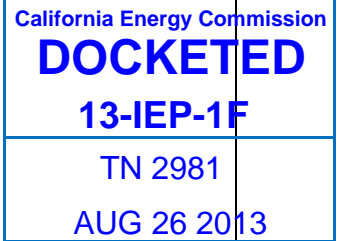


BEFORE THE
CALIFORNIA ENERGY COMMISSION



INTEGRATED ENERGY POLICY REPORT
LEAD COMMISSIONER WORKSHOP
THE DEFINITION OF ZERO NET ENERGY IN
NEWLY CONSTRUCTED BUILDINGS IN CALIFORNIA

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

TUESDAY, JULY 18, 2013

9:00 A.M.

Reported by:
Kent Odell

APPEARANCES

Commissioners

Commissioner Andrew McAllister
Commissioner David Hochschild

Staff

Suzanne Korosec, IEPR Lead
Patrick Saxton, Advisor

Presenters

Ed Mazria, California Energy Commission
Peter Turnbull, Pacific Gas & Electric
Manuel Alvarez, Southern California Edison
Martha Brook, California Energy Commission
Cathy Fogel, Public Utilities Commission

Public Comment & Questions

Michael Day
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Charles Eley
Mike Keesee
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Ramirez Nanamuti
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John McHugh
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Brandon De Young

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Lead Commissioner

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P R O C E E D I N G S

JULY 18, 2013

9:00 A.M.

MS. KORESEC: I'm Suzanne Korosec. I manage the Energy Commission's Integrated Energy Policy Report Unit and welcome to today's IEPR Workshop on the definition of net zero energy in newly constructed buildings in California.

A couple of housekeeping items before we get started. Restrooms are in the atrium out the double doors and to your left. Please be aware that the glass exit doors near the restrooms are for staff only and will trigger an alarm if you try to go out the building that way.

We have a snack room on the second floor at the top of the atrium stairs under the white awning.

And finally, if there's an emergency and we need to evacuate the building, please follow the staff out the building to the park that's kitty corner to the building and wait there until we're told that it's safe to return.

Today's workshop is being broadcast through our WebEx conferencing system and parties do need to be aware that you are being recorded. We'll post the audio recording on our website a

1 couple of days after the workshop and we'll post
2 a written transcript in two to three weeks.

3 In terms of context for today's
4 workshop, Public Resources Code requires the
5 Energy Commission every two years to assess major
6 energy trends and issues, including those related
7 to energy efficiency, and specifically calls out
8 the need to identify policies to achieve energy
9 efficiency potential in California.

10 California's energy agencies have
11 adopted a goal of achieving Net Zero Energy for
12 new buildings by 2020 and for commercial
13 buildings by 2030, and the Energy Commission is
14 evaluating how to incorporate that goal into our
15 building standards.

16 The 2013 IEPR Scoping Order identified
17 Zero Net Energy as one of the topics that would
18 covered in this IEPR cycle. And today's workshop
19 focuses on the definition of ZNE as it applies to
20 newly constructed buildings.

21 For our agenda today we'll begin with a
22 presentation by Ed Mazria on opportunities and
23 challenges associated with California's Zero Net
24 Energy goals, followed by presentations by
25 Pacific Gas & Electric Company and Southern

1 California Edison.

2 We'll then have a joint staff
3 presentation from the Energy Commission and the
4 Public Utilities Commission that talks about
5 current efforts to define Zero Net Energy, some
6 of the challenges that involves, and key findings
7 from some ZNE studies.

8 We'll then open it up for public
9 comments, at which point we'll take comments
10 first from those of you in the room, followed by
11 those participating in the WebEx, and then
12 finally the people who are on the phone only.

13 For those of you in the room, please
14 come up to the microphone at the center podium to
15 make your comments so that the people on WebEx
16 can hear you and so that we capture your comments
17 on the transcript.

18 It's also helpful if you can give our
19 court reporter a business card either before or
20 after you speak, so that we make sure that your
21 name and affiliation are spelled correctly in the
22 transcript.

23 For WebEx participants, please use the
24 chat function to tell our coordinator that you'd
25 like to make a comment.

1 And phone-in only participants, we'll
2 open all the phone lines after we've taken
3 comments from the folks in the room and the WebEx
4 participants. And for those of you on the phone
5 only, please keep your phone muted unless you
6 intend to speak, otherwise we get a feedback on
7 our lines.

8 We're also accepting written comments on
9 today's topic until close of business August 1st.
10 And the notice for today's workshop, which is out
11 on the table with the handouts and also on our
12 website, explains the process for submitting
13 written comments to the IEPR docket.

14 So with that, I will turn it to
15 Commission McAllister.

16 COMMISSIONER MCALLISTER: Right. Well,
17 thank you very much. I'm looking forward to a
18 great workshop this morning, so it's a half-day
19 workshop so I mean I have to say a nice little
20 reprieve for me from having how many all-day
21 workshops have we had in the last three weeks on
22 IEPR.

23 Let's see. To my left is Patrick
24 Saxton, my advisor on these issues, on all things
25 energy efficiency really. And at some point

1 we'll likely be joined by Commissioner
2 Hochschild, so hopefully he'll be able to spend
3 the majority of the time with us, or at least a
4 good chunk.

5 I just wanted to kind of frame this and
6 let people know what we're trying to accomplish
7 here and frankly what we're not trying to
8 accomplish here.

9 You know, first of all, kind of we know
10 2020 is almost upon us, right? As a practical
11 matter, it'll be on us really before we know it.
12 And now that we actually have a new construction
13 market, we have a housing market that's much more
14 robust than in the recent past. New
15 development's picking up. Many of you are
16 involved in the construction industry, certainly,
17 and know this probably better than I.

18 You know, currently much in the new
19 construction pipeline is projects that were
20 started prior to the housing bust, but that won't
21 be the case for very long. New developments have
22 a timeline of three to five years, sometimes
23 longer, which basically puts us pretty close to
24 2020.

25 So it means that those coming online in

2020 may already be a twinkle in some developer's eye, right? So we really need to be laying the playing field for this very clearly, and in 2020 these homes will need to be ZNE, meaning in the most practical sense that they'll have to conform to 2019, assuming we are on track for that, Title 24, California Building Efficiency Standards.

8 So we're here to discuss the definition
9 of Zero Net Energy for policy purposes. It
10 sounds simple, a building that produces as much
11 energy as it consumes. And
12 we have a lot of technical information, we have a
13 lot of understanding of the marketplace, and we
14 can always have more, but there's a good basis
15 for discussion here and there really needs to be
16 because, as I said, 2020 is coming down the pike
17 pretty quickly.

18 So a few things we're not doing today.
19 We're not determining the future of net energy
20 metering; let me be very clear about that.
21 That's the role of the Legislature and the
22 subsequent appropriate implementing agencies and
23 that really mostly does not include the Energy
24 Commission.

25 We're not doing rate making. The CEC

1 does not do rates. We don't have that competence
2 or that mandate. We do look at the value of
3 energy in time-dependent valuation terms, and
4 this certainly relative to rates I think it has
5 some additional stability over time, but it too
6 does change, it too does change and will change
7 with the evolving resources mix and T&D
8 infrastructure, etcetera, so we're not in a rate
9 making discussion here.

10 We're also not really debating the
11 wisdom of Zero Net Energy buildings as a state
12 policy goal. It is our policy goal. So we're
13 trying to be surgical here, we need a definition
14 so that we all know where we're aiming, so given
15 that it is the policy goal, so let's develop and
16 adopt a definition. That's really what we're
17 trying to accomplish here today.

18 We're lucky to have the lead staff from
19 both Energy Commission and the PUC here today.
20 They've been busy on this topic and I think have
21 made a lot of progress getting us towards a
22 definition. We're going to hear about that
23 today. I'm very excited to sort of see the
24 latest.

25 And bottom line, the proximate need here

1 is for a definition of ZNE that can stand the
2 test of time without presuming to know exactly
3 what markets for specific technologies will do in
4 the future, is simple enough to be understandable
5 and enforceable, and provides paths for
6 compliance in particular cases where self-
7 generation options are limited or overly costly.
8 We need a functional definition that the
9 marketplace can actually use.

10 So I want to thank everybody for coming,
11 particularly the IEPR staff, Suzanne and the team
12 again. They keep knocking it out of the park
13 here and keeping the trains running on time and
14 it's quite a heavily loaded freight train here at
15 this point.

16 And certainly to the building staff and
17 the PUC staff as well that's working on this
18 topic together, I know that they have been really
19 putting in a lot of hours and time and slogging
20 through the tough issues here, so I'm really
21 looking forward to the day and let's get started,
22 so I'll pass it back to Suzanne.

23 MS. KORESEC: All right. Our first
24 speaker is Ed Mazria. He's going to be doing his
25 presentation via WebEx. So Lynette, is he on?

1 Ed, can you hear us?

2 MR. MAZRIA: Yes, I can. Can you hear
3 me?

4 MS. KORESEC: We sure can, so go ahead.

5 MR. MAZRIA: Okay. Let me -- hold on
6 one second. Okay, do you see the first slide
7 that says "California's Commitment"?

8 MS. KORESEC: No, we do not. You might
9 want to hit "Share Desktop."

10 MR. MAZRIA: Hold on one second. Okay.
11 Do you see it now?

12 MS. KORESEC: No, not yet.

13 MR. MAZRIA: Okay. Let me do one other
14 thing here, oh I'm sorry. Microsoft PowerPoint,
15 there we go. Do you see it now?

16 MS. KORESEC: We don't have it on our
17 screen, but it's apparently showing on the WebEx,
18 so.

19 MR. MAZRIA: Okay, shall I, let's see --

20 COMMISSIONER MCALLISTER: Is that a
21 problem on our end or on his?

22 MS. KORESEC: Yeah, I think that's a
23 problem on our end, so yeah we're contacting our
24 IT folks right now. So if you want to just go
25 ahead and maybe start on your intro while we're

1 trying to deal the technical stuff on our end?

2 MR. MAZRIA: Okay, so it's on the WebEx
3 then?

4 MS. KORESEC: Yes, it's showing on the
5 WebEx.

6 MR. MAZRIA: Great. Okay, so the title
7 of this presentation is California's Commitment.
8 And initially I want to talk about the goals of
9 California's commitment Zero Net Energy for
10 residential buildings by 2020 and Zero Net Energy
11 for commercial buildings by 2030. And the reason
12 that these targets and these goals are so
13 important, is because they have global
14 implications. So I'm going to talk about that
15 first and then I'll discuss a definition and how
16 to meet those targets.

17 MS. KORESEC: And just so you know, we
18 are seeing your slides now so it's okay.

19 MR. MAZRIA: Okay, great. So why does
20 what California does with these targets have
21 global implications? So I want to look at the
22 big picture for a minute.

23 This is global energy consumption today.
24 We use globally about 542 quadrillion Btus or 542
25 quads. Fossil fuels provide about 452 of those

1 quads, hydro supplies about 42 quads. All the
2 sun, wind and biomass in the world today supplies
3 about 19 quads and nuclear, we have about 437
4 plants globally and they supply about 30 quads.

5 If we project out these are the
6 projections: out to 2030 we'll need about an
7 additional 180 quads to power the world, so it
8 looks like we're going to be going up roughly 722
9 quads. Now, these numbers change on an annual
10 basis depending upon what's going on, but this is
11 the latest projections that we have.

12 And the projections are that 122 quads
13 of those 180 quads are projected to be supplied
14 by fossil fuels, hydro another 21 quads of that
15 180 probably mostly in Southeast Asia. Sun, wind
16 and biomass is expected to double to about 19
17 quads. And we're expected to increase our
18 nuclear plants up to about 650 plants, mostly
19 again in Southeast Asia, and will add another 17
20 quads. So that's what the picture looks like.
21 So that's what the picture looks like.

22 Now, there have been some studies
23 recently that I've just seen that indicate that
24 sun, wind and biomass might be quite a bit more
25 than 19 quads, it might even double that number.

1 But even if it doubles or triples that number,
2 you look at this picture and it's not a pretty
3 picture for our climate change or reducing our
4 fossil fuel consumption globally.

5 So the opportunity is really on the
6 demand side of the equation. And the reason is
7 that by 2030 there'll be another 1.6 billion
8 additional people that will live in cities
9 worldwide, so again we're looking at the global
10 picture here. By 2030 that is going to roughly
11 equal about 900 billion square feet of new and
12 tear down and rebuild buildings globally in urban
13 areas.

14 To give you an idea of what 900 billion
15 square feet is, if we took the entire United
16 States and scraped it clean: no buildings, no
17 buildings in California, no buildings in New
18 York, no buildings in Las Vegas, Nevada, just
19 scraped the U.S. clean and then rebuilt it
20 exactly the way it is today three and a half
21 times over, that's 900 billion square feet. So
22 in the next two decades we will literally rebuild
23 the world.

24 So where is all that building going to
25 take place? This is actually a critical to

1 understand the growth in building construction
2 and California's role in all this? About nine
3 percent of that is going to take place in all or
4 back in the Middle East. These are projections
5 again, by the McKinsey Global Institute. About
6 another nine percent in Latin America, India
7 itself will be responsible for about nine
8 percent. Other emerging nations, mostly
9 Southeast Asia, will be responsible for about
10 twelve percent.

11 The U.S. and Canada and mostly obviously
12 the U.S., the projections will be responsible for
13 about 15 percent of that total gross over the
14 next two decades and obviously China is critical,
15 it's about 38 percent. But between China and the
16 U.S. you have over 50 percent and if you includes
17 the rest of Southeast Asia you're well over,
18 you're about 65 percent of the total construction
19 in the world. That's critical, because the U.S.
20 influences what happens in China. So you have a
21 majority of the growth happening between those
22 two areas.

23 So if we look at where California is
24 located obviously it's on the Pacific Rim. And
25 many of our major architecture, engineering,

1 building firms located on the West Coast are also
2 obviously located in China. So there is a big
3 influence between what happens in California that
4 influences to some degree what is going to happen
5 in China. And what happens in those two
6 countries obviously influences what happens
7 around the world.

8 So in order to come up with a definition
9 of Zero Net Energy there were a number of
10 elements we looked at. And again, this is just a
11 proposal for you to consider.

12 You know what the definition is for
13 newly constructed residential and commercial
14 buildings. And we understand and we've come to
15 understand also, just by our own experience, that
16 it really should be one definition of ZNE to not
17 confuse the marketplace. It should be simple,
18 understandable, everybody understands it then
19 this is where we're headed.

20 We know that for California it's going
21 to obviously need to incorporate the societal
22 value of energy, which is embedded in the time
23 dependent value of energy, and that in order for
24 it to succeed it must be fail proof. That means
25 it must be a path for all buildings, the

1 definition must be a path for all buildings to
2 meet Zero Net Energy without a burdensome
3 bureaucratic or administrative nightmare on
4 figuring out which buildings are going to meet it
5 and which buildings aren't going to meet it.

6 So given all that, we looked at that and
7 so a definition that we would propose and put
8 before you, obviously for consideration and
9 discussion, is that Zero Net Energy is a newly
10 constructed building that meets California
11 Building Energy Efficiency Standards, and I'll
12 define that in a minute. And the value of onsite
13 or offsite renewable energy equals the value of
14 the energy consumed by the building annually.
15 The emphasis will be on the value of onsite
16 energy, making it a lot more lucrative to do that
17 than offsite energy. And I'll discuss that now
18 in a second.

19 So what do we mean by building energy
20 efficiency standards in the definition of Zero
21 Net Energy of getting to that by 2020? And what
22 we understand that to mean is that a building
23 built in 2020 would meet roughly a California
24 HERS minimum rating, of a HERS 30.

25 And that is really a prescriptive

1 requirement, so if you're going to design or
2 build a building that meets a ZNE definition your
3 efficiency standard would be that it get to at
4 least a HERS 30 or below, so that then onsite
5 renewables are not burdensome. And that those
6 energy efficiency standards obviously optimize
7 energy efficiency, their requirements and also
8 demand response.

9 And that should probably happen by the
10 Title 24 updates in 2016 that would incorporate
11 time dependent values. So by 2016 that code
12 update, which then would go into effect in 2017,
13 should roughly get one to about a California
14 HERS, so minimum California HERS then.

15 And then in order to meet the Zero Net
16 Energy definition you would incorporate onsite
17 renewable energy but TDV valued, and this is
18 important, to offset any of the remaining energy
19 consumed after you've implemented the minimum
20 efficiency standards or better. And if it's TDV
21 valued that means that you're getting a lot more
22 value per kilowatt or Btu generated to offset the
23 amount of remaining energy that you would use.
24 And that makes it pretty lucrative to go that
25 route and/or if you would be able to purchase

1 renewable energy to offset the remaining energy
2 consumed after efficiency, but that would be Btu
3 for Btu so you're not getting any additional
4 value for that energy.

5 And it should be a lot more expensive
6 than incorporating onsite renewables where you do
7 get the time dependent value, especially if
8 you're doing portable takes and it's during the
9 daytime and during peak loads.

10 And there are other ways to make the
11 purchased energy between now and 2020 a lot more
12 expensive than onsite. One would see how onsite
13 renewable energy comes down in price between now
14 and then and there could be either incentives on
15 one end or not incentives on the other end to
16 make purchasing a little more expensive.

17 So what you're doing is you're valuing
18 onsite renewables, so that you incorporate the
19 notion of purchasing renewables for all those
20 cases where someone can't meet the targets by
21 incorporating onsite renewables. A shaded site,
22 there's a tree on the site, it's an old tree or
23 you want to locate the building on one part of
24 the site and not the other part of the site. But
25 you make it lucrative to really look at onsite

1 renewables first. This way you alleviate either
2 a bureaucratic or administrative nightmare in
3 figuring out per density -- for all the barriers
4 for generating onsite.

5 I mean, there would be so many different
6 situations that you would need quite a bit of
7 staff at the local level to figure out which ones
8 need it, which ones don't need it, how you really
9 incorporate that into codes. This eliminates all
10 that and eliminates all that expense by the way.
11 And so once you add together the building energy
12 efficiency standards and the renewable energy
13 requirement you would then equate to a California
14 HERS rating of zero.

15 So on the scale of the California HERS
16 rating scale the 2008 T24 is rated at about a
17 California HERS 100. And my understanding is
18 that the 2013 T24, which will be implemented in
19 2014, would get to about a HERS 75, maybe even
20 greater. I've seen some numbers that are around
21 80 or maybe even a little higher than that, but
22 it's going to fall somewhere in that range.

23 And then what we would recommend, again
24 these are recommendations that the 2016 Title 24,
25 which would go into effect in 2017 would get you

1 down to a HERS 30. So that would be essentially
2 a ZNE ready code. That would be getting you
3 ready for 2020 and then in 2020 it would be the
4 2019 code. That would incorporate the 2016 Title
5 24 prescriptive requirements getting one to a
6 HERS 30 and that would be the prescriptive
7 requirements plus the renewable energy either
8 onsite or the much more expensive option, which
9 would be purchasing would get you to a true Zero
10 Net Energy building as by the definition that we
11 propose.

12 Now the challenge of course is going to
13 be, and we're getting close to 2020, that the
14 closer we get what you want to try to do is
15 reduce any barriers to obviously getting to Zero
16 Net Energy, so that you eliminate most of the
17 pushback that might occur.

18 We know from experience that the first-
19 time home buyer's tax credit, the \$8,000 tax
20 credit between 2009 and 2010, that went over
21 about an 18-month period, about 303,000 people
22 took advantage of that tax credit. So what we
23 would propose is that there be some incentive,
24 and we just said it here for the purposes of
25 discussion at \$8,000, because we know a lot of

1 people will take advantage of it purchasing a
2 home. And we said, okay, what about an \$8,000
3 home buyer incentive for purchasing a new
4 California ZNE home and have that program go over
5 around be established over a three-year period
6 somewhere between now and 2020? So that the goal
7 is to get at least 10,000 new ZNE homes built and
8 purchased incorporating only onsite renewables,
9 by the way, in California so that you have
10 already ZNE buildings going up and that reduces
11 any kind of pushback.

12 Now the incentive, and we've seen it
13 done quite a number of ways, it could either be a
14 rebate, a tax credit or a public-private
15 partnership.

16 So for example, a ZNE bill was just
17 passed last month in Colorado. It was called the
18 Colorado Energy Savings Mortgage Program and what
19 it did is it reduced if you bought a ZNE home,
20 your principal on the loan would be, on a
21 mortgage would be reduced by \$8,000. And it was
22 a public-private partnership, so for example a
23 \$400,000 home mortgage if you were purchasing a
24 home that you were going to go get a mortgage for
25 \$400,000, the banks who were authorized to

1 produce these loans would put in about a half a
2 point, \$2,000, so they would buy the principle
3 down \$2,000.

4 Now banks, why is it good for banks to
5 do this? Well, Bank of Colorado is doing it
6 because banks charge about 2 points on a mortgage
7 and so to give up a half a point or \$2,000 to do
8 more mortgages kind of washes out economically in
9 the long run. And the banks get quite a bit of
10 PR out of -- that would be one of the banks that
11 participate in this program, they're providing
12 mortgages for Zero Net Energy buildings, so in a
13 sense it doesn't cost them anything because
14 they're doing more mortgages and they're giving
15 up a half a point and they supply \$2,000 of that
16 \$8,000. And then the States and Utilities in
17 Colorado are combining to provide the other
18 \$6,000 bite-down of the principle.

19 So that's one way to do it, but there
20 are tax credits. New York State is looking at a
21 \$10,000 tax credit for Zero Net Energy. Barbara
22 Lifton, the state assemblywoman, put that bill
23 in. It'll go in again in the next legislature
24 and it looks like it has a good chance. There's
25 a bill that went in in Oregon, so it's kind of

1 based on a first-time homebuyer's tax credit and
2 again that was only for first-time homebuyers.
3 This is, for any homebuyer it should be a no-
4 brainer.

5 So who is likely to support some kind of
6 incentive depending upon what it is? And again,
7 we put that out only as a recommendation. Well,
8 what we found is for a homebuyer's incentive
9 obviously the homebuyers like it, because they
10 can build and they'll be building to ZNE and
11 getting those homes sold. Specialty construction
12 trades like it and we have found that these folks
13 have supported, in different states, this type of
14 legislation. Cities obviously like it, because
15 they get taxes on the construction. Counties
16 like it, they get property taxes and other taxes.
17 Chamber of Commerce in New Mexico came out for
18 this type of legislation and we passed it this
19 year.

20 The environmental community likes it,
21 would support it. The renewable energy trades,
22 obviously the solar installers would kill for it.
23 The realtors and real estate developers and real
24 estate community likes it because we're selling
25 more homes.

1 Interesting the community colleges came
2 out big time in support, because they're training
3 all these kids to install photovoltaics, to
4 upgrade homes, things like that and there aren't
5 any jobs out there. So they like it. The
6 architects and designers obviously love it. And
7 the banks like it.

8 So you really have a coalition across
9 the board and we found no one coming out against
10 it in that sense.

11 So I'll conclude with that. You know,
12 I've thrown out a lot of information and
13 proposals and hopefully it spurs on some
14 discussion. And again, I think to keep in mind
15 is the big picture, that it is absolutely
16 critical globally that California succeed in its
17 goals and targets of meeting ZNE by 2020 and
18 2030. Thank you.

19 COMMISSIONER MCALLISTER: Thanks very
20 much, Ed. I have actually a clarification
21 question on the Colorado program if you could
22 just indulge me for a second. So who gets the
23 \$6,000? Does that go directly to the builder or
24 does that go to the bank or what?

25 MR. MAZRIA: No, it goes to the

1 purchaser. So it buys down the amount of the
2 mortgage. So if you had a \$400,000 mortgage your
3 mortgage would be only 392,000, so your monthly
4 outlay would be less. And if you run the numbers
5 on energy save for ZNE and the cost of getting
6 ZNE we threw in a number of about, to get to ZNE
7 in Colorado we threw a number of about 30,000 in
8 there to get to ZNE over a standard building.
9 They're built to ENERGY STAR level.

10 It's very, very lucrative for the home
11 buyer. So we're essentially doing what the car
12 companies have been so successful doing and what
13 the first-time homebuyers' tax credit did back in
14 2009-2010. You incentivize the demand side, so
15 you give a tax credit or yeah. And it's a time-
16 proven and tested strategy to increase demand of
17 whatever product it is you're trying to look at.

18 COMMISSIONER MCALLISTER: Yeah, it's
19 interesting right, because we're dealing with a
20 number of similar issues about how to really get
21 to true scale in the retrofit market and in the
22 new construction market. And it's clear that
23 demand side needs to, we need to kind of help on
24 the demand side.

25 And, you know, as agencies and policy

1 implementers and makers to some extent we're not
2 actually that accustomed to dealing with markets.
3 And so we need to sort of figure out the central
4 message and then set up the playing field, so the
5 market can actually play, right?

6 MR. MAZRIA: Yeah, and let me put
7 forward something. I think what a lot of people
8 miss is when to actually incentivize renovation
9 and when to incentivize new building
10 construction. So this obviously is new building
11 construction, when you're building a building
12 obviously that's the time to incentivize, and
13 you're purchasing the building, to incentivize a
14 marketplace to do greater and greater efficiency.

15 But in renovation you can do
16 weatherization when people are living in their
17 buildings, but to really do deep renovation in
18 the housing market it's best when a existing
19 building is being bought before people move in,
20 because it's incredibly disruptive to do deep
21 renovation when people are actually living in a
22 building. People will do it, but it's pretty
23 disruptive. People get divorced over it. And so
24 it's not a simple thing --

25 COMMISSIONER MCALLISTER: Yeah, I just

1 bought an existing home, so I really am not happy
2 to hear that Ed.

3 MR. MAZRIA: Well, what I'm saying is
4 most people do weatherization, they'll do the
5 simple things where you're not actually ripping
6 out walls and you have to move the kids out and
7 the dogs out and you're sanding gyp board and I
8 mean, you know, you're out for a month. So the
9 time to do that is either at a refi or if you're
10 purchasing a building and that's what we found.

11 Now, obviously the people who are
12 committed and find it really lucrative to do deep
13 renovations while they're in a building will do
14 it. So but anyway that's just something that
15 we've looked at.

16 COMMISSIONER MCALLISTER: So I just
17 wanted to just tell folks listening on the web
18 and here in the room with us, that we wanted a
19 little bit of an outside California or a more
20 global perspective, a larger perspective, to kind
21 of put this into context to stimulate discussion
22 here. And kind of acknowledge that yes,
23 California's a leader in the leadership position
24 as Ed rightly says, but there are things going on
25 in other parts of the world. There are creative

1 thinking, creative groups doing interesting
2 things in other places and so sort of put this in
3 context. And, you know, keep on the table the
4 bigger issue of what we're trying to accomplish,
5 so we can all kind of keep that in mind as we go
6 forward with a California-specific discussion.

7 So it looks like Martha has a question.

8 MS. BROOK: Yeah, this is Martha Brook
9 of California Energy Commission staff. I just
10 wanted to make one clarification, because Ed's
11 slides are going to be up on our public website.
12 And anyway, the 2013 standards do not reach the
13 HERS 70. It's closer to 90 and that's because
14 there's this huge amount of energy that we don't
15 regulate under the building standards. And so we
16 can make a huge change in the building standards
17 when we still have appliances and plug loads that
18 are keeping that HERS rating pretty high. And I
19 just think it's important for everybody to
20 understand that, you know, a 20 percent reduction
21 in code doesn't mean a 20-point change in the
22 HERS scale.

23 COMMISSIONER MCALLISTER: Thanks for
24 that.

25 MR. MAZRIA: Thank you.

1 COMMISSIONER MCALLISTER: Thanks very
2 much, Ed. So if you can listen in on the rest of
3 it that'd be great. I'm sure some folks might
4 have questions or comments that are relevant for
5 you as well.

6 Are we going to go with questions here
7 after each presentation or are we going to try
8 to?

9 MS. KORESEC: We were actually going to,
10 since we have such a short agenda we were
11 planning to hold it for the public comment
12 period, if that's okay. But if you'd prefer we
13 can do it now.

14 COMMISSIONER MCALLISTER: I guess I'm
15 happy to, well I don't know that we want to vet
16 Ed's presentation fully. Let's get it on the
17 record and let's sort of put it into the mix and
18 then hear the final two presentations. And then
19 if we want to take a little bit of break between
20 panels for some clarifying questions then that's
21 probably okay to do.

22 MS. KORESEC: Okay. Okay, we'll do that
23 then, we'll take questions and after we hear from
24 our outside folks before we get to our staff
25 presentations

1 All right, our next presenter is Peter
2 Turnbull from Pacific Gas and Electric Company.

3 MR. TURNBULL: Well, Commissioner
4 McAllister and members of the staff and audience
5 here, it's a pleasure to be here and we
6 appreciate the opportunity to speak today on this
7 issue.

8 It is in no small way a little bit
9 intimidating, but also a great honor to go after
10 someone like Ed Mazria who has been a great
11 leader in this field for a long time. And I
12 would like to make just a quick aside to start
13 off that he served as a judge in the Zero Net
14 Energy building design competition we ran last
15 year using a site at UC Merced. And has again
16 agreed to serve as a judge for this year's
17 competition, which is using an affordable housing
18 site, a kind of a modest high-rise in the
19 tenderloin of San Francisco, which will be a real
20 challenge.

21 So with that aside and also have to note
22 a little irritating to go after an architect,
23 because the architect always has better slides,
24 right? You know that.

25 So to be responsive to Commissioner

1 McAllister and the idea to be surgical about
2 this, this morning, we have some comments. We've
3 had a long-standing goal to work in energy
4 efficiency renewables and so on and also the
5 building codes, which support that. We've been,
6 of course, active in that together with the other
7 IOUs for quite a long time, more than a decade.
8 We really agree that a clear, singular definition
9 is essential and it has to be a code-based
10 definition.

11 We support the idea of using TDV as the
12 metric to establish the requirements and in fact,
13 at least in my view, the definition really hinges
14 on the metric as a practical matter. We support
15 it, we think that there are some imperfections
16 and we think that there's some forward-looking
17 corrections that need to happen. But we think
18 that's especially true with respect to power
19 exports from buildings to the grid and it becomes
20 more and more critical as we get closer and
21 closer to ZNE going forward. So in a nutshell
22 that's this.

23 I think we'll see more about this in the
24 staff presentation later, but we believe that ZNE
25 will soon be technically feasible for the bulk of

1 the building stock. This is a finding from a
2 study that conducted by EROP, by the IOUs,
3 managed by PG&E. And the central finding as it's
4 stated there, it would be technically feasible
5 for much of the newly constructed market.
6 There's, I think you guys, Martha has a graphic
7 on this later. Obviously the less dense
8 buildings are easier to get to than things like
9 high-rises and hospitals, but on a square-foot
10 basis it's in the range of 70 to 75 percent we
11 think.

12 PG&E and the other IOUs and SMUD, I
13 believe are actively engaged with the CEC on a
14 measure-base tactical plan to enhance the
15 building standards through the CASE initiatives,
16 Codes and Standard Enhancement Studies. That's
17 consistent with what we've been doing now for at
18 least, well more than a decade, so we're very
19 engaged on this and eager to see it move forward.

20 We think speaking to some of the points
21 that Ed made, that there's something to work
22 regarding ZNE, Time Dependent Valuation and
23 public understanding. We have noticed ZNE means
24 different things to different people. For a code
25 definition we really need to coalesce on a single

1 metric I thin.

2 And this is in the context where we see
3 this term. I've been in this business for over
4 30 years and I've never seen a term energize the
5 design community like this concept of Zero Net
6 Energy. So if we hold a forum at PG&E that's
7 open to the public and we call it a forum for
8 high-performance buildings in Northern
9 California, we get four people. If we call it a
10 forum for Zero Net Energy buildings in Northern
11 California we pack a room with several hundred
12 people. And so this is an energizing topic and
13 it really has captured the imagination.

14 I think we need to capitalize on that.
15 We would still just point out that something like
16 Time Dependent Valuation is not understood by the
17 lay public. I would say that I have to be having
18 a pretty good day to understand it myself. It's
19 probably not realistic to expect the lay public
20 to understand this concept, but I don't know that
21 we need to do that, but I think we should maybe
22 have that on the horizon.

23 Where it would become important would be
24 if someone's buying a home and we tell them it's
25 got the stamp, ZNE, say seven years from now.

1 And well, what does that mean, and we go into a
2 long discussion on Time Dependent Valuation is
3 probably not going to resonate with the home-
4 buying public, right? That's a communications
5 issue though and we shouldn't back away from the
6 concept of having a robust definition.

7 We don't want to get into rate making
8 here. We realize that, our world though is this
9 world where we believe we've got cost-shift
10 issues when you have building ZNE buildings with
11 PV systems. We don't think that the costs that
12 are imposed by those systems are fully captured
13 under the retail rates. We don't think they're
14 maybe fully within the TDV system at this point,
15 so we think that that's something can be
16 addressed going forward.

17 The cost-shift issue, while of course
18 it's not in the purview of the CEC it is
19 nonetheless putting costs on to the
20 nonparticipating customers and that's very much
21 an issue to them, of course.

22 We think it's probably not good to do
23 messaging associating with Zero Net Energy as
24 zero energy bill. We don't think that that ends
25 up being sustainable, so those are some things I

1 think we point out. Not with any real defined
2 solution at this point, but things to work on
3 going forward.

4 But for ZNE to succeed at scale we do
5 need to get solutions around things.

6 COMMISSIONER MCALLISTER: Peter, can I
7 just chime in there and since this is an intimate
8 group I think I'm interested in sort of having
9 clarification as we go.

10 So I agree the messaging is an issue and
11 ZNE kind of as a term has a lot of kind of
12 potential liability wrapped up in it. And, you
13 know, you point out from your perspective you're
14 implying zero bill has some issues, but just as a
15 matter of practice it's not going to be even Zero
16 or Zero Net Energy for all people. There's going
17 to be a standard deviation and behavior in it and
18 plug loads and all that stuff is all going to
19 play into this.

20 So I guess so we have a goal for code to
21 be at Zero Net Energy, but we don't necessarily -
22 - I mean, notwithstanding your point about the
23 term being an attractive term for people it'd be
24 nice to hear from stakeholders, not just PG&E,
25 but all stakeholders about what we might call

1 these buildings to the public, right? We can
2 have an internal goal of ZNE, but that doesn't by
3 any stretch mean that the homes have to be
4 marketed as ZNE. They're just code compliant.
5 We're talking code here, so they'd be code
6 compliant.

7 And the developer, and it might be a
8 qualified developer or the development might be a
9 green seal or whatever, but I guess it seems like
10 it's kind of a separate discussion about how we
11 ought to label this for marketing purposes. And
12 so that issue, I think, ought to be on the table.
13 It's not necessary for our adoption of a
14 definition in its context, but it's sort of an
15 adder that I think is pretty important to the
16 discussion for the longer term.

17 MR. TURNBULL: I completely agree and I
18 think we ought to hear, I think it's something
19 that needs to be solved. I've been our Zero Net
20 Energy pilot program manager for the last three
21 years and it's I don't know the answer to that
22 issue. But we definitely need some branding
23 around it and it's the branding has to be
24 consistent with what the customer is going to
25 get, of course. So I think that that's certainly

1 correct.

2 So we take in a nutshell, the first
3 bulleted point there, the TDV itself as we move
4 down the efficiency. Thinking of it maybe at the
5 HERS scale for 100 today and then down that
6 scale. For power taken from the grid, we think
7 TDV does a pretty good job.

8 The breakdown in our view at least, is
9 when TDV -- when we start exporting power to the
10 grid from the home or from whatever the building
11 is that at the risk of oversimplification as the
12 building load goes down the wires and pipes in
13 the infrastructure needs are reduced. You could
14 say that the wires can get smaller, but when we
15 start exporting of course the wires don't
16 necessarily get smaller.

17 We don't want to cry wolf on this or to
18 say that there's no solution to this or anything
19 of that nature at all, but just that we don't
20 think that metric is working for power export to
21 the grid and that there's probably some work
22 there. Is there something that goes into that
23 metric or when we get to the export do we do it a
24 different way and plug it in or what? That part
25 needs to be solved, I think.

1 So that's I think the point of this
2 slide.

3 COMMISSIONER MCALLISTER: I guess I
4 would just point out that the penetration of EVs
5 is kind of a big wrench in that works there too,
6 because that may determine whether you can
7 downsize the wires as well, right?

8 MS. TURNBULL: Absolutely.

9 COMMISSIONER MCALLISTER: So that kind
10 of inherently is part of the discussion for the
11 long term.

12 MS. TURNBULL: So a slide that looks
13 like it might be familiar to us after the last
14 presentation, I think so graphically where we are
15 today at 100 moving down to ZNE ready at
16 something like 30 or 35, qualitatively something
17 in that nature or I guess it's quantitative, but
18 we mean it sort of qualitatively. And getting
19 there in a couple of steps between 2013 and 2012,
20 meaning the two different code cycles between
21 then and now, that that area between the 2013 and
22 the ZNE ready then for TDV is less problematic
23 than when we start moving down from 35. I think
24 graphically that would be the way I'd say the
25 point from the previous slide.

1 A couple of other things that come up,
2 it's inherently of course a moving target if
3 we're successful with what's going on. The
4 values of time dependency will shift and then
5 measures that are great today become maybe not so
6 great and measures that aren't so great become
7 great, right as time dependency shifts over time.
8 And I think it's just something to be aware of as
9 we move forward with code.

10 It's certainly an issue of communication
11 to the building industry if Measure A is
12 wonderful now and then becomes less so three
13 years or seven years from now. And this did come
14 up, this concept of stranding assets becomes
15 really an issue if too much of that happens. We
16 did talk about that on the May 29th workshop a
17 little bit and that was pointed out by multiple
18 players really. So this is another thing that
19 needs to happen in our view with Time Dependent
20 Valuation.

21 One other thing not maybe slightly
22 outside of just the TDV point here is we do have,
23 of course, a code that's building by building.
24 And we think that of course you're considering
25 cost effectiveness with TDV at the building

1 level. We think that there are potentially some
2 economic benefits and then some operation
3 benefits from the point of view of the grid by
4 looking at maybe district level solutions. More
5 so rather than only looking either at building by
6 building individual homes versus a central power
7 station, which of course is outside of the
8 building standards scope.

9 You could have economies of scale
10 possibly for something like a ground source heat
11 pump or some other measures that are efficiency-
12 related measures that today really aren't
13 particularly encouraged by the way the code
14 works. And, of course, you could do that with a
15 photovoltaic system, so that rather than 2,000
16 individual systems in a subdivision you might
17 have 1 or 5 or 10 or something of that nature.
18 There could be some operational advantages to
19 that as well as it could be less expensive. So
20 we recommend, and maybe this is a legislative
21 solution, but that there be methods of
22 incorporating some of these district system
23 benefits into code if possible.

24 So that's a point I wanted to just bring
25 up. And now I know I'm done when I come to this

1 slide, so that's that.

2 COMMISSIONER MCALLISTER: Thanks a lot,
3 Peter.

4 MS. TURNBULL: Thank you, very much.

5 COMMISSIONER MCALLISTER: That's
6 helpful, thanks.

7 MS. KORESEC: All right, our next
8 speaker is Manuel Alvarez from Southern
9 California Edison. Okay, where is it?

10 MR. ALVAREZ: Good morning,
11 Commissioner. My name's Manny Alvarez, I'm with
12 Southern California Edison and I guess I'm
13 pleased to be here today to talk about this issue
14 of Net Zero Energy (sic) for this definition. I
15 was kind of pleased to hear opening remarks in
16 terms of trying to focus on the definitional
17 question, because it seems like as we get into
18 the various details of Net Zero it gets
19 complicated and it gets argumentative with folks,
20 because the definition is not there to guide us.

21 So what I'm trying to set out today is
22 basically some parameters of what the definitions
23 should be and then try to lay out for you some of
24 the key principles we think that should be
25 employed as you kind of go through this process

1 of developing the definition as well as develop
2 the overall program for the Net Zero Energy.

3 So the first slide I've put up here I
4 think you all have seen in some fashion. And, in
5 fact you brought the electrical vehicle issue up
6 and as you can see there's one in the garage
7 there, so it has to deal with its implications.
8 But what I wanted to remind you about this
9 particular area is that there's a lot of activity
10 going on, not only inside the home dealing with
11 the structure itself as well as appliances and
12 energy sources, but also things going on outside
13 the home that are in the community.

14 The picture on the right there is part
15 of our Irvine project that looks at Net Zero
16 Energy homes as well as its implications to the
17 grid and its stability. And as you know, there
18 are a lot of programmatic activities going on
19 today. There's the emergent technology effort
20 that's going to interface with the Net Zero
21 Energy, there's the Codes and Standards work
22 which we're discussing today, there's the
23 workforce education and training activities that
24 also influence how we're going to implement this
25 particular program.

1 But I just wanted you to keep in mind
2 not only is Net Zero Energy the topic for today,
3 but it's implications in other parameters in
4 which the state is involved with, and the
5 integration and coordination of those policies, I
6 think are key important and it's something that
7 the IEPR is supposed to do.

8 As we wrestle with the question of
9 definition of Net Zero Energy I've identified
10 three basic parameters that I think you should
11 like to consider. And other people I've heard
12 today have other options, so it's definitely
13 something that we will examine as we write our
14 comments for you later on this month. And
15 perhaps we want to reserve the right, if there's
16 another idea we want to off to you we will do
17 that in the future.

18 But first of all we'd like to recommend
19 an asset-based definition that requires all cost
20 effective energy efficiency and demand resources
21 be achieved in the building to perform. And that
22 ensures that the grid stability and reliability
23 are part of that equation. This notion of
24 flexibility and the option of equivalency for
25 meeting energy is pretty important too, and it's

1 something that you're definitely going to have to
2 wrestle with in what it really means in terms of
3 equivalent production and consumption of energy.

4 Next the definition should allow for
5 flexibility to encourage the most cost-effective
6 blend of both supply and demand resources. It's
7 definitely going to be a competition that will
8 take place at the home or at the building in how
9 either the designer or the owner or the occupant
10 wants to select their supply and demand resources
11 in achieving those activities.

12 But one thing that we're going to
13 recognize, and I think you recognized it quite
14 early in your discussion here this morning, is
15 that the impacts on the grid stability and
16 reliability of the grid are going to be an
17 important factor. No longer are homes and
18 buildings just an independent stand-alone device
19 or structure. But they're going to be an
20 integral part of what the system looks like going
21 forward into the future.

22 Finally the Net Zero equivalent option
23 would allow all buildings, including those with
24 limited potential for onsite generation, to
25 participate through the utilization of offsite

1 renewables or renewable offset credits or
2 tradeoff from transportation. So that's
3 something that you're going to have to wrestle
4 with of how you, in fact, incorporate those
5 equivalent basis for that.

6 And with that we've identified at least
7 five guiding principles that we would like to
8 offer your consideration. We think the
9 principles are important not only because they
10 identify the items that you have to wrestle with,
11 but it actually services as a guidepost for you
12 as you go forward and implement these particular
13 activities. If there's tradeoffs to be made
14 between one principle or another.

15 As you wrestle and debate those
16 standards you're going to adopt, in a transparent
17 process we can actually see how you're weighing
18 those particular criteria and those principles,
19 so we can either support something like that or
20 argue on behalf of another principle that we
21 wanted to have more emphasis on. So we'd like
22 you to kind of take these five principles into
23 your consideration as you look.

24 And the first one is that to maintain
25 grid stability on our local and system, and

1 reliability in our system-wide. I don't think
2 you're going to want to implement devices that
3 are going to cause grid instability. And
4 examples of that come up all the time. I mean,
5 look what's going on down in Southern California
6 in the workshop you had on Monday. Reliability
7 was paramount in that discussion in terms of how
8 you would develop pilot programs and how you
9 would develop energy efficiency or demand
10 response programs to solve problems down there.

11 The second principle we'd like to offer
12 for your consideration is that you look at fair,
13 equitable, and affordable rates for customers.
14 That gets into Time Dependent Valuation analysis
15 a bit, but it's definitely something that you're
16 going to have to wrestle with. We're going to
17 have to know how you trade off participant
18 activity versus nonparticipant activity in these
19 particular programs.

20 Next we'd like you to extend the
21 performance and efficiency standards to include
22 all supply and demand side resources initiated in
23 Net Zero Energy homes. You wrestle with that
24 today when you deal with your appliance
25 standards, so as you look at what kind of supply

1 resources you're going to have it's definitely a
2 legitimate question to say what standards of
3 efficiency and performance should we require out
4 of these devices, so that we can ensure that in
5 fact they're going to be available to us going
6 forward.

7 And then fourth, we encourage the
8 synergies of technology. For example, we can
9 have demand response, energy efficiency or demand
10 response DG or even demand response appliances.
11 And if they're going to be part of the operating
12 grid they should support the stability and
13 reliability of that grid going forward.

14 And then fifth we'd like to offer you're
15 your consideration is a prioritization of the
16 most cost-effective means of meeting greenhouse
17 gas emissions. I think that's something that
18 you're going to have to wrestle with, ultimately
19 the Net Zero Energy home is not only dealing
20 with energy efficiency goals of the State of
21 California, but also greenhouse gas requirements.

22 So with that I'll leave those for your
23 consideration and we look forward to any
24 discussions or questions in the future. Thank
25 you.

1 COMMISSIONER MCALLISTER: Thanks very
2 much, Manny. I appreciate it.

3 MS. KORESEC: Yes, all right so we'll
4 open it up now for any questions in the room for
5 our first three presenters. If you want to go
6 ahead and just come up to the center podium,
7 identify yourself.

8 MR. DAY: Good morning Commissioner
9 McAllister, staff and fellow usual suspects.

10 One of the things that came up in the
11 first presentation I wanted to pose it to the
12 presenter, was that the onsite renewable energy
13 would be valued at TDV and anything that was
14 offsite would be on a Btu basis. And I'd like to
15 suggest that maybe we look at an alternative or
16 suggest something here.

17 You know, obviously there's something
18 that's been coming out from the IOUs that onsite
19 renewables are imparting a pretty substantial
20 operational burden in terms of stability and
21 reliability. There's a need for balancing, it
22 has to be this is a cost that's being transferred
23 to rate payers, we're all pretty familiar with
24 the duck curve now being a really substantial
25 impact from PV penetration.

1 One additional compliance concept might
2 be to be able to bank credits from storage that
3 would be located. It may be a district, it may
4 be it's a demand control area within the load
5 pocket. I think getting down to the individual
6 circuit or substation might be a little bit
7 tough. But what you might be able to see are
8 third parties installing storage say at a mall,
9 at a large office building, that are able to be
10 dynamic and dispatched enabled to meet balancing
11 demands.

12 If those could be valued on a TDV basis
13 and those TDV credits banked then you'd have a
14 competition on a market basis between putting PV
15 on the houses and purchasing these credits, these
16 basically grid reliability credits for lack of a
17 better term that would also be based on a TDV
18 basis.

19 I don't think that those TDV sales would
20 be the only revenue stream that would allow
21 somebody to go in and put in say a thermal energy
22 storage or who knows what next technology comes
23 out. But it could be an important revenue stream
24 that when stacked on top of others could
25 encourage more storage, more local storage that

1 makes everything else work. And I think there's
2 a really good argument to giving locally-based
3 storage banked credits, a TDV treatment as
4 opposed to Btu. And I'd be particularly
5 interested in what the 2030 person would feel
6 about that as well.

7 MR. MAZRIA: And I think it's an
8 interesting concept to explore. You know, we
9 don't know what's going to happen with storage
10 capability between now and 2020. And that's a
11 very interesting concept that I think is worth
12 exploring, so essentially you would get the TD
13 Value even though you would be importing it from
14 offsite of someone else develop that capacity.

15 MR. DAY: Yes, I mean here the example
16 would be you build a new housing development at
17 Quail Ridge. And you have the choice between
18 purchasing a PV to reach your ZNE goal or you
19 could purchase the credits. And the credits
20 might come from an office building 30 miles away
21 where they installed a thermal energy storage
22 system that had the ability to shift that much
23 load and on balance the following TDV
24 characteristics.

25 I think the important part about that

1 is, is that that thermal energy storage system
2 should be dynamic. It shouldn't be a permanent
3 load shift, it should be something that focuses
4 on helping maintain grid stability, so that
5 system operators could dispatch it as needed and
6 provide a load following resource.

7 If you had that, there are so many
8 societal benefits that flow from that I think
9 that it would be appropriate for it to get the
10 same TDV treatment for the energy on-peak energy
11 reduction that it's providing compared to its
12 off-peak charging. That it would make sense for
13 that to be a competitive element to reach ZNE,
14 because in essence you'd be trading instead of
15 generating that energy on-peak as you're talking
16 about with PV primarily, you'd be looking at
17 backfilling it with off-peak resources, which are
18 disproportionately clean and those that aren't
19 clean are lower footprint than there are on-peak.
20 And that again, aligns pretty much with the
21 concepts of TDV.

22 MR. MAZRIA: Yeah, this is Ed again.
23 Yeah, and thanks for the comment. I think many
24 things may come out of this type of a meeting
25 that makes sense and should be considered.

1 MR. DAY: Thank you, and Martha my name
2 is Michael Day and I'm with Rockwood Consulting.

3 COMMISSIONER MCALLISTER: Thanks,
4 Martha. Many of us, I think some of these topics
5 are going to be in the staff presentations right.
6 We're going to talk about the sort of staff
7 proposal for TDV, so I think that'll also give
8 rise to some good discussion that treats some of
9 these same topics, but Manny wanted to make a
10 reply I think.

11 MR. ALVAREZ: I guess, just Mr. Day's
12 comment about the offsite thing, I just wanted to
13 kind of reinforce that. I guess there are two
14 parameters there that I see that relevant. One
15 is the accounting for the credit in terms of
16 offsite and locational, but the more important is
17 being sure that the operation of the system can
18 be done when something is 30 miles away from
19 where the action is taking place.

20 So you want to account for that also, so
21 that's an important parameter that you want to
22 take into account when you're dealing with the
23 offsite credits and how they're accounted for.
24 So don't just look at the pure accounting basis
25 in terms of many Btus or kilowatt hours were

1 produced and saved, but how the system was
2 operating and needs to operate at that particular
3 time.

4 COMMISSIONER MCALLISTER: Yes, so thanks
5 for that clarification. I want to acknowledge
6 Commissioner Hochschild who's with us now, which
7 is great and I know he has a lot of interest in
8 this topic. And we'll invite you at your leisure
9 to make some comments.

10 And so again I'm trying to be surgical
11 here today and adopt a definition. You know, I
12 think we all acknowledge that there's quite a bit
13 of contested ground kind of on the periphery here
14 about how Utility gets some revenue from a
15 building that doesn't actually purchase energy on
16 net, for example. That's kind of a little bit of
17 a question there, still and is really not within
18 the scope of this particular discussion.
19 Although I mean I think it's kind of relevant as
20 an input, but we're not trying to make decisions
21 along those realms. We don't have the authority
22 or the brief to do that.

23 So but it is important to get to a
24 definition that has some staying power and I
25 think that's our really long-term goal here or

1 our immediate goal really here.

2 So George, introduce yourself?

3 MR. NESBITT: George Nesbitt, HERS
4 rater. I'm a little confused, because I think
5 debating the definition of Zero Net Energy or as
6 we used to say Net Zero Energy, is the wrong
7 question. Why? I mean, I think as we've seen
8 all the presentations so far have said, "Well,
9 let's use TDV."

10 I'm even more confused, because Andrew
11 McAllister I think signed a proclamation from the
12 Commission on One Sky Homes Net First new single-
13 family, Net Zero Energy home in California
14 certified under the Title 20. And I was the
15 rater on that.

16 So a little HERS story, Public Resources
17 Code 25942, I don't know sometime in the '90s,
18 directed the Energy Commission to develop a
19 consistent rating system. And in 1999 we
20 implemented Phase I of the Title 20 Chapter 4,
21 Article 8, Section 1670 through 1675 the Title 20
22 HERS Home Energy Rating System Regulations.

23 It was supposed to be followed by Phase
24 II, which got delayed in this room and many of
25 the usual suspects that are here today were here

1 five years ago when we debated the HERS rating
2 system. And in December of 2008 the Energy
3 Commission adopted the Phase II regulations,
4 which included the definition of a Net Zero
5 Energy home based on Time Dependent Value. The
6 2008 code home is the 100 and the 0 is Net Zero
7 Energy.

8 Yet for five years I've been hearing we
9 don't have a definition of Zero Net Energy or Net
10 Zero Energy as well as other misconceptions about
11 the HERS rating system. That it doesn't apply to
12 new homes or it doesn't apply to multi-family.
13 None of which is true, so we've had a definition
14 in regulatory effect since September of 2009 for
15 a Net Zero Energy home.

16 So that should be a done deal. I think
17 the questions are really, you know, TDV, the
18 issues with it, issues with the grid stability,
19 net metering, rate schedules, grid stability,
20 those are the real questions. You know, how do
21 you market it to the customer, because a Net Zero
22 TDV home not even necessarily a zero electric
23 bill home let alone zero electric net.

24 So those are really the questions we
25 should be struggling with, not the definition

1 which we already have.

2 COMMISSIONER MCALLISTER: I'll invite
3 you to actually, either I guess Martha or Cathy
4 maybe to talk about why we need to adopt a
5 definition at some point, maybe during your
6 presentations in your background you can talk
7 about that?

8 MS. RAYMER: Yes Commissioners, Bob
9 Raymer representing the California Building
10 Industry Association. And we'll be submitting
11 comments by the August 1st deadline and we'll
12 also be joined by the Building Owners and
13 Managers Association and the Business Properties
14 Association, but a very short comment on the
15 first three presentations and some comments that
16 you raised.

17 We agree that on the liability issue
18 there certainly can be some very clarity, there
19 absolutely has to be clarity in terms of the code
20 definition of ZNE, but the manner in which this
21 is portrayed to the public is entirely different.
22 And it can be separate and we can do a very good
23 job of making it clear that a house that meets
24 the code that we're going to have does not mean a
25 zero bill.

1 And so as long as we can get over and
2 we're having some difficulty within our own
3 industry right now. We've got some early
4 adopters that are moving forward and there is
5 some issue whether or not that bill is zero.
6 Well, it's not and it's not going to be. It can
7 be very reduced etcetera, etcetera but we agree
8 with the comments that Peter Turnbull and
9 yourself had earlier. And we think both of these
10 can be reconciled. It's just the definition that
11 applies in the code and the definition that's
12 used out to the public can be two very different
13 things.

14 COMMISSIONER MCALLISTER: Well thanks
15 very much, Bob. And I guess I would anticipate
16 and hope certainly that some people that buy
17 whatever we label these homes, you know,
18 internally we say Zero Net Energy but maybe
19 they're the green shot or something or who knows?
20 Right, so whatever label works for the public but
21 some of them would have Zero Net Energy or
22 negative, would have net production. I mean if
23 they're parsimonious with their energy or that's
24 their lifestyle and then that's perfectly
25 possible.

1 But it's just given the fact that you're
2 going to have a lot of variability you can't
3 promise that for everybody and then you create
4 some funky incentives there, so we need to be
5 clear with our definitions and it's all for the
6 good. So thanks very much.

7 MS. KORESEC: All right, I think if
8 that's anybody else in the room with a question.
9 All right, I would like to give the people on the
10 phones a quick chance to ask any questions if
11 that's all right with you, Commissioner. Okay,
12 let's go ahead and open up the phone lines.

13 All right, do we have any questions on
14 the phone?

15 MR. GOFF: Yes, this is Christopher Goff
16 from the Gas Company.

17 MS. KORESEC: Yes Christopher, go ahead.

18 MR. GOFF: Thank you, in the second
19 presentation it did say that ZNE would be, or
20 there was a reference to it being exclusive of
21 distributed generation. And that actually raises
22 the point in my mind that I don't know if that's
23 the Commission's viewpoint. And the reason I'm
24 saying that is because obviously we have AB 32,
25 we do need to cut greenhouse gas emissions. And

1 there may be some tremendous benefits for other
2 players if we include DG in the definition of
3 ZNE.

4 Just to illustrate, let's say a city has
5 a landfill. Landfills do have fugitive
6 greenhouse gas emissions, but if the city could
7 recover the greenhouse gas emissions, clean up
8 the gas, put into to the distribution system,
9 transport it to their customers where they could
10 -- or local customers who could actually use it
11 in a clean, generating system you would get a lot
12 of things. You would reduce fugitive greenhouse
13 gas emissions from a landfill, the city could
14 generate revenue, customers could help support
15 the grid. And they could also potentially use
16 waste heat to do applications that would normally
17 take some type of fuel such as water heating,
18 space heating or supplemental cooling.

19 So just to illustrate if we had a fuel
20 cell running on biogas, in my mind that seems
21 like that would fit the ZNE definition and if you
22 look at some of the sustainability plans of the
23 federal government they're actually very
24 progressive. And one of the things that the
25 White House and the Department of Defense looks

1 at is doing things like that, recovering landfill
2 gas to supply energy to clean generating systems.

3 So I guess I'm really trying to get my
4 arms around this issue about DG, because the
5 strategic plan mentions clean generation in the
6 residential multi-family and commercial sectors.
7 So I'm just curious, the Energy Commission see
8 clean DG fitting into the TDV definition or what
9 is the viewpoint regarding?

10 COMMISSIONER MCALLISTER: So you're
11 talking about DG that's not behind the meter of
12 the individual customer, correct?

13 MR. GOFF: No, I'm talking at the
14 facility, at the commercial building or a home.

15 COMMISSIONER MCALLISTER: Well,
16 absolutely that is certainly contemplated within
17 the definition of ZNE. That absolutely is there.

18 So I think probably the best thing is to
19 move onto to the staff presentations, so that we
20 can sort of get the state of this discussion
21 within the agencies on the table and then that'll
22 actually give rise to some discussion to flush it
23 out.

24 MR. GOFF: Thanks for your attention,
25 very much.

1 COMMISSIONER MCALLISTER: Thank you,
2 thanks for your comment.

3 MS. KORESEC: All right, we have Martha
4 Brook and Cathy Fogel for our joint staff
5 presentation.

6 MS. BROOK: Hi, I'm Martha Brook with
7 the California Energy Commission and we have
8 Cathy Fogel here from the California Public
9 Utilities Commission.

10 We have been working on this jointly for
11 many months. I don't want to say many years, but
12 it has been more than 12 months. And we're going
13 to summarize what we've come to and the
14 recommendation we're making for a definition for
15 Zero Net Energy.

16 Cathy's going to speak to the slides and
17 I'm going to chime in from a microphone at the
18 desk. And I think that should work pretty good.

19 MS. FOGEL: Great, so I'm going to start
20 with a little bit of background from the CEC's
21 perspective primarily in terms of the adoption of
22 the Zero Net Energy bill and goals. This will be
23 a review for most of you in the room, but so be
24 it.

25 Do I advance the next slide or how?

1 Okay. So the California Public Utility
2 Commission, I believe following the Energy
3 Commission, in 2007 adopted Zero Net Energy
4 goals. In the decision in 2007 and then
5 subsequently in our adoption of the strategic
6 plan in 2008 the 2020 goals for all new
7 residential construction to be at Zero Net Energy
8 and 2034 new commercial construction to be Zero
9 Net Energy.

10 Also in 2008 in the strategic plan the
11 Commission adopted the goal that 50 percent of
12 existing commercial buildings will be retrofit to
13 ZNE by 2030. We also, this goal's been
14 reinforced in a number of other state policy
15 decisions and plans, which are listed on the
16 screen.

17 It's also notably in 2012 the Executive
18 Order B-1812 adopted the goals for new state
19 buildings, and major renovations beginning design
20 after 2025 should be constructed as ZNE
21 facilities. Fifty percent of new state
22 facilities beginning design after 2020 shall be
23 ZNE. And state agencies shall take measures
24 towards achieving ZNE for 50 percent of the
25 square footage of existing state-owned building

1 by 2025. So I've seen really wide-spread support
2 for the Zero Net Energy goals in the state.

3 In the California Long Term Energy
4 Efficiency Strategic Plan Zero Net Energy was
5 defined. There it was defined perhaps in a
6 couple of different ways, which has I think
7 helped create a little confusion over the years.
8 But the primary definition offered as appears on
9 the screen there, that the amount of energy
10 provided by onsite renewal energy sources is
11 equal to the amount of energy used by the
12 building.

13 The metric was not specified though, how
14 do you measure this energy? That was one
15 omission in the plan. I think in different text
16 elsewhere in the plan there was some mention of a
17 zero bill. This definition, this graphic offered
18 here includes that embedded energy might be able
19 to contribute to it. So there was a little
20 confusion as can happen, but it did clearly
21 indicate that the definition was intended to
22 apply at the level of a project seeking
23 entitlements and permits. So I think that's
24 important to remember. From the start in the
25 PUC's mind this was potentially a definition that

1 applied beyond a single building.

2 The CPUC subsequently initiated a number
3 of action plans to move forward implementation of
4 the strategic plan. One of the first to be
5 launched was a commercial Zero Net Energy
6 Building Action Plan in 2010 or '11, that was
7 launched. And out of that previous ambiguity I
8 mentioned a Zero Net Energy Definitions Group
9 arose and decided to try and tackle this
10 definitions issue. So about 20 participants took
11 part in that, many of them are in the room here
12 today from Utilities, leading advocates for Zero
13 Net Energy, government agency staff and others,
14 nonprofits, the CBIA took part.

15 And the intent of the group was to come
16 up with a simple and short definition of Zero Net
17 Energy buildings. And the challenge was to keep
18 a common-sense definition that made sense, but
19 also could be applicable to all buildings. The
20 same issues we're discussing today that Ed
21 introduced. And a key finding was that the
22 definition of the Zero Net Energy and the policy
23 goals had to be addressed together. And I
24 believe, as I mentioned, many of the participants
25 in that group are here today.

1 So the proposed revised definition that
2 came out of that group, which was essentially a
3 consensus proposal -- it was not fully supported
4 by all members of the group, but it had large
5 support. Was similar to what we're seeing today,
6 that the societal value of energy consumed by the
7 building over the course of a typical year is
8 less than or equal to the societal value of the
9 onsite renewable energy generated, so again
10 pointing towards the TDV metric.

11 I think Martha, you were perhaps going
12 to speak to this?

13 MS. BROOK: Yeah, so and then because we
14 do, I think we have a mandate to get to Zero Net
15 Energy in the building standards we feel like
16 there's a pressing need to formally approve a ZNE
17 definition, which is why we asked for this to be
18 in the IEPR and to move forward.

19 We are already underway with development
20 activities for the next standards update. So the
21 2016 standards needs to make a significant
22 progression towards Zero Net Energy. And in
23 order to do this, you know, we need to establish
24 the Zero Net Energy level of energy performance.

25 First in the Green Building Standards,

1 which is a beyond code voluntary portion of the
2 California Building Code and it includes an
3 energy chapter in there. And since we only have
4 two code updates to get to that 2020 goal the
5 beyond code level of energy performance needs to
6 include that in the very next update. And we
7 have to be able to define what we mean by Zero
8 Net Energy in the code in order to set that level
9 of energy performance as a requirement for a
10 beyond code level of performance.

11 And this will actually result in a Zero
12 Net Energy definition being published in the
13 California Building Code, because we want to
14 establish what we mean by getting a home to this
15 level of energy performance.

16 The other thing that's really important,
17 and I'm guessing most of us in the room know, but
18 we really depend on the Utility new construction
19 programs to lead the way to more and more
20 stringent building codes. And so they really
21 need to be demonstrating and incenting the Zero
22 Net Energy of performance today. Just like Ed
23 was saying, we need to really be getting to this
24 level of performance as quickly as possible in
25 order to mandate it in two more code updates.

1 And they need a consistent definition
2 that they employ in their incentive program
3 that's consistent with a code definition, because
4 they're trying to move code forward in their new
5 construction programs.

6 COMMISSIONER MCALLISTER: Well one thing
7 I would just add actually is, you know, we've
8 certainly in the code as it applies to
9 alterations, but I think also just in the new
10 construction industry itself that the code is
11 getting pretty complicated. And parallel there's
12 a need to simplify in a way and sort of make it
13 more usable. And I don't mean that in any sort
14 of coded way, I mean that in the sincere, "Give
15 people a clear target, so that people with good
16 intentions can comply with code and not be in the
17 dark about whether they're really there or not."

18 And so doing this within that bigger
19 process of updating code to be more aggressive
20 and simpler are just it's not clear how the
21 pieces of that puzzle really do fit together.
22 And it's going to take a lot of really hard work,
23 I think from all stakeholders to come to the
24 table and work that out.

25 So I know we're already getting on

1 board, staff is already convening around the 2016
2 standards sort of I think pretty much
3 understanding what the lift is and it's not
4 small. So in that context we're having this ZNE
5 discussion.

6 MS. FOGEL: As Martha mentioned as
7 agency staff we've been having these discussions
8 following, I believe the 2011 or '12 IEPR that
9 recommended that our agencies work together, and
10 recommended a societal value metric. So we've
11 been working since at least November of last year
12 and this is a proposed definition that we came up
13 with. It really modifies the primary definition
14 of Zero Net Energy buildings in the California
15 Long-Term Energy Efficiency Strategic Plan. And
16 the changes to that definition are noted here in
17 italics, so I'll just go ahead and read it.

18 "A Zero Net Energy Code Building is one
19 where the societal value of the amount of energy
20 provided by onsite renewable energy sources is
21 equal to the value of the energy consumed by the
22 building at the level of a single project seeking
23 entitlements and building code permits, measured
24 using the California Energy Commission's Time
25 Dependent Valuation metric. A ZNE Code Building

1 meets Energy Use Intensity," I believe targets
2 was omitted there, "by building type and climate
3 zone that reflect best practices for highly
4 efficient buildings."

5 So again we came to this as essentially
6 a building on what had gone before. And in the
7 course of the PG&E study and our discussions, we
8 really focused a lot on the importance of
9 maintaining the focus on energy efficiency as the
10 foundation of ZNE buildings.

11 So of course the Utilities are mandated
12 to pursue all cost-effective energy efficiency
13 under PU code and statute. We're mandated to
14 oversee that process and it is essential in
15 reducing costs for most ZNE building types. And
16 so that results in the second sentence here that
17 Energy Use Intensity targets. And we've heard
18 several presentations today that talked about
19 HERS being a way to potentially measure and
20 communicate those targets. Certainly that would
21 be an obvious approach here.

22 MS. BROOK: Okay, so the Time Dependent
23 Valuation of energy, it's a mouthful and but it's
24 important from the code perspective, because it
25 basically allows us to meet our mandate of

1 delivering standards that are cost-effective for
2 the consumer. And also consider the full costs
3 of energy for the State of California.

4 So it accounts for the avoided costs of
5 future energy generation, transmission,
6 distribution and delivery of, and the greenhouse
7 gas emissions that are part of that system,
8 expected over the 30-year life of buildings. It
9 includes the existing infrastructure costs paid
10 by the average consumer. It values both energy
11 generation and efficiency more on-peak than off
12 peak, consistent with California system costs

13 COMMISSIONER MCALLISTER: Hey Martha,
14 can I ask a clarification? So the 30-year or
15 assumed lifetime of a building is 30 years in the
16 TDV?

17 MS. BROOK: Yeah, our life cycle costs
18 methodology is a 30-year time period, yeah.

19 COMMISSIONER MCALLISTER: Thirty years
20 okay, yeah even though we know that many if not
21 most buildings would actually be here longer than
22 that. But that's sort of the end result.

23 MS. BROOK: But this is not, this is
24 only set in stone for each code update. The very
25 beginning of our code update we vet a life cycle

1 cost methodology and the Time Dependent Valuation
2 update. In that process we can adopt any life
3 time that we choose. At least as long as I've
4 been here we've set it but you've got a very good
5 point, in Europe and other places they're arguing
6 over whether it should be 50 or 60 years.

7 COMMISSIONER MCALLISTER: There are 500.

8 MS. BROOK: Yeah, so it's a very good
9 point and you could say that we're being
10 conservative in our ability to get the energy
11 efficiency and renewable energy into the code by
12 that 30-year life assumption.

13 COMMISSIONER MCALLISTER: Yeah, I'm not
14 making a value judgment on where I think it
15 should be longer than that for purposes of
16 analysis. I just, that seems like a reasonable
17 horizon for a life cycle cost analysis. You
18 would expect the financials to sort of work out
19 at some timeframe that presumably would be less
20 than the actual average lifetime of the building.

21 MS. BROOK: Yeah, and actually I think
22 that where we've landed on 30 is that's the
23 typical mortgage time period.

24 COMMISSIONER MCALLISTER: Right, okay.

25 MS. BROOK: And so that kind of factors

1 into the equation, because we're thinking of this
2 from the consumer perspective. And they're going
3 to be paying for this efficiency through their
4 mortgage.

5 COMMISSIONER MCALLISTER: Also that's
6 the shell of the building, the building, the
7 basics of the building, those lifetimes are
8 likely going to be different than say, we have to
9 then talk about, "Okay, well what's the lifetime
10 of each of the measures and all that kind of
11 stuff, right?

12 MS. BROOK: Right, right.

13 COMMISSIONER MCALLISTER: Okay, good.

14 MS. BROOK: Now the other thing to note
15 about the way that we develop our Time Dependent
16 Valuation of energy is that we look at both the
17 current snapshot of what the grid looks like, and
18 therefore the grid costs. And we also look at a
19 future snapshot, best estimate of what we think
20 the future grid in 30 years is going to look
21 like. And we basically value both that whole
22 trend between current costs and future costs, so
23 we bring those forward and then that present
24 value type of a calculation to quantify the
25 system costs over that 30-year time period.

1 So that's important, because we know
2 that the costs are going to change and that the
3 generation costs and the transmission, to be
4 different in the future, because of all of our
5 other policy goals.

6 COMMISSIONER MCALLISTER: Can I ask, how
7 often is TDV updated with sort of new
8 projections, you know? We've just been through a
9 few years where the way the resource mix has
10 begun to change drastically and it's going to
11 continue to do so, and the hourly costs on the
12 margin are going through some pretty tremendous
13 change and it's important to kind of keep up to
14 date with, so how often --

15 MS. BROOK: Right, right so we do at the
16 beginning of every code update, so basically
17 every three years.

18 COMMISSIONER MCALLISTER: Every three
19 years, okay.

20 MS. BROOK: Yeah. And we did this time
21 and the 2013 standards assume that our RPS goals
22 were met and that at the end of that time period,
23 the 30 years, so that -- and that was the type of
24 system that we evaluated the cost on for the
25 future that we brought forward.

1 So it's good and it's bad. I mean, the
2 good part is we update it every three years. The
3 bad part is we don't have a fixed metric that's
4 always going to stay the same, and this has
5 always been the case, so when I think it was
6 Manuel from Southern California Edison brought up
7 stranded assets, that's something that Building
8 Code lives with and has always lived with. So
9 we're not doing anything different; we will
10 always have that stranded asset issue, but it
11 would be just as problematic to never update
12 expected costs.

13 COMMISSIONER MCALLISTER: Oh, no,
14 absolutely. Absolutely. I think just this
15 discussion kind of goes on steroids when you
16 start talking about having sort of having it
17 really truly be on the margin for the utility and
18 new construction, and I think working through the
19 issues of -- looking at ways to respect the
20 infrastructure costs but also respect the home
21 buyer and the business, you know, the building
22 owner, over time, I mean, we got to juggle that.

23 MS. BROOK: Yeah. So the other thing
24 that I would note is that if you look at -- if
25 you use a time dependent valuation of energy

1 metric, the size of a PV system needed to meet a
2 Zero Net Energy level of performance would be
3 lower or smaller than if you valued that PV
4 system generation with any other metric, because
5 PV system generation is very coincident with PEAK
6 and since we value PEAK higher in our time
7 dependent valuation metric, you'd need less PV
8 size to meet that same level of performance.

9 That's all I have, Cathy.

10 MS. FOGEL: So also in our agency
11 discussions we discussed a couple of other terms.
12 They've been introduced today as well. We're
13 proposing these as additional different terms
14 with different definitions and meanings.

15 The Zero Net Energy code definition I
16 offered earlier is intended to cover all fuels,
17 electric and gas, so the Zero Net Energy building
18 term offered here is intended to offer a term
19 that can help us be clear when we're talking to
20 each other if we really are talking about a
21 building that's just offsetting with the
22 renewable energy the electric consumption in the
23 building, that we call it something different,
24 call it a zero net electric building, but that
25 all those buildings meet the same EUIs for both

1 fuel types and that those EUIs are consistently
2 set and adopted and communicated.

3 The idea of a Zero Net Energy ready
4 building was again previously introduced and is
5 essentially intended to mean buildings that meet
6 those EUIs but do not have any renewables onsite.

7 MS. BROOK: I would just add on that
8 zero net electric building term, the reason
9 that's almost a paragraph long is because we
10 think it's really important that if you're trying
11 to claim that you're zero net electric, you can't
12 just be at the expense of shifting all your use
13 to gas, so that's basically what we're saying is
14 that if you do choose to use gas and you want to
15 get to that zero net electric level of
16 performance, your gas use has to be best practice
17 level of energy use intensity, so that's the
18 intent of the second part of that paragraph.

19 COMMISSIONER MCALLISTER: Who would be
20 using these terms?

21 MS. BROOK: Well, this is just all about
22 what we were talking about earlier about the
23 marketplace. You can't control the marketplace's
24 use of vocabulary and things are going to spin in
25 a bunch of different directions.

1 COMMISSIONER MCALLISTER: Right.

2 MS. BROOK: So that's why we sort of put
3 that stuff in red at the beginning of the slide.
4 We don't want to think of these as alternative
5 definitions for ZNE; they're terms that are going
6 to be in the marketplace. Let's all agree on
7 what we think that they mean. We're not going to
8 be able to say no, you can't use that term.

9 COMMISSIONER MCALLISTER: Oh, no,
10 absolutely. That's not what I'm implying. I
11 just think, like, you know, we don't want to be
12 in a situation where there are -- it's not that
13 we're trying to dictate vocabularies; I'm trying
14 to think about ways to let the marketplace decide
15 what it's going to be called. It's probably
16 going to be none of these, right? I just want to
17 make sure that this isn't our terms of art that
18 we then expect to have play out there in the
19 world, because I think that's unlikely and really
20 undesirable, right. We just want to be defining
21 code.

22 MS. BROOK: Well, that's true, but in
23 the case where there could potentially be an
24 incentive program around Zero Net Electric, if
25 that is useful to the marketplace. We just are

1 asserting that it's really not fair to call it
2 that if you've just shifted all your wasteful
3 energy to the gas side.

4 COMMISSIONER MCALLISTER: Fair enough,
5 yeah.

6 MS. FOGEL: I'll also add that I've
7 talked to builders every now and then. They say
8 "we're doing Zero Net Energy buildings."

9 Well, are you offsetting all the energy
10 consumption?

11 No, we're offsetting the electric
12 consumption.

13 So, it's proposing to have a term where
14 we can say, well, we think that's a Zero Net
15 Electric building.

16 COMMISSIONER MCALLISTER: I think it'll
17 be really important to get stakeholder comments
18 on this and really work through how this would
19 play out, right, because it's going to vary along
20 a lot of different axes, I think, as to what has
21 traction and what doesn't.

22 MS. FOGEL: So this is backtracking a
23 little bit. As I mentioned, the CPC adopted the
24 ZNE goals in 2007/2008, and the Utilities
25 subsequently incorporated these goals in their

1 codes and standards programs and their new
2 construction programs and of sustainable
3 communities, and in the case of PG&E, a Zero Net
4 Energy pilot program.

5 Peter Turnbull mentioned two studies
6 that PG&E funded: the technical feasibility of
7 ZNE buildings in California by ARUP, and The road
8 to ZNE; mapping pathways to ZNE buildings in
9 California, by HMG, both completed in 2012. So
10 some of the main takeaways there really reinforce
11 the goal adopted by the State.

12 The ZNE, these findings here are from
13 the technical feasibility study, which did most
14 of its analysis using the TDV metric, found that
15 for most buildings in California ZNE buildings
16 will be technically feasible by 2020. The most
17 challenging ones for which this was not
18 necessarily found are the larger more energy
19 intensive ones; hospitals, restaurants, large
20 hotels, multi-family high-rise and large offices.

21 The study found that using parking lot
22 space supports achieving ZNE for three of those
23 more challenging types; the multi-family high-
24 rise, large office and restaurants. And there's
25 many assumptions in the study.

1 I encourage you to look at it directly
2 if you haven't yet. At the end of the
3 presentation is a link to how you can find it.

4 One of the assumptions is that it
5 assumes rooftop PVE systems except in the case
6 when they did additional analysis to look at how
7 parking lots might support goals for certain
8 building types.

9 It did include significant plug load
10 improvements over this 2020-25 period.

11 And it did not evaluate cost-
12 effectiveness, but PG&E is looking to use some of
13 the data we're gathering for other purposes and
14 try and add some of that to their work over the
15 next couple of years.

16 As Peter mentioned earlier, one of the
17 findings also looked at the need to update study
18 ways for TDV to reflect peak shift and the value
19 of energy exports. It's primarily intended to
20 look at energy used or imported.

21 This is a nifty graphic. You either
22 like it or you don't. It's from the technical
23 feasibility study. It reinforces what Peter
24 Turnbull said, which is the study found that for
25 about 75 percent of California's building stock

1 expected to be built in 2020, that ZNE was found
2 to be technically feasible by the study. This
3 graphic kind of shows on the horizontal axis the
4 projected numbers of different building types
5 expected to be built, so warehouses, single
6 family homes, multi-family, medium office, going
7 all the way up to hospitals with single family
8 and multi-family homes comprising the bulk of the
9 expected square footage.

10 And on the other horizontal axis is the
11 California climate zones, which indicates for
12 using the TDV values how far away from ZNE each
13 building type was. You can see in the far back
14 in the deserts for hospitals there's a little
15 spike. That's going to be one of the most
16 challenging climate zones and building types to
17 choose ZNE.

18 And on the vertical axis is a reflection
19 of the additional energy reductions needed to
20 reach ZNE using the TDV metric.

21 COMMISSIONER MCALLISTER: So from front
22 to back the width of the bands, it would kind of
23 nice to have lines there to know, but it looks
24 like SoCal Non-Coastal is our kind of biggest
25 challenge there; is that a fair statement to

1 make?

2 MS. FOGEL: Yeah, I think going towards
3 the back, SoCal Non-Coastal, Central Valley,
4 Desert, yeah, with a little blip in the front
5 there for Bay Area and Mountains multi-family
6 high-rise.

7 So this is indicative, and the report
8 goes into more detail about the projected square
9 footage for building type and the modeled
10 remaining needs to get to ZNE using the
11 prototypes used in the model, but it communicates
12 that we have some significant challenges in some
13 building types and a little bit easier path in
14 some of the other building types that comprise
15 about maybe 75 percent of the expected building
16 stock in 2020.

17 This is a graphic that communicates,
18 let's start with one of the findings or
19 suggestions from the report by HMG, The Road to
20 ZNE. Especially for non-residential buildings
21 let's start with the easier buildings that also
22 have additional reasons to go ZNE, such as state
23 buildings and schools, warehouses and possibly
24 consider the next code update as including a ZNE
25 reach code or possibly a ZNE code; I'm not sure.

1 Let's let Martha speak to that if you want to add
2 to that.

3 MS. BROOK: Well, I think that the red
4 building type labels up there sort of indicate
5 that we think that we can get to Zero Net Energy
6 levels of performance in some of those easier
7 commercial buildings before the end date, which
8 is 2030, so that's one of the things we'll have
9 to think about when we do our code update is if
10 those kind of targets can be addressed earlier
11 and we don't have to wait until the end of the
12 goal period to set those standards.

13 MS. FOGEL: Some more recommendations
14 from The Road to ZNE. Again, retaining deep
15 energy efficiency as the foundation for ZNE
16 buildings. An emphasis on looking at the grid
17 impacts of the distributed generation
18 requirements that definitely will be significant.
19 These estimates here of up to 530 megawatts for
20 rooftop PV per year for residential as early as
21 2020 assume all California homes can go to ZNE,
22 which we know is unlikely to be the case. But
23 it's a significant increase from our current rate
24 of rooftop solar installations.

25 And also again this analysis assumed PV

1 was the only option. It's not necessarily the
2 only option. Also the analysis didn't include
3 storage or I believe demand response
4 opportunities. But it's significant new
5 requirements and implying by 2030 up to 5,000
6 megawatts PV just for the residential ZNE goals
7 alone.

8 The report also recommended that the
9 agencies consider defining ZNE equivalent
10 buildings. It's been introduced today again that
11 such a term and a building meeting this threshold
12 could meet renewable generation requirements
13 offsite.

14 Some other stakeholders suggest
15 considering locational efficiency or water
16 efficiency in defining this term. So that was a
17 strong recommendation in this report and also was
18 brought up in the ZNE definitions group that I
19 mentioned earlier.

20 COMMISSIONER MCALLISTER: I just wanted
21 to ask if there's been any discussion about how
22 credits that might be purchased or generated
23 somehow on behalf of a building for compliance
24 purposes would fit into utility energy efficiency
25 goals, because the utilities are within the CAP

1 sectors, right, so you've got this whole other
2 market there, so potentially to help pay for this
3 you could monetize the carbon value of aggressive
4 measures and help with the transaction, help
5 improve the profile, pay for some of the
6 additional cost of the Zero Net Energy building.
7 But then you cross some boundaries there that
8 probably are a little tricky.

9 MS. FOGEL: Uh-huh.

10 COMMISSIONER MCALLISTER: So I wonder,
11 again, we want to focus on the definition, but I
12 think if we're talking about spinning out in some
13 working groups on how to implement this thing,
14 then I think that's probably one of them is to
15 figure out mechanisms to make it attractive in
16 the marketplace. So we talked about the labeling
17 issue but we also need to talk about where the
18 different components of this fall in terms of the
19 policy that we already have. So anyway, tricky
20 issues.

21 MS. FOGEL: Yeah.

22 COMMISSIONER MCALLISTER: Another thing
23 I want to get to, an existing program that might
24 be good for this as a model is the Carl Moyer
25 Program where you have sort of entitlements.

1 It's a way to fund infrastructure investments
2 sort of in a forward way. But I think I'm getting
3 into a little bit of the weeds here, but I'm
4 wondering if there's been any sort of practical
5 discussion about how to do the accounting on the
6 incremental measures that ZNE code would require.

7 MS. BROOK: We have not had those
8 discussions to date, but we need to keep doing
9 that.

10 One thing that I wanted to mention is
11 that from the code perspective, I don't think
12 there needs to be a separate definition for a ZNE
13 equivalent. I think the nature course of code
14 development, there's always exceptions to every
15 requirement, so if there's a ZNE requirement,
16 there will naturally be some exceptions where
17 there's a good practical reason why you can't
18 meet that requirement.

19 We would just define what is a
20 legitimate exception to a ZNE requirement in
21 code, so you don't have to jump around from
22 definition to definition; there's just a natural
23 code implementation that would implement what
24 we're trying to accomplish with that alternative
25 definition.

1 COMMISSIONER MCALLISTER: You know this
2 better than I, but as long as we're not
3 encouraging people to stampede toward the
4 offramps, you know.

5 MS. BROOK: Right, and that's the issue
6 we have with every code exception. And when you
7 talk about simplifying code, that's a great way
8 to do it is to limit the exceptions.

9 So anyway, I think that this could be
10 needed for some of the marketplace spin. I don't
11 think it's needed for implementing energy code.

12 MS. FOGEL: Yeah, I would agree with
13 that. I can say and perhaps some of the utility
14 folks here may like to comment on this.

15 I haven't seen or been part of many
16 practical discussions on how to implement ZNE
17 equivalent buildings, certainly not in code. The
18 utilities have informally offered us a few ideas
19 about how such an approach might link with
20 incentives offered. They may choose to speak to
21 those or not. They may not go forward; I'm not
22 sure.

23 Anyway, carrying on here. Just as the
24 final recommendations from the HMG report that
25 the utilities should internalize the Zero Net

1 Energy goals in their portfolios. Support and
2 learn from early adopter builders. And we need
3 more real ZNE buildings in the marketplace to
4 touch and feel and measure and emulate and
5 inspire and etcetera. So there's a number of
6 discussions staring to focus in that area with
7 the utilities and CPUC.

8 And also to take a long-term view of
9 cost effectiveness. We at the CPUC have some
10 constraints on our cost-effectiveness approach
11 that does not take a long term benefit to
12 account.

13 So just some concluding thoughts here.

14 Our agencies at the staff level support
15 the TDV societal value definition for ZNE code
16 buildings for use of Title 24.

17 We think ZNE ready to be used as an
18 energy intensity target or a HERS performance
19 rating score. The utilities are talking now
20 about linking their residential new construction
21 building to EUI target starting as early as 2014,
22 next year. And I think the details are still to
23 be worked out in terms of what that means, what a
24 target would be now that we're starting to merge
25 our HERS score of 30-40.

1 And beyond that, builders can
2 differentiate with respect to branding, add
3 renewable, go ZNE, go zero electric and
4 differentiate themselves in the marketplace, but
5 we're talking about a technical target for the
6 utility programs there.

7 Zero electric could possible also be
8 shown in a HERS or perhaps a BEAR rating scale if
9 it gained traction in the marketplace. It may
10 not, as you point out, Commissioner McAllister.

11 And as Martha said, I think from the
12 staff perspective we find that we haven't quite
13 hit on the way how the idea of ZNE equivalent
14 could be regulated via Title 24, so we think it
15 may be best kept separate from Title 24, so we'll
16 probably have a lot of discussion on that.

17 There's just a lot of variables that
18 could be considered; location and water, offset
19 renewable. Are these proposed to be included in
20 50- or 30-year binding contracts at the time of
21 code or not. Are you talking about every year or
22 five year HERS rater verification of certain
23 claims? It hasn't been clear to me.

24 And we think that this idea may be a
25 little bit more appealing to consumers as

1 occupied or living in a building already rather
2 than as built. We can see how that plays out.

3 And again, now the ongoing oversight of
4 renewables would be handled.

5 So those are some of the our questions
6 about that particular terms and we welcome your
7 questions.

8 COMMISSIONER MCALLISTER: Great. I'm
9 really excited to hear what people have to say.
10 I guess just a couple things to point out and
11 then one question.

12 So I think in Cal Green Update and the
13 2016 there's opportunity to do it in a stretch
14 way and sort of get some of these ideas out there
15 and see how much they have traction in the
16 marketplace, so I think it's a really great
17 opportunity. I don't necessarily think we're
18 ahead of the game here. We've got a lot of time
19 pressure and the marketplace does not move --
20 well, it can move quickly, but I think certainly
21 our process is fairly intentional.

22 I also wanted to just point out that if
23 we can find a way, we're currently talking
24 between the two Commissions about doing the joint
25 update of the Long-Term Energy Efficiency

1 Strategic Plan and really making that a joint
2 agency document, and I think that process might
3 also be a way to push some of these ideas and
4 really be clear across the board and consistent
5 across agencies.

6 One of the issues is, as you mentioned
7 Cathy, the cost-effectiveness and figuring out
8 how to homogenize or -- I'm not sure what the
9 best word is, but I'm not sure what the best word
10 is, but figuring out how to be more consistent
11 across agencies or at least be explicit about
12 what our various statutory constraints are and
13 then make a decision. In this context I think
14 TDV makes a lot of sense. But potentially get
15 each of our respective agencies working with the
16 other's definitions in a way that is a little bit
17 more integrated, I think would be a good idea.
18 That way we wouldn't be talking two different
19 languages all the time, we'd be really talking
20 the same language, we'd just have more
21 vocabulary. I think that's an improvement.

22 But I think it's a really exciting
23 opportunity to actually get this stuff down
24 operational within -- and get some clarity
25 through the update of the Long-Term Energy

1 Efficiency Strategic Plan.

2 And then a question. With respect to
3 the PUC, Cathy, is there any need or has there
4 been a staff discussion -- certainly code comes
5 through and goes through our process and goes
6 through the Building Standards Commission and
7 becomes the law of the land. Is there any need -
8 - what's the pathway for some of this stuff to go
9 up through the Commission, the PUC Commissioners?
10 Does this need to reach an end point with them as
11 well or is it just within the portfolio process
12 as adopted basically?

13 MS. FOGEL: Well, the short answer is
14 I'm not sure. I think as long as it's adopted
15 by Commission decision of some type, I think that
16 would be helpful, and is needed. And I think the
17 updating of the Strategic Plan will probably not
18 take precedence over the authorization of the
19 2015 through 17 utility portfolio, so that could
20 slip. We may want to in that case try and
21 indicate a more refined definition or support for
22 this definition as part of the portfolio approval
23 process for 15, but whether that's possible
24 remains to be seen with the administrative law
25 judge and the scope of the proceeding.

1 COMMISSIONER MCALLISTER: Okay. Well,
2 so we should just get on whichever set of tracks,
3 you know, put it on the right train to get it to
4 the finish line. Okay. Great. Thanks.

5 So I'll open it up to questions from the
6 public.

7 MR. RAYMER: Thank you, Commissioners.
8 I'm Bob Raymer representing California Building
9 Industry Association. As I said earlier, we'll
10 be submitting comments for CBIA, BOMA and CBPA.
11 My comments today, I'm going to be presenting
12 questions and comments. I don't expect answers
13 to these. Well, please on the spot if you can,
14 but that'll be sort of the tenor of our
15 presentation, and that is 10, 15, 20 years ago we
16 may well have been beginning to serious question
17 whether or not there should be doing, whether or
18 not we would oppose it. That's not the issue.
19 We understand the state has a policy, we
20 understand there are goals in place. We have
21 questions that need to be answered on how we get
22 there.

23 So starting off, I'd like to indicate
24 our strong support for a path to simplicity. We
25 will always have the performance method out

1 there. That will be the lion's share of
2 construction that gets done, but there's a couple
3 of very obvious benefits to having some
4 marketable packages, similar to those that are
5 being developed by SMUD and others.

6 The first, of course, is that you've got
7 a very clean and easy to understand path to
8 compliance, but I suspect more importantly,
9 particularly at this time at this juncture,
10 having marketable packages that are easy to
11 understand is a marvelous education tool.

12 As we've said earlier, we've got some
13 early adopters out there that are moving forward
14 rather rapidly and rather surprisingly. At the
15 same time, there's still the vast majority of
16 industry out there that's kind of getting their
17 breath after the six to seven year downturn.
18 They're trying to get back into the construction
19 stream of things, and if they had something they
20 could just visualize and understand, you know,
21 this is how it's done, some of the fear and
22 confusion that is out there just simply education
23 that, you know, you don't have to do it this way,
24 but here is one way to get it done, could be very
25 helpful.

1 COMMISSIONER MCALLISTER: Can you -- so
2 at what point would that engagement and that
3 education need to happen? I mean, that really
4 optimally would happen when they're laying out
5 the lots, you know, when they've got the piece of
6 land and they're orienting lots and figuring out
7 what the infrastructure is going to look like
8 before they even pour a foundation.

9 MR. RAYMER: The marketable packages
10 don't necessarily need to be part of part 6 or
11 part 11, and I think the Energy Commission has
12 the ability just in the same way that the
13 Division of State Architect and HCD has done for
14 disabled accessibility. You know, there's a
15 variety of ways to comply. It doesn't
16 necessarily need to be spelled out specifically
17 in the standards, but you can come up with these
18 educational tools. And over the years,
19 particularly in the late 80s and early 90s the
20 Energy Commission did sort of anoint a number of
21 packages. Matter of fact, at one point in time
22 we had a whole lot of packages.

23 But getting on to the point here, we
24 don't need to necessarily keep all this
25 constrained to just the simple update and

1 adoption cycle that we go through, which is
2 pretty rigid quite frankly. We've got about two
3 years to get the work done prior to the next
4 update. So having said that, there is enormous
5 opportunity here to get the word out. We don't
6 have to wait for an adopted standard; we can just
7 simply -- I mean, SMUD is very close here and we
8 don't intend to keep that a secret. As soon as
9 this stuff is done we'll probably have a place on
10 our website saying, hey, by the way, here's how
11 to do it in climate zone 12, and one possible
12 option.

13 Moving right along. In terms of the
14 general definition of Zero Net Energy and the
15 reference to societal value, we don't necessarily
16 take issue with that; it's just that everything
17 is always so intertwined with cost effectiveness
18 and whatnot, and it's important to understand
19 that in terms of mandatory standards, we market
20 what is in the code, we market that to the home
21 buyers as something that the upfront cost
22 associated with compliance is going to pay for
23 itself in reduced utility bills over the 30-year
24 life of the structure. That has been the bread
25 and butter of marketing of the energy efficiency

1 standards. Obviously, REACH codes may well be
2 something else, but it is incredibly important
3 that we, our sales agents be able to look the
4 home buyer in the eye and say, look, you're going
5 to get your money back, and that is a key
6 marketing item. We don't necessarily make a big
7 deal of telling them it's 30 years. A lot of
8 people would like to get their money back in five
9 or six years, but they are going to get their
10 money back and that's an important marketing
11 point.

12 We've already mentioned liability to the
13 builder. That's a huge issue and we thoroughly
14 support the use of a variety of different
15 definitions. We just have to be very careful of
16 the one that we're going to be using in terms of
17 marketing overall to the general public.

18 Another question on how will PPAs be
19 dealt with in all of this. Once again that gets
20 back to liability issues or whatever.

21 We've got two major builders who have
22 extremely different ways of marketing their near
23 Zero Net Energy homes. One is basically
24 purchasing the solar system and the home buyer is
25 buying that and owning it. We have another huge

1 builder that is effectively utilizing PPAs
2 through a third party entity. And how all of
3 this gets addressed into this process is going to
4 be a significant issue. It can be done, but we
5 just have to be dealing with this up front.

6 In terms of the loading order, I realize
7 this may well be controversial, but when I view
8 the loading order I'm looking at it as a
9 priority. Do your energy efficiency and then
10 kind of move on, but not at all cost. Energy
11 efficiency clearly is the priority, but it
12 doesn't need to be an absolute rigid mandate that
13 any and all energy efficiency be done before you
14 consider solar. There needs to be an appropriate
15 blending, if you will. And certainly as we look
16 forward to the next set of standards we've
17 already made it very clear we're looking for the
18 use of solar as an option for compliance with the
19 energy regs. There's a whole lot of benefits to
20 that. Primarily, we're going to be losing our
21 financial incentives from the state in June of
22 2016, and to the extent that we can somehow find
23 other non-financial methods of promoting
24 incorporation of solar, particularly in the
25 smaller and medium size building industry, could

1 be very important. This is one way to do it.
2 And hopefully we don't need to view the loading
3 order as just this brick wall. It is something
4 that helps us make decisions, prioritize energy
5 efficiency, but not to the detriment of
6 everything else.

7 Obviously, the plug load issue has to be
8 taken care of, before I get into the Building
9 Standards Commission.

10 We're very interested in how gas is
11 going to be handled in all of this, and we
12 certainly understand the complexities involved
13 here, but you also need to understand energy
14 efficiency and the Energy Commission is not the
15 only game in town. We've also got the Department
16 of Housing, and to a lesser degree the Building
17 Standards Commission that is looking at mandatory
18 EV charging station regulations. And whether
19 it's July of 2015 or January of 2017, it's pretty
20 clear we're going to have some manner of mandate
21 for single family dwellings for EV charging
22 ready.

23 And it raises the issue beyond energy
24 efficiency to keep the cost at a minimum, to keep
25 entry level housing affordable. We need to

1 understand that if we're going to have
2 substantial increases in the electrical load
3 coming into the house, that's going to have a
4 huge impact on utility line infrastructure, in
5 essence all of that stuff that happens outside
6 the structure but within the project. In
7 essence, are we doubling the number of pad
8 mounted transformers?

9 Using gas helps offset some of that load
10 that's coming out, and so we need to kind of keep
11 all of this together, and I realize you've got a
12 lot of moving parts here and that's why this
13 isn't going to be an easy job to do over the next
14 five to six years, but we want to help work this
15 out.

16 Sort of concluding the comments, I don't
17 want to spend a lot of time on it, but the
18 Building Standards Commission with any agency,
19 whether it's an adopting agency like the Energy
20 Commission or a proposing agency like HCD or the
21 Fire Marshall or DSA, all building standards have
22 to meet a 9-point criteria.

23 Two of these criteria that don't get a
24 whole lot of air play are numbers 4 and 5.

25 And by the way, for reference this is

1 out of Health and Safety Code 18930 where the 9-
2 point criteria is printed.

3 Number 4 is "The proposed building
4 standard is not unreasonable, arbitrary, unfair
5 or capricious in whole or in part."

6 And criteria number 6, "The proposed
7 building standard is not unnecessarily ambiguous
8 or vague in whole or in part."

9 And this creates a not insurmountable
10 problem but clearly a clear problem that when
11 you're developing the definition and everything
12 related to Zero Net Energy, you're dealing with a
13 50-55 percent of the energy load of the house
14 that isn't regulated by the CEC but we're going
15 to try to take care of that through ultimately
16 coming up with Zero Net Energy.

17 Consequently, we're going to have to
18 make some assumptions and we're going to need
19 building standards that are precise and clear
20 because that's what building standards are, but
21 how you deal with that 50-55 percent that is not
22 necessarily regulated by the building standards,
23 we've got to make sure that it's clear that it's
24 not arbitrary, that there's strong foundation for
25 doing that.

1 And you've got a big problem because you
2 can have two precisely the same homes built right
3 next to each other to the same set of standards
4 and the overall energy plug load could be
5 substantially different.

6 So with that, industry looks forward to
7 working with you over the next five to six years,
8 particularly over the next year. We're very
9 open-minded about how we go about this. We want
10 it to be sort of a consensus arrangement and we
11 look forward to partnering with you on this.

12 COMMISSIONER MCALLISTER: Thanks very
13 much, Bob. And your last point, I really agree
14 that figuring out what 'typical' means in this
15 context, because it's essentially behavioral
16 issue, so having a solid foundation for that, I
17 mean, I think probably one of the topics here
18 about how to get to a good end point on here is
19 to dedicate some resources to studying this
20 question and coming up with updated or current or
21 just better assumptions on the half or so of the
22 energy you're talking about.

23 MR. RAYMER: And one last thing. As
24 with all of the 9-point criteria, somehow in this
25 great scheme of things we're going to be dealing

1 with farmworker housing, we're going to have to
2 be dealing with low and moderate income housing,
3 we're going to have to deal with apartments,
4 which is sort of at the lower end of the bell
5 curve in terms of housing pricing structure, but
6 these are critical issues.

7 And as Martha said, you've got the
8 ability with any building code to have
9 exceptions, but certainly that may not be the
10 answer for farmworker housing or low income
11 housing, but we're going to have to figure out
12 how to do this without crippling that upfront
13 cost.

14 So thank you very much.

15 COMMISSIONER MCALLISTER: Thank you. I
16 guess a question for staff on this. Has there
17 been discussion about electric vehicles are in or
18 out? Does our boundary for the definition
19 include them or not? I would kind of assume not,
20 but I wonder.

21 You know, for example, if we were to
22 study the question of what the plug loads are,
23 would we actually take those into account or not?

24 MS. BROOK: Yeah, so right now it's not,
25 but that's just because that's an emerging market

1 that we haven't had to pay attention to in the
2 past because there just wasn't enough of it to
3 worry about, but that obviously is changing and
4 we need to figure out. That's a huge plug just
5 to add onto a long list of tiny little plugs.

6 But our agency did give the HCD some
7 money to establish a working group to figure out
8 what the right kind of code requirements should
9 be for EVs, so that is getting worked on right
10 now.

11 MS. FOGEL: I agree with Martha and just
12 want to add that the utilities, Edison is in the
13 process of putting together a study proposal for
14 plug loads in the context of Zero Net Energy
15 buildings.

16 A somewhat modest literature review has
17 started and then going on to, I believe the
18 objective is to try and better characterize plug
19 loads so they can be reflected in both code and
20 ZNE approaches.

21 COMMISSIONER MCALLISTER: All right.
22 I've done academic research in that realm and I
23 know that it can be rather challenging, but
24 that's great to hear, that excites me a lot.
25 It's a really key area going forward, I mean

1 really, so thanks.

2 MR. ELEY: Good morning, Commissioners.
3 My name is Charles Eley. I'm an engineer and
4 architect. I've been involved in code
5 development for a long time, maybe 30, 40 years.
6 I guess my affiliation today is, I guess I'm
7 speaking for my children.

8 COMMISSIONER MCALLISTER: I want to
9 actually thank you just for your long, long
10 history in this arena. I mean, really quite
11 extraordinary, so thank you for coming today.

12 MR. ELEY: Thank you. I've got several
13 points. The first point is that building codes
14 are fundamentally asset ratings, not operational
15 ratings. We're looking at creating a building
16 that's capable of being a ZNE building when
17 operated in a way that we expect it to be
18 operated.

19 So if I design an office building and my
20 client leases it to a business that runs it 24/7
21 and puts a data center on three floors, clearly,
22 that's out of the bounds of the asset rating. So
23 we need to keep that clear in our definition.

24 I think for homeowners it's a similar
25 kind of situation.

1 I agree that TDV is the correct metric
2 for this, but as noted by Peter and others, it
3 does change.

4 My perspective is that that change,
5 though, is good. You know, if we achieve our
6 goals and half of the non-residence buildings are
7 ZNE by 2030 and all of our new ones, you know,
8 the curve is going to shift. The maximum value
9 for time-dependent valued energy is not going to
10 be at 4:00 and 5:00 in the afternoon, it's going
11 to shift to right after hours, it's going to
12 shift to 7:00 p.m.

13 And that's in a way going to begin to
14 address the grid issue to some extent, because
15 the value, the time value that we place on energy
16 is going to align with that.

17 There's a couple of boundary issues that
18 I want to talk about. The first is the physical
19 boundary.

20 By the way, I was on the advisory
21 committee to Cathy and I agree with the
22 definition that's being proposed, although it has
23 about three or four times as many words as the
24 one we originally came up with.

25 MS. FOGEL: That's government at work.

1 MR. ELEY: That's the way things work
2 around here, I guess.

3 NREL (phonetic) did a very interesting
4 paper a few years back and they identified four
5 physical boundaries, A, B, C and D, and these
6 kind of have to do with the location of the
7 renewable energy systems.

8 A means that renewable energy systems
9 have to be located on the building itself. B
10 means that they need to be located on the site.
11 C would allow them to be remotely located offsite
12 somewhere. And D would open it up to the
13 purchase of renewable energy credits and so
14 forth.

15 I believe that the proper definition is
16 B, and that aligns mostly with what we're talking
17 about here.

18 COMMISSIONER MCALLISTER: Could you be a
19 little more explicit? So you're talking about
20 like a fee and tariff kind of arrangement where
21 it's on the property?

22 MR. ELEY: On the property but not
23 necessarily on the building.

24 COMMISSIONER MCALLISTER: Oh, but it's
25 behind the meter? Anyway, too many weeds.

1 MR. ELEY: Yeah, but there are a few. I
2 did some teaching last fall down at Foothill
3 College and they have a campus of maybe 15 or 20
4 buildings and they have a campus level PV system
5 of 1.2 megawatts out over the student parking
6 area that's not associated with any one building,
7 and through exceptions or something we need to
8 account for those kinds of campus level PV
9 systems.

10 And then also another issue that we may
11 want to deal with through exceptions is the
12 concept of virtual meters. We don't expect each
13 condominium in a large building to be Zero Net
14 Energy, we expect the building to be Zero Net
15 Energy and we do that by wrapping a virtual meter
16 around all the individual condominiums and then
17 having the PV system on a separate meter that's
18 within that virtual meter, and we show that ZNE
19 is achieved at that level.

20 This could also extend maybe to school
21 districts and other things, but I think these are
22 exceptions. I think we should keep the
23 definition pure.

24 The other boundary issue is not a
25 physical boundary but it's a boundary issue

1 around which energy, how much energy is included
2 in our definition of ZNE.

3 You know, we had a lot of debates about
4 this, about whether transportation energy ought
5 to be factored in, about where the water energy
6 ought to be factored in or the embodied energy of
7 the building itself ought to be factored in.

8 I've come around to believe that they
9 should not. You know, we should be looking at
10 the building itself, but all of the energies that
11 enter the building; gas, electricity, chilled
12 water, steam if there's a campus system, all of
13 those need to be accounted for.

14 And that's not to say that we shouldn't
15 strive for ZNE transportation systems or ZNE
16 water systems or ZNE material resource, but
17 that's a separate issue. Here we're talking
18 about ZNE buildings themselves.

19 But as soon as we start talking about
20 all of the energy, then this does raise some
21 policy issues. I know we're not supposed to talk
22 about rates today.

23 COMMISSIONER MCALLISTER: I thought I'd
24 just try.

25 MR. ELEY: But I have to say a couple of

1 things.

2 You know, if we apply the test to all of
3 the energy that enters the building, then the
4 electric systems have to be net producers to make
5 up for the gas use that's used or the chilled
6 water or steam or other uses that are used, and
7 our tariffs need to accommodate that in some way.

8 I mean, you know, we put a lot of time
9 and energy into time-dependent valued energy and
10 it would be terrific if our rate structures were
11 emulated the TDV rates more. I think that would
12 kind of close the gap and speak to some of the
13 things Bob Raymer was bringing up.

14 I guess the next point is, those of you
15 that know me know that I've always been an
16 advocate for performance standards. I think the
17 EUI targets are fine, although it could be in a
18 few years that it's cheaper to install PV than it
19 is to take us to that next level of conservation.

20 At some point, and there was a graph up
21 here that showed the lines crossing, and I think
22 I'd rather just leave it open to designers, to
23 builders, to owners, to contractors to decide the
24 most cost effective and easiest way to get to
25 Zero Net Energy and not try to be too

1 prescriptive.

2 I know the EUIs are not exactly
3 prescriptive, but we're sort of drawing the
4 boundary between conservation and --

5 MS. BROOK: Uh-huh. But the problem is,
6 in my opinion, we were trying to do that so that
7 it would be a cost-effective solution for the
8 consumer and that it wouldn't be, you know, an
9 inefficient building with a ton of solar on it,
10 so that's the alternative that we were --

11 MR. ELEY: I understand.

12 COMMISSIONER MCALLISTER: Well, but if
13 solar is actually cheaper than, I mean --

14 MS. BROOK: Yeah, that would be a lovely
15 future to become a reality.

16 COMMISSIONER MCALLISTER: Yeah, exactly.
17 But I think --

18 MS. BROOK: I think, I just want to --
19 we've done the analysis and we're not there yet
20 or not even close, so that's part of what staff's
21 asserting is that let's not just assume that that
22 is already a reality.

23 COMMISSIONER MCALLISTER: No, no, and
24 I'm not. I mean, that graph was the way it was
25 for a reason, but there are some apples and

1 oranges kinds of things here that the transaction
2 cost. I mean, new construction is quite a bit
3 different. Obviously there are different markets
4 from existing buildings. But there are different
5 market issues and in some ways that incremental
6 energy efficiency has different and probably more
7 stakeholders and we have to work through each
8 measure independently.

9 So I'm not arguing for one approach or
10 the other, but I just think that flexibility is
11 important. I mean, Mr. Eley has described
12 essentially this future utopia we hope to get to
13 where the societal cost and rates match and send
14 the right signal up and down the food chain, and
15 that would motivate the right behavior and then
16 we don't have to make these compromises.

17 And that is actually a long-term policy
18 goal is to try to get time-dependent rates,
19 right, but again, we're not there yet and we're
20 going to have to have this discussion so we can
21 know what the heck we're talking about and
22 keeping it as simple as we can.

23 MR. ELEY: Just a couple of last
24 comments and then I'll sit down and let other
25 people speak.

1 But the definition for ZNE ready that I
2 saw seemed to only say that we needed a building
3 with a low EUI. I think conceptually it seems to
4 me that you've got a tall slender apartment
5 building in San Francisco with 50 stories and
6 it's got a low EUI, but there's no roof space or
7 no place to install PVs. Calling that ZNE ready
8 is a bit of a problem.

9 So we have to -- I think there needs to
10 be two things. I think there needs to be a low
11 EUI, but there also needs to be adequate space on
12 the roof or in the parking lot or someplace for
13 the renewable energy systems.

14 COMMISSIONER MCALLISTER: Would you
15 suggest some kind of an offset program or some
16 kind of a place where --

17 MR. ELEY: Possibly, yeah. I think
18 buildings like that are going to have to --

19 COMMISSIONER MCALLISTER: Is that part
20 of entitlements that there's some process to get
21 there that's not necessarily all onsite but that
22 could be counted somehow that's formal?

23 MR. ELEY: Those are the tough
24 buildings. In Cathy's graph those were the ones
25 on the right side that are going to be hard. And

1 the (inaudible) study and an earlier study by
2 NREL in 2007 both identified those building types
3 as being a problem.

4 And the interesting thing, I didn't see
5 too much sensitivity in terms of climate; it was
6 mainly building types that were the problems
7 here.

8 And then the last comment is the
9 definition of Zero Net Electric. I don't find
10 that very useful. You know, I see that as being
11 some options to kind of circumvent things by
12 shifting energy use from gas to electricity by
13 using absorption cooling systems or gas engine
14 driven chillers or (inaudible) generators or --

15 MS. FOGEL: Yeah, I think you might just
16 needs the gas, yeah.

17 MR. ELEY: -- or what have you, so I
18 think we have to be very careful with that
19 definition.

20 Anyway, Thank you very much. I
21 appreciate the time.

22 And I agree with my friend Ed Mazria. I
23 think California really is, the whole world is
24 looking at what we're doing and we want to get
25 this right, and I think we are, so Thank you very

1 much.

2 COMMISSIONER MCALLISTER: Great, thanks
3 for coming, appreciate your being here.

4 Mike.

5 MR. KEESEE: Good morning,
6 Commissioners. My name is Mike Keese. I'm a
7 project manager at the Sacramento Municipal
8 Utility District, SMUD, in our Research and
9 Development Unit. Thank you for the opportunity
10 to speak. I'll try and keep my comments as brief
11 as possible. I just want to provide a little bit
12 of background of SMUD zero energy experience.

13 We've been doing this since the year
14 2000, motivated by the 2001 energy crisis. I
15 remember that one well. We partnered with the
16 National Renewable Energy Lab in trying to
17 develop highly efficient homes with the aim of
18 introducing solar PV into the production home
19 market in residential new construction.

20 We were guided by a very simple
21 principle in developing our projects, which was
22 the definition NREL offered at the time, which
23 was a home or a building is zero energy if it
24 produces as much energy as it uses on an annual
25 basis. We understood at the time that that was

1 perhaps simplistic and a very hard goal to reach.
2 And in particular from our utilities point of
3 view our main concern is the cost of providing
4 power, which is driven by our peak demands. We
5 have a load factor somewhere around 40 percent.

6 As a result, we adopted a source energy
7 definition where we tried to develop homes that
8 used 80 percent less source energy on an annual
9 basis, and NREL helped us develop that.

10 Bob Raymer alluded to some of the
11 packages that we developed. One of those
12 packages actually evolved into our Solar Smart
13 Home Program, which is our current residential
14 new construction program which was a very simple
15 prescriptive list of energy efficiency measures
16 that we felt confidential would provide at least
17 60 percent reduction in the electricity use, and
18 that was our main concern there. Plus, you had
19 to have a certain amount of PV on the home,
20 minimum of 2kw.

21 We've evolved that looking at because we
22 knew that the codes would change, that these
23 would soon become obsolete, so speak, or the code
24 would catch up, which they have. The new code,
25 by the way, is now a Solar Smart Home (inaudible)

1 and a PV, which is a challenge for Mr. Raymer's
2 members.

3 So the home of the future, as we called
4 it, the 80 percent source reduction, is now what
5 we're seeing as the new new construction program
6 for the 2013 goal. And for HERS index, that's
7 somewhere around on the efficiency side, 50-30,
8 depending on the home. You add the PV, I can get
9 pretty low. You get into the teens.

10 We have one builder in the ones.

11 We currently have three projects, three
12 subdivision scale projects underway as we speak,
13 under construction, that are meeting this 80
14 percent energy reduction goal. Another
15 reference, that's about 45 to 50 percent north of
16 the current Title 24, 2008 standards.

17 I urge you to take a minute and come
18 down and look at them, see what they're like, and
19 more importantly, talk to the builders that are
20 building them, because they have their own
21 insights on why they're doing this, as it were.
22 I'll allude to that in a minute.

23 But the reason I'm up here is to say
24 that in principle we like the time-dependent
25 valuation approach, however, we're concerned that

1 this does not match SMUD's time-dependent
2 valuations for our system.

3 It's important to keep in mind that we
4 are our own control area. Our peak is different
5 than the statewide peak. Our costs are different
6 than the IOU's or the ISO's. As a result, we're
7 concerned that using the current standards or the
8 current TDV definition skews things dramatically,
9 at least from our point of view. We're a late
10 peaking utility.

11 COMMISSIONER MCALLISTER: How different
12 are they? I guess you really don't say that.

13 MR. KEESEE: Well, that's a good
14 question, Commissioner. We share with your staff
15 what we think the TDV numbers are. They don't
16 match our load profiles at all. In fact, I don't
17 know how they'd match any utility load profile,
18 from my experience.

19 Now, I may just be looking at them
20 wrong. I'm not an engineer, I'm just a guy, you
21 know. I'm just a simple guy, exactly. I'm just
22 a caveman; that's my thing.

23 We'd like to explore that more with
24 staff and I think that discussion has started.
25 We would like to develop our own TDV, we're only

1 in climate zone 12.

2 The other concerns are these heat storms
3 which we just came through is what drives our
4 cost, and you look at any utility load profile.
5 It happened to the ISO, I'm sure. It just grows
6 and it grows and that's not reflected in the TDV
7 calculations currently, at least not what I see.

8 I see a spiked peak day for the current
9 file that Patrick sent me was September 1st.
10 We're never going to peak on September 1st
11 unless, I don't know, something happens that's
12 beyond belief, you know.

13 We peak in July. We will continue to
14 peak in July forever, until the climate changes,
15 and it'll probably just get worse.

16 The other thing is that we are driving
17 towards the carbon free generation resource. Our
18 current goal is 90 percent carbon free by 2050,
19 and that we don't think it reflected in the TDV
20 either.

21 So we would like to work with staff to
22 develop a TDV for our climate zone.

23 And the other thing I'll just mention is
24 we are going to adopt and apparently we have a
25 rate proposal right now that will institute time

1 and use rates for our customers in the near
2 future. I think it's scheduled for 2016 if it's
3 adopted by the Board of Directors, but it's in
4 discussion. For residential, mandatory. And
5 that time and use will be 4:00 to 7:00 p.m.

6 COMMISSIONER MCALLISTER: Oh,
7 interesting. Okay. And then also, I understand
8 you're developing rates or maybe already have
9 them where there's a pretty significant fixed
10 charge.

11 MR. KEESEE: Correct. And that's going
12 up as well, that's in the current proposal as
13 well. It's currently \$10.

14 COMMISSIONER MCALLISTER: Okay. That
15 definition goes to this point of Zero Net Energy
16 versus zero net bill, you know, sort of customer
17 perception versus societal value overall. I
18 mean, those two things really don't match up and
19 I think we just need to be very careful about how
20 we turn around and look outward with this.

21 MR. KEESEE: So that's the main point I
22 put. The last point, which is the obvious one
23 we've talked about, is I talk to the public a lot
24 with the demonstration projects I manage, and
25 they have a very clear fixed idea in their mind.

1 I think we all know what that is, which is a zero
2 bill. They love nothing more than not paying a
3 utility bill.

4 COMMISSIONER MCALLISTER: You're not
5 just a man, you're The Man.

6 MR. KEESEE: That's right; I wasn't
7 going to say that.

8 MS. BROOK: I think caveman...

9 MR. KEESEE: And for experience, I think
10 the idea of having a market driven definition,
11 which the builders will adopt however they want
12 to do it versus a code one is going to make
13 sense, you know?

14 And I would just point that the Japanese
15 in their home building market, from what I can
16 tell, I don't read Japanese very well, they've
17 been doing this for at least 2000, but they very
18 different consumption patterns, although their
19 use is probably close to the California use, and
20 they build houses very differently, and they are
21 all electric homes for a variety of reasons.

22 So that's what we have. And by the way,
23 we at SMUD are happy to share the data we have
24 from the projects we've done, including we've
25 looked at grid impacts of high penetration PV.

1 We're currently doing that right now as I speak,
2 including storage out of the Anatolia
3 subdivision.

4 I can just tell you from the research
5 I've done, I've never seen any impacts of PV on
6 the grid. We have a unique distribution system,
7 however.

8 Thank you very much.

9 COMMISSIONER MCALLISTER: So let's see.
10 We do actually need to be out of this room at
11 noon, so I think does somebody else have the room
12 after that?

13 MS. KORESEC: Yeah, there's another
14 workshop this afternoon, yeah.

15 COMMISSIONER MCALLISTER: Another
16 workshop starting at noon, so we've got to be out
17 of here.

18 MS. KORESEC: Yeah, so we need to kind
19 of move through the comments a little more
20 quickly, if possible.

21 COMMISSIONER MCALLISTER: Could folks
22 raise their hands of who has comments that they
23 want to make. So we're going to have to sort of
24 limit these. I think we have some phone
25 comments, as well.

1 MS. KORESEC: Yes, we have six people
2 now on WebEx who want to make comments.

3 COMMISSIONER MCALLISTER: Okay. So
4 we're going to have to limit it to probably a
5 couple minutes. I'm sorry, guys, but let's just
6 try to clip it on through here.

7 MR. HODGSON: Mike Hodgson from Consul.
8 I'll be very brief, Commissioner McAllister and
9 staff, as well as audience members.

10 My comment generates also in my comments
11 on the AB758 workshops is really this is a
12 leadership role for the Energy Commission to come
13 forward with marketing. For ZNE to succeed at
14 scale, we need the market acceptance, and
15 builders will tell you that if the public demands
16 it, we'll build it, so currently we have a market
17 problem and that is the public doesn't demand it.

18 So as Peter Turnbull already mentioned,
19 that if you mention ZNE the attendance and the
20 interest all of a sudden goes up because it's
21 quite an interesting topic for people to center
22 around.

23 But if you look into the market, the
24 only few builders who are marketing zero energy
25 in today's market are actually marketing zero

1 bills, so what your definition and what the
2 market is doing is two different things and we
3 need to align those.

4 I would like to complement Ed Mazria for
5 always bringing up the big picture and also
6 giving us a potential feasible economic solution,
7 and so there's kind of a challenge here for the
8 Energy Commission now to see if the Governor's
9 Office wants to give us tax credits to build ZNE
10 buildings.

11 And I think that's a real request. I
12 think if the Governor's vision, which is what the
13 2020/2030 goals really kind of started from our
14 governor's office, is if they're sincere, and I'm
15 not doubting that they are, an economic stimulus
16 would be a huge help and I think Mr. Mazria's
17 comments are right on point there.

18 Last comment is, we've heard reference
19 and seen reference today to the HERS Scale. The
20 scale is a very important scale either whether
21 you're trying to identify where you are or where
22 you want to go.

23 And as we mentioned, our market, the
24 California market is built by national builders.
25 Forty percent of the buildings here are built by

1 people who are not headquartered in California,
2 and so we need to align that HERS Scale with the
3 national scale. I'm not saying they have to be
4 similar, but we have to have that dialog, we have
5 to have that crosswalk, and we need to improve
6 the HERS Scale in California so that national
7 builders can use it and market to it.

8 Thank you.

9 COMMISSIONER MCALLISTER: Thanks, Mike.

10 MS. FOGEL: This is Cathy Fogel from
11 CPC. I'll just observe for the sake of
12 stimulating offline discussion that the utility
13 approved new construction program budget for '10
14 through '12 was 65 million, which oddly enough is
15 just about what was implied by Mr. Mazria's
16 proposal.

17 MR. NANAMUTI: Good morning,
18 Commissioners. I'm Ron Nanamuti from Avery
19 (phonetic). Just wanted to bring up a couple of
20 quick points. I think Charles and Mike and Bob
21 covered a lot of really good areas.

22 As we look at society value as a guiding
23 principle for ZNE, one of the areas that comes up
24 is always demand response, because demand
25 response at the building level has a huge

1 societal value.

2 Now, the question always comes up about
3 how that gets translated to code. I don't have
4 an answer but that's a consideration.

5 And also, as we started looking at what
6 we're trying to do here is take operational
7 efficiencies over a 30-year period and absorb
8 that on the front end as a fixed point in time,
9 and so a lot of the issues with the distribution
10 level challenges that come up need to be
11 sufficiently somehow absorbed into the TDV side,
12 too.

13 The other item I'd like to bring up with
14 respect to TDV and the code itself is how we
15 treat new innovative technologies, because given
16 the fixed code cycles, if there's new technology
17 coming out of a lab today, it might take possibly
18 the earliest code cycle it can get incorporated
19 is going to be the 2020 cycles.

20 so we end up with a very long timeframe
21 for adoption of new innovative technologies,
22 which in other areas of the country such as
23 Arizona where I think 55 or 60 percent of the
24 homes are energy star rated now, so that area is
25 actually by far the highest density of energy

1 star homes in the country, and builders have been
2 able to adopt new technologies at a much faster
3 pace.

4 So it's an interesting question to
5 answer on how we can accelerate the adoption of
6 new technologies.

7 COMMISSIONER MCALLISTER: Thanks for
8 your comments, and as we were going through the
9 presentations I actually noted down "demand
10 response, demand response" several times, and I
11 agree it's got a lot of potential societal value.

12 Also, I mean, and really more important
13 even for me is potentially having it built in to
14 narrow the gap between what we've been talking
15 about, the societal value and the impacts on the
16 grid and the utility concerns about Zero Net
17 Energy, because I feel like to the extent that
18 homes can provide services, ancillary services,
19 to the grid it potentially resolves at least some
20 of these issues and helps us narrow the
21 discussion a little bit, so I appreciate your
22 comments.

23 MR. NESBITT: George Nesbitt, HERS
24 rater. Several things.

25 The PV peak is earlier than our grid

1 peak, so we still have peak, and I think the grid
2 is pretty much at the max as it is.

3 I mean, we're contemplating electrifying
4 cars. The thing is, when we talk about Zero Net
5 Energy, a lot of people want to get off of fossil
6 fuels, so it's driving people to want to go to
7 more electric houses, so we're going to throw
8 more demand on the grid, which is already at the
9 limit. Scotty can't give us any more. So unless
10 we reduce load on the grid otherwise.

11 We need to shift peak. You know, if PV
12 is one of the predominant, that means we need to
13 shift peak to earlier in the day, although I
14 think in one of the reports they talked about
15 peak getting later, but we're going to have to
16 match our use to the resources we have.
17 Currently PV is the only resource we really have
18 to get to Zero Net Energy, so we would ultimately
19 need ways to incorporate wind, various other
20 technologies to get to Zero Net Energy.

21 Currently we define it only at the
22 building or at the site, at least behind the
23 meter. If we're going to require people to have
24 a ZNE home, Martha talked about exemptions in the
25 code, but the exemptions in the code are if you

1 can't do this, generally, you have to do that, so
2 it's not like we say, well, if you can't do it
3 you just do whatever the heck you want.

4 So if we're going to make people meet
5 code ZNE and some people can't get there, we have
6 to have an equitable path that says you don't get
7 a free ride, and that's where offsite, you know,
8 some mechanism needs to be had so that if they
9 can't do it onsite, they somehow do it offsite so
10 that they're not getting a free ride.

11 I think the other thing we have to
12 remember is currently, I mean, solar is sold
13 typically on cost. Essentially, buy a PV system,
14 pay less than you would pay the man. And
15 generally I think people are going to want it to
16 be cost-effective. There are those of us that
17 would do it even though it's not cost-effective.

18 So under the current net metering, and
19 actually it's more the rate schedules than net
20 metering per se, there is no -- I coined a new
21 acronym at the last PG&E ZNE forum -- ZFI, Zero
22 Financial Interest. So currently under net
23 metering, or even if you have a meter, and the
24 rate schedules, you have no economic interest in
25 going beyond a zero bill, and a zero bill is less

1 than zero net electric consumption. And of
2 course, you know, you hit that point, you get
3 minimum charges and that takes away some of that,
4 but to the customer, you know. I mean, if it's
5 code, whether it's cost-effective or not, they're
6 going to have to do it.

7 So just the point is that we're probably
8 going to have to change the rate schedules and
9 come up with the value of your generation
10 separate from your consumption, and that value is
11 probably less than what you -- well, whether it's
12 less or more than what you pay, it really needs
13 from a customer standpoint, the value of it needs
14 to be more than the cost of putting in the
15 system.

16 I can put 10KW on my house, but there's
17 no economic incentive because it'll cost me more
18 to install it than I could ever sell it for
19 currently.

20 COMMISSIONER MCALLISTER: Okay. Thanks.
21 Yeah, Rob, come on up.

22 MR. HAMMON: Thank you, Commissioner.
23 Good morning. Rob Hammon, Bureau of Energy. One
24 gratuitous comment, if I may.

25 I just want to wish a happy birthday to

1 Nelson Mandella.

2 Regarding the major content here, I'll
3 send in notes to make sure you have all my
4 information.

5 COMMISSIONER MCALLISTER: Yeah, please
6 do.

7 MR. HAMMON: TDV really ultimately if we
8 control peak, TDV becomes source, and I think it
9 makes more sense to be source energy than TDV,
10 but those two are both reasonably attainable
11 goals and I want to make sure that we stay with
12 those two and not try to adopt site. It's not
13 been discussed but I just want to make sure we
14 don't go there because it's not attainable in the
15 near term.

16 I think we need to address peak directly
17 as opposed to through TDV. As Mike Keesee
18 pointed out, if you do look at the climate zone
19 12 peak, it's in September. That's pretty
20 bizarre. And if you do some winter analyses, you
21 get some very funny things happening between
22 electric appliances and gas appliances that just
23 don't make sense.

24 And my last comment for now would be
25 that I think we need to encourage and incent

1 SMART. I'll call them microgrids. That may be
2 raising some flags that would worry some people,
3 but community skill efforts that would promote
4 energy efficiency peak and storage, because we're
5 going to need to do storage to make the grids
6 secure. Thank you.

7 COMMISSIONER MCALLISTER: Thanks very
8 much, Rob. Very good stuff. Your last point in
9 particular I think is going to inspire a lot of
10 discussion.

11 So John, you have some slides here?

12 MR. MCHUGH: Yeah, but I think I'd
13 probably only be able to show one or two.

14 COMMISSIONER MCALLISTER: if you could
15 just rip through them, and obviously they should
16 go into the record and we have a few people still
17 in the room, or at least one still in the room,
18 and then we have some folks, we have six people
19 on the phone, so the phone folks are going to
20 have to be pretty quick, I think.

21 MR. MCHUGH: So I'll put these into the
22 record. Why don't we move to the next slide,
23 right to the proposal. Here are some suggestions
24 not only for the definition of ZNE but also for
25 the Energy Efficiency Strategic Plan goal, and

1 the first one is to define -- actually, it's not
2 clear what residential is in the goal, and Title
3 24 historically has had a portion of the
4 standards that were residential focus which are
5 low rise residential and that high rise
6 residential is grouped with non-residential, and
7 so for the 2020 goal I think the goal should be
8 modified so that we're looking at low rise, and
9 this allows us to prepare for success rather than
10 preparing for failure for the 40-story high rise
11 or something like that.

12 The other thing is that, in terms of
13 definitions, everyone gets focused on the 20
14 percent rather than the 80 percent, so define
15 what ZNE is and not worry about in terms of your
16 definition how you address all the others,
17 because that's the equivalency issue.

18 So all houses are ZNE or equiv, and then
19 you have the equivalency for the exceptions. And
20 the obvious one is I'm not going to cut down the
21 300-year-old Redwood so I can have PV.

22 I'm on the ASHRAE 189 Committee, the
23 design of high performance green buildings, and
24 how we address the issue of equivalency is that
25 you're not allowed to use equivalency rules

1 unless you don't have solar access, so the house
2 that's behind the 300-year old Redwood or the
3 house that's in the urban canyon tucked between
4 various buildings, well, you don't get to use
5 equivalency unless you're in those kinds of
6 situations. And still the 8020 rule, you know,
7 all these houses that are being built south of I-
8 50. There's no issue in terms of solar access
9 for those houses.

10 And then of course to move the high rise
11 into the 2030 goal along with the rest of the
12 non-residential.

13 So now to get to the actual definition
14 of ZNE itself is one which has a California
15 Building Energy Code compliance software design
16 rating of zero or less, and that ruleset includes
17 the plug loads that are also included in the HERS
18 rating.

19 So what we have is something that is
20 clear, it's well defined. And to speak to Bob
21 Ramer's issue about liability, the builder is not
22 making the promise that it zero builds or
23 anything else but saying "I met this particular
24 code requirement," and that's what I need to do.

25 Now in terms of, I actually think all

1 these other definitions of ZNE actually confuse.
2 If I have Coke, I don't want something that's
3 called Coca and Coke Light and they're all
4 different companies. So for ZNE I think that
5 what you have is you have a definition of ZNE,
6 and then what is equivalent is just what's code
7 compliant in 2019, so near ZNE, ZNE Light, ZNE
8 Electric, all these other things, I think,
9 confuse the market and the state really should
10 just be focused on what is the definition of ZNE
11 and then, of course, for the 2019 standards to
12 figure out what those equivalency rules are.

13 So I'll stop here because I know you've
14 got limited time.

15 COMMISSIONER MCALLISTER: Great.
16 Thanks, John, I appreciate it, but definitely
17 submit those to the record.

18 So one more quick comment in the room
19 and then I think we need to go to the phones.

20 MR. MOHAMMED: Thank you, Commissioner.
21 My name is Abdul Mohammed. I am the Emerging
22 Technologies Program Manager for Southern
23 California Gas Company, and we have been involved
24 in the long-term strategic plan development when
25 we went through all the exercises of workshops

1 and things like that. I just have two quick
2 questions.

3 One is I would like to know what is the
4 schedule for the adoption of the definition, if
5 it will be a full Commission adoption hearing and
6 adoption and what is the timeline, I'd like to
7 know that.

8 And number two is that I'm looking at
9 the presentation that Martha and Cathy made and
10 I'm looking at slide 6 of the definition that's
11 been proposed. Assuming that Zero Net Energy
12 strategy is to address the electric grid, and
13 assuming that TDV or source energy, whichever
14 definition is adopted, is field neutral, then I
15 would question or I would like -- I'm a little
16 bit alarmed with the second sentence which says -
17 - or the second line which says "onsite
18 renewable," so that really excludes all cost-
19 effective alternate fuels, other fuels other than
20 renewable.

21 So that's the concern, because one could
22 develop a fuel that has very low TDV values and
23 could meet the zero net definition but could be
24 disallowed because the definition is only for
25 renewables.

1 COMMISSIONER MCALLISTER: Or only for
2 onsite? Is your problem the renewable definition
3 or the onsite?

4 MR. MOHAMMED: Yeah, onsite, yeah.

5 COMMISSIONER MCALLISTER: Okay.

6 MR. MOHAMMED: And especially when you
7 look at technologies such as fuel cells or
8 microgrid technology, which could meet all the
9 carb and the emissions requirements with
10 potential, since we cannot project the future and
11 forecast the future, there could be, say, carbon
12 sequestration technologies that could allow,
13 natural gas technologies or even any other fuel
14 to be used onsite to produce the electricity to
15 meet the zero energy definition.

16 MS. BROOK: So I don't think that we're
17 trying to preclude any of that. For one, our TDV
18 does cover alternative fuels. We have TDV for
19 gas and propane, not just electricity.

20 MR. MOHAMMED: Right, but the definition
21 says renewable, that's what my question is.

22 MS. BROOK: And if there are other
23 renewable technologies that use other fuels or
24 aren't PV, those would certainly be considered.

25 MR. MOHAMMED: They don't have to be

1 renewable, that's what I'm trying to say.

2 COMMISSIONER MCALLISTER: Well, then how
3 are you going to offset energy, I guess
4 (inaudible)?

5 MS. BROOK: Our definition -- I don't
6 know, we weren't intending to have to define
7 renewable here, that's not even in our purview,
8 at least not mine, but the idea is that it's a
9 clean energy source.

10 MR. MOHAMMED: Sure.

11 MS. BROOK: If there's other clean
12 energy sources just like you've described, they
13 would certainly be able to be used for that
14 purpose.

15 MR. MOHAMMED: Right, it could be clean
16 but not renewable, but the definition says onsite
17 renewable, that's why.

18 COMMISSIONER MCALLISTER: They still
19 have to figure out some way to comply with some
20 Zero Net Energy definition.

21 MR. MOHAMMED: Of course. Of course.

22 MS. BROOK: Okay. Now I understand your
23 question. Okay.

24 MR. MOHAMMED: Thank you.

25 COMMISSIONER MCALLISTER: No, thanks for

1 your comment. And if you could submit that in
2 the written record, that would be great.

3 MR. MOHAMMED: Yeah, we will be. We
4 will be working.

5 COMMISSIONER MCALLISTER: Okay.

6 MR. MOHAMMED: And about the schedule,
7 are we going to ask Martha, is there a schedule
8 as far as adoption?

9 MS. BROOK: I'm sorry, the schedule,
10 basically our intent is that the full Commission
11 will adopt the IEPR and this definition will be
12 in the IEPR report.

13 MR. MOHAMMED: When is that?

14 MS. KORESEC: The IEPR is scheduled to
15 be adopted November 13th at this point.

16 MR. MOHAMMED: November. Okay. Thank
17 you.

18 MS. KORESEC: All right, we're going to
19 move to our folks on the web. Can you open Bill
20 Dakins' line.

21 Okay, Bill, your line is open. Did you
22 have a question? Bill? All right, I think we
23 may have lost Bill.

24 Next we have Christopher Goff. Mr.
25 Goff, your line is open if you'd like to make a

1 comment.

2 MR. GOFF: I'm sorry, I had you on an
3 external speaker and I'm putting on a headset.

4 MS. KORESEC: Thank you.

5 MR. GOFF: No, actually no comment at
6 this time, thank you.

7 MS. KORESEC: Oh, all right. You had
8 your hand raised earlier, that's why we thought
9 you had a comment.

10 MR. GOFF: Oh, no, that was, yeah,
11 earlier.

12 MS. KORESEC: Okay. Next is Matt
13 Grocoff (phonetic). Matt, we're opening your
14 line now. All right, Matt seems to have logged
15 off.

16 Next is Brandon De Young. Brandon,
17 we're opening your line now.

18 MR. DE YOUNG: Oh, can you hear me?

19 MS. KORESEC: Yes, we can. Go ahead,
20 Brandon.

21 MR. DE YOUNG: Okay. Brandon De Young
22 with De Young Properties, the new home builder in
23 Fresno. Just a couple real quick things.

24 You know, we talk a lot about PV and how
25 it all fits into the picture, but I feel like a

1 lot of time we never talk about the new lease
2 products that are available these days and that
3 kind of a big game changer as far as the cost
4 goes and how it fits into, you know, when it
5 actually becomes feasible in a project. So I
6 just wanted to kind of throw that out there. At
7 least solar is kind of becoming a big deal with
8 now.

9 COMMISSIONER MCALLISTER: Brandon, what
10 new product are you talking about?

11 MR. DE YOUNG: Well, we're doing an
12 emerging technologies program right now with PG&E
13 actually and on this particular project we're
14 using a solar city prepaid lease, so it's like a
15 dollar a lot, basically, and it's a 20-year
16 lease, prepaid up front, no annual or monthly
17 payments after that, you just pay a low amount
18 right up front and that's the whole thing for 20
19 years.

20 COMMISSIONER MCALLISTER: Okay. So a
21 lease product, okay, that's what you said.

22 MS. KORESEC: Prepaid lease.

23 COMMISSIONER MCALLISTER: Yeah, prepaid
24 lease product. We couldn't make you out very
25 well.

1 MR. DE YOUNG: Yeah. Oh, okay.

2 And then my only other comment had to do
3 with energy use estimating as far as plug loads
4 and all that and how they fit in. We've been
5 trying to do our best to verify the energy
6 modeling software estimate that our California
7 companies are doing for us through they're using
8 Energy Pro, and for each of our floor plans we
9 get these estimates annual basis and we are able
10 to, sort of in partnership with PG&E, start to
11 verify, without addresses so that we're not
12 dealing with privacy issues, but verify how far
13 our actual customer bills are from our
14 estimations from Energy Pro, and on average they
15 actually come in very, very close.

16 So I think in partnership with the
17 utilities, builders like us can, and if it's
18 streamlined a little bit better, can start to
19 verify our models compared to actual floor plan
20 usage.

21 COMMISSIONER MCALLISTER: Thanks for
22 that. And I think it goes back to you're sort of
23 speaking to the urgency of this issue of making
24 sure that the assumptions we make really meets
25 climate zone for the non-core energy use plug

1 load specifically are as up-to-date as they could
2 be so that we're in the ballpark with the TDV
3 calculations, etcetera. So thanks for your
4 comments.

5 MS. KORESEC: Thanks, Brandon.

6 MR. DE YOUNG: Absolutely.

7 MS. KORESEC: Next we have Ann Edminster
8 (phonetic). Ann Edminster, sorry. Ann, your
9 line is open. Ann, are you there? All right,
10 Ann may have dropped off.

11 All right. Last we have Andrew Rileman
12 (phonetic).

13 COMMISSIONER MCALLISTER: We're a little
14 bit over time so maybe people have --

15 MS. KORESEC: People may have already
16 dropped off, yeah.

17 COMMISSIONER MCALLISTER: They're out at
18 lunch now, yeah.

19 MS. KORESEC: Yeah, so it looks like we
20 no longer have Andrew either.

21 All right, so that does it for the folks
22 on our WebEx. We can take a moment to open our
23 phone lines. I think we still have 12 people on
24 the phones, but we have to open them
25 individually, unfortunately, the way our system

1 is, so that's going to take a minute or two.

2 COMMISSIONER MCALLISTER: They can't
3 raise their hand in any way?

4 MS. KORESEC: No, because they're on the
5 phone, they're not on the WebEx.

6 MS. KORESEC: Okay. Go ahead and open
7 all the call-in users, Linda. So I'm getting
8 phones lines now. If you have any comments,
9 please chime in.

10 All right, it doesn't appear that we
11 have any folks on the phone that are talking.
12 And if we missed anybody on the phone or on the
13 WebEx, please make sure to submit written
14 comments because we do want to make sure that we
15 get your comments on the record, and we're sorry
16 if we missed you.

17 So with that, we're ready to wind up.

18 COMMISSIONER MCALLISTER: Yeah, I think
19 we're ready to adjourn here. I'll just thank
20 everybody for coming. I think this certainly I
21 would want to thank
22 Cathy and Martha for the presentation and all the
23 hard work that's gone to getting us to this point
24 and as well as the three percenters early in the
25 earlier panel.

1 And Ed, if you're still on, thanks very
2 much for being with us and we'll look forward to
3 continuing dialog to include you in this
4 discussion.

5 So as Martha said right at the end, the
6 goal here is to have an adoptable definition in
7 the IEPR document so that we can really just as a
8 core foundational resource for moving forward
9 with the next round of Title 24, Cal Green and
10 Title 24, Part 6. So the goal is to be adopted
11 with that document hopefully by the end of the
12 year. Sometimes it runs over a little bit, but
13 the goal right now is November, so it's really
14 important that we get your comments and thoughts
15 on how to make this as workable as possible
16 without making it more complex. I think that's
17 really the trade-off that we have to work with.

18 So with that in mind, go forth and think
19 about it and get back to us.

20 It's a really exciting time. I agree
21 that California is leading this effort and people
22 look to us and I think we want to give them
23 another example to emulate what we're doing, and
24 we do that by ending up with a product that the
25 marketplace actually uses in practice and we

1 really need to keep that in mind, so I appreciate
2 everybody's participation in getting us there.

3 Thanks very much and we're adjourned.

4 (ADJOURNED)

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