

1 perhaps. But this is really exciting policy terrain for
2 California.

3 Because I think as we're laying the foundation
4 for increasingly muscular sort of action-oriented
5 policies, you know, with all the arrows pointing in this
6 particular direction really across the board, in
7 transportation and buildings, and every sector of the
8 building stock, and industry, and agriculture. You
9 know, I think there's increasing -- there ought to be, I
10 think there will be increasing appetite for programs
11 like this that make sense and actually ask of the
12 building owners and operators that they take action.

13 And I think we've heard that that needs to be
14 accompanied with a certain level of competence and
15 consistency, and as many resources as we can kind of put
16 into it, in the sense of both sticks and carrots. And
17 so, as many carrots as we can sort of put in the mix I
18 think is what we're hearing we need to do. And really
19 listen to stakeholders and really make the programs
20 reflect those constraints

21 So, really appreciate the thoughtfulness and the
22 leadership, you know, at the local government level, at
23 the -- sort of from the private sector. You know, Sara,
24 you always bring a really great perspective there. And
25 also, you know, from the sort of technical support side

1 of things Cliff and Katy, really your leadership is
2 really incredible, and sustained over a long time. So,
3 we're all benefitting from that effort. So, thanks for
4 being with us everyone.

5 And with that, I think we will do the public
6 comments, if there are any. Rosemary, are you still
7 here to facilitate that?

8 MS. AVALOS: Yes, yes, Commissioner McAllister.
9 Commenters, please allow one person per --

10 COMMISSIONER MCALLISTER: Actually, Rosemary,
11 can I step in?

12 MS. AVALOS: Yes.

13 COMMISSIONER MCALLISTER: I'm sorry, I think I
14 might have jumped the gun. Did any of my colleagues on
15 the dais have any other questions they want to ask? I
16 sort of didn't see evidence of that, so I kind of moved
17 ahead. But I wanted to just check one last time.

18 COMMISSIONER HOUCK: I don't. It was a great
19 panel and I --

20 COMMISSIONER MCALLISTER: Okay, great.

21 COMMISSIONER HOUCK: -- really think the
22 afternoon session was great, but I don't have any
23 additional questions. But thank you.

24 COMMISSIONER MCALLISTER: Great. Thank you,
25 Commissioner Houck. I really appreciate you and

1 Commissioner Shiroma being with us the whole day. Well,
2 you being with us the whole day and Commissioner Shiroma
3 for the afternoon. So, really appreciate your
4 collaboration here, it means a lot. And really, it lays
5 a great foundation for us jointly in deciding what our
6 policy direction is and coordinating all the different
7 initiatives, of which there are many. So, thanks for
8 your leadership.

9 Okay, so back to you, Rosemary. Thanks for
10 bearing with me there.

11 MS. AVALOS: Thank you, Commissioner McAllister.

12 Now, again, commenters please allow one person
13 per organization to make a comment. And comments are
14 limited to 3 minutes per speaker.

15 I'll first start with folks using the raised
16 hand on Zoom. Let's see, and I don't see any raised
17 hands on Zoom.

18 And now, I'll move on to -- oh, I do see one.

19 Nehemiah, your line is open. Please state your
20 name, spell your name, and name your affiliation if any.
21 Go ahead, your line's open, Nehemiah.

22 MR. STONE: Yeah, my name's Nehemiah Stone,
23 Stone Energy Associates. I was a little concerned
24 almost all day long hearing these long timelines. And I
25 know Andrew that you were hurting by saying planning out

1 to 2040, 2050 because that establishes some certainty
2 for folks. But we don't have that kind of time. And I
3 think that now that we have all the tools we need to
4 move the standards forward. And given the urgency that
5 the latest IPCC report has shown, I wonder if it makes
6 more sense to really push the boundaries of what the two
7 Commissions' guard rails are, and really move to make a
8 much bigger difference in this climate crisis. Thank
9 you.

10 MS. AVALOS: Thank you for your comment.

11 Now, I'll go ahead and move on to the phone
12 lines. And a reminder to those on the phone to dial *9
13 to raise your hand and *6 to mute. I'll give a few
14 seconds for those on the phone line, if they want to
15 raise their hands.

16 Okay, seeing that there are no raised hands,
17 that completes public comment. I turn now to
18 Commissioner McAllister.

19 COMMISSIONER MCALLISTER: Thank you, Rosemary.
20 And I really have to say I appreciate that comment from
21 Nehemiah Stone. And I, you know, couldn't agree more.
22 The conversation on that really has to be -- to do
23 something, you know, sooner and harder. And I think,
24 you know, certainly the long planning horizons in no way
25 indicates taking the foot of the pedal and I think you

1 understand that.

2 But the Legislature, you know, would really be a
3 key factor in setting goals and enabling the agencies,
4 both of our agencies, and I would throw in there the Air
5 Resources Board, and Department of Water Resources, and
6 potentially others to really coordinate and have a
7 concerted, streamlined effort across agencies and
8 throughout the state based on goals that the Legislature
9 would likely set in conformance with the aggressive
10 carbon goals we already have in the state.

11 And so, anyway, I would love to have that
12 conversation and appreciate you bringing it up,
13 Nehemiah.

14 So, with that I think we're done for the day.
15 This has been an incredible day. I won't, again,
16 summarize what we've heard because there was a lot of
17 substance. But you'll all be able to relive it online,
18 because it has been recorded.

19 Really appreciate all of the panelists, and the
20 moderators, and the keynote again from Jessica
21 Granderson.

22 I was looking at the afternoon, and will just
23 note sort of the diversity of those panels and I think
24 that's really kudos to staff for putting these together.

25 And I also want to thank my advisors Bryan

1 Early, Bill Pennington, Fritz Foo for helping facilitate
2 a lot of this.

3 Just to point out the gender diversity as well,
4 which in the energy efficiency realm we don't always
5 get. We had a woman moderator for the first panel in
6 the afternoon with four male speakers. And then, we had
7 a male moderator -- there were three male speakers,
8 pardon me. And then in the next panel we had a male
9 moderator with four female speakers.

10 So, I want to just appreciate that this is a
11 really broad and diverse endeavor. And I think we need
12 to, you know, make sure that our public facing work
13 always shows that diversity because we're all stronger
14 for that, and really is worthy of intense focus. It
15 doesn't just happen, we have to be very intentional
16 about that. So, I've appreciated that all day. So,
17 just to thank staff for the development of all the
18 materials today.

19 So, and Heather and your team just thank you
20 again for that.

21 I want to -- before we wrap up, I want to invite
22 my fellow Commissioners to make some closing comments,
23 if they would like.

24 COMMISSIONER SHIROMA: Well, thank you,
25 Commissioner McAllister, outstanding afternoon. It

1 really highlights that there are many more opportunities
2 in energy efficiency in the role in building
3 decarbonization. And not only are there more
4 opportunities, there is substantial need.

5 I was particularly struck by the California
6 efforts in the Coachella Valley, in Chula Vista, and of
7 course nationwide.

8 So, I look forward to working with you and your
9 team. Congratulations on an excellent set of panels
10 this afternoon. Thank you.

11 COMMISSIONER MCALLISTER: Thank you,
12 Commissioner Shiroma. Congratulations to all the
13 initiatives you're leading as well. Thanks for being
14 here.

15 Commissioner Houck?

16 COMMISSIONER HOUCK: Yes, I just want to say
17 today was very informative. I enjoyed listening to all
18 of the panelists. I want to thank you, Commissioner
19 McAllister, for all of your work in this area, and
20 Commissioner Shiroma for leading up the efforts at the
21 PUC.

22 There are still a lot of challenges, especially
23 on the decarbonization and buildings with equity issues,
24 and so I think that we're in a position to meet those
25 challenges. We have the tools. We need to continue

1 that work. And I am really inspired by the
2 opportunities that I had heard today, and the various
3 programs, and I'm looking forward to seeing the progress
4 as we go forward. So, thank you.

5 COMMISSIONER MCALLISTER: Well said. Thank you
6 very much. Yeah, inspiration is I think the word that I
7 would use as well. This was really tremendous and so
8 many creative people and creativity rising to the
9 challenge that we have ahead of us, which is really
10 massive as we all know.

11 So, with that I think we'll just point out the
12 information on the screen is for submitting comments.
13 They will be due on September the 7th. And there's the
14 docket information.

15 We do have -- just again, we do have another
16 workshop in the building decarbonization track on
17 Thursday. And that will be looking at embodied carbon,
18 there we go, and refrigerants. Then August -- well, all
19 the IEPR workshops are there. I would highlight
20 September the 10th as quality installation of
21 decarbonization technologies, which is also in the
22 building decarb track. But we have natural gas,
23 forecasting, and reliability workshops throughout this
24 summer. So, the heavy lifting of the IEPR is really
25 here upon us. And all your -- all the stakeholders, I'm

1 talking to you. Thanks for your participation and
2 contributions. This is a massive effort, it really
3 mobilizes a big chunk of the Energy Commission and lots
4 of stakeholder input, which really is the lifeblood of
5 producing a good product and getting all of the sort of
6 the content both developed and right through the
7 development of the IEPR document itself, and the review
8 out there in the world.

9 So, a big endeavor and we really appreciate
10 everyone's participation.

11 And again, just a last thought, the
12 collaboration across the agencies is as deep and broad
13 as I have certainly seen it in my time at the Energy
14 Commission. But I gather, talking with previous
15 Commissioners that served prior to me that this is
16 really unique in the history of the agencies, actually
17 in the history of California. And I think that's a
18 function of how urgent the challenges we're being asked
19 to address actually are in part. But it's also just a
20 testament, I think, to the governors who have appointed
21 this group of Commissioners that just, you know, there's
22 a lot of collaborative spirit in the room here, the
23 virtual room.

24 So, hopefully, at some point here pretty soon
25 we'll be in a real room together. But until then, we'll

1 keep doing it virtually. But really thank you for all
2 your attention everyone.

3 And we, I think, are finished for today unless I
4 missed something, Heather. You want to close us out.

5 MS. RAITT: No, you did a great job as usual.

6 COMMISSIONER MCALLISTER: Oh, thanks.

7 MS. RAITT: Thank you for a great day.

8 COMMISSIONER MCALLISTER: Yeah, thanks everyone.
9 have a great rest of your day and appreciate it. Take
10 care. We are adjourned for the day, thanks a lot.

11 (Thereupon, the Workshop was adjourned at
12 4:48 p.m.)

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