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CALIFORNIA ENERGY COMMISSION

California Energy Commission

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100 SOUTH MAIN STREET
LOS ANGELES, CALIFORNIA
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Reported and transcribed by:
Martha L. Nelson, CERT

APPEARANCES

COMMISSIONER

Carla Peterman

STAFF

Laurie ten Hope, Deputy Director, R&D Division

Erik Stokes

Cody Schindler

Pam Doughman

Garry O'Neill

Jamie Patterson

Beth Chambers

CPUC

Andrew Schwartz, Procurement Strategies Supervisor

Cem Turhal, Procurement Strategies Analyst

SAN DIEGO GAS AND ELECTRIC

Frank Goodman

PUBLIC SPEAKERS

William Lyte

Stephanie Pincetl, Ph.D.

Michelle Rodriguez

Neal Roche

John Minnicucci

APPEARANCES (Continued)

PUBLIC SPEAKERS (CONT.)

Erin Falquier

Marian Fischlien

John Holmes

Gregg Ander

Joe Wallace

Karry McLaughlin

James Blatchford

Steve Zuretti

Jon Fortune

William Torre

Paul Bunje

Robert Sherick

Michael Colburn

Byron Washom

Magali Delmas

Edwin Hornquist

Owen Howlett

Devin Rauss

John Carrieri

PROCEEDINGS

9:05 A.M.

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MS. TEN HOPE: Good morning, everyone. I'm Laurie ten Hope. I'm the Deputy Director for Research at the California Energy Commission. And I want to welcome you here for our Electric Program Investment Charge Workshop. This is the second in a series of workshops. We had a workshop last Thursday and Friday in Sacramento. And we have today's -- today's workshop. We're convening a two-day workshop.

And before I go through the agenda I want to just let you all know that we are WebEx-ing this -- this meeting today and -- and recording it. So when -- when we have opportunities for public comment we'd ask you to come up to a microphone, state your name, state your affiliation so that people who are participating remotely have the opportunity to -- to -- to hear you.

We have -- participating remotely we have Commissioner Peterman. And she would like to make some welcoming comments for us today. Can we bring Commissioner Peterman up?

MR. SCHINDLER: She's up.

MS. TEN HOPE: Commissioner?

COMMISSIONER PETERMAN: Good morning.

MS. TEN HOPE: Good morning.

1 COMMISSIONER PETERMAN: Can you hear me?

2 MS. TEN HOPE: We can. But if you could speak up
3 a little bit it would be helpful.

4 COMMISSIONER PETERMAN: Hello? Hello?

5 MS. TEN HOPE: Just tell her one moment.

6 COMMISSIONER PETERMAN: Hello?

7 MR. SCHINDLER: Hello?

8 COMMISSIONER PETERMAN: Hi. Can you hear me?

9 MR. SCHINDLER: Yes.

10 COMMISSIONER PETERMAN: Oh. Okay. Good morning,
11 everyone. Just want to make sure I'm coming in clear, and
12 please let me know if I'm not. I hope it's cooler where you
13 are than Sacramento. It's going to be 104 degrees here
14 today. So hopefully you're in a nice clear space.

15 Again, this is Commissioner Carla Peterman, and I
16 bring you greetings from my fellow commissioners as well. I
17 regret, and we generally regret that we can't be there in
18 person today. But we have a business meeting this morning,
19 and the work must go on. Thank you for being part of that
20 work with your participation today.

21 First, let me thank the California Public
22 Utilities Commission for adopting the EPIC decision. This
23 is a very important program that will position the state to
24 develop cleaner, affordable, and more sustainable energy and
25 reach our climate and energy goals.

1 These workshops are the primary form for the CEC
2 to gain stakeholder feedback for the investment plan. This
3 is the place to make the most influence in shaping the
4 program going forward. During this two-day workshop and
5 breakout sessions I ask that you roll up your sleeves and
6 dig into the details, all of which, again, will be recorded
7 and available remotely via WebEx.

8 As the commission engages in this process we have
9 program experience to leverage in both research and
10 renewables. The PIER Program has good experience with
11 carving investment plans and designing them with stakeholder
12 feedback. And the Renewables Program has managed incentive
13 programs for small PEVs, wind fuel cells, and biomass. This
14 experience positions us well going forward. However, as far
15 as what will be funded with EPIC, this is a blank slate.

16 In the renewables space in particular, I'm looking
17 at stakeholders to provide feedback on what are some of the
18 best ways to incentivize renewables, and for feedback from
19 local governments on types of assistance you need to better
20 develop and site renewables.

21 Again, I encourage, as you work through the next
22 two days, you keep in mind that the research should be
23 paving the way for deployment through our renewables
24 program. And the funding areas should speak to maximize
25 ratepayer value.

1 Finally, thank you to the CEC and the PUC staff
2 for their hard and excellent work to date and the efforts to
3 come. I look forward to your feedback, and have a
4 productive two days. I'll be able to participate until our
5 business meeting starts at 10:00, and then I'm looking
6 forward to staff's report back.

7 MS. TEN HOPE: Thank you, Commissioner.

8 I'd like to -- this morning we're going to first
9 have an overview of the EPIC decision by the CPUC that sets
10 the stage for the conversations that we'll have -- we'll
11 have throughout the day. I'll then provide some context for
12 the process that the Energy Commission will be following to
13 develop our portion of the investment plan. And then we'll
14 hear from the investor on utilities, who are also preparing
15 investment plan.

16 So next up, I'd like to introduce Andy Schwartz
17 and Cem Turhal from the CPUC, and they'll walk through the
18 decision that frames -- frames today's discussion.

19 MR. SCHWARTZ: Thank you, Laurie. So my name is
20 Andy Scwhartz, as Laurie said. I'm a supervisor of the
21 Emerging Procurement Strategies section of the CPUC. I
22 thought what I would do before we get into the specifics of
23 the framework that the decision created for the
24 establishment of the EPIC program is just a few, I guess
25 sort of ground-rule suggestions, as well as discuss the role

1 that the PUC has in the process.

2 So as was indicated, the PUC adopted a decision
3 that established the EPIC program to fund primarily -- well,
4 focusing on pre-commercial technologies. And Cem is going
5 to sort of get -- talk in much more detail about the
6 specifics of the program. In addition to pre-commercial
7 technologies, also facilitating sort of the deployment of
8 technologies through permit streamlining and other
9 activities that can enable those technologies, once
10 developed, to be deployed more effectively.

11 But I think it's important to just briefly talk
12 about sort of the role that Cem and I have. So we are the
13 key staff people at the PUC. So we would be a stakeholder's
14 point of contact if you have questions about either the
15 decision that established the framework, or once the
16 investment plans are submitted to the commission, if you
17 have questions about how the commission's deliberations
18 work, and things of that nature.

19 I don't think either Cem nor I would claim to be
20 subject matter experts on the broad scope of issues that the
21 EPIC program is going to cover. We have more of, I would
22 say, a coordination-facilitation role at the PUC. So to the
23 extent there are specific questions about a given technology
24 area that's proposed within the investment plans that will
25 be submitted by the CEC and the utilities, we would work

1 with the internal expertise of the commission to provide
2 feedback.

3 In terms of the -- what I'm hoping we can do with
4 today's presentation is have Cem go through it. If you have
5 a specific question, if you can hold those until after his
6 presentations, just to make sure that we have enough time
7 for him to go through the presentation in its entirety
8 first.

9 And then second, in terms of the types of
10 questions that, you know, we're happy to entertain, you
11 know, if you have clarifying questions about what the
12 decision meant by something or what, again, what the process
13 is from going from the investment plan proposals through the
14 PUC deliberations -- we have an answer to those -- I want to
15 avoid getting into situations where we're essentially re-
16 litigating issues that were decided within the commission
17 decision. I think we recognize that certain aspects of the
18 decision were highly controversial, as Cem will describe in
19 a moment, that are certain areas that the commission decided
20 not to continue funding or that had previously been funded
21 via funds through the PUC, in particular some of the markets
22 and core activities that were previously funded through
23 those prior programs.

24 I know -- I know personally, I've heard from
25 parties that there is some dissatisfaction within the

1 development community on some of those decisions. But the
2 decision stands as it is, and I don't want to get into a
3 discussion about sort of why -- what the commission did was
4 correct or not, and would rather spend our time discussing
5 how to move forward with what the decision currently says.

6 So with that, I will turn things over to Cem to
7 give you an overview of the -- of the EPIC decision. Thank
8 you.

9 MR. TURHAL: Thank you, Andy. Hello, everyone.
10 I'm name is Cem Turhal, and I'm with the California Public
11 Utilities Commission. And I'm here to provide you an
12 overview, a detailed overview of the EPIC program.

13 In recent decisions the California Public
14 Utilities Commission determined that the commission has a
15 compelling interest in providing ongoing support for the
16 development and deployment of the new and emerging
17 technologies in California, despite the sunset of the public
18 discharge. The basis for this viewpoint is rooted in a
19 number of considerations.

20 To achieve the goals set forth by AB 32 and the
21 cap-and-trade program, there will need to be a fundamental
22 change in the technologies and the systems used to provide
23 energy services in California. The degree to which new
24 technologies will need to be relied upon grows more evident
25 if one looks towards the 2050 timeframe where in order to

1 realize the goals of GHG emissions 80 percent below the 1990
2 levels, the energy systems in California will have to almost
3 be -- completely be decarbonized. The carbon emissions will
4 become increasingly expensive, and as a result providing
5 energy services at a reasonable cost strongly suggests the
6 need to invest in tomorrow's technologies today.

7 California is an innovation leader. Programs like
8 the EPIC program have a fundamental role in catalyzing the
9 industries of the future and maintaining California's place
10 as a center of innovation in technology, and the economic
11 benefits associated with that leadership.

12 Oh, I didn't move the slide. My bad. So in this
13 slide we're -- all these slides will be up online, as well,
14 so you can -- you can always go back and review them if
15 you'd like.

16 The -- the EPIC program is focused primarily on
17 supporting pre-commercialized efforts, with some additional
18 support for -- for more facilitation activities. And we'll
19 discuss these in further slides.

20 The support for the EPIC program provides -- is
21 largely intended to help fill in the gaps of funding that
22 exist between the technological -- the technology maturation
23 curve, which you're seeing in this slide. This particular
24 version has been developed largely by the energy finance,
25 and there perceives to be significant funding gaps in areas

1 of research development, technology, demonstration, and
2 certain aspects associated with commercialization. In
3 general, the EPIC program is built around filling these
4 identified funding gaps to help move technologies or
5 approaches from an early stage of development to commercial
6 viability. We can take a closer look at these in the next
7 slide.

8 So in considering what areas to fund with EPIC
9 monies, the commission considered four potential areas,
10 shown in this slide. Of the four areas, three, which were
11 the applied research, technology, demonstration, and
12 deployment, and market facilitation were -- were chosen.
13 The CPUC decided not to fund market-support activities for
14 various reasons. I want to spend a few minutes on the
15 reasons why market supports was not chosen to be supported
16 with EPIC monies, and the reasonings are varied.

17 Previously, the Public Goods Charge funded three
18 market-support programs. These programs included the
19 Emerging Renewables Program, the existing Renewables
20 Facilities program, and the New Solar Homes Partnership
21 Program.

22 For the Emerging Renewables Program the commission
23 determined that the -- consolidating this program with the
24 Self-Generation Incentive Program was preferred to
25 continuing funding for a separately administered program,

1 given the similar objectives of the Emerging Renewables
2 Program and the Self-Generation Incentive Program. For
3 existing Renewable Facilities Program the commission
4 determined that these facilities have ample market
5 opportunities via existing procurement programs like the
6 Renewable Portfolio Standards or RPS. Finally, the New
7 Solar Homes Partnership Program at this -- at the time that
8 the decision was issued by the commission the commission's
9 hands were tied in terms of providing incremental funding
10 for the New Solar Homes Partnership Program because of the
11 statutory cap on the amount of ratepayer monies for the --
12 for the -- for the California Solar Initiatives Programs,
13 which the New Solar Homes Partnership Program is a part of.

14 However, with the recently approved budget's
15 trailer bill, Senate Bill 1018, it appears that it gives us
16 some flexibility in this area, and we remain optimistic that
17 future funding will be available to support the New Solar
18 Homes Partnership Program.

19 The program -- the EPIC program has an overall
20 budget of \$162 million annually, starting in 2013, adjusted
21 every three years to account for inflation using the
22 Consumer Price Index. I should note that in 2012 this --
23 the EPIC program's budget is 143 million based on
24 Commission's Phase I decision in the EPIC proceeding.

25 And the -- and the areas of investment are broken

1 out into the four administrators, which we will cover in a
2 bit. But the applied research area, the areas that we
3 talked about briefly in the previous slide, 55 million will
4 go to the CEC for applied research in technology,
5 demonstration, and deployment; 45 million will also go to
6 the CEC with -- with the -- with -- with a note that at
7 least 20 percent of that money needs to be used for
8 bioenergy projects. And another 30 minute -- 30 million for
9 the utility -- I mean, the technology, demonstration, and
10 deployment area.

11 Under the market facilitation area, the CEC will
12 also administer \$15 million. And the program administrators
13 will have an overall 10 percent; that's 12.8 for the CEC,
14 and \$3.4 million dollars for the utilities. The CPUC will
15 provide program oversight and will -- will be -- will
16 receive \$.8 million for that, which totals to an annual
17 again of 162 million starting in 2013, and every year those
18 are the monies that will be set aside.

19 So as I briefly discussed earlier, there will be
20 four program administrators, the three utilities and the --
21 and the CEC, California Energy Commission, Pacific Gas and
22 Electric, Southern California Edison, San Diego Gas and
23 Electric, specifically. Under the terms of the decision the
24 IOUS are prohibited from using monies they're administrating
25 for generation projects. They may propose non-EPIC fund

1 sources to support such projects, but utility administered
2 EPIC funds cannot be used for this purpose.

3 The role of the administrator -- there are many
4 roles to being an administrator on the EPIC program, but one
5 of them is to submit investment plans to the California
6 Public Utilities Commission for approval. Once that plan is
7 approved the administrators will implement those plans and
8 use them directly to fund individual projects. All
9 administrators of the EPIC funds will be subject to the same
10 requirements as we discussed in the previous slide,
11 including the administrative expenditure cap of ten percent
12 annual reporting requirements. And also I should not that,
13 additionally, one of the investment plans that -- that we
14 have approved, administrators can shift up to five percent
15 of the approved spending categories into another approved
16 spending category at their discretion.

17 This slide provides an overview of the EPIC
18 program schedule. As you can see, the EPIC program is
19 divided into three investment plan cycles. The cycles are -
20 - it begins in -- 2012 to 2013 is the first cycle, the
21 second being 2015 to 2017, and -- and the third investment
22 plan will be from 2018 to 2020. Each investment plan will
23 have four elements to it.

24 (Background noise from WebEx.)

25 MR. TURHAL: If you could mute your phone, that

1 would be great. Thank you.

2 As I was saying, the -- the four elements of the
3 investment plans will be the -- the development of the
4 investment plans by the administrators. So the CEC and the
5 three utilities will develop an investment plan. And then
6 that proposed investment plan will be submitted to the CPUC
7 for review. The CPUC will review and ultimately issue a
8 decision on -- on the investment plans in May of 2013 for
9 the first investment plan, and December of 2014 for the
10 second investment plan, and December 2017 for the third
11 investment plan.

12 The provisions of the electric ratepayer benefits
13 is the overarching guiding principle for the EPIC program.
14 Every -- every project in the -- that would receive EPIC
15 funding would need to have some sort of ratepayer benefit
16 associated with it. The CPUC has a mandate to assure that
17 any monies we -- we direct to the IOUS to collect for
18 programs like this under our own authority provide benefits
19 to the ratepayers. There are many components to what could
20 be included in the notion of ratepayer benefits, as
21 indicated in this slide. These types of benefits line up
22 with a variety of state goals including GHG emissions
23 reductions, advancing safety and reliability, reducing
24 costs, etcetera.

25 However, some of these components done inherently

1 result in ratepayer benefits. For example, not all clean
2 transportation projects provide benefits to electric
3 ratepayers. To address this and further underscore the
4 centrality of providing benefits that explicitly accrue to
5 electricity ratepayers, the decision requires that the
6 proposed funding activities are mappable to the utility
7 value chain. And the utility value chain can be best
8 described as -- as these four bullet points which are
9 operations and market design, generation, transmission
10 distribution, and demand-side management.

11 So in other words, the projects seeks EPIC funding
12 would need to, A, provide ratepayer benefits, and should be
13 also mappable directly to one of these, at least one of
14 these, mappable to the utility value chain.

15 This slide shows the various components that need
16 to be included in the investment plans. Also, in developing
17 these investment plans the administrators are required to
18 consult extensively with a broad cross-section of
19 stakeholders via workshops such as this one, as well as
20 through a common process. They -- they are continuously
21 seeking stakeholder involvement. And another key exception
22 to the CPUC is -- of the program administrators is that they
23 will coordinate their efforts across not only their
24 investment plans, but also in consideration of activities
25 that are taking place elsewhere, for example, at the federal

1 level.

2 Lastly, the decision establishes annual reporting
3 requirements. The program administrators shall file reports
4 annually, starting on February 28th of 2013, to February
5 20th of 2020. Every year, starting in 2013, February 28th,
6 until 2020 there will be annual -- annual reports filed by
7 the administrators.

8 As I mentioned earlier, the CPUC will hire an
9 independent evaluator to review the EPIC program by 2016.
10 So at least one independent evaluator will be hired by the
11 PUC by 2016. And -- yeah.

12 So that concludes my overview of the EPIC program.

13 These are my contact information. So if you have any
14 questions, please feel free to give us a call. Thank you.

15 MR. SCHWARTZ: Before we -- I don't know if people
16 have questions. We're happy to take those now. But before
17 we do that I was remiss earlier in not recognizing the
18 efforts of the CEC in putting these workshops together. I
19 mean, I think as the timetable that Cem put up showed, we're
20 operating under, particularly for the first investment plan,
21 very, very -- a very, very constrained schedule. And so
22 kudos to the CEC and CEC staff for pulling these workshops
23 together and working so quickly to pull these investment
24 plans together.

25 I also want to thank the stakeholders who, as the

1 CEC mentioned, are really a critical part of this process
2 and are really helping to inform what the EPIC program
3 ultimately focuses on.

4 So if people do have questions, I think we're
5 happy to -- to take those now. No? Okay.

6 DR. PINCETL: I'm Stephanie Pincetl.

7 MS. TEN HOPE: Please go up to the microphone.

8 DR. PINCETL: Okay.

9 MS. TEN HOPE: I'm sorry. It's a little hard for
10 us to hear you.

11 DR. PINCETL: All right. I get to address the
12 audience here.

13 MR. SCHWARTZ: Yeah.

14 DR. PINCETL: Good morning. I'm Stephanie
15 Pincetl. I'm at the UCLA Institute of the Environment and
16 Sustainability. And in full honestly, I'm a recipient of
17 PIER funding, and so I've been involved very closely with
18 these kinds of efforts. And I laud the PUC and the CEC for
19 putting these hearings together and actually advancing the
20 future of the state in terms of renewables.

21 Now that being said, I do have a question. Under
22 ratepayer benefits, are you considering health benefits?

23 MR. SCHWARTZ: I think that's a really good
24 question. You know, we -- we are largely deferring at this
25 point to proposals by the CEC and the IOUS. So if there are

1 things that they feel are specifically related to, you know,
2 health benefits to specifically ratepayers, as opposed to
3 sort of -- I mean, I guess it's sort of an open question.
4 If broad-based sort of public health benefits of reduction
5 of criteria pollutants, for example, I don't know whether or
6 not -- I can't say with certainly right now whether or not
7 that would be meet the requirement. I think that's a good
8 question, and there's a meaningful discussion to be had if
9 those are the types of projects that the CEC or the IOUS are
10 interested in proposing.

11 So, you know, Cem laid out the schedule for
12 developing investment plans. Once those investment plans
13 are developed there will be a full deliberative process
14 undertaken at the PUC. Those processes provide additional
15 opportunity for comment and involvement by stakeholders.
16 And obviously, then the Commissioners will need to decide
17 if, you know, sort of the definition of ratepayer benefit is
18 satisfied by the program and eligibility requirements that
19 are put in the plans. But I wouldn't say there's sort of a
20 categorical kind of determination now that would say, no,
21 those are -- those are off the table.

22 MR. SCHINDLER: Could you summarize the questions
23 that are asked?

24 MR. SCHWARTZ: Oh, sure. So the question was
25 whether or not public health benefits that a project may

1 provide or advance would be consistent with the notion of
2 providing electricity ratepayer benefits.

3 Are there any -- any other questions?

4 DR. PINCETL: This is Stephanie Pincetl again.
5 I've given this a fair amount of thought, obviously. Some
6 of the other areas that I'm wondering whether they'll be
7 considered a full life-cycle analysis of the projects. So
8 there are different ways of measuring benefit, of course.
9 There's cradle to grave, or there's from the point of
10 implementation forward. And I would argue if this is going
11 to be a more comprehensive approach, particularly
12 considering greenhouse gas emissions and so forth, that
13 since greenhouse gasses are a global program, full life-
14 cycle analysis ought to be included in the evaluation of
15 whether the project is providing ratepayer benefit. And I
16 would be happy to provide written comments on several more
17 details like that.

18 MR. SCHWARTZ: So summarizing for the question or
19 comment was the -- the gist of it, as I understand it, is
20 there would be -- there's -- there is a reasonable argument
21 that in considering projects and ratepayer benefits that a
22 life-cycle approach should be taken, evaluating benefits on
23 a life-cycle basis.

24 Again, I don't think there would be -- there's
25 nothing in the decision that would say that such an approach

1 could not be proposed by the administrators if that was the
2 direction that they wanted to go. So, yeah, I think
3 there's -- there's some openness to -- to concepts like that
4 within the framework the decision establishes.

5 MS. TEN HOPE: Thank you.

6 MR. SCHWARTZ: Thank you.

7 MS. TEN HOPE: Thank you, Andy and Cem. We --
8 people on WebEx are having a little trouble hearing. So I'm
9 going to try to speak right into the microphone. And when
10 anyone else comes up, please speak closely, otherwise we
11 have to repeat the questions. And -- and it's a little
12 awkward. I feel like I'm right there. All right.

13 I'm Laurie ten Hope. For those of you who came in
14 a little bit later, welcome to the workshop. There are
15 agendas over here. And we also have a two-pager overview of
16 the EPIC program and schedule. On the back side of that
17 handout is -- is the website. So for those of you who want
18 to sign up to receive follow-up materials through this
19 proceeding, sign up. You'll find a lot of materials there,
20 and more as time goes on. Presentations will be posted at
21 that site, and notices of future -- future workshops.

22 So as -- as you've heard, today we are here to
23 take public comment on the -- the EPIC program. The Energy
24 Commission, as I stated at the beginning and you heard from
25 the CPUC, is one of the four administrators. We're -- we

1 want to have a very public process to solicit stakeholder
2 input on the elements of the investment plan that we submit
3 to the PUC. We then need to craft an investment plan that's
4 responsive to the criteria that's in the decision. But
5 getting input and ideas on what should be in that investment
6 plan is, you know, is really the purpose of these forums.

7 We'll -- we'll have a series of workshops. And we
8 also welcome written comments. Written comments are due as
9 a follow-up to this workshop by the 17th. And you'll see a
10 web address for -- for submitting those later on in today's
11 presentation.

12 So as Andy and Cem outlined, the investment plan
13 has a lot of elements to it. We basically have to define
14 what the research initiatives should be in the investment
15 plan. We need to provide a rationale for why those are the
16 right initiatives in terms of, you know, tying back to a
17 strong ratepayer benefit, and having an energy policy nexus.

18 The administrators are expected to collaborate. And we
19 have initiated that collaboration. And I appreciate the
20 reach-out from the -- the three investor-owned utilities to
21 collaborate in terms of schedules and initiatives so that
22 when we put a plan forward the plans are non-duplicative and
23 they complement each other.

24 I will mention, although you will hear it from --
25 from Frank Goodman, as well, the utilities are holding their

1 own stakeholder workshops to seek input specifically on the
2 initiatives that they're proposing.

3 We are also reaching out to Department of Energy,
4 the Air Resources Board, and others who have energy-related
5 research programs so that the program that goes forward here
6 can complement the work that they're doing. And if there's
7 an opportunity to provide some, perhaps, match funding
8 through the EPIC program that helps pull more federal
9 dollars into California, that's something we, you know, we
10 want to be cognizant of. And we really want this program to
11 compliment what the private sector and federal government is
12 doing and not be duplicative. So again, you can be helpful
13 in identifying some of the areas that you think are -- are
14 real gaps or areas that we really don't need to be including
15 because they're well covered by -- by others.

16 Basically, we want a robust plan that -- that
17 accelerates clean energy innovation. And we think that the
18 EPIC program gives -- gives a good opportunity to kind of
19 take a pause, look at what's been done in the past, but --
20 but start afresh with -- with a new program that has some
21 opportunities for some -- for -- for new elements that were
22 really not a part of the public goods charge program.

23 So, so far, this is a quick a agenda review.
24 We've heard the overview from the CPUC. I'm doing the
25 process overview. And then Frank Goodman will be outlining

1 the investor-owned utilities. And then we're going to have
2 three discussion sessions. If some of you participated last
3 week in the Sacramento workshops, we did these sessions as
4 three separate breakouts. Today we're going to all be
5 together in this room and we'll go session by sessions,
6 starting with generation, and then grid ops, and then energy
7 efficiency. So in that -- those discussions we'll tee up
8 some topic areas. But what we really want to hear is -- is
9 from you.

10 What I'd -- in this -- and then tomorrow we're
11 going to have three panels that are in -- focused on the
12 market deployment and market facilitation topic areas within
13 the decision. So as you heard, there's an emphasis in the
14 decision on an innovation pipeline, and including deployment
15 activities, and maybe market support. So we have -- and
16 there are some specific topic areas that are discussed in
17 the decision as options. They're not necessarily, you know,
18 saying that these are what should be done, but there are
19 some options for facilitating permit -- permit assistance,
20 particularly for renewables, working with local governments.
21 That's one opportunity.

22 Innovation clusters to geographic focus on
23 assistance to -- to clean-tech start-ups that may have a
24 good idea, and with some help in their -- with their market
25 plans and networking will really be able to facilitate some

1 clean -- clean growth in -- in various parts of the state.
2 We have some exciting panels to talk about what is
3 happening, and then solicit comments on whether this is a
4 good fit with EPIC or where the gaps are, what -- what would
5 really help bring these -- bring new technologies to market.
6 And the third panel is on workforce development. So that's
7 -- that's a peak at tomorrow.

8 We -- just quickly, because you saw this chart
9 already, I want to just point out that after today we'll be
10 working on a draft investment plan, which we will issue in
11 early September. And then we'll hold another series of
12 workshops in Northern and Southern California and take
13 comments on the investment plan. If you can't participate
14 in the workshop it will be posted online and you'll have an
15 opportunity to -- to submit comments to us. And the rest of
16 the dates you have heard already.

17 I just want to, for a second, reiterate this
18 innovation pipeline, because I think it's really important
19 when we have the discussions a little later this morning and
20 this afternoon is to think about, you know, not just a
21 favorite project, but what a project -- what do technologies
22 need. Do technologies need a breakthrough in terms of cost
23 or materials that might fit more in the applied research
24 area? Or is the, you know, is the true barrier a scale-up
25 issue and really a need for demonstration to -- to share

1 with potential users the -- the value of a technology?
2 So -- or is it, you know, is it more in the market
3 facilitation area? And it is important to tell us what's
4 not needed so that this money really goes to focus on the
5 priorities where we're going to really make the biggest
6 difference.

7 Again, here -- here is the -- our website for
8 follow-up material. Our two leads at the Energy Commission
9 are Erik Stokes -- if you could raise your hands -- and Pam
10 Doughman. So if you have questions on process you can ask
11 me or either one of them.

12 With that I'm going to -- I think I stepped ahead
13 here. We're going to go to -- to Frank Goodman with
14 SDG&E&E, and he's going to do an overview of the IOU
15 process.

16 MR. GOODMAN: Do I have to bring up another
17 presentation?

18 MR. SCHINDLER: I'm bringing it up right now.

19 MR. GOODMAN: Okay. Will it come up here as well?

20 MR. SCHINDLER: Yes.

21 MR. GOODMAN: Okay. Great. Well, I want to thank
22 Laurie for bringing up the presentation, and thank Laurie
23 and the CEC for giving me the opportunity to represent three
24 IOUS; a rare opportunity. And I --

25 MS. TEN HOPE: You're going to need to step closer

1 to the microphone.

2 MR. GOODMAN: Okay. All right. Can you hear me
3 okay? All right. Thank you.

4 And I will speak for the three IOUS. This
5 presentation was put together as a collective action by
6 Southern Cal Edison San Diego Gas and Electric, and PG&E.
7 And we are working toward workshops. I'll give you more
8 information on those at the end of the presentation.

9 We, in -- in the course of developing our
10 investment plan for EPIC we are looking to have high-
11 priority activities, larger significant activities -- not a
12 lot of small things -- and make wise use of the funds,
13 target it toward the things that will really produce high
14 value for our ratepayers, and at the same time achieve these
15 three issues that were presented earlier, greater
16 reliability, lower costs, and increased safety as targeted
17 areas.

18 We like to see our projects have clearly stated
19 objectives. For example, on a demonstration we don't want
20 to say we're going to demonstrate technology X or product X.

21 We want to put out the matrix and say what that
22 demonstration will consist of in terms of measurement and
23 evaluation, demonstrating technically -- technical
24 viability, economic viability, or both. So we will work
25 toward projects with specifically stated objectives, and at

1 the same time consider the issues that Cem was showing you a
2 little earlier.

3 This slide shows policy issues. I just came out
4 of a two-day EPRI workshop in which all three IOUS were
5 participating in that as well. And there was quite a bit of
6 discussion around policy. And most of our strategic drivers
7 align with policy issues coming from the state level in
8 terms of renewable energy, zero-net energy, and more
9 recently the governor's program for 12,000 megawatts of
10 distributed renewables. So those things are factored into
11 our choice of projects that we will do. And this is true
12 for all three IOUS. There was quite a bit of discussion
13 around that at the workshop that we just came out of.

14 We have a full -- we have an interest in a full
15 spectrum of R&D activities from basic research all the way
16 through the commercialization processes. But we are focused
17 more toward the final closing steps of a technology
18 development cycle toward demonstration and deployment in the
19 EPIC program. But the IOUS must continue to be involved
20 across the full spectrum of the RD&D process. We have
21 vendors, universities, and other stakeholders coming to us
22 all the time with ideas and brainstorming with us. And they
23 need utility input early on in their development process.
24 And then they need us more than ever when they get down to
25 the demonstration stage, which tends to be the more

1 expensive part of the R&D cycle.

2 So we want to continue and will continue that full
3 spectrum. We need to -- it's -- it's not an option that
4 we -- we focus only on one part of the spectrum. And the
5 EPIC money is aligned with our work in the latter part. And
6 we will be using other sources of funding as we identify
7 them to keep us involved across the full spectrum. But we
8 don't intend to get heavily involved in things like basic
9 research. The emphasis is towards the later end of the
10 cycle.

11 We seek to collaborate with CEC. We have been
12 meeting with them by phone and by face-to-face meetings to
13 put these workshops together and have the workshops
14 coordinated. And then hopefully the investment plans that
15 come out of this whole cycle of planning will be aligned
16 well to where their non-duplicative and they're balanced
17 between the different stages of the R&D cycle, and the
18 activities themselves, in some cases, are teamed between the
19 IOUS, and in some cases the IOUS are also teaming with the
20 CEC. So there can be individual stakeholder funding of a
21 project, there can be collective IOU funding, or there could
22 be collective funding of all four stakeholders, including
23 CEC and the three IOUS.

24 We want one program, is another way of saying it.
25 We don't want the stakeholder, the -- the administrators,

1 as we're called, going in separate directions.

2 Then here is a landscape view of the RD&D cycle,
3 if you will. And there's two valleys of death represented.

4 The -- the role of the IOUS is presented in terms of
5 helping cross the valley of death. And, in fact, it's the
6 whole EPIC program that has that. So getting to where we
7 have projects that do that will be our goal. And I should
8 point out that the valley of death doesn't just mean in the
9 commercialization stage; it means in the development stage
10 as well. And I'll say more about that in a minute.

11

12 We want to have a program collectively among the
13 four administrators which cuts across the whole utility
14 infrastructure and, if you will, generation to customer.
15 And this slide comes out of a microgrid project we're doing.

16 Think of it as an islandable circuit that can be
17 interconnected, or it can be separated and operated
18 standalone. But the control infrastructure that you need to
19 do that, what you see on the right -- the left side there,
20 the microgrid controller, that could be a distributed
21 controller that operates that portion of the power system
22 when it's interconnected. And then it becomes a microgrid
23 controller when island -- intentionally island the circuit.

24 So this slide shows the depth and the dimensions
25 of what will be involved in the -- in the R&D plan, and --

1 and it's a very broad spectrum of activities but again,
2 trying to pick up and target what are the key needs in any
3 one of these areas within the power system infrastructure.

4 Here is a view of the program budget. It's a
5 three-year view. And the amounts there are what we would
6 have for 2012 to 2014. And then there's two additional
7 three-year cycles that would follow that. And again, we --
8 we'll team where possible and try to leverage the money that
9 the three IOUS have with what CEC has and other sources of
10 sponsorship that we might bring in through federal
11 procurements and the like.

12 And here are the investment areas. In terms of
13 the IOUS, I put a green rectangle around technology,
14 demonstration, and deployment, because that is what
15 specifically is called for by the EPIC decision as the IOU
16 role. And then CEC has a broader role. But like I said
17 earlier, we will be working together because utilities must
18 be -- are asked to give input at all stages of the cycle.
19 And the IOUS will -- in the bottom half of this you'll see
20 in the value chain, those are the five areas listed in
21 the -- in the decision itself, and the current vision. And
22 at the point we are in the planning is that the utilities
23 will focus on the three in the bold on the bottom, which are
24 the grid ops, the transmission, and the distribution.

25 Now back to definitions, as I promised. Here is

1 what is in the decision as far as the definition for
2 technology development and demonstration. And you can see
3 it -- it is -- it's words are in the pre-commercial realm.
4 So there's different definitions of demonstration out there.

5 This is the one we will abide by. It's more often that you
6 see demonstration associated with commercial systems as
7 they're coming into the pilot stage. But we will go by
8 these definitions as we put together our plan.

9 And then to compare between those five areas of
10 the value chain as listed in the decision and as shown on
11 this slide, and the requirements of our smart grid road-
12 mapping -- or, actually, it's our reporting activities.
13 We've got our road maps in as of July of last year, and we
14 report on those regularly now, annual reports. And these
15 are the areas of reporting requirement in the smart grid
16 deployment plans. And you can see, there's a good match
17 between the areas we would emphasize in our use of EPIC
18 funds.

19 We want to align the R&D programs with key needs
20 to support the smart grid deployment. And that doesn't mean
21 using EPIC funds for smart grid deployment. It means, for
22 example, doing some penetration studies to look at the
23 impacts of photovoltaics or electric vehicles, or some
24 simulation work, or trying out something in the
25 developmental stage that is not ready for wide-scale

1 deployment, but it is maybe something that is targeted later
2 in the deployment plan. So it's -- it's not intended to use
3 EPIC funds for commercial deployment supported by other line
4 items in our budget. It's intended to use the EPIC R&D
5 funds as an enabling part of the process to bring the
6 technologies to a level where they can be deployed in the
7 smart grid.

8 And then finally, the workshops Laurie mentioned,
9 we have the two IOU stakeholder workshops on the ledger for
10 next week, on Thursday and Friday. And the first one will
11 be in San Francisco. It's the Northern California IOU
12 Workshop on August 16th, hosted by PG&E and at their energy
13 center, which is near Moscone Center. And there is a
14 posting; a public notice went out on this about a week-and-
15 a-half ago, I believe it was. And then August 17th is the
16 second IOU workshop in Southern California. And that one
17 will be in Westminster, which is Orange County. And
18 Southern California has their new information system and
19 simulation capabilities in laboratories there. So it will
20 be at that site, again, posted in a public notice.

21 The two workshops are generally similar but not
22 identical. And if anyone wants to come to both, they're
23 encouraged to do so. The overall agenda flow is the same at
24 both, but there are differences in who is on the panels, for
25 example, in the panel sessions.

1 So that's basically it. And do we want to take
2 questions for the whole group, or how do we do it this time,
3 Laurie?

4 MS. TEN HOPE: You're welcome to take questions.
5 We definitely have time.

6 MR. GOODMAN: All right. Yes?

7 DR. PINCETL: Should I stand up at the mike?

8 MS. TEN HOPE: Yes.

9 MR. SCHINDLER: Yes.

10 DR. PINCETL: Good morning again. It's Stephanie
11 Pincetl. Thank you for your presentation. And I have three
12 questions. One is I'd like further exploration of what is
13 meant by lower cost. Lower cost can take many different
14 forms: lower cost for equity consideration; lower cost
15 overall; lower cost again for health impacts; lower cost for
16 long term. So low cost is a very generic term but covers a
17 lot of many details. So I think that's one area that would
18 be worth exploring in much greater detail so that we
19 understand what's meant because -- or maybe it means a lot
20 of things, which would be even better.

21 The second question I have is about the emphasis
22 on new technologies rather than behavior change, if I
23 understood the presentation correctly. And I'd like to ask
24 why there is that emphasis, particularly because I did note
25 that there is the question of demand-side management, and

1 whose responsibility is it to address the question of
2 behavior change? We know that in the area of conservation
3 we've achieved many, many benefits through behavior change.

4 And so I'm curious to understand why behavior change seems
5 to be left off the agenda. And there's a lot of work to be
6 done in that area.

7 The third area I'm curious to have more
8 explanation about is the way you're approaching key needs
9 and power infrastructure. I have been working very
10 diligently to try to understand energy use at a granular
11 level across the Southern California region. And what we
12 understand is that energy use varies tremendously according
13 to location and income. And so I'm really curious to know
14 what kind of information you're going to be using and/or
15 needing for research purposes in the area of who uses how
16 much energy where and to do what. And up until now I have
17 the impression that there's not a lot of work being done in
18 that area.

19 And finally, I just wanted to make a comment.
20 Sixty percent of the population lives in Southern California
21 and we're having one workshop down here. Perhaps we should
22 think about several. So there's the Inland Empire, which
23 has its own energy issues. The San Diego, which is the,
24 what, second largest city in the United States -- or region,
25 and L.A. And I would suggest that maybe more than one would

1 be useful. Thank you very much.

2 MR. GOODMAN: Okay. I'll recap what I heard. The
3 first question was on --

4 DR. PINCETL: The definition of cost.

5 MR. GOODMAN: Yeah. Thank you. Lower cost; the
6 definition of lower cost. The second one was on behavior
7 change. And the third one was on energy use data.

8 DR. PINCETL: Correct.

9 MR. GOODMAN: And then there was a comment.

10 On lower cost, the bottom line for all benefits,
11 and it's required in the decision, is that it -- it be shown
12 how the project work flows through to ratepayer benefits.
13 So ultimately lower cost means either keeping a lid on costs
14 for the ratepayer and mitigating what would be larger
15 increases by implementing improved system changes, and it is
16 something that might be a system change up in the utility
17 level, or it might be something that's closer to home with
18 the customer. So lower cost means implementing measures out
19 in the power system or at the customer level that cause the
20 ratepayer to see an overall -- lower overall cost of energy
21 use.

22 And so there will need to be -- do -- need to be
23 rigorous cost benefit studies done as a part of this -- this
24 planning phase. That's a requirement that there be these
25 cost benefit analyses. But the decision specifically says

1 cost to ratepayers or benefits to ratepayers need to be
2 shown for project activity that's undertaken.

3 And then the next one on energy -- consumer
4 behavior, or I think you meant consumer behavior. Yeah, we
5 had a good discussion and I was asked a similar question two
6 days ago at another meeting. In terms of something like
7 zero-net energy, this came up in a scoping study we did last
8 year, what does zero energy mean, was the first thing they
9 had to grope with. And then once you know what it means and
10 you -- you have some proposed solutions, those solutions
11 will work or not work, depending on how the consumer in that
12 building behaves.

13 And it's not only zero-net energy, but right down
14 to a single-energy efficiency measure that is maybe a better
15 way of air conditioning a building. All those things assume
16 that the consumer will do certain things. To the -- to the
17 degree they can be automated and taken a level above the
18 consumer's control, it probably increases the chances of
19 them working the way they're intended. But if there's a
20 high degree of consumer intervention, especially in a
21 residence, then you -- you need to teach and educate the
22 consumers on -- on what is expected of them if the energy
23 efficiency measures are to be successful in their
24 implementation.

25 And the scary scenario is that somebody puts in a

1 zero-net energy system and thinks it means they can do
2 anything they want now because they're zero-net energy. And
3 because they're doing anything they want they won't be zero-
4 net energy. So the two have to go hand in hand.

5 And then the third one was on data regarding
6 energy consumption and use. And we have access to data. We
7 have our own demand data utility by utility. And there's
8 other sources of data a higher levels. If the data turns
9 out to be inadequate for any of the R&D activity, or the R&D
10 planning activity, that is, then we would probably seriously
11 consider some additional studies to bring in additional
12 data. So we don't rule out as -- as a need for some of the
13 R&D activity that we do some studies to get smarter before
14 we commit to a larger project.

15 And then on your comment, what was your comment
16 again?

17 DR. PINCETL: Southern California has 50 percent
18 of the population --

19 MR. GOODMAN: Oh, yeah.

20 DR. PINCETL: -- and we're having one hearing down
21 here.

22 MR. GOODMAN: Yeah. And, in fact, we were only
23 required to have one workshop, and we have -- we have two.
24 We -- we were concerned that we not overdo it and have a lot
25 of workshops that were poorly attended. We decided, at

1 least in this first round of workshops, given the short fuse
2 we had to put it together, which was once that decision was
3 released in the end of May we had to move immediately to put
4 these together, we -- we focused on to one in Northern, one
5 in Southern. And as we go through the final stages of
6 investment planning process additional -- there will be
7 additional opportunities for the stakeholders to give input.

8 And whether that takes the form of another workshop or
9 presenting our draft plan, and maybe that's done through
10 webcasting, and or maybe it's done by a face-to-face
11 workshop, or maybe by both, there's going to be additional
12 opportunities.

13 Other questions? I've already had three, and one
14 comment.

15 MR. SCHINDLER: We have one online, Michelle
16 Rodriguez.

17 MR. GOODMAN: Okay.

18 MS. RODRIGUEZ: Hi. This is Michelle Rodriguez,
19 Planning Sustainable Communities consultant from the San
20 Francisco-Bay Area. I'm also the former program manager for
21 the development launch of Energy Upgrade California, which
22 is a whole building approach to energy efficiency. And I
23 did that for the eight counties in the Bay Area. And then I
24 worked Los Angeles County, also, testing 22 pilots testing
25 energy efficiency delivery mechanisms, financing, and

1 marketing and outreach.

2 What I'd like to get clarification on regarding
3 the investment plan schedule is what is your needs now? In
4 other words, with Energy Upgrade California, and also with
5 previous PIER proposals, I provided a laundry list of ideas
6 for consideration. And the CEC and the utilities decided
7 which ideas they wanted to go forward with. And a grant
8 notice came out, and at that time I organized regional
9 government partnerships, nonprofits, stakeholders, utility
10 partners to work on submitting a grant proposal along with
11 great detail and -- on that proposal and budget. So I'm
12 trying to get clarification on how that -- what you are
13 going to need between now and September, particularly, I
14 think my focus is going to be on smart grid. Thank you.

15 MR. GOODMAN: Okay. Thank you. And I'll repeat
16 what I think the question was in case people in the back
17 didn't hear it. The questioner had been involved in some of
18 the PIER work. And she wants to know going forward what our
19 process is going to be as far as what input we're looking
20 for from the stakeholders right now and how that would
21 influence what goes in the plan. Did I -- did I capture
22 that correctly? Okay. So --

23 MS. RODRIGUEZ: What level of commitment and
24 detail do you need between now and the end of September, or
25 now and the end of August, I guess?

1 MR. GOODMAN: Okay. And the answer is we just
2 need input between now and the end of August. We are
3 focusing in on the plan writing, at least in the IOU
4 portion, on projects areas. We're not drilling down to
5 specific projects. We do have emphasis on smart grid
6 related activity. That's a collective aim of the three
7 IOUS. And so what we need from the stakeholders is their
8 inputs on areas of activity at the program or project area
9 level, but not drilling down to a specific project.

10 For example, is work on distributed control for
11 smart grid something that we need to focus on and come up
12 with algorithms and hardware-software products or technology
13 that can later be translated into products to move us to the
14 next step in smart grid evolution. There's -- a lot has
15 been done now to deploy pieces of the smart grid. But the
16 next big step is integrating those pieces so you can control
17 and operate them in a rational manner that actually achieves
18 ratepayer benefits.

19 So that's an example of a project area to bring
20 the technology of distributed controllers for smart grid
21 operation to a state of readiness, just one example. And
22 that could involve multiple projects when we actually move
23 into the implementation plan.

24 Other questions? Yes, sir?

25 MR. ROCHE: Use this mike?

1 MR. GOODMAN: Yeah, please.

2 MR. ROCHE: Hi. My name is Neal Roche. I'm the
3 CEO of a company called Gridtest Systems. We work with EV
4 and smart grid integration technologies.

5 And my question is about your comment about the
6 IOUS focusing on larger programs rather than a lot of small
7 programs. This seems to be a little at odds with building
8 an innovation pipeline that was talked about earlier.
9 Because a lot of small technology companies, they're looking
10 for -- you know, to build a new software or hardware
11 product, you know, \$1 million to \$2 million for a project.
12 And so how -- what -- can you expand on what you -- why you
13 want to lean towards larger programs only? Thank you.

14 MR. GOODMAN: It's twofold. One is the dollars
15 are limited. We don't preclude doing something small if it
16 really is deemed as an early step towards something that
17 could blossom into a larger program. But we don't want to
18 take the budget we have and fund 100 things that are so
19 defused and so small that we -- we come out of it with
20 little value to show for the money spent. So we're trying
21 to target things that have apparent high value and are
22 deemed to be essential to what needs to be done in the next
23 five years to move forward with modernizing the power
24 system.

25 And then the other reason besides budget is we

1 don't want -- well, the other reason is when you get into
2 some of the energy efficiency and small programs that you
3 were talking about we see the CEC who specifically said why
4 aren't the IOUS going to do that. We see the CEC as taking
5 the lead role there. They have a higher budget. And we
6 might help with fielding something. But we don't have as
7 much money that we can address all of those areas of the
8 value chain. So we're trying to focus on -- on the three
9 that are most important right now on the utility agenda.

10 Other questions?

11 MS. TEN HOPE: John, can you come up to the
12 microphone?

13 MR. MINNICUCCI: More of a comment.

14 MR. GOODMAN: Go ahead.

15 MR. MINNICUCCI: I'm John Minnicucci from Southern
16 California Edison. I wanted to make a couple of comments.

17 The -- there are different program administrators
18 that are doing different roles. And right now utilities,
19 as -- as per the decision, are mainly responsible for doing
20 demonstrations and deployment projects. And deployment in
21 this sense is not capital deployment, as one would typically
22 think, but is -- it's projects that directly connect to the
23 grid.

24 So the way -- the way the decision is currently
25 written it's not -- it's not that we don't want to do

1 certain things, it's right now our -- our main role and main
2 objective under this particular program is to do grid type
3 projects. And I wanted to directly address Ms. Pincetl.
4 It is Pincill or Pincilt?

5 DR. PINCETL: Pincetl.

6 MR. MINNICUCCI: Pincetl. Utilities do operate a
7 fairly large scale energy efficiency programs and demand
8 response programs. That is a separate program from EPIC.
9 And in those programs they have emerging technologies and
10 other -- and other opportunities to -- to -- to push
11 technology further. But that, again, is a separate utility
12 program, apart from EPIC.

13 So with respect to EPIC, the utilities by, you
14 know, definition in -- in this -- in this proceeding are
15 focused on grid activities. There are other utility
16 programs, of course, that you could participate in.

17 Now the CEC has broader latitude. They -- they
18 are allowed to do more of the -- the research, the front-end
19 research, the applied technology work through the
20 demonstration, all the way through the full spectrum. And
21 that's where, you know, we're hoping to really partner with
22 the CEC to help, you know, these important technologies move
23 through the pipeline so that at some point they do get --
24 they get developed and into, you know, full operational
25 deployment.

1 So there -- there are -- there are differences
2 between the programs. Even though it is one EPIC program,
3 the administrators have different roles within the broader
4 context. So I just wanted to clarify that. It's not that
5 utilities don't want to do that, we are actually doing it,
6 but under different program umbrellas. Thank you.

7 MR. GOODMAN: Yeah. Thanks a lot, John. That
8 actually came up last week, too, in the CEC workshop. We do
9 have a separate activity called ENERGY EFFICIENCY, energy
10 efficiency, that is funded through a different proceeding.
11 And that continues. That's separate from PIER. So -- not
12 from PIER, from EPIC. So in EPIC we are trying to fill out
13 our R&D hand and compliment what's being done through that
14 other -- that other ENERGY EFFICIENCY program.

15 Was there another question here? Yeah. You want
16 to come up?

17 MR. LYTE: Sure. Yes. Good morning. My name is
18 Bill Lyte. I'm with Protean North America, which is an
19 ocean wave energy firm. Essentially I'm speaking on behalf,
20 not of -- not only of my firm, but the many other ocean
21 energy firms around the United States and around the world
22 that would like to come to California.

23 I support the broader large program emphasis here
24 for a couple of reasons. One, you need -- you need a large
25 program to draw all these companies to California and build

1 the -- the new industry here. Much of this large program
2 can be done by unifying existing resources. Specifically,
3 if you had a single point of contact within the State of
4 California for ocean wave technology, regulatory permitting,
5 other issues, funding, that would be very valuable. And the
6 California Ocean Protection Council and the Office of the
7 Lieutenant Governor does a very good job in that regard.

8 What you really need is a test location here
9 and -- because California is losing out to other states.
10 Hawaii is putting one in with the U.S. Navy. Oregon is
11 putting one in. New Hampshire and North Carolina and
12 Florida are all putting one in. And that's where the
13 industry will go.

14 I think you can also weave together the
15 universities through very strong faculty organizations that
16 are already in place. I believe California State University
17 has a group called COAST, which is about 300 university
18 marine researchers. You apply them, focus them on this
19 industry and build a broad range of new technologies, and
20 then grow them locally. And you can grow them in geographic
21 locations with innovation clusters. There are core
22 industries of California that used to be very strong -- the,
23 you know, offshore oil industry -- that logically would fit
24 right with the marine research industry and could sell right
25 into it. And there's a good fit with what the U.S.

1 Department of Energy is funding on this. So I support the
2 larger program initiative.

3 MS. TEN HOPE: This is Laurie ten Hope with the
4 Energy Commission. Just a point of clarification to an
5 earlier question, which was the woman on the phone asking
6 for what information is -- is needed now. I wanted to
7 clarify, if it wasn't clear, that in this first year the
8 activity is around developing an investment plan. So when
9 you were talking about responding to grants, the
10 solicitation activity would be happening next fiscal year.

11 So what we really need now is input to the plan on
12 the agenda that is -- is on the website there are specific
13 questions in terms of what are the barriers to clean energy
14 innovation? What are the major initiative areas that are
15 needed? You know, what's -- what kind of benefits would
16 accrue? How would those benefits be measured? Those --
17 responses to those questions are extremely helpful this
18 month. And so I'd just urge you to take a look at those
19 questions and submit written -- submit written comments or
20 participate in the sessions we're having today.

21 The next thing that's going to be really useful is
22 in the September timeframe is to review the investment plan
23 and provide comments on the investment plan.

24 Following that, it's participate in the CPUC
25 process. They'll have a rule making to consider the

1 investment plans that are put before them. And, you know,
2 so it will be important for you to participate there, as
3 well.

4 We will then, we, meaning the four administrators,
5 will issue solicitations. You know, assuming the investment
6 plans are approved by the CPUC, we will then issue
7 solicitations, and that's when you have an opportunity to
8 apply for, you know, apply for the funding. So that was one
9 point of clarification.

10 And then if we could -- if there are any
11 additional comments or questions on the process, we could
12 entertain them now. If you have comments on specific
13 initiatives, I ask you to hold them for the discussions that
14 we're going to have -- have next. Any further questions on
15 process of schedule for CPUC, Energy Commission or
16 utilities? On WebEx?

17 MR. SCHINDLER: Yes.

18 MS. TEN HOPE: Okay.

19 MS. FALQUIER: Yes. This is Erin Falquier. I'm a
20 consultant for the California Energy Efficiency Industry
21 Council. Just to clarify, in terms of the comment process,
22 there was a comment review August 17th. And are there any
23 additional comments accepted after that time regarding these
24 sort of higher level input in terms of the draft investment
25 plan?

1 MS. TEN HOPE: Comments can be submitted to the
2 docket at any point. But if you really want to assure that
3 your comments can be considered in the writing of the
4 investment plan, they really need to be in by the 17th
5 because we need to turn that plan out pretty quickly. It
6 looks like we need --

7 MS. FALQUIER: Okay. And then there will be
8 another comment period once the investment plan, the draft
9 investment plan is released in September?

10 MS. TEN HOPE: That's correct. And there will be
11 public workshops.

12 Could I ask you to state your name clearly and
13 perhaps spell your last name? It was hard to hear.

14 MS. FALQUIER: Sure. My name is Erin Falquier.
15 And the last name is spelled F-a-l-q-u-i-e-r. I'm a
16 consultant with the California Energy Efficiency Industry
17 Council.

18 MS. TEN HOPE: Perfect. Thank you.

19 MS. FALQUIER: Thanks.

20 MS. TEN HOPE: Other questions? Any WebEx
21 questions? Okay.

22 MR. GOODMAN: Yeah. This is Frank Goodman. And
23 just to expand on what Laurie said regarding the IOU
24 workshops, there will be a comment period, as well, and it
25 will close one week after the second workshop, which is the

1 24th of August. So we parallel in our plan what CEC is
2 doing, but it lags by a week. And then everything else she
3 said about additional opportunities in September and the
4 like will apply to the IOU case as well. It's going to be
5 one plan when we finish it off.

6 MS. TEN HOPE: All right. Let's take a short
7 break. We will resume at 10:30 sharp, and we'll role into a
8 discussion of the -- the specific topic areas that we'll be
9 seeking your participation today. See you back at 10:30.

10 (Off the Record From 10:18 A.M., Until 10:34 A.M.)

11 MS. TEN HOPE: Next up I'd like to introduce Gary
12 O'Neill with the Energy Commission. And he's going to walk
13 us through these three sessions on various topic areas,
14 generation, energy efficiency, and grid ops.

15 MR. O'NEILL: Good morning, everybody. I'm Gary
16 O'Neill with the Renewable Energy Office at the California
17 Energy Commission. I'll be stepping us through an overview
18 of the breakout sessions for today. We're going to be
19 breaking out into three sessions, one right after the other.

20 The first session we'll be going over clean -- clean energy
21 generation technologies. The second will be grid
22 operations, D&D, and electric vehicles. The third session
23 will be energy efficiency and demand-side management.

24 And during all of those sessions we invite
25 everybody to come up to the podium and provide comments on

1 potential initiatives. And then we will have an additional
2 public comment period after the close of all the sessions
3 for general public comments, followed up by a summary at
4 4:15 today.

5 So the purpose of these public discussions, of
6 these sessions are to gather public stakeholder input on
7 potential initiatives for the Energy Commission to consider
8 putting into the investment plan. As Commissioner Peterman
9 stated earlier today, we are starting with a blank slate,
10 and we need public input about what to include in the
11 investment plan.

12 In addition, we would also like public input on
13 justifications for these particular initiatives you would
14 like in there. Things to keep in mind is we would like
15 feedback on technologies, resources, and strategic topic
16 areas. We also would like information and public input on
17 how to prioritize these investments. What are the most
18 important investments. Where should our money be going.
19 What will give us the biggest bang for our buck.

20 Our expectations for these sessions is we would
21 like the speakers to please introduce themselves, speak
22 clearly into the mike. We will be asking that you come up
23 to this podium right here. And also, please provide a
24 business card for our court reporter.

25 If we start running short on time we'll be

1 limiting comments -- but right now we probably won't do that
2 -- to three minutes. And we would like comments to be
3 limited to the scope of the CPUC EPIC decision. As was
4 stated earlier today, we don't want to re-litigate anything.

5 We just are looking for public input in potential
6 initiatives to go into the investment plan. We will also be
7 accepting written comments. They are due to the Energy
8 Commission by August 17th. That's next Friday.

9 So an overview of the breakout sessions are as
10 follows. Clean energy generation systems will be covering
11 topics such as energy smart communities, distributed
12 generation, utility scale generation, environmental and
13 public health, and market facilitation. We'll be going
14 through each one of these topic areas one by one, and we'll
15 be going through the questions that were submitted through
16 the agenda a few weeks ago.

17 In grid operations we will be talking about smart
18 grids and micro grids, electric vehicle charging and grid
19 integration, electric vehicle efficiency and battery reuse,
20 storage, renewable integration into the grid, grid system
21 monitoring, HANs and related technologies. We're also
22 looking for input on other types of topics we should be
23 covering in the investment plan.

24 On -- for efficiency and demand-side management,
25 the topics that are covered in this session will be building

1 and use energy efficiency, net-zero energy buildings,
2 industry and agriculture and water use -- end use energy
3 efficiencies, demand response, demand-side storage, and
4 other energy efficiency related environmental and public
5 health impacts.

6 Again, in each one of these breakout sessions if
7 there's a topic that we have not included in these slides
8 you are welcome to bring them up. This is not supposed to
9 be the world that we're covering. We would welcome more and
10 more input.

11 With that, I'm going to go ahead and switch over
12 to the energy generation system presentation, and we'll go
13 ahead and get started.

14 So the goals for the energy generation session,
15 we're looking for initiatives that highlight IOU electric
16 ratepayer impacts. Electric ratepayer impacts are those --
17 are defined as promoting greater reliability, lower cost,
18 and increased safety. Other goals are to increase the cost
19 competitiveness of the technologies, mitigate variable
20 renewable generation, reduce environmental impacts,
21 streamline permitting, and help technologies overcome the
22 valleys of death. The key policy drivers for the EPIC
23 decision are the renewable portfolios standard, so 33
24 percent by 2020, and Governor Brown's Clean Energy Jobs Plan

25 So these are the questions we would like to cover.

1 They're very broad, overarching questions. We'd like you
2 to answer them specifically for the clean air generation
3 systems during this first session. And then for the other
4 two sessions, answer them there.

5 So we're very interested in what the barriers are
6 to the development of these technologies. What -- what are
7 the challenges these technologies are facing, and where
8 should we be putting our money? What initiatives will
9 overcome those barriers? How to maximize the deployment of
10 clean energy generation technologies? Also, please define
11 the need for the ratepayers for with the EPIC investment
12 should be targeted. Prioritization; we really need to know
13 what is the most important. Where should we put our money
14 first?

15 We also need to know how to collaborate,
16 compliment, and follow other existing programs. We don't
17 want to duplicate other efforts, as well, so, for example,
18 Department of Energy or other federal programs through USDA
19 and such.

20 So the first topic area -- and before I move on to
21 this, if you're going to have any comments or questions I
22 would actually ask that you queue up, up here. It will be a
23 little more efficient.

24 So the first topic area is going to be clean
25 energy generation investment topics, the energy smart

1 communities. Potential initiatives that we have already
2 identified are zero-net energy buildings and communities,
3 community energy storage, community energy test beds, and
4 micro grids. Are there other initiatives that we should be
5 considering in this category? What are -- what are the
6 barriers that we should be addressing for the investment
7 topics?

8 Are there any comments or questions from the room
9 in this topic area? Is anything on WebEx. We have one
10 comment-question from the room.

11 DR. FISCHLIEN: Good morning. My name is Marian
12 Fischlien. I'm with UCLA at the Institute of the
13 Environment. I wanted to add a comment to you on the zero-
14 net energy buildings and communities. My research group
15 does behavior related research. And we are currently
16 running a pilot on advanced metering and energy use
17 feedback. And I wanted to suggest that in this area we
18 should also add behavior related aspects. Because as
19 somebody mentioned earlier, we cannot succeed with these
20 zero-net energy buildings if we don't also address the
21 behavioral component of this. Thanks.

22 MR. HOLMES: Hi. I'm John Holmes with San Diego
23 Gas and Electric. And I wanted to maybe lend some
24 discussion time to the topic of vehicle electrification and
25 integration with communities of a charging infrastructure.

1 The ability for communities to be developing around
2 intelligent charging and dispatch of energy from vehicles is
3 coming on our horizon. And the ability for us to
4 contemplate such research as part of that, I think it would
5 be value added.

6 DR. PINCETL: Stephanie Pincetl. I think that one
7 of the aspects of zero-net energy buildings and communities
8 is really to understand the context in which they're
9 developed. So recently there's been a new zero-net energy
10 building built right outside of UC Davis. It's actually on
11 the campus. But it's really a pod plunked down in an
12 agricultural field. And it's kind of funny, actually, if
13 you think that that's a zero-net energy building, but to get
14 there and to -- to go to work is not anywhere near zero-net
15 energy.

16 So I would urge that this kind of program really
17 think about that urban context or the context in which these
18 buildings or these initiatives are placed so that you're not
19 just plunking down buildings or communities that are far
20 away from anything, and then require lots of energy to get
21 to.

22 And also, they will need some kind of
23 infrastructure. And so are you talking about simply the
24 energy use of the building once it's built? Or are you also
25 taking into consideration the kinds of materials that are

1 needed to build those buildings?

2 And there should be cost-benefit analysis done
3 relative to retrofitting existing buildings, compared to
4 building new buildings that may not use energy much but
5 require all of this infrastructure and building materials to
6 build, hence they are not zero-net energy. The term is a
7 misnomer.

8 And so I think we need to consider those factors
9 pretty seriously going forward with this initiative. Thank
10 you.

11 MR. O'NEILL: And just one quick reminder, if you
12 are making a comment please provide a business card to the
13 court reporter.

14 MR. GOODMAN: Yeah. Frank Goodman, San Diego Gas
15 and Electric Company. I'd like to make two comments, one on
16 zero-net energy. And that it that we did a status and needs
17 assessment late last year on zero-net energy and took a look
18 at what is zero-net energy, and found that the PUC, the CEC,
19 NREL, and others have different definitions. So we need to
20 make sure that when we target zero-net energy we have an
21 agreed upon definition. And my guru of zero-net energy,
22 Chip Fox, has told me that we abide by the PUC definition as
23 the prime directive, if you will. And so we are trying to
24 move in that direction.

25 And a couple of issues with it. One is that as

1 defined by the PUC, zero-net energy is probably going to be
2 achievable only on two- to three-storey buildings or less
3 because you have to generate your electricity from the
4 renewable energy onsite. So you'd probably never get enough
5 electric generations from renewables on the site of a high-
6 rise building. So it's something to consider in going
7 forward is what -- do we want to change the definition, or
8 if we do want to stay with the definition we -- we have a
9 very stringent definition -- I mean, requirement as far as
10 high-rise buildings go.

11 And the second thing is measures you might use to
12 achieve zero-net energy might have value in their own right,
13 so that even if you don't end up having them become a part
14 of a zero-net energy you investigate them for that purpose.

15 And if it doesn't pan out, they may be useful as an energy
16 efficiency measure that lowers demand but doesn't compute to
17 zero-net energy.

18 And then my other comment is on community energy
19 storage. And I probably said this last week, but it's worth
20 repeating. The -- the community level takes you up in size
21 in storage. And you can either start thinking in terms of
22 pad mount batteries and things like that, or you can think
23 in terms of non-battery options. And down at the
24 residential, single-residence level it's almost certain that
25 you only have one choice; batteries. But as you get up into

1 these larger systems, the community level or a substation
2 level, you can explore compressed air storage, liquid air
3 storage, and other non-battery options which may make more
4 sense at the larger system level economically. Thank you.

5 MR. O'NEILL: Thank you. Are there any other
6 comments or questions from the room?

7 DR. PINCETL: Do we have time for more comments?

8 MR. O'NEILL: Yes.

9 DR. PINCETL: I will summarize my comments in --
10 in a written document. This is Stephanie Pincetl, again,
11 for the record.

12 One of the interesting aspects of community energy
13 storage that probably should be examined is the land use
14 capacity for storage. So how big an area is going to be
15 needed for storage? Are we thinking about distributed
16 storage in individual buildings with their own electric
17 generation, for example? Are we thinking of neighborhood
18 level storage capacity. And there's a lot of, I think very
19 important questions to be explored relative to the land use
20 planning side of it, the zoning side of it, and the actual
21 space available in the urban fabric. Because you can
22 develop storage technology, but if you don't have any place
23 to put it then you're asking for a little problem.

24 So I think it should be a parallel area of
25 investigation, in coordination with the different types of

1 storage technologies being examined.

2 MR. LYTE: Yes. Bill Lyte with Protean Energy
3 again. Just on the subject of storage, I thought I would
4 mention that a lot of -- a lot of organizations are looking
5 at different kinds of storage. The Department of Defense
6 right now has a solicitation out for energy storage, but
7 storage in terms of fresh water or ice or hydrogen or other
8 kinds of methodologies. So we shouldn't just be limited to
9 thinking of battery storage or other conventional means.

10 MR. O'NEILL: Thank you. I'm going to go ahead
11 and start stepping through the questions to make sure we
12 cover everything.

13 So are there any other major barriers to
14 developing or commercializing community technologies under
15 these potential initiatives or similar initiatives in this
16 category?

17 MR. SCHINDLER: Remind them to use the raise-hand
18 feature.

19 MR. O'NEILL: For those of you on WebEx, if you'd
20 like to ask a question or provide a comment please use the
21 raise-hand feature. Are there any comments on WebEx?

22 So on the second question, where should funding be
23 placed to maximize deployment of clean energy technologies,
24 that is where is technology innovation needed versus support
25 for commercial scale-up for critical need? And what

1 specific initiatives are recommended to advance innovation
2 for energy technologies and benefits -- that benefit
3 ratepayers? And define the ratepayer need for which EPIC
4 investments should be targeted.

5 Are there any additional questions from the room?
6 Comments? Initiatives?

7 DR. PINCETL: (Off mike.) (Inaudible) for funding.

8 MR. O'NEILL: Okay. On the question of priority,
9 how should be prioritize these initiatives? So we've heard
10 some comments, but nothing specifically identifying which
11 one of these initiatives should be the priority. So now is
12 your opportunity to identify anything that you think should
13 be a priority for public funding.

14 Frank?

15 MR. GOODMAN: Frank Goodman, San Diego Gas and
16 Electric. The thing I'm thinking of is what my guru, who I
17 mentioned, my zero-net energy guru mentioned to me, that in
18 terms of investment it may be that it would be wiser than
19 investing in zero-net energy as a goal to -- to invest in a
20 change in the efficiency standard at a level below zero-net
21 energy. And that should give more bang for the buck on your
22 R&D investments and -- and seeking to push up the standards
23 for efficiency. And you'd hit more buildings than zero-net
24 energy, which may just hit a few.

25 So there is a mandate in the state to have a

1 certain percentage of buildings -- it's all new
2 construction -- by certain dates be zero-net energy. What
3 I'm proposing is one initiative might be to have the CEC do
4 an intensive look at bang-for-the-buck issues on whether
5 zero-net energy or some other energy efficiency standard
6 would be more productive in saving energy, basically.

7 MR. O'NEILL: Thank you.

8 MR. HOLMES: This is John Holmes, again, from San
9 Diego Gas and Electric. I think that one of the other areas
10 that prioritizing needs to focus on, the integration of
11 these energy communities, these energy generation
12 opportunities at communities into grid operations, not only
13 at the IOU and municipal utility basis, but also at the
14 CAISO level. For example, our communications infrastructure
15 for managing integration renewables is not fully developed,
16 and that's an area that I think is consistent in terms of
17 need throughout the state. And I'd suggest that that's an
18 area of priority.

19 DR. PINCETL: Stephanie Pincetl again. I think
20 that the Energy Smart Community Initiative needs to take
21 into account the context in which these new strategies are
22 deployed, and as I mentioned earlier, relative to storage of
23 energy, whether it's batteries of other technologies. They
24 need to be placed somewhere.

25 And it's important to couple the work of Energy

1 Smart Community's R&D with thinking about what -- the
2 context, the people who will be impacted by these new -- new
3 changes in land use, who they are, what the environmental
4 impacts of those technologies, a the life-cycle analysis of
5 these tradeoffs, to support my colleague from SDG&E&E, are
6 there better ways to do this or more efficient ways to do
7 this or lower cost ways to do this. But you really have to
8 have the ability to look at the larger context in which to
9 ask those questions.

10 So it's not technology by technology or building
11 by building that you're going to be able to achieve the best
12 long-term benefits. You have to have the broader context of
13 land use and people as part of the research. Thank you.

14 MR. O'NEILL: Thank you. We have one more
15 question from the room, comment.

16 MR. ANDER: Good morning. Gregg Ander, Southern
17 California Edison. I just want to make a couple of
18 observations regarding zero-net energy buildings in
19 community. There's a number of issues and initiatives that
20 are -- that are affected by some of these policies that are
21 coming up at the CPUC.

22 Zero-net energy residential 2020, commercial 2030.

23 And they really interact with each other. So to the
24 extent, you know, you're dealing with issues on the customer
25 side of the meter, whether it's renewable generation,

1 inverters, you know, how the various technologies interact
2 with each other, the behavioral implications of in-home
3 displays, and some of the technologies that are helping
4 customers reduce load and reduce peak are all really
5 critical.

6 But it all comes down to a very key integration
7 issue. So at the building level, at the distribution
8 circuit level, you know, how -- you know, end-use devices,
9 smart meters, distribution circuit control impact to
10 transformers, and so forth is really critical.

11 Many of us in this room have been intimately
12 involved with some of the definitional discussions that were
13 brought up earlier on, you know, what -- you know, is this
14 zero-net energy? Is it source energy, site energy, peak
15 energy? And so forth. The leadership of the PUC is
16 thinking very carefully about how this might pan out going
17 forward, as is Martha Brooks and others, your colleagues
18 from a codes and standards perspective here.

19 But a lot of this has to do with integration, and
20 ultimately impact to grid -- grid ops and grid reliability.

21 I think that's really key and fundamental to -- to some of
22 these issues too. So it may not be specific customer side
23 of the meaning, but more broadly how you tie the stuff
24 all -- all together, you know, whether it's building scale,
25 storage, or community, or utility scale, and all -- all the

1 pieces that make this stuff work together. So it's -- it's
2 a very complex problem.

3 MR. O'NEILL: Thank you. Any other comments from
4 the room? From WebEx? No?

5 How about areas that are already covered by DOE or
6 private funding or other federal and state programs that we
7 should be complimenting or avoiding duplication?

8 Frank?

9 MR. GOODMAN: Yeah. This will be quick. But
10 it's -- it's something that we all need to get the
11 intelligence on just what is being covered by DOE and other
12 private funding, and make sure we're not reinventing the
13 wheel or duplicating. So perhaps as we move forward with
14 the investment planning, the four administrators can pool at
15 least our knowledge. And if any of you have knowledge of
16 things going on that are major and that we should either
17 compliment or not duplicate, please make us aware of those
18 through the commenting process.

19 MR. O'NEILL: Any other comments from the room?
20 Come on up.

21 MR. WALLACE: Yes. I'm Joe Wallace with the
22 Coachella Valley Innovation Hub. And we -- we foster and
23 try to attract and help entrepreneurs, and in particular in
24 the renewable energy base. And DOE and several other
25 federal programs are pushing right now for what they call

1 concept proof centers, where people that come in with an
2 idea can have a place and possibly some money to put
3 together what their idea is, to prove it on a small scale
4 before we run out and do things for hundreds of millions of
5 dollars, see if we can prove it with \$1 million.

6 MR. O'NEILL: Thank you.

7 MR. MCLAUGHLIN: My name is Larry McLaughlin.
8 I'm with the College of the Desert. And I direct one of the
9 seven centers that the chancellor's office has designated
10 for advanced transportation and energy technology support in
11 workforce development. And I'd like to point out the fact
12 that the Department of Energy has national laboratories that
13 develop new technologies. And they license those
14 technologies and make them available and try to deploy those
15 technologies through small business development programs,
16 and so forth. And the State of California has the benefit
17 of having several of those national laboratories here in our
18 state.

19 And I think that this program should look at the
20 deployment efforts of the DOE with respect to the licensing
21 of patents and these new technologies and to try to dovetail
22 wherever possible with those -- with those federal efforts,
23 specifically for small business.

24 MR. O'NEILL: Thank you. Are there any other
25 comments from the room. I'm going to go ahead and move on

1 to the next topic.

2 The next topic, same questions, but now we're
3 looking at distributed generation specifically. So what are
4 the major barriers to developing distributed energy
5 technologies? This includes customer side, community scale,
6 distributed energy generation technologies, utilities side
7 of the meter. Anything under 20 megawatts is what we're
8 encompassing here.

9 Would anybody like to provide any comments on
10 this? Frank?

11 MR. GOODMAN: Yeah. Not wishing to abuse the
12 privilege of coming up here, but this is an area that's very
13 dear to my heart. And I think, whether it's customer or
14 utility-owned distributed generation it needs to get to
15 where we can plug and play them. And we want not only to
16 use them as a kilowatt hour source, as is done now -- let's
17 call out the traditional function of distributed
18 resources -- but we also would like to use them for
19 regulating functions like voltage, participating in -- in
20 your VAR management on a circuit, along with coordinating
21 with capacitor banks and other regulating devices.

22 So to get to that point where you can use it,
23 whether it's a customer resource or a utility-owned
24 resource, and do it without a lot of custom engineering for
25 every distributed generator, you'd like to be able to talk

1 to it easy, meaning have a standardized communication
2 interface. And that boils down to using a standard.

3 The standard that is there is IEC 61850-7420.
4 Those are the object models for distributed resources. And
5 I think that going forward, amongst the programs that the
6 four stakeholders put together we definitely should have
7 trial use of those object models. It is the fastest way
8 available to us to getting to a plug-and-play process. And
9 anything else is going to involve starting all over with a
10 standard-writing effort. And the 61850-7420 took eight
11 years to develop.

12 So I put in a request that shame on us for --
13 administrators if between us somewhere we don't have trial
14 use of the 7420 standards.

15 MR. BLATCHFORD: Thanks. Hi. I'm Jim Blatchford.
16 I'm with the California ISO in the smart grid area. And
17 specifically I focus on renewables, but let me speak a
18 little about a couple of topics that have been brought up
19 already, distributed energy.

20 We already have, right now in the state, over
21 1,200 megawatts of distributed energy on rooftops. One of
22 the things that we need to -- to integrate into the grid and
23 to help us control is visibility into that. So I've heard
24 it mentioned here earlier about looking at cost effective
25 ways for metering and telemetry so that we can all see that

1 data. So I think that would be something that would be very
2 good for us to focus on.

3 And as you said, a plug-and-play, as Frank said, a
4 plug-and-play system where we don't have to reinvent the
5 wheel every time a new technology comes on.

6 So that's a couple things I'd like to -- that we
7 at the ISO would like to see.

8 And then one other question here, the -- what was
9 already asked about the DOE and private funding, we brought
10 up in a Sacramento a centralized database, maybe dedicating
11 some funds to CEC or to set up a centralized database so all
12 of these projects that are going on at the DOE, ARPA-E, all
13 the other research is -- is put into this database where we
14 all can see it and we can track it, and we don't duplicate
15 what's already being done, but we can tag onto that and take
16 that research maybe to another step, or to integrate it into
17 the -- into the grid or into the utilities. So thank you.

18 MR. O'NEILL: Thank you. Any other comments from
19 the room? Okay. Just -- oh, yes. Go ahead.

20 MR. MCLAUGHLIN: Larry McLaughlin, College of the
21 Desert. I may be addressing one of the previous questions,
22 but I think with respect to commercializing clean energy
23 technologies for distributed generation and smart
24 communities, we need to make sure that the people who are
25 out there developing land, who are putting in the projects,

1 the next, you know, the next planned communities, the next
2 shopping districts, and so forth have familiarity with these
3 technologies and giving them information about some of the
4 opportunities that exist for them to integrate these new
5 technologies as they go forward would be a good investment.

6 Thank you.

7 DR. PINCETL: Stephanie Pincetl again. I think we
8 should do this as a roundtable of something.

9 One of the questions I have about distributed
10 generation is whether there's any -- been any work on
11 business models for encouraging the adoption of rooftop
12 solar distributed generation systems. We know that there
13 are experiments springing up in different places with
14 community groups, basically, pooling their resources in
15 order to put solar on roofs because they can't afford to do
16 it individually.

17 And I would suggest that perhaps to encourage more
18 distributed generation on residential, and even on
19 commercial, one aspect that ought to be looked at in a very
20 thorough manner is new business models for doing so, whether
21 it's having the utilities rent rooftops or the -- I have no
22 idea. It's not my area of expertise. But I would encourage
23 that to be part of the research in order to be able to
24 facilitate this being -- this happening.

25 MR. O'NEILL: Any other comments or questions from

1 the room? Anyone? Yes?

2 MR. ZURETTI: Good morning. Steve Zuretti with
3 the Solar Energy Industries Association. I'm here on behalf
4 of SEIA to request that the commission consider the
5 inclusion of the New Solar Homes Partnership funding within
6 the EPIC plan.

7 As background, this was launched in January of
8 2007. It was intended to be a 10-year, \$400 million program
9 to encourage the solar adoption and energy efficiency in new
10 homes. Over the past five-and-a-half years it's proven to
11 be a critical driver in adoption of both by builders, and
12 specific program benefits for homeowners do include
13 providing immediate cash flow, positive investments,
14 shielding homeowners from utility rate increases, and
15 lowering the cost of electric to a broad set of utility
16 ratepayers, which includes affordable housing, which is low
17 to moderate income, first-time home buyers, ethnically and
18 geographically diverse communities, and seniors.

19 In addition, the program has helped increase the
20 value of California homes. A 2011 study by the Lawrence
21 Berkeley National Laboratory found that California homes
22 with solar systems sell on average with a premium of \$17,000
23 more than homes without solar. So there are real tangible
24 benefits to this program.

25 Over the past year we're seeing several of the

1 state's largest production-style builders starting to
2 incorporate solar PV as a standard feature, not just an
3 optional one. So hundreds and hundreds of single-family
4 homes are being built right now with solar as a standard
5 feature. This means the designers, contractors, building
6 officials involved with these projects are really becoming
7 more familiar with the technology. And this is greatly
8 important in helping California achieve its efficiency
9 goals.

10 But without this leverage funding these companies
11 would not have incorporated solar as a standard feature.
12 But, however, further progress may stall as the funding for
13 the program was recently eliminated as part of the public
14 good's charge, which is SEIA is here to urge that the New
15 Solar Homes Partnership be included as part of the EPIC
16 plan.

17 As noted earlier today, budget for the new solar
18 homes partnership was not included at the time of the
19 decision, not from a policy standpoint but rather from the
20 statutory language that was interpreted as being too
21 constrained to simply being California Solar Initiative
22 Budget. With the passage of SB 1018 this should not longer
23 be a problem. So thanks for your consideration of the
24 comments.

25 MR. O'NEILL: Thank you. Are there any other

1 comments in the room? Anything from WebEx?

2 So on question three, keeping in mind that current
3 administration, Governor Brown's Clean Energy Jobs Plan
4 calls for 12,000 megawatts of distributed generation be
5 developed by 2020, what specific initiatives should we be --
6 should -- should be recommended to ensure that ratepayer
7 benefits are maximized? How do we maximize ratepayer
8 benefits by the development of these technologies, the
9 applied research, and integration of these renewables?

10 Come on up.

11 MR. HOLMES: So collocation of generation in
12 proximal location for use is very important. We have
13 tremendous reserves in California to do generation at areas
14 of high insulation and wind. But those depend on
15 infrastructure to take that -- that generation, that power
16 to the -- the users.

17 So in terms of being able to locate and serve the
18 population of California, developing infrastructure support
19 for the integration of renewables at the locations that
20 they're living or in proximity to the locations they're
21 living is, to me, a very high, important -- high level of
22 importance.

23 We're seeing, through our sustainable communities
24 programs, lease opportunities being exploited to put solar
25 on facilities that are currently not able to fund that

1 themselves. And it's a great opportunity for us to also
2 explore community energy storage integration as well. In
3 general, the integration of storage and renewables should
4 look at it as complimentary and collocate it.

5 MR. O'NEILL: Thank you. Any other comments?
6 Okay.

7 We'll move on to prioritization. How do we
8 prioritize these initiatives? Which initiatives should be
9 the priority for the Energy Commission in our investment
10 plan, speaking to distributed generation projects?

11 Frank?

12 MR. GOODMAN: Frank Goodman, San Diego Gas and
13 Electric. And in terms of the 12,000 megawatt goal, one of
14 the things that will help achieve the goal is getting more
15 functionality out of the DER, beyond the traditional
16 function as I mentioned a minute ago. And there's two needs
17 in that area. I've already mentioned the plug-and-play for
18 communication infrastructure.

19 The other is extension of 1547, the electric
20 standard around interconnection of DER, which is embedded in
21 Rule 21. And that standard is being expanded through
22 Working Group 1547.8 to liberalize, if you will, what you
23 can and cannot do in the way of interconnecting right now.
24 And that eventually will have to flow through to rule
25 making, and Rule 21 will have to be updated once the

1 standard evolves from IEEE 1547.8.

2 So I would make it a priority to support that
3 standard development through actual R&D projects which try
4 out some of the things that are being considered for the
5 standard and help provide a basis around, yes, this is a
6 safe practice or, no, it is not to help fuel the standard
7 writing. The standard -- I've been on these working groups
8 and chaired them, in fact, and the working group loves any
9 real fieldwork they can get their hands on to support what
10 they should and should not put in the standard.

11 So I would make that a priority, is R&D activity
12 that supports the evolution of the 1547 standards.

13 MR. O'NEILL: Thank you. Anything from WebEx?

14 So how should EPIC funding address ratepayer
15 needs? Are there ratepayer needs in the realm of
16 distributed generation, consumer side, energy, other
17 distributed generation technologies, energy upgrades?
18 Anything?

19 DR. PINCETL: Could you elaborate on that a little
20 bit?

21 MR. O'NEILL: So I'm -- I'm trying to rephrase
22 question four as far as define the ratepayer need. So is
23 there anything in the scope of distributed generation that
24 ratepayers need to be addressed as far as on the technology
25 side, integrating renewables? Is there anything on the

1 solar side, customer side generation you can bring up?

2 DR. PINCETL: I have a silly question. Sorry.

3 MR. O'NEILL: Okay. So in the plan there's \$9
4 million set aside for community-scale bioenergy and the
5 development and deployment of bioenergy technologies. I
6 haven't heard anything today on initiatives focused on that.

7 Is there anything that we can add regarding bioenergy
8 technologies that should be addressed by the investment
9 plan?

10 DR. PINCETL: So this is Stephanie Pincetl again.

11 But I think in the area of bioenergy there really could be
12 a lot of collaboration with sanitation districts across the
13 state. And it serves a number of different purposes. One
14 is that the solid -- the sewage sanitary waste is no longer
15 treated as a waste product but is actually an input into the
16 energy capacity of a region. Secondly, it makes sanitary
17 districts re-look at the way they treat what is considered
18 waste. And I think it is a very important area going
19 forward in terms of rethinking how water is treated
20 generally in the states.

21 So I don't know if there's room in that program
22 area for reaching out to sewage treatment districts. But I
23 think that would be a very interesting area to explore, at
24 least do research on.

25 MR. O'NEILL: Thank you. Is there anything else

1 from the room on bioenergy technologies? Anything from
2 WebEx?

3 I'm going to go ahead and move on to utility-scale
4 generation. So utility-scale generation, we're talking
5 about large wind farms, solar farms, solar thermal
6 technologies, and other types of technologies. What types
7 of utility-scale generation technologies needs EPIC funding
8 to achieve commercialization? What technologies are needed
9 on the back end of it to help it integrate better with the
10 grid in general? This also covers utility-scale energy
11 storage, offshore renewables, and other integration
12 technologies and strategies.

13 So we'll go ahead and start with question one on
14 the major barriers of developing and commercializing these
15 technologies, what barriers should we be addressing? Are
16 they -- is this list of initiatives comprehensive enough to
17 address those barriers?

18 Do I have a question from WebEx? Hell, on WebEx?

19 MR. FORTUNE: Hello.

20 MR. O'NEILL: Hi.

21 MR. FORTUNE: This is Jon Fortune. I'm doing some
22 work right now. And the question that keeps rising is with
23 school districts, reliability can tend to be a high priority
24 since they tend also to be meeting locations. And I think
25 that the school districts and the communities as a whole

1 would benefit from having reliable clean energy of the -- of
2 the solar or renewable energy and energy storage co-located
3 at school districts. And it would be nice to some funding
4 go toward that and to support periods when reliability is
5 needed at those locations.

6 MR. O'NEILL: Thank you. Any other comments,
7 questions? Okay.

8 Where should funding be placed to maximize the
9 deployment of these large scale renewable technologies?
10 What should the priority be, and how do we maximize the
11 ratepayer benefits from these technologies?

12 Come on up.

13 MR. MCLAUGHLIN: Larry McLaughlin, College of the
14 Desert. I think for maximizing the deployment of clean
15 energy technologies and utility-scale generation, and
16 ensuring that it results in the greatest economic benefit to
17 the State of California, we need to inform small businesses
18 as to what the value chain opportunities are with the large-
19 scale systems. We have a number of utility-scale generation
20 plants being constructed in the desert region of California,
21 the area that our college serves. And we would like to see
22 more businesses within the local communities benefit from
23 those projects.

24 And I think the way for them to do that is for
25 them to be aware of what point in the value chain they might

1 be able to tap, and to perhaps put a new product or service
2 in place in order to serve this growing industry. I think
3 it could be technology oriented or it could be level service
4 oriented. But nevertheless, there are many opportunities
5 and it would benefit the -- the industry itself and how it
6 is deployed, and certainly benefit the local communities if
7 small businesses could be educated as to what that value
8 chain looks like, what supplies, what manufacturing, what
9 service opportunities exist in support of this new industry.

10 MR. O'NEILL: Thank you. Any other comments?
11 WebEx? Okay. Any other comments on where we should
12 prioritize our funding for EPIC with regards to large-scale
13 renewables and clean energy generation technologies? Okay.

14 And we've already covered this before, but are
15 there any other DOE or other private funding sources that we
16 should be complimenting, avoiding duplication? Okay.

17 Let me move on to -- oh, one more comment.

18 MR. HOLMES: So with specific reference to other
19 funding sources, we have a large presence of military
20 installations in California. And looking at the Department
21 of Defense as a financial collaborator and research
22 opportunities is strategic.

23 In addition, the U.S. Department of Agriculture
24 offers funding opportunities as well. And then beyond that
25 the ability for us to develop concerted efforts with the

1 EPA, who also have research activities underway.

2 MS. TEN HOPE: Would you mind stating your name
3 for those people on WebEx?

4 MR. HOLMES: Sorry. John Holmes, SDG&E&E.

5 MR. LYTE: Bill Lyte. One more. On offshore
6 renewables, we're echoing Mr. Holmes comment. There is the
7 opportunity to work very closely with the U.S. Navy. The
8 U.S. Navy has been a leader in ocean renewables. They have
9 put on a major conference in Hawaii in March to showcase
10 their wave energy test site, working closely with the U.S.
11 Department of Energy and International Renewable Energy
12 Laboratory, but they would like to roll out a gigawatt of
13 wave energy by 2025. It's tremendously ambitious.
14 California has a unique opportunity, because much of the
15 wave energy research for the U.S. Navy is done in Port
16 Hueneme. It's the engineering service center which oversees
17 all of the navy's operations worldwide.

18 So that's certainly something we should be looking
19 at. And the Department of Energy has had a very active
20 solicitation on offshore wind. It was -- the due date was
21 about three months ago, and they should be making a decision
22 shortly. And there are firms that have proposed offshore
23 wind projects off of California coast. So there is a great
24 opportunity to weave all these initiatives together.

25 MR. O'NEILL: Thank you. Any other comments or

1 questions? All right.

2 I'll move on to environment and public health. So
3 with regards to clean energy generation technologies, what
4 potential initiatives should we be considering? Our list
5 includes climate change impacts on the energy
6 infrastructure, environmental benefits to deployment, supply
7 chain issues, public health impacts, energy generation in
8 disadvantaged communities. Are there any other initiatives
9 that we should have on this list? And we'll also step
10 through the questions.

11 Did you have a comment?

12 MR. GOODMAN: No.

13 MR. O'NEILL: Okay. So what are the major
14 barriers to developing? What major barriers should we be
15 addressing through this initiative, through this topic?
16 Anything?

17 DR. PINCETL: Stephanie Pincetl. So I think that
18 this raises some of the questions I asked earlier about how
19 you define ratepayer benefit. Because, clearly, if you are
20 looking at deploying renewables across the landscape there
21 will be a cost. Let's not delude ourselves that you can do
22 all of this and maintain really low rates of electric for
23 everybody all the time.

24 And I think that one of the scary things but
25 really, really important questions to ask is who should bear

1 the burden of these kinds of shifts? And it has enormous
2 environment and public health implications for all kinds of
3 people living in communities. And I would urge us to couple
4 a little bit better the question of ratepayer benefit as has
5 been described in terms of dollars per kilowatt used. And
6 to think about it a little bit more broadly relative to
7 questions of public health and impacts. And so what -- I
8 don't think it's useful to look at all ratepayers as equal
9 under the ratepayer burden side of it.

10 And so this may be a little bit of a tangent, but
11 I think that if you're looking at climate change impacts,
12 energy infrastructure, public health impacts, energy
13 generation in disadvantaged communities and trying to
14 maintain the same price per kilowatt hour for everybody,
15 you're going to come into a real kind of train wreck.

16 And so I think that one of the ways that one could
17 begin to look at this question of environmental public
18 health and equity is also to open up a little bit our
19 thinking about ratepayer benefit, because there's a clear
20 connection there in terms of how we're able to do things.
21 And so maybe we have to think about tiered pricing in order
22 to address the question of energy generation in
23 disadvantaged communities so that you can have a broader
24 implementation of distributed energy in those communities.
25 Or, again, the funding question that I raised earlier about

1 innovative ways to finance distributed energy generation.

2 And I would reiterate the point I made much, much
3 earlier about tradeoffs between greenhouse gas emissions and
4 criteria of pollutants in looking at climate change impacts,
5 because there's not just greenhouse gas emissions. So we
6 should really revisit what we think of or define better what
7 environmental impacts encompass. Thank you.

8 MR. O'NEILL: Any other questions or comments from
9 the room? Anything from WebEx?

10 So I'm going to combine two and five, questions
11 two and five about funding. Where should funding be placed,
12 and how should be prioritize that funding? And we're
13 talking about the environment and public health, these types
14 of initiatives. What should be the greatest priority for
15 EPIC, under EPIC for these initiatives?

16 Any comments? No? No takers? Are there any
17 comments or questions about what other funding sources are
18 out there that are providing that -- this type of research,
19 demonstration, funding available for this type of -- these
20 type of initiatives? Okay.

21 I'm going to go ahead and move on to the next
22 topic. So this will be covered broader tomorrow. This will
23 be an all-day event discussing market facilitation. But we
24 wanted to include this in here if we had time to discuss,
25 how do we facilitate the market for clean energy generation

1 technologies?

2 So some of the potential issues that we are
3 considering are creating a performance data clearing house,
4 provide various types of data that is needed to permit and
5 site these types of technologies. The resource assessments
6 and planning tools; this is something more on the lines for
7 local governments, to assist them with their planning
8 processes. Permitting and deployment facilitation; this is
9 also on the local government side, and they also have
10 aspects that could reach over to the developers, new
11 technology. Innovation clusters, and workforce development.

12 Are there any other initiatives that we should
13 have on this list to consider for market facilitation?

14 And what are the major barriers that we should be
15 addressing with these initiatives? Okay. Where should
16 funding be placed to maximize deployment of clean energy
17 generation technologies? So when we're looking at market
18 facilitation, where should -- what initiatives should we be
19 funding through market facilitation to get the biggest bang
20 for our buck, to get the most clean energy generation
21 technologies sited I place with the least amount of
22 environment impact, greatest ratepayer benefit?

23 MR. HOLMES: This is John Holmes from SDG&E&E
24 again. We saw a great penetration of solar through the
25 California Solar Initiative. It was an exemplary program

1 for other states to be able to emulate. Going forward I
2 think it would be appropriate to consider energy storage for
3 similar type of funding effort. And EPIC may facilitate
4 some research to explore opportunities for such a program.

5 MR. O'NEILL: Any other comments? Frank?

6 MR. GOODMAN: Yeah. I was -- Frank Goodman, San
7 Diego Gas and Electric. I was in the facilitation sessions
8 last week. And there was one thing that I couldn't quite
9 phrase, so I left it, figuring I'd write it up. But now I'm
10 going to say it today, then I don't have to write it up.

11 When you look at innovation clusters and the
12 various three concepts that were described there, one of
13 them is around your Silicon Valley type of entity. I'm not
14 sure just what the name of that entity class was. But what
15 I wanted to say is those that are sustainable and have been
16 around a long time, like Silicon Valley, have reinvented
17 themselves many times. I lived there for 30 years, and it's
18 not about silicon anymore. It started out in the early
19 '70s. Some of my grad school buddies were saying, you know,
20 they're calling the Santa Clara Valley, Silicon Valley now.

21 Well, that name is still there and it's used as a
22 clever marketing thing around high tech in general, in a
23 more general sort of way. And it's moved through various
24 machinations from integrated circuits, which is legitimate
25 silicon, to a variety of things including networking and

1 software are now probably the biggest industries there. And
2 your semiconductor manufacturers may have headquarters or
3 R&D there, but they're moved their production outside of the
4 area.

5 So my point is this, that in going out and looking
6 for where you might find these clusters to develop into that
7 type of a capability around power systems and smart grid,
8 look at not only new starts, brand new clusters, but also
9 reinventing some of the ones that are dying in other areas
10 and getting them realigned with this area.

11 MR. O'NEILL: Come on up.

12 MR. LYTE: Yes. Bill Lyte, Protean Energy. I've
13 had a lot of involvement with innovation clusters and -- and
14 have tried to interface them with ocean wave energy. I -- I
15 bootstrapped a very major technology cluster in Pasadena,
16 California with Cal Tech and JPL, and we had 200-plus
17 companies come out of it, and then took the model to the
18 ports, Port of L.A. and Long Beach and -- and did it there,
19 too, working with the universities, and began looking at how
20 California's coast could be a series of innovation clusters
21 geared toward renewable energy.

22 And, candidly, you've got a perfect situation all
23 the way from Humboldt to San Diego because you've got the
24 cities with the ports which are high energy users, plus
25 coastal facilities like prisons or airports or military

1 bases, they have good wave energy. But at those locations
2 you've also got universities. And almost every one of those
3 locations are, at least the Cal State system, a lot of
4 community colleges, and the U.C.

5 So if you can weave those together and -- and then
6 apply the research out of the universities to develop the
7 technologies, harvesting the energy from the ocean and then
8 directing it to the large energy using entities, you've got
9 a very good opportunity for innovation clusters.

10 MR. O'NEILL: Thank you. Come on up.

11 MR. WALLACE: Joe Wallace from Coachella Valley
12 Innovation Hub. And that's precisely what we're trying to
13 start is an innovation cluster around renewable energy, and
14 particular it's the energies from the sun, the wind, and
15 geothermal. And no matter how much money and cash there is
16 in Silicon Valley, you can't outsource the sun and the wind.

17 So those kinds of clusters with renewables have to
18 happen in places like Coachella Valley and, is it Livermore,
19 the -- the wind areas up north. There's natural places
20 inland that are just as applicable to other renewable
21 technologies as the coastal ones are to -- to wave motions.

22 And so I think this guy is right on target. And
23 Silicon Valley happened with private money. Hollywood
24 happened with private money. But, you know, there's no
25 reason that if you have public-private partnerships that you

1 can jumpstart some of these things the way they did down in
2 Raleigh with Research Triangle Park.

3 MR. O'NEILL: Thank you. I just want to ask a
4 follow-up question to those last two comments.

5 How can EPIC initiatives be developed to leverage
6 private investment in California, private and public
7 investment in California so that we maximize the amount of
8 jobs and maximize the amount of these technologies that are
9 developed in California? Any ideas?

10 MR. WALLACE: Are you asking everyone or --

11 MR. O'NEILL: Everyone or you.

12 MR. WALLACE: The energy hub under Schwarzenegger.

13 MR. O'NEILL: Energy hub under Schwarzenegger?

14 Okay. Any other comments? Okay.

15 MR. WALLACE: I'll tackle it.

16 MR. O'NEILL: You want to tackle it? All right.
17 You've got 20 minutes.

18 MR. WALLACE: I won't take that long. Joe Wallace
19 once again, Coachella Valley I-Hub. There -- there are
20 twelve I-Hubs in the State of California. It's -- it's a
21 wonderful idea. It came from Sacramento. And the logo came
22 and the name came, and even some of the local initiatives
23 came, but not a red cent came with it. And it's even to the
24 point that when I go to Sacramento I have to buy my own
25 plane ticket and my own lunch. They don't even have money

1 up there to buy a lunch.

2 So if there's some program that at the state level
3 we can leverage the I-Hubs and -- and groups like -- like
4 this gentleman have so to where we can collectively market
5 the talent base that still is in California, the -- the
6 natural gifts of the earth that we have in California, to
7 bring private money -- whether it's American money or not
8 really doesn't matter, because most of our entrepreneurs
9 don't necessarily want to move somewhere else -- and not
10 only that, with so much cash available in Silicon Valley, if
11 there's anything that can be done at the state level to
12 encourage that private investment to be willing to go beyond
13 50 miles from where their offices are off of Sand Hill Road,
14 that could -- could -- I don't want to use the term spread
15 the wealth around, but it could enable innovation in other
16 parts of California to -- to equal what's gone on for the
17 last 50 years in the Silicon Valley.

18 MR. O'NEILL: Any comments or questions from
19 WebEx?

20 Frank?

21 MR. GOODMAN: Yeah. I'll comment on that comment,
22 because it was an excellent comment. The Sand Hill equity
23 investment firms, what do they call them, venture capital
24 firms, there's this cluster on Sand Hill Road in Menlo Park
25 in the heart of Silicon Valley that has, I forget what it

1 is, but it's a very large percentage of all the venture
2 capital in the country is controlled by those groups, and if
3 it can be spread around more a lot of companies will set up
4 a shop in Silicon Valley just to have access to the venture
5 capital, even though they -- they may be geographically
6 disbursed everywhere but Silicon Valley. So that would be
7 something that is good, is to try and encourage the venture
8 capital to go to these other clusters that are associated
9 with the energy industry.

10 MR. O'NEILL: Any other comments or questions from
11 the room? Does anybody have any comments or questions on
12 clean energy generation system technologies in general,
13 overarching comments, anything about cost-cutting
14 initiatives? Any comments or questions from WebEx? Okay.

15 So written comments; we encourage written
16 comments. We submit it -- submit it to the Energy
17 Commission by August 17th, next Friday. You can send those
18 via email to docket@energy.ca.gov. Please include the
19 docket number in the subject line of the email. Or you may
20 submit comments in writing to the Energy Commission to the
21 email address that's on the screen.

22 If you have any other comments or questions before
23 we sign off for the session please raise your hand now,
24 either online or in the room. If not, then I think we will
25 adjourn for lunch. All right. We'll start back at 1

1 o'clock or 1:10?

2 MS. TEN HOPE: It's listed on the agenda as 1:15.

3 MR. O'NEILL: 1:15.

4 MS. TEN HOPE: But I think promptly 1:15.

5 MR. O'NEILL: Okay. We will start back promptly
6 at 1:15. Have a good lunch.

7 (Off the Record From 11:43 A.M., Until 1:20 P.M.)

8 MS. TEN HOPE: We are ready to reconvene this
9 workshop. For those of you who are the other end of the
10 football field, you are welcome to -- to join us down here.
11 If you prefer it back there, that's fine. But it makes the
12 conversation -- it makes it a little more conversational if
13 we're a little closer.

14 I'm Laurie ten Hope. I'm the Deputy Director of
15 Research and Development at the California Energy
16 Commission. I appreciate those of you have returned, and
17 are on WebEx. The next session that we're going to talk
18 about is grid operations. And I just -- before I introduce
19 Jamie I just wanted to mention a couple of things.

20 We heard from the presentation this morning that
21 the investor-owned utilities are going to be doing project
22 initiatives in the grid operations and transmission and
23 distribution area. And, you know, at the end of the day we
24 don't want our plan to be duplicative of the plans that are
25 submitted by the investor-owned utilities. But for today's

1 discussion I think you just put out your ideas. We have
2 participation from the utilities. If it makes more sense in
3 that program, it fits, it will be heard. If it makes more
4 sense in the Energy Commission's program it's heard. So
5 rather than worry about boundaries, give us your ideas.

6 If anybody just joined us, we're in the middle of
7 our conversation, possible initiatives that fit into the
8 investment plan for the Electric Program Investment Charge
9 program. We're taking comments today, and welcome written
10 comments as well. And there will be another -- another shot
11 for comments when the draft plans come out in mid-September.

12
13 We are going to run this one just slightly
14 differently so that we can try to get more comments more
15 quickly. So when it comes to comments, Jamie is going to be
16 roaming with the microphone. Feel free to come up front or
17 queue up in the -- in the middle row, indicating that you do
18 want to speak on a particular item. We -- we welcome your
19 participation on every question. And it's also going to be
20 closer to the satellite phone, because WebEx folks were
21 having a hard time hearing comments in the room. So we're
22 hoping this will facilitate everybody's participation.

23 So with that, Jamie Patterson is the Energy
24 Commission staff and he's going to facilitate this next
25 session on grid operations.

1 MR. PATTERSON: Hello, I'm Jamie Patterson. And
2 we're going to be looking at grid operations, transmission
3 and distribution systems, and electric vehicles.

4 We've seen this slide. This is the purpose of our
5 discussion. Again, I'd like to remind you to try to limit
6 to about three minutes at a time. Make sure you identify
7 your names and affiliations, and give a business card to the
8 reporter over here who is off to my right. Okay.

9 These are primarily the benefits that we're
10 looking for, and the key policy drivers. You've seen many
11 of the same key policy drivers. Here is the governor's
12 Clean Energy Job Plan. I'd like to highlight the State
13 Alternative Fuel Plan because we will be talking a little
14 bit about electric vehicles today. And in the State
15 Alternative Fuel Plan the idea to display 376 million
16 gallons of gasoline with electric.

17 Next slide. So these are the questions that we'll
18 be answering. I won't go through them now. They're also on
19 the slides that we are going to see coming up. And these
20 are some of the potential technology areas within the fields
21 of grid operations, transmission, distribution system and
22 electric vehicles. You'll be seeing these again on various
23 slides where they're appropriate, primarily smart grid
24 microgrids is one of the technology areas. It's been said
25 that the smart grid may consist of a series of microgrids

1 interconnected together to share resources across the
2 greater grid. We have electric vehicle charging grid
3 integration of those vehicles.

4 As Commissioner Peterman mentioned back on June
5 14th in San Diego, California leads the way in electric
6 vehicles. And San Diego, by the way, leads California in
7 the adoption of electric vehicles. Okay.

8 Let's go into grid operations. Okay. In the
9 field -- what I would like you to do is we know that we want
10 to map most of our initiatives to the utility technology
11 area, which are operations, transmission, distribution, and
12 demand-side management. That's one of the areas -- that's
13 one of the requirements of EPIC to try and do. So on these
14 slides I've tried to group them along those lines.

15 And the first one we're going to hit is grid
16 operation. So giving your vision of grid operations,
17 basically, and looking at the potential initiatives of smart
18 grid microgrids, electric vehicle charging grid integration,
19 storage, renewable integration, grid monitor and controls,
20 and analysis, or home area networks and things, anything
21 else that you might have. What are the major barriers to
22 developing and commercializing some of the clean energy
23 technologies that we could address through research?

24 Here you go.

25 MR. TORRE: Thanks. Bill Torre from San Diego Gas

1 and Electric Company. One area that I think is a barrier
2 right now is to do technology standards, actually, for
3 interoperability, and also for control of renewable
4 generation like solar voltaic, PV inverters and all. So I
5 think we need some new technology standards. And, also,
6 even regulatory standards, like Rule 21, things like that.
7 So I think that needs to be changed to allow us to -- to
8 integrate more renewables.

9 MR. PATTERSON: That's good. What other barriers?
10 Anybody else?

11 MR. BLATCHFORD: I have my notes.

12 MR. PATTERSON: Yeah. You've got your notes?

13 MR. BLATCHFORD: Yeah.

14 MR. PATTERSON: Okay. Good.

15 MR. BLATCHFORD: Jim Blatchford, California ISO,
16 again. Along with what we've just heard with regulations,
17 looking at the physical side, and we spoke about -- about
18 this a little bit earlier is looking at the cost-effective
19 telemetry and metering behind the meter grids, behind the
20 meter generation. Also, we -- we spoke of it up in
21 Sacramento, is forecasting. How do we forecast what we
22 need? If we forecast what is happening behind the grid or
23 behind the meters, then we don't have to buy so much on the
24 grid and save all the ratepayers money. Okay. So that's a
25 couple of them.

1 We also need to look at -- I had a third one here
2 too. Oh, you got it. Let me make sure I got it. Those --
3 that's on the work side, on the grid side. Let me not talk
4 about that now.

5 But -- and -- and we've talked about this, this is
6 the one I wanted to hit again, was DER -- DER penetration
7 data. Looking at the data, how do we know that how we, the
8 grid, knows what the IOUS have put in behind the meter. So,
9 again, we need a centralized database, I feel, to collect
10 this information so that we know what's going on. And
11 anybody can use this information. We'll need it for
12 studies. The CEC will do studies on this information. The
13 CPUC will do studies on the information. So to bring that
14 all together in one centralized database.

15 MR. PATTERSON: Okay. Information sharing then?
16 Okay.

17 What other barriers do people -- can people
18 identify to some of these?

19 There you go.

20 MR. HOLMES: So John Holmes, San Diego Gas and
21 Electric. One of the things that we're really taking a
22 strong forward-looking view toward this integration is
23 weather data in -- in the integration of renewables. And
24 we've got research activities that are advancing, weather
25 predictive patterns to dispatch the stored energy from

1 renewables generation into grid operations. And so the
2 ability for us to look at a broader scale, outside of our
3 service territory on a state level and a national level,
4 capitalizing again on other forms of data specific, and
5 maybe farm the data from the PMU networks that are forming
6 across the country to be able to look at, for example, what
7 level dispatch of energy based on criteria.

8 MR. PATTERSON: Good. Frank?

9 MR. GOODMAN: Frank Goodman with San Diego Gas and
10 Electric Company. Like I said, I was in a EMPRY workshop
11 the last couple days. And one of the things we just started
12 working on at San Diego Gas and Electric a couple months ago
13 was an architecture for smart grid. And this means how do
14 you organize your system and how do you overlay the
15 communication and control infrastructure on the electrical
16 system? And we are now in the process of designing an
17 architecture.

18 But what we learned in that workshop the last few
19 days, and all three California IOUS were represented there,
20 is not only the California IOUS but utilities elsewhere
21 around the country have gone about smart grid deployment by
22 deploying smart devices and hoping the architecture and
23 networking of those things together would catch up. And
24 many now, like the three California IOUS, are at the point
25 where we got to catch the architecture -- architecture up.

1 And some would say maybe you should do the architecture
2 first. And some very good points were made to count that,
3 that really to get going on smart grid, it was okay to
4 evolve it the way we did. But now we are at that point
5 where we need to develop architecture.

6 And we would -- we would welcome some support from
7 EPIC funded -- EPIC funded work on principles for
8 architecture development, what can be done uniformly by all
9 utilities, and what will be utility specific because of some
10 quirk in the design of their system, and each of us has our
11 own quirks. So architecture development in a unifying
12 approach would be a good -- a good area of endeavor.

13 MR. PATTERSON: Good. Okay. Your name

14 MR. ROCHE: My name is Neal Roche. I'm CEO of
15 Gridtest Systems. We work on vehicle grid integration. One
16 of the challenges we see with integrating electric vehicles
17 to the grid is actually getting fair pricing information for
18 ratepayers. And so there's a new -- the PUC is supporting a
19 sub-metering protocol so that third-party electric vehicle
20 service providers could actually do billing or metering in
21 their charging station. And so -- so when buyers have to
22 essentially test a surge volume, those -- those sub-meters
23 in the charging stations have -- have also verified the
24 data, the communications between these third-party providers
25 and the utility. So I think that's a challenge that has to

1 be solved together, you know, the ratepayers, you know, fair
2 and consistent pricing when -- when they're charging their
3 cars.

4 MR. PATTERSON: Thank you. Okay. In the area
5 of --

6 DR. BUNJE: I'm sorry, one more. One more.

7 MR. PATTERSON: -- grid ops -- my -- my apology.

8 DR. BUNJE: Just one question. Paul Bunje with
9 UCLA. With respect to particular to grid stability issues,
10 the -- the distribution of uptake of novel technologies,
11 including EVs on demand-side, as well as distributed
12 generation, as you note that the -- the adoption by -- by
13 customers is -- is differential in random parts of the
14 state, and we need to ensure through both behavioral and
15 economic research that we have an understanding of how that
16 will be -- be pulled up.

17 In a related thing on EVs, there is continuing
18 interest in electric vehicle battery storage of -- of excess
19 electricity, which raises a number of legal issues that --
20 that, in addition to economic issues, that should be at
21 least addressed or recognized as one of these programs.
22 Thank you.

23 MR. PATTERSON: Thank you. Does anybody else have
24 barriers that they would like to mention here to, say, smart
25 grid, microgrid, or grid ops, electric vehicles, storage,

1 renewable integration, monitoring, home area networks in the
2 area, grid operations? Okay.

3 Well, let's go to question two. Where should
4 funding be placed to maximize the deployment of clean energy
5 technologies?

6 Okay. Any ideas? Are there any preferences out
7 there? Do we have anything on the web? Oh, we have one.

8 Here you go.

9 MR. GOODMAN: Thank you. Frank Goodman, San Diego
10 Gas and Electric. When we say HANs, I think we really mean
11 CPMs, customer premise networks. And that generalizes it
12 from residential home to all classes of customers. And,
13 indeed, some of the more sophisticated interoperability
14 systems between the utility infrastructure and the customer
15 premise I think will be around commercial and industrial
16 systems first, because it's a bigger system, more options
17 for taking direct control of demand and things of that
18 nature.

19 So I would say a good area to place funding is
20 interoperability systems to move us in the direction of
21 direct control, which means demand management, not demand
22 response, of big loads by utilities with prearranged
23 agreements with the customers.

24 MR. PATTERSON: Okay. Thank you. I learned
25 something.

1 Bill?

2 MR. TORRE: Bill Torre from San Diego Gas and
3 Electric Company. And one of the areas I think that we need
4 to consider for a fair amount of funding is to help meet the
5 state mandated goals from RTP renewable integration. And
6 the 12,000 megawatt EG goal that the governor has
7 established, you know, I think there's quite a bit that
8 needs to be done on distribution systems and maybe on
9 transmission systems and grid operations to -- to help us
10 accommodate these increased levels of goals. And we can
11 talk a little bit more about that later. But that -- that's
12 an area that I think we need to focus on.

13 MR. PATTERSON: And we will be getting to
14 transmission and distribution systems in a minute. That
15 will be our next slide. So we will have one on that, I
16 hope. Let's see. So funding point number two. Any ideas
17 for where funding should be placed? Keep in mind that we do
18 have this goal for 2020. And one of the priorities would be
19 that some things need to be started now to be ready then,
20 because it will take the whole six or seven years that we
21 have.

22 MR. SHERICK: Robert Sherick, Southern California
23 Edison. I think this is playing off a bit on Frank's
24 comment about the architecture. But I think we really do
25 need, on the grid operations side, to take a look at the

1 model of how much do we want to have distributed control
2 versus how much do we want to have centralized control. I
3 think that issue is, to -- to get into Frank's point about
4 being able to manage and have direct control over things
5 like commercial buildings, I think that's an ongoing concern
6 as to who should have the control and what would be, again,
7 bringing the most value to our customers, and what business
8 model makes sense from a control standard. These are our
9 questions.

10 MR. PATTERSON: Okay. Thank you. That's an
11 interesting idea.

12 Oh, we have one from the back. Could you please
13 come up here. It makes us possible for all the microphones
14 to hear you.

15 MR. WALLACE: Okay. Joe Wallace, Coachella Valley
16 I-Hub. And addressing an issue that was brought up this
17 morning by a lady -- I don't see her in here, maybe she
18 left -- but it has to do with storage. And she was talking
19 about the difficulty with storage and high rises and large
20 buildings, the same thing exists at the home level.

21 So behind the meter, storage opportunities, maybe
22 it's batteries, maybe it's a passive thing, but it's
23 something that will allow all of these solar panels to -- to
24 store the energy, and maybe they're even storing it from the
25 grid during off hours. You know, we've got two companies in

1 our incubator that are working on solutions for that, and
2 some of them are installed. They're not very expensive.
3 They add value to the home. And they take away the -- the
4 waste of -- of both wind and solar energy that goes on every
5 day.

6 MR. PATTERSON: Good observation.

7 MR. LYTE: Thank you. Bill Lyte, Protean Energy.
8 One of the obstacles to deployment of ocean wave energy is
9 the cost of the cable. It's a very major obstacle. It's
10 frequently more than the actual system. I've suggested to
11 the California State Lands Commission that -- who oversees
12 all coastal facilities, that they do an inventory of cables
13 that may even be unused at the present time. They might
14 have been laid in for something else and that use is gone.
15 And those cables could then be made available to marine
16 renewable energy facilities.

17 MR. PATTERSON: Good. Any more comments on this
18 question or -- okay.

19 MR. HOLMES: Good. Well, just -- this is John
20 from San Diego Gas and Electric. And I think very clearly,
21 as he stated, where? That's the first part of this
22 question. And in parentheses you talk about technology
23 innovation versus commercial scale.

24 One of the things I think is important to
25 recognize is that there will be a preparedness component

1 that Frank alluded to in terms of integration for the
2 utility system. It really needs to be solidified in place.

3 This is not done solely by the utilities. There will be
4 commercial enterprise development efforts to -- to advance
5 this technology. But I think there needs to be a forwarding
6 approach towards this integration development that is
7 essentially is utility centric. And secondly, CalISO
8 Centric.

9 MR. PATTERSON: Okay. Any more on this? Okay.
10 Let's move on to --

11 MR. SCHINDLER: Jamie -- Jamie, we've got one.

12 MR. PATTERSON: We have one. Okay. Go ahead.

13 MR. SCHINDLER: John, are you on line?

14 MR. PATTERSON: John, are you there?

15 MR. SCHINDLER: John, go ahead.

16 MR. PATTERSON: Is he there? Okay. Well, we'll
17 see if we can't get back to that person over there -- out
18 there.

19 Let's move on to question three, unless we have
20 any more comments. I don't want to cut anybody off. Okay.

21 Question three: What specific initiatives are
22 recommended to advance these energy technologies that will
23 benefit the ratepayer?

24 Okay. We're looking for some good ideas here that
25 will help us meet those energy goals that we covered

1 earlier. Any ideas?

2 MR. COLBURN: Mike Colburn, San Diego Gas and
3 Electric. It's one thing to take a level two charger and
4 install it in the garage of every single family home. It's
5 very much more difficult to provide that same functionality
6 for multi-family, apartment houses, condominiums. And if
7 some effort could be aimed towards standardizing an approach
8 that works across the state for that I think it would really
9 open up the viability of electric vehicles for a lot more
10 users.

11 MR. PATTERSON: Okay. Thank you. Do we have any
12 other initiatives anybody would like to propose? How are we
13 doing out on -- oh, Bill.

14 MR. TORRE: (Off mike.) Assuming electric
15 vehicles are part of this, smart charging would be an area
16 to have an initiative and an area where we can pull, you
17 know, vehicle to grid, and also demand response and
18 behavior, and using it for ancillary services, and also
19 support the grid during high-peak load periods, things like
20 that.

21 MR. PATTERSON: Okay. We have research on smart
22 charging to support grid operations.

23 (Colloquy Between Jamie Patterson and Court Reporter)

24 MR. PATTERSON: We have a request that we speak up
25 over here, because we have, yet, a third mike that needs to

1 pick you up. Multiple, multiple mikes. Yes.

2 So -- but to recap, that was on -- that was an
3 initiative to explore the use of smart charging by Bill
4 Torre, to support grid operations. And he mentioned that it
5 could be used for, say, ancillary services, vehicle to grid,
6 and a number of other operational issues. Good.

7 So any other initiatives for anybody out there?

8 Then let's move to question four. Define
9 ratepayer need for which EPIC investment should be targeted.
10 Any ideas in the area of grid operations?

11 Well, then let's move on to five. And let's look
12 at some of these initiatives to see if we have any
13 priorities and how we can identify the benefits. This
14 should be anticipated measure, energy cost saving, improved
15 reliability, job creation, economic benefits. Anything for
16 question five under that goal? What should be started now,
17 first? If you think of anything --

18 MR. SCHINDLER: Jamie?

19 MR. PATTERSON: Yes? We have one person the web?

20 MR. SCHINDLER: Yeah. We got John's mike working

21 MR. PATTERSON: Oh, good. John, can you hear us?

22 John, are you there?

23 MR. SCHINDLER: No.

24 MR. PATTERSON: No.

25 MS. DOUGHMAN: Maybe he can send the question to

1 you via WebEx.

2 MR. PATTERSON: Okay.

3 (Colloquy Between Staff Members)

4 MR. PATTERSON: Are there any other questions?

5 MR. TORRE: Oh, yeah, I --

6 MR. PATTERSON: You have a comment? Good.

7 MR. TORRE: Yeah.

8 MR. PATTERSON: Come on up to --

9 MR. TORRE: I'll come on up here. Okay.

10 MR. PATTERSON: -- the mike here --

11 MR. TORRE: All right.

12 MR. PATTERSON: -- this is the one we want you to
13 have, right there.

14 MR. TORRE: It's okay. Bill Torre from SDG&E&E.
15 You were looking for us to comment on prioritization of
16 these different benefits. And, you know, from my
17 perspective, from a utilities perspective, grid reliability
18 is incredibly important. So as we go into higher and higher
19 levels of renewable penetration, you know, that's more and
20 more of a concern, and that's something we should definitely
21 address.

22 Job creation right now, you know, with the high
23 level of unemployment, is also a concern. So I think you're
24 going to have a session tomorrow on workforce development.

25 MR. PATTERSON: Yes, we are.

1 MR. TORRE: So I think that's a good thing to
2 address.

3 Energy, cost savings, definitely. The more we can
4 identify benefits for these high technology projects that
5 we'll be looking at through EPIC I think we'll be able to
6 get more value for ratepayers that way. So I would
7 encourage that. Thanks.

8 MR. PATTERSON: Good comments. Okay. Frank?

9 MR. GOODMAN: Yeah. Just one thought. In reading
10 the list there it occurred to me that there's a lot of
11 uncertainty yet as what is the best way to do cost benefit
12 analyses for purposes of developing these investment plans.

13 So maybe more than an initiative for what goes in the plans
14 is to back up a step and see how best to do consistently
15 amongst the four administrators are cost benefit analysis
16 that will support the investment plans.

17 MR. PATTERSON: So are you recommending maybe a
18 more common way of doing the cost benefit analysis?

19 MR. GOODMAN: Well, given the tight timeframe we
20 have to get these investment plans in front of the public in
21 September, and the final form in November, I think what we
22 have to do is take a look at what each of us have done in
23 past cost benefit analysis work and -- and pick out what we
24 think is the best of all worlds, of all these different
25 approaches. And it will cut across all of those different

1 attributes mentioned in that list.

2 MR. PATTERSON: Good comments. Any more on
3 prioritizing initiatives and identifying the benefits. Here
4 we go.

5 MR. SCHINDLER: One of the comments we have online
6 is that energy efficiency products work with home area
7 networks, should be a priority, as well as research into
8 energy measurement to prove out-products.

9 MR. PATTERSON: Okay. Good comment. Do I have
10 any more comments, advice?

11 MR. GOODMAN: Yeah. This may actually apply to
12 more than -- Frank Goodman, again, San Diego Gas and
13 Electric -- to more than just the grid ops area, but I might
14 as well at least interject it now.

15 Business case development. Some of the
16 initiatives we might launch we'll need to have a business
17 case. Sometimes you have a two-phase process in getting the
18 business case; one before you do phase one of the project,
19 and phase one produces information to where you can fine
20 tune your business case or redo it and come up with a better
21 answer than you could before you have that first data.

22 So I guess the point is for this and other areas
23 phasing the work so that you come in with a business case,
24 and if you don't have it you make that one of the key
25 objectives in your work.

1 MR. PATTERSON: The establishment of business
2 case. Good comments.

3 Oh, we have another one from the web?

4 MR. SCHINDLER: Yeah. Another one from the web.
5 Along the lines of reliability, the defense of the system
6 from cyber attack should be part of the scope.

7 MR. PATTERSON: Cody, could you identify who said
8 that?

9 MR. SCHINDLER: And that was Ed Becker.

10 MR. PATTERSON: Security. Defense from cyber
11 attack. Any -- oh.

12 MR. HOLMES: Final comment, I promise.

13 MR. PATTERSON: Come over here.

14 MR. HOLMES: So increasingly the world is becoming
15 more -- a lot more similar than it is different. And the
16 issues that are facing us are not that different than --
17 than other areas of the globe. And I would suggest that
18 grid operations could benefit from international
19 collaborations, such as with -- for example, EDF has a very
20 forward-looking research program. Same thing in Korea.
21 Same thing in Japan. And those governmental organizations
22 behind their research activities are often knocking on our
23 doors for collaborative opportunities. So maybe that could
24 be done at a state level.

25 MR. PATTERSON: Something worth considering. Any

1 more comments or questions or --

2 MR. BLATCHFORD: I do have one more thing.

3 MR. PATTERSON: Okay, Jim.

4 MR. BLATCHFORD: It's Jim Blatchford from the
5 California ISO. I want to make sure everybody knows that I
6 really beat up on forecasting. I think it's something that
7 we really have to do. And then how do you value grid
8 reliability? Okay. So -- and then, to me that's a holistic
9 view if you look from forecasting to reliability throughout
10 all these projects. And I think we have to look at this
11 with the IOUS and not -- not piecemeal this, look at end to
12 end of these projects. Now I just want to remind everyone,
13 we need to do that so that we can see everything, so we
14 don't have something that starts in bits and pieces.

15 MR. PATTERSON: So coordination from end to end.

16 MR. BLATCHFORD: Right.

17 MR. PATTERSON: Good. Okay. Are we ready to go
18 to the next question? Do we have another one?

19 MR. SHERICK: No. We can move to the next
20 question. I've -- I've --

21 MR. PATTERSON: Next question then. What areas
22 are already covered by DOE and private funding? Because we
23 want to avoid duplicate research or unnecessary research.

24 MR. SHERICK: Robert Sherick from Southern
25 California Edison. On this one I think it's very important

1 not to have duplicative work. But also I think it should be
2 considered in part of the prioritization process, if there's
3 opportunities to partner with the DOE and get funding, like
4 we did the with stimulus package and the ARRA funds, I think
5 that would be something that should be considered as part of
6 the criteria for making investments in the state, that we
7 have some possible federal matching funds. And we talked
8 about that a little bit this morning.

9 But I think there's certainly the aspect of not
10 wanting to have duplicative work, but also wanting to -- to
11 do this collaborative work, just as San Diego is reaching
12 concerning international opportunities. It's something the
13 DOE is very interested. We are a very welcome contributor
14 to a lot of those DOE projects because we are so much
15 forward thinking in this space. And I think it's a great
16 opportunity for the state to be able to continue funding
17 those efforts.

18 MR. PATTERSON: Great. So we should look to
19 leverage federal funding, and other funding, as well. Okay.

20
21 MR. ROCHE: One area that DOE has invested some
22 funds in the last year is for some areas that were
23 mentioned, smart charging and meters imbedded in smart
24 chargers. So DOE has funded four companies to develop smart
25 charges and reduce the cost by 50 percent.

1 So one area that might be complimentary to the
2 EPIC program would be to -- to do some demonstration and
3 deployment to compliment the smart chargers being developed
4 such as, you know, testing and certifying them in -- in some
5 pilot networks. So that would be an area that we could
6 leverage.

7 MR. PATTERSON: Thank you.

8 MR. ROCHE: That's Neal Roche with Grid Test.

9 MR. PATTERSON: Thank you. Okay. Any more, or
10 are we ready to move on to transmission and distribution?
11 Okay.

12 Let's move on to transmission and distribution.
13 As you can see, these are some of the potential initiatives.
14 They're somewhat familiar. We have smart grid microgrids,
15 electric vehicles charging grid integration, storage,
16 renewable integration.

17 And in putting on your transmission and
18 distribution hats, what are the major barriers to developing
19 and commercializing these from the transmission and
20 distribution systems' side? Any ideas for smart grid
21 microgrids?

22 MR. GOODMAN: I'll put on my Bill Torre hat. Bill
23 has had a lot of work going to look at the impacts of
24 distributed resources, in particular photovoltaics, which
25 we're seeing very high penetrations of, and -- and PEV now.

1 So I think there is a need to intensive that work, the
2 penetrations. We used to speak of don't worry about it
3 until we get to 25 percent. Well, in some cases we are
4 seeing high penetrations up to that range now. So it's time
5 to really intensify the effort on system impacts, meaning
6 distribution system impacts of distributed resources in PEV,
7 and what mitigative measures might be done to -- how to put
8 this -- make everybody's life easier, both installer and
9 utility.

10 MR. PATTERSON: Good. Okay. Any others? Oh,
11 Bill Torre.

12 MR. TORRE: Put my own hat on. Bill Torre here
13 from SDG&E&E. What major barriers? I was thinking about
14 this. It think that one of the areas that -- that is a
15 barrier right now is -- is the pricing on our commercial and
16 retail rates for customers. It doesn't take into account
17 the realtime pricing. And I think with -- with eventually
18 getting to realtime pricing and the right price incentives
19 we can better integrate renewables into the system and make
20 demand response more effective, and the energy efficiency.
21 So I think that's one of the areas that I see as a barrier
22 is -- is the -- is a pricing mechanism. So maybe we could
23 do some research into looking at new technology that would
24 enable, you know, more -- more accurate pricing --

25 MR. PATTERSON: Okay.

1 MR. TORRE: -- for customers.

2 MR. PATTERSON: Looking at pricing mechanisms,
3 realtime pricing being one of them. Okay.

4 What are some other major barriers? Anybody?

5 MR. SHERICK: Robert Sherick from Southern
6 California Edison. We have a major problem in how we
7 allocate costs for distribution and transmission upgrades.
8 So essentially it's whoever causes that. And it might be
9 that you've got six people putting in, say, a renewable
10 project, and then the seventh person actually triggers an
11 upgrade requirement. And that seventh person is the one who
12 is going to get allocated those costs. I think we could do
13 some research, possibly, on new and different ways to
14 allocate costs for transmission distribution upgrades.

15 MR. PATTERSON: Okay. Thank you. Cost. Any
16 other barriers, real quick? And then we'll move on.

17 Where should be funding be placed to maximize to
18 the deployment of these technologies? What should be the
19 emphasis?

20 Any ideas?

21 MR. BLATCHFORD: Okay. Jim Blatchford, California
22 ISO. We have deployed throughout the West, throughout
23 California synchrophasors. We don't have a standard for the
24 synchrophasors throughout the country and to put it into the
25 control room. So to develop a standard we've got very -- a

1 lot of vendors that come in and say we can do this and we
2 can do that, but there's no interface and no standard for
3 that. So put some standardization behind that, starting to
4 do that.

5 MR. PATTERSON: Standardization for
6 synchrophasors --

7 MR. BLATCHFORD: Yeah.

8 MR. PATTERSON: -- then looking forward.

9 MR. BLATCHFORD: Yeah.

10 MR. PATTERSON: Okay.

11 MR. BLATCHFORD: Well, no, for every -- everybody
12 around.

13 MR. PATTERSON: For everybody around?

14 MR. BLATCHFORD: So that the same signal comes in
15 and it's at the same time and everyone sees the same view of
16 what's going on in the -- in the -- with the synchrophasors.

17 MR. PATTERSON: Oh. Okay. Bill?

18 MR. TORRE: Hi. Bill Torre, again, from San
19 Diego. I think what Jim just mentioned triggered a thought
20 in my mind, too, that's been a barrier, and that is the
21 issue of cyber security and the cyber security standards,
22 maintaining cyber security while at the same time allowing
23 us to implement these new technologies, the smart grid,
24 particularly synchrophasors, and maybe even using it for
25 close-loop control, active control on our system. So that's

1 an area that really needs to get resolved is the whole issue
2 around NERC standards and maintaining cyber security. So if
3 there's something we could do in that area of research to
4 help resolve some of the technical issues related to
5 maintaining cyber security while still allowing us to fully
6 utilize the capabilities of new technology.

7 MR. PATTERSON: Cyber security issues. Okay.
8 Thank you.

9 MR. SCHINDLER: Jamie?

10 MR. PATTERSON: Yes? We have one from the web.

11 MR. SCHINDLER: Yeah.

12 MR. CARRIERI: John Carrieri. (Inaudible) has
13 created a statewide central server system to rebroadcast
14 realtime pricing from all ISOs.

15 MR. PATTERSON: Okay. Thank you for that comment.
16 Okay. Here we go.

17 MR. HOLMES: John Holmes, San Diego Gas and
18 Electric. The synchrophasor network is managed today by
19 PNNL. And the ability for that data being collected
20 currently by PNNL to influence decision making in the
21 algorithm development for large categories of loads, such as
22 corridors of vast charging equipment for vehicles across the
23 web, it's an opportunity for us to look at, you know,
24 statewide, as well as, you know, beyond our -- our state
25 borders.

1 MR. PATTERSON: Okay. Thank you.

2 MR. LYTE: Yes. Bill Lyte, Protean Energy. There
3 may be opportunities where other state agencies are
4 implementing programs that yield a tremendous amount of new
5 electrical generation that the renewable energy or new
6 technologies could dovetail with. For example, the
7 electrification of the ports, cold ironing, where it's now
8 mandatory to hook up the ships to the electrical grid at
9 most California ports when they come in. So there's this
10 enormous amount of new electrical infrastructure being put
11 into the ports. And also tremendous -- tremendous emphasis
12 on sustainable technologies at those same ports. But I'm
13 not sure that the renewable energy technologies folks knew
14 that much about the -- the cold ironing program.

15 MR. PATTERSON: Okay. Good comment. Any more
16 initiatives?

17 Process. How much time do we have, about 30
18 minutes?

19 MR. SCHINDLER: 2:30 is the next.

20 MR. PATTERSON: 2:30 is the next one. Okay.
21 Well, we'll go on to the next question. Let's see, I
22 just -- did we just do question two?

23 MR. STOKES: Yeah.

24 MR. PATTERSON: Okay. So we're on what specific
25 initiatives then?

1 MR. STOKES: Correct.

2 MR. PATTERSON: Okay. What specific initiatives
3 are recommended to advance innovative energy technology to
4 benefit ratepayers?

5 Sorry about losing -- trampling the questions,
6 your comments are getting me thinking.

7 But what specific initiatives have you got to any
8 of these that could advance this? Any ideas? Bill?

9 MR. TORRE: I've got a couple of initiatives. One
10 is the area of energy storage. I think we need to really
11 look to energy storage as an initiative that might help us
12 to accommodate more renewable generation. And the other is
13 volt power control on our system, fast-acting volt power
14 control.

15 MR. PATTERSON: Okay. Good initiatives. What
16 other good initiatives? I know you have probably a lot of
17 ideas. Anybody? Everyone saving them up for comment to
18 dockets? Okay. Yes?

19 MR. GOODMAN: Yeah. Just one -- I don't know,
20 maybe it's a comment and a question at the same time. But
21 this is Frank Goodman with San Diego Gas and Electric. I
22 was sitting there contemplating why distributed energy
23 resources aren't in the potential initiatives. It would
24 seem that in D&D realm, even though we talked about them
25 under generation this morning, there's so many issues around

1 integrating distribution generation. And some of the same
2 things Bill said about storage would apply to distributed
3 generation, as well, and having initiatives around making
4 sure it's assimilated into the distribution system in a way
5 that is beneficial and there's no deleterious effects.

6 MR. PATTERSON: Good. That's why we have others
7 up there.

8 MR. GOODMAN: Oh, there you go.

9 MR. PATTERSON: Yeah. If you have ideas of things
10 that are not up there that should be up there we do want to
11 hear about them. And put them in the comment, too, if you
12 like and submit them to dockets. We will consider that.

13 MR. COLBURN: Mike Colburn from San Diego. One of
14 the concerns that the early adopting of EV community has is
15 what is my cost of charging going to be going forward? A
16 common price point we see, at least in San Diego, is a \$1.00
17 an hour, regardless of a demand, \$1.00 a hour. So it's
18 simple. It probably makes sense at 1:00 or 2:00 in the
19 afternoon in the middle of August. It doesn't make a lot of
20 sense at 1:00 or 2:00 in the morning.

21 So some way to -- and this needs to be
22 standardized -- bill-to-your-home electric account,
23 regardless of where you are charging your vehicle in the
24 state. Give customers more price certainty.

25 MR. PATTERSON: More price certainty for electric

1 vehicles.

2 Any other initiatives? Anything out there on the
3 web? Okay. So basically there are no other initiatives for
4 transmission and distribution that we would like to see?

5 Then we'll go on to question four -- four: Define
6 the ratepayer need for which EPIC investment should be
7 targeted. Any ideas? Comments?

8 MR. ROCHE: Hi. Neal Roche from Gridtest. The
9 ratepayer need is -- kind of another way of stating the
10 comment that we just had -- the ratepayer need from an EV
11 driver point of view is I always want to charge at the
12 lowest price. So I want pricing signals to go to my car or
13 my charging station so I know when to charge. That's the
14 biggest, I think, ratepayer behavior, you know, we can
15 influence, by giving them price signals.

16 MR. PATTERSON: Good idea. You know, it's more
17 than that, actually. It's also pricing signals. Gasoline
18 went up 6 cents in the last 24 hours here in Los Angeles.
19 I've never seen that before. Okay.

20 What other ratepayer needs would you like to
21 comment on?

22 MR. MINNICUCCI: With respect to T&D -- I'm sorry,
23 John Minnicucci from Southern California Edison. With
24 respect to T&D, I think in the area of transmission and
25 distribution it's -- it's really looking at safety,

1 reliability, and affordability. Those are the things that I
2 think we ought to target in -- in this specific area. And
3 the way to really target those things is, you know, how do
4 you integrate all of the different types of systems that are
5 going to be, you know, connecting with the system, and that
6 includes electric vehicles, all forms of generation, you
7 know, whatever types of markets might, you know, evolve out
8 of these -- these different interconnections.

9 And, frankly, it's -- it's -- it's a key --
10 it's -- I guess this is kind of the nexus of, you know, what
11 we're trying to do with state policy, and then also what
12 we're trying to do with -- with the grid. There's a bit of
13 a disconnect in that, you know, state policy is way ahead
14 and the grid is trying to catch up. It's going to take
15 investment. It's going to take a lot of different things.

16 So I really think safety, reliability, and
17 affordable are the things you've got to look at.

18 MR. PATTERSON: So safety, reliability, and
19 affordability are the -- are the ratepayer needs that you've
20 identified. All right.

21 MR. WASHOM: Sorry I'm late. Byron Washom from
22 U.C. San Diego. On -- on this particular point I think
23 there's going to be a need for equitably identifying the
24 cost for increased penetration of photovoltaics and DER, and
25 how do you equitably distribute that between beneficiary

1 ratepayer versus the base. So I think on that -- on that
2 it's going to be complex and we'll need a lot of stuff.

3 MR. PATTERSON: Well, thank you. Okay.

4 Anybody else have any comments on ratepayer need?
5 Come on up.

6 MR. WALLACE: Joe Wallace, Coachella Valley
7 Innovation Hub. Have any of you ever seen a 24-hour time
8 lapse of the rate change for electrical? Chairman of the
9 FERC gave a presentation in Palm Springs in February. And
10 in a 24-hour period -- and he was doing this for most of the
11 Midwest -- the rate for electric went from zero in the
12 middle of the night to a little over \$1.00 at the peak in
13 the middle of the hot July day. People around the grid,
14 ratepayers, don't know that exists. They don't know it's
15 there.

16 Why wouldn't there be some mechanism to take
17 advantage of the fact that I'm going to cool my refrigerator
18 down at two o'clock in the morning and run my fuel pumps
19 when -- when it's readily available for two cents a kilowatt
20 hour because the utility can buy it for one. It doesn't
21 exist, and it doesn't exist anywhere. The airline industry
22 does it. I fly at midnight, I pay less. Why doesn't it
23 happen at -- at our -- our electric meters.

24 MR. PATTERSON: Good observation. All right.
25 Frank.

1 MR. GOODMAN: Yeah, the last few comments are kind
2 of headed in this direction, and maybe it could be
3 generalized that the -- the ratepayer, we -- we -- so far
4 when this question has come up in other areas we've talked
5 about how the projects might flow through to the ratepayer.

6 But direct information to the ratepayer is something that
7 is a need in its own right, and that is to help a ratepayer
8 with tools that they can make decision on whether or not to
9 buy a distribution generator or an energy efficiency
10 measure, storage, etcetera. And a lot of ratepayers who are
11 buying their own stuff and trying to make themselves as
12 independent of utilities as they can are actually, in some
13 cases, increasing their price of electricity and they don't
14 even know it.

15 So tools and knowledge to help ratepayers make
16 informed decisions before they rush down to Home Department
17 and -- and buy something that they think is going to save
18 them money, but they don't have all their facts right.

19 MR. PATTERSON: Good comment. Any others on this
20 area?

21 DR. BUNJE: Thank you. Paul Bunje, UCLA. Two
22 other elements of ratepayer need that I think we should not
23 forget here, number one is equity issues associated with
24 investments in these -- in these other elements to ensure
25 that you have both -- both good security, as well as access

1 to novel technologies and such in an equitable manner for
2 California.

3 Secondly, and not in a related way, we should
4 consider the investment elements of T&D that will result in
5 incentivizing some of the technologies and economic benefit
6 strategies that exist in other parts of the EPIC -- the EPIC
7 strategy. And those two things I think should be considered
8 through a part of the ratepayer need definition.

9 MR. PATTERSON: Thank you. Okay. Are we -- do we
10 have any more comments about identifying ratepayer needs?

11 If not, we'll move on to the next question, which
12 is question five, to prioritize initiatives and identify the
13 benefits in transmission and distribution, what basically
14 should be done first, and identify the benefits that should
15 be measured such as energy and cost saving, grid
16 reliability, job creation, economic benefits, as you see
17 before you.

18 Any comments on this?

19 MR. SHERICK: I think -- I think we capture this
20 in energy cost savings. But one area I think that's
21 important as we go forward is that there's a lot of emerging
22 technologies, like synchrophasor, that we talked about that
23 are being put onto the grid for monitoring purposes. But as
24 Bill Torre mentioned, there's opportunities for possibly
25 closed circuit control, being able to use those

1 synchrophasors in a new and different way. So right now
2 we've got quite a few special protection schemes on our
3 system, an opportunity to maybe revisit those and whether or
4 not those are optimized, and take a look at how
5 synchrophasor data could feed into those systems to make
6 them better than they are right now. Robert Sherick.

7 MR. PATTERSON: Okay. Yes, come on up.

8 MR. LYTE: Bill Lyte on -- Protean Energy. On the
9 subject of economic benefits, I've spent 25 years with major
10 consulting engineering firms. And you learn to watch the
11 big capital projects, highways, water, etcetera. When that
12 money is being spent, that's the time to deploy the new
13 technologies if you can get the engineering firms to spec
14 them.

15 And I think that one way to -- to jet stream the
16 entire renewable energy industry in California is to show
17 them where the money is going to be spent. The cold ironing
18 at ports was one idea. The tunnel under the delta is going
19 to be another huge pumping. So, you know, you just -- you -
20 - you go to them and you say bring us your technologies that
21 will work with this project.

22 MR. PATTERSON: Okay. Any other ideas on what
23 initiatives should be prioritized here first to meet the
24 goals of 2020 and beyond?

25 MR. GOODMAN: Yeah. When we visited the Southern

1 Cal Lab reasonably -- this is monetary -- our tour guide, if
2 you will, mentioned that they are going to be implementing
3 61850. This is the substation 61850 that IEC produced, not
4 the other piece of 61850 I was talking about this morning.
5 And I think it's an industry need because right now the DNP3
6 is the legacy information system that is used. And it also
7 came out of IEC and has an IEC number. But 61850 is a more
8 robust smart-grid oriented alternative that has engineering
9 tools built into it.

10 So all of the utilities, not only California but
11 elsewhere, are struggling with should I change from DNP3 to
12 61850, but I've got a big investment in DNP3 and -- and I
13 don't want to waste an investment and just throw it away.
14 So is there a rational migration process where maybe I start
15 turnkeying new substations that are 61850, and eventually
16 transition the others over?

17 So I think this is an area where a lot of good
18 work could be done to -- to help the whole industry, the
19 whole IOU industry in California, understand the pros and
20 cons of moving to -- to 61850 from DNP3, and what is an
21 orderly rational process for doing it if you want to take a
22 look and say, no, in five years I still need to be on DNP3.

23 But in 20 years I probably should be on -- moving to 61850,
24 or something of that nature.

25 MR. HOLMES: Frank, could you cover that from an

1 international perspective?

2 MR. GOODMAN: Yeah. Thank you. John has
3 suggested that I mention that DNP3 is well ingrained in
4 North America, meaning U.S. utilities. It's not as well
5 ingrained elsewhere in the world. And in some of the South
6 American countries, for example, where there's a green field
7 situation, they're just moving right to 61850. And the big
8 vendors like ABB or Siemens, they are now offering dual
9 platforms where it could -- a substation could be operated
10 on either -- either one to help you with the migration
11 process. So the U.S. and North America, in general, may end
12 up being the slowest to move to 61850, just because we're
13 the ones that have this big legacy investment.

14 MR. PATTERSON: Okay. So one of the initiatives
15 you'd like to see prioritized is the migration from DNP3 to
16 IEC 61850. Okay. Good. Any other initiatives people have?

17 If not, then we'll go to question six. What areas
18 are already well covered by DOE and private funding? Any
19 thoughts in the areas of these initiatives that you've
20 heard, plus the additional ones, like distributed generation
21 of a product in the other category?

22 John Minnicucci.

23 MR. MINNICUCCI: I just have more of a cautionary
24 comment. If you look at the DOE and you look at their broad
25 based research programs you'll see that they have

1 initiatives that are very similar to the initiatives we have
2 here on the board. And, frankly, they're similar to the
3 initiatives that we pursue in the utilities. But at the end
4 of the day it comes down to the actual projects. And, you
5 know, initiatives are going to be similar. There are
6 going -- there are going to be pieces that the DOE might
7 focus on that -- that we won't focus on.

8 And, you know, we've got some rather large ARRA
9 projects that are ongoing right now. And they touch into
10 some of these -- these initiatives, but there's -- there's -
11 - plenty of room is left. And I would caution against
12 looking at one initiative against another initiative and
13 saying, well, they're already doing that, because it's
14 just -- it's not the case. There's plenty of room to do
15 more.

16 MR. PATTERSON: Well, thank you. Yeah, cautionary
17 comments are welcome under here.

18 MR. TORRE: Yeah. Bill Torre again from San Diego
19 Gas and Electric. Along the same lines, I think there's a
20 lot of room for collaboration with the DOE and other federal
21 agencies where the CEC compliment the work and maybe cross-
22 share with some of these agencies.

23 MR. PATTERSON: Okay. Frank?

24 MR. GOODMAN: Frank Goodman. And as long as we're
25 in the cautionary realm I want to do my two cents indeed,

1 two things. One is the people at DOE and elsewhere, they
2 draw upon the same intelligence pool for input. So it's not
3 surprising that you'll start seeing some of the same ideas
4 floating around in each different organization's programs,
5 the DOE, CEC and elsewhere. So indeed, we have to watch
6 that.

7 But the implementation, that's the other caution,
8 what they focus in on, if you -- if you say let's -- let's
9 see you do some work on interoperability standards, well,
10 they may focus in on one aspect of that. Or if it's -- what
11 was the last one we were on there, architecture this
12 morning, they may focus on some specific aspect of
13 architecture. So the danger is not to say the DOE has
14 covered that. We don't need to do anything. There may be
15 some piece of it that DOE is focused in on, but a lot of
16 other things that need to be done in that same area yet.

17 MR. PATTERSON: Okay. So we're getting a little
18 tight on time. So I think I can sum up real quickly the
19 comments.

20 Oh, Byron?

21 MR. WASHOM: Byron Washom, U.C. San Diego. Two
22 comments. One is under the potential initiatives I think
23 cyber security needs to be pulled out a an individual item,
24 if it hasn't already been mentioned. And as a cautionary
25 note, that is definitely an area that is underserved by both

1 DOE and the private sector. So that's probably the
2 hungriest of them all.

3 MR. PATTERSON: Okay. Thank you. Well, now, I
4 think I've heard -- many of your comments, I would like to
5 quickly summarize them as we need, as administrators going
6 forward, we need to really look hard at DOE and see how we
7 can leverage their money that they are funding, because they
8 are funding money into these areas, and ensure that we don't
9 do duplicative research, but to do complimentary research.
10 Okay.

11 Are we ready to move to the electric vehicles?
12 Okay. Let's move to electric vehicles. Okay. Electric
13 vehicles. Now, looking at electric vehicles we have our
14 potential initiatives. Electric vehicles, we have the smart
15 grid, microgrids; How does electric vehicle fit in with
16 that? electric vehicle charging and grid integration. We
17 have vehicle efficiency and battery reuse. Okay. So
18 battery for storage, which is the next thing down there,
19 ancillary services, how electric vehicles can be used to
20 supply those services on the grid such as B2G. We have grid
21 monitoring control and analysis, with the idea being of
22 doing that to support electric vehicle integration, smart
23 charging we mentioned earlier.

24 We have HANs. Frank? Well, okay, I don't know if
25 he said HANs and or --

1 MR. HOLMES: Customer program networks.

2 MR. PATTERSON: Customer program networks. Okay.

3 Thank you. HANs and CPNs. And any others, such as
4 distributed gen, which has been brought up, and cyber
5 security has been brought up as two additional areas of
6 initiatives.

7 So what are the major barriers to developing and
8 commercializing clean energy technologies for electric
9 vehicles among these initiatives? Okay.

10 MR. HOLMES: So I could stand up here the rest of
11 the day and talk about the barriers, but I'll and summarize
12 a very short list here for us to be able to focus on in the
13 future.

14 Standards are clearly one of the things that are
15 more appropriate to -- to focus on with respect to
16 technology barriers. Because without standards there's --
17 it's the Wild-Wild West and we don't have anything
18 predictable to be able to design to work.

19 So with that in mind, a couple of areas of focus,
20 specifically in standards, are the, you know, utility
21 interface to vehicle chargers, and by proxy, to the vehicles
22 themselves, eventually potentiating vehicle to grid. And so
23 those are standards that are actively under development
24 through AST on the list, as well as SAE.

25 And so the ability for us to look at research

1 activities to support electric vehicle integration
2 operations with the grid, and specifically infrastructure
3 associated with charging, is -- is seen both as -- as a
4 barrier from the standpoint that standardizations --
5 standards are not completely in place today, but also as an
6 opportunity in terms of being able to look at the -- the,
7 for example, the renewable portfolio standard and the
8 ability to integrate vehicle operations and charging with
9 involving integration of renewables. So that's a very
10 important component that often those two areas or dots don't
11 get connected.

12 So that's an important focus that we're working on
13 right now with U.C. San Diego, specifically in the area of
14 separate use of batteries. We have two active research
15 products, one with CEC, and a second with NREL, and a third
16 under development right now with a systems integrator in
17 Detroit who facilitate module standardization.

18 So I would also suggest that there's an important
19 aspect of demand charges associated with vehicle charging,
20 that we have to contemplate solutions toward -- with respect
21 to rates. Demand charges affect every commercial area. And
22 in some cases there's a lessening of the burden of demand
23 charges by locating charging equipment at places of high
24 load. And in some cases there's an impenetrable hurdle
25 because the demand charges make charging an impossible

1 proposition for a business to begin operations. So those
2 are two areas I think that are really important for us to
3 look at in terms of barriers.

4 MR. PATTERSON: Thank you. And for all those
5 barriers that you left out, I'll be reading a comment that
6 you're going to submit to dockets, if you decide to do so.
7 Okay.

8 What other barriers are there? Bill?

9 MR. TORRE: Bill Torre from San Diego Gas and
10 Electric Company. As an EV owner one of the most
11 frustrating things is availability of public charging
12 stations. If there's something we can do on the
13 technologies side to make public charging more affordable
14 and more readily available on major freeways, maybe a study
15 looking at -- at where optimum location of charging stations
16 could be would be a good one, possibly maybe covered with --
17 coupled with energy storage, perhaps, and maybe renewables
18 in a way we could couple the renewables to the energy -- to
19 energy storage and electric vehicles and, you know, looking
20 at the benefits in terms of reducing greenhouse gasses.
21 Thank you.

22 MR. PATTERSON: Great. Okay. We have more.
23 Byron?

24 MR. WASHOM: Byron Washom from U.C. San Diego.
25 From -- from -- from a market penetrations point of view and

1 sustained commercialization I would say for research
2 purposes, penetrating a multi-unit development, housing
3 development is the toughest nut to crack and the one that
4 requires the greatest amount of research. Thank you.

5 MR. PATTERSON: Thank you.

6 MR. MCLAUGHLIN: Larry McLaughlin, College of the
7 Desert. Recognizing that we have a workforce development
8 session tomorrow I'll just say that we need to make sure
9 that we have trained technicians who can service these
10 vehicles from Sears to Pep Boys to Joe's Mechanic Shop on
11 the corner as the vehicles that are currently covered under
12 warranties come out of warranty and these repairs are taking
13 place in the aftermarket retail automotive service industry.

14 You have to trained technicians out there. The OEMS, the
15 original equipment manufacturers, are currently taking care
16 of that skilled training right now, but the rest of the
17 industry is going to have to have it in order to remove that
18 barrier.

19 And we also need to be mindful of what skills
20 electricians are going to need to have in terms of
21 installing the charging systems.

22 MR. PATTERSON: Good observations. Any other
23 barriers? Okay. Anything out there on the web? Okay.

24 I'll quickly go on to any specific -- where should
25 funding be placed to maximize the deployment of this? Where

1 do we want to put our funding? Any comments? Okay.

2 Let's move on to three. What specific
3 initiatives? We've sort of been mixing that up with
4 barrier -- but what are the specific initiatives? Any
5 additional ones you can think of? Any web ideas from folks
6 out there on WebEx? No? Okay.

7 Define the ratepayer need for which EPIC --

8 MR. HOLMES: Would you --

9 MR. PATTERSON: I have one.

10 MR. HOLMES: John from SDG&E again. We have been
11 successful in a proposal that's been awarded to Qualcomm for
12 wireless charging, not the inductive charging that you've
13 seen in the past with the first release of the EV-1, but
14 imbedded inductive loops in the ground or on a pad. And so
15 the activities around demonstrating that technology are
16 underway currently in London, will be underway in San Diego
17 in the project that we have. So there will be additional
18 opportunities for us to look at expanding the role of
19 wireless charging in, for example, multi-unit dwelling
20 facilities, as well as public -- public installations.

21 We're stifled somewhat in that we as a utility
22 cannot own and operate those charging infrastructures, as --
23 as an IOU. But we are working together with industry to
24 advance that.

25 MR. PATTERSON: Okay. Well, thank you. Yes?

1 Would you come around here?

2 MR. COLBURN: Absolutely.

3 MR. PATTERSON: So that way we can make sure that
4 you're picked up --

5 MR. COLBURN: Thank you.

6 MR. PATTERSON: -- on the recording.

7 MR. COLBURN: Mike Colburn from San Diego Gas and
8 Electric. One of the main interest areas for electric
9 vehicle early adopters is being able to -- and utility
10 companies, is the ability to manage the load on the
11 infrastructure, primarily the distribution transformer,
12 which I believe has been identified as a bottleneck when it
13 comes to electric vehicle charging. You need some kind of a
14 closed-loop control that will allow the utility to modulate
15 the charge rate as a function of available capacity.

16 The other issue, the older urban areas where
17 electric vehicles may be proliferating are often served at
18 lower distribution voltages. And one other opportunity
19 would be to more thoroughly incentivize utilities to do cut-
20 overs from those 4 and 5 KV systems to at least a 12 KV
21 system. It would be more -- much more capable.

22 MR. PATTERSON: Okay. Thank you. Okay.
23 Initiatives; I think we're -- we're really short on time
24 here. So let's try and wrap this up.

25 MR. ROCHE: Okay. So a specific initiative around

1 electric vehicles would be a system to test and certify the
2 electric vehicle chargers in California in order to support
3 the metering, something that the PUC has asked for. So
4 there's no way to test and certify these chargers today.

5 MR. PATTERSON: Okay. Thank you. Thank you.
6 Okay. Are we ready to kind of get through these last three
7 questions real fast? Good.

8 Let's define ratepayer need for which EPIC
9 investments should be targeted? Any ideas, or do we want to
10 move on? Okay.

11 Prioritize initiatives. Identify the benefits
12 that should be anticipated and measured, such as energy and
13 cost savings, and those other things that are up there. Any
14 ideas? Anything anybody wants to identify and tell
15 everyone? Okay. Nothing on the web?

16 In that case let's go to what areas are already
17 well covered by DOE and private funding? Okay.

18 We'll be monitoring those. I think I've --

19 MR. HOLMES: I'd come back to question five and
20 comment.

21 MR. PATTERSON: Okay. Come on up here and let's
22 get you on record here.

23 MR. HOLMES: I think the comment I would offer
24 pertaining to environmental benefits in question five here
25 relates to quantifying how it is that we would displace the

1 liquid fuel content in the goal toward vehicle
2 electrification. One of the things that's not well
3 understood is how the different types of charging, whether
4 that be AC charging or DC charging, what the source of that
5 power to charge those vehicles is, is not well understood.
6 Because in this evolving market we're looking, for example,
7 at -- at solar charging facilities that would dramatically
8 change that equation.

9 MR. PATTERSON: Okay. So you're looking like
10 level one, level two versus DC charging research now?

11 MR. HOLMES: DC charging.

12 MR. PATTERSON: DC charging research. Okay.
13 That's good.

14 Any other -- I guess we have one from the web.

15 MR. FORTUNE: Yeah. Hi. This is Jon Fortune from
16 Sunmerge. I would like to echo what John Holmes stated as
17 much. I think solar charging stations across a specific
18 pathway up California could be beneficial to EV and that
19 whole integration of all those assets would be good.

20 MR. PATTERSON: Okay. Good. Thank you. Frank?

21 MR. GOODMAN: Thanks. Yeah. I think just to
22 expand a little on John Holmes comment about looking at
23 where the power comes from, I think environmental issues are
24 ripe for more work on electric vehicles. And we talked
25 about cradle-to-grave studies at the workshop a week ago.

1 And I think in electric vehicles they are particularly
2 germane as to what happens to the batteries, spent
3 batteries, and the whole life-cycle issues associated with
4 electric vehicles, including the power generation to charge
5 the batteries.

6 MR. PATTERSON: Okay. Yeah. We have battery
7 reuse up there.

8 MR. STOKES: Well, I think, Frank, are you talking
9 about recycling or what we do with these batteries or --

10 MR. GOODMAN: Cradle-to-grave.

11 MR. PATTERSON: Here, why don't you --

12 MR. GOODMAN: However many uses they have --

13 MR. STOKES: Yeah.

14 MR. GOODMAN: -- where do they end up, and factor
15 in all the costs over the life cycle.

16 MR. STOKES: And maybe you could speak to what
17 needs to be done in recycling for EV batteries or types of
18 studies that might -- we might do under EPIC?

19 MR. GOODMAN: Well, I'm not an electric vehicle
20 specialist. So I would defer to anyone else in the room who
21 wants to comment on that. I was just saying whatever the
22 solutions proposed are, look at a cradle-to-grave cost
23 analysis, including an environmental cost on electrical --
24 electric vehicles.

25 MR. PATTERSON: Okay. We're running a little late

1 so --

2 DR. BUNJE: I'll speak as fastly as I can.

3 Fastly; that's not a word.

4 I was going to echo what Frank said, actually, but
5 I don't see any approaches to this, in particular looking
6 at -- at the actual --

7 MR. PATTERSON: Come over here.

8 DR. BUNJE: Sorry. Paul -- Paul Bunje -- sorry --
9 UCLA.

10 With respect to the actual materials and recycling
11 and incentivizing creative ways of re-utilizing batteries,
12 as it were, but also integrating that battery technology
13 development to think about the actual -- actual cradle-to-
14 grave life cycle.

15 In addition, the -- the entire life cycle of the
16 transportation sector as it pertains to electric vehicles,
17 as there's a lot of overlapping intention -- overlapping
18 programs to try and combine EVs and other types of
19 transportation sector elements with transit and other
20 elements, and that should be incorporated here, as well, as
21 you're measuring things like GHG benefits and other energy
22 benefits. Thanks.

23 MR. PATTERSON: Hit mute?

24 MR. SCHINDLER: Yeah. Go ahead.

25 MR. PATTERSON: Oh. Go ahead. Is somebody --

1 MS. DELMAS: Oh, is this me?

2 MR. PATTERSON: Yes.

3 MS. DELMAS: Yes. Hi. I'm Magali Delmas from
4 UCLA. I'm a professor at the Institute of the Environment.
5 I also -- I just would also emphasize the need to have a
6 life-cycle assessment of electric vehicles. We did actually
7 conduct one analysis of the current impact of electric
8 vehicles on -- on the environment. And some of them
9 mentioned, of course, a lower impact than hybrids or
10 conventional vehicles.

11 However, I think what is also required are studies
12 that would look at the essential impact of such vehicles,
13 considering the changing infrastructure that would be
14 required to accommodate for all these vehicles. Let's say,
15 you know, everybody has now an electric vehicles, we need to
16 increase the, you know, the energy providing these cars in
17 powers plants maybe or, you know, in renewable energy.

18 So how this life cycle exceptionally would change
19 once everybody has -- has an electric vehicles, so I was
20 just emphasizing kind of long term type of -- you know, not
21 just looking at the current impact right now?

22 MR. PATTERSON: Okay. And could you please say
23 your name again?

24 MS. DELMAS: My name is Magali Delmas. It's
25 M-a-g-a-l-i D-e-m-l-a-s. I'm a professor at UCLA.

1 MR. PATTERSON: Thank you very much.

2 MS. DELMAS: Thank you.

3 MR. PATTERSON: Okay. So we covered all of the
4 questions. Anybody have any more comments or anything that
5 they wanted to add? If not, then next slide please. I
6 think this is it.

7 I look forward to -- I'd like to remind everybody
8 that if you have additional comments please --

9 MS. TEN HOPE: No. Go to the slides. If you --
10 go to the next one --

11 MR. PATTERSON: Right.

12 MS. TEN HOPE: -- and just open it up to all
13 questions on market and facilitation, and then we'll move.

14 MR. PATTERSON: Okay.

15 MS. TEN HOPE: So just see if there are any
16 closing comments, if we could just -- if --

17 MR. PATTERSON: Okay. We have our market
18 facilitation plan where we talk a little bit about what
19 we'll -- there will be a further discussion tomorrow, of
20 course, but we have workforce development. We talked a
21 little bit about that today in some of your earlier
22 comments. We have innovation clusters. And I guess we
23 could go through the questions real quick from one to six.
24 So I'd like to open it up to any questions out there.

25 MS. TEN HOPE: I'm just trying to give everybody

1 an opportunity to respond to this section but not go one by
2 one. So if you have an urgent comment on market
3 facilitation we'll take it now and then move it to the next
4 session.

5 MR. PATTERSON: Anybody on any of the six
6 questions that you see up there? Okay.

7 Then let's move on. I'd like to remind everybody
8 about the -- so if you think of things that you would like
9 to say but you haven't had a chance to say, or if you have
10 anything that you would like to elaborate on and provide
11 greater levels of detail, then please send them by email to
12 the docket. Include that docket number 12-EPIC-01 on the
13 subject line. And it's docket, just d-o-c-k-e-t, at
14 energy.ca.gov.

15 MS. TEN HOPE: Thank you, Jamie. And I really
16 appreciate everyone's active participation in -- in this
17 session. And sorry to have to move along, but we don't want
18 to shortchange energy efficiency. I know it's been a long
19 afternoon. If you want to stretch in place while Beth comes
20 up, just stand up, you know, say hello to your neighbor and
21 then -- but we'll kind of stay in the room so we can -- can
22 move to the next session, the -- the final facilitated
23 discussion this afternoon.

24 MS. CHAMBERS: Bend and stretch. We saved the
25 best for last.

1 MS. TEN HOPE: All right. So our last section,
2 facilitated section is on energy efficiency and demand
3 response. We're losing part of our audience. But I hope
4 those of you who are staying are enthusiasts of energy
5 efficiency, top of our loading order. And I'd like to
6 introduce Beth Chambers who will facilitate this discussion.

7 MS. CHAMBERS: Good afternoon. I'm glad to see
8 that you're all still awake, at least I hope you are. So
9 like I said, I think maybe -- I hope we saved the best for
10 last. So put on your thinking caps. A lot of the same
11 questions -- I mean, the questions are exactly the same but,
12 of course, the topics are different. So we're going to be
13 looking at efficient and demand-side management.

14 I'm going to try to do what Jamie did. But I
15 think just for a little bit of explanation, what we're
16 trying to do is capture your voice here and here or here for
17 our court reporter, and also on the conference phone, so
18 that our friends on WebEx can hear everything. So the
19 challenge is not to trip.

20 MR. PATTERSON: Do you want me to help you?

21 MS. CHAMBERS: Perhaps. So we'll start there and
22 see what happens. All right. Oh, yeah, see?

23 MR. PATTERSON: Anyways --

24 MS. CHAMBERS: That will work. Why thank you,
25 kind sir. Okay.

1 So let's look at our energy efficiency management
2 goal. At the top of our list on every single session has
3 been to provide IOU ratepayer benefits. And how we go about
4 doing this -- I can hold this up --

5 MR. PATTERSON: I got it.

6 MS. CHAMBERS: -- you got it -- okay -- reduce
7 costs of energy efficiency and demand-side technologies,
8 advance science and technology, help technologies overcome
9 valleys of death, reduce both electricity use and demand
10 cost-effectively, advance building and appliance energy
11 efficiency standards, reduce indoor air quality and -- and
12 compliment and leverage other public and private funding
13 sources.

14 Some of our key policy drivers are our energy
15 policy report, or IPR, where we want to increase energy
16 efficiency, reduce greenhouse emissions, support for energy
17 efficiency standards in zero-net energy buildings. Also our
18 California Energy Efficiency Plan where we want to achieve
19 zero-net energy buildings, and also efficiency in the
20 industrial and agricultural sectors. Our California public
21 resources code speaks to indoor air pollution and air
22 quality.

23 Some of our other policy drivers that we were
24 looking at are the Energy Action Plan, which discusses
25 energy efficiency as being first in the loading order, which

1 Laurie alluded to, and also our AB 32.

2 This is very uncomfortable.

3 MR. PATTERSON: No. Not at all.

4 MS. CHAMBERS: But if you think it's okay, all
5 right.

6 MS. TEN HOPE: Beth, you can go up to the -- and
7 put it up at the podium and then you -- and put that right
8 down on the podium.

9 (Colloquy Between Ms. Chambers and Ms. ten Hope)

10 MS. CHAMBERS: We'll get all the kinks worked out.
11 Okay. So these are the questions, the same questions we've
12 been looking at. And here are our lists of potential, and I
13 think that's the operative word, energy efficiency demand-
14 side management and investment topics, building use energy
15 and efficiency zero-net energy buildings, industrial ag and
16 water energy efficiency, demand respond, demand-side
17 storage, environmental and public impacts, and market
18 facilitation. And I think the key word is others. What
19 have we not captured?

20 Is there anything else you would like to add to
21 this? You can speak up now or add in a comment going
22 forward. We'll look at each section, each topic area.
23 Okay. Look at each topic question and respond to the
24 questions as quickly as we can. Okay.

25 So looking at building end-use energy efficiency,

1 we have identified some of those initiatives as lighting,
2 HVAC and refrigeration, flood loads, consumer electronics
3 and appliances, building envelopes, demand response and
4 energy storage, and consumer behavior, have we captured all
5 of the initiatives that perhaps should be under this
6 particular topic area? So you can comment now? Yes? Of
7 course, now this -- you'll have to come up here.

8 MR. WASHOM: I'll come to you.

9 MS. CHAMBERS: Good idea.

10 MR. WASHOM: Okay.

11 MS. CHAMBERS: Thanks, Byron.

12 MR. WASHOM: Byron Washom from UC San Diego. I
13 don't know where this fits. But as a campus and a large
14 industrial consumer of electricity we would love to be able
15 to participate as a load center, rather than just responding
16 and during demand responses, we would love to be able to
17 acquire surplus energy off the grid before it's sold at a
18 negative price to Arizona. I don't know where that fits,
19 but we have the ability to be able to be able to sync.

20 MS. CHAMBERS: Thank you, Byron.

21 Any other comments in the initiatives area?

22 Well, we're going to start right at number one.
23 What do you consider the major barriers and commercializing
24 building and efficiency under any of these initiative areas?
25 Come on, friends.

1 MR. SCHINDLER: You got one.

2 MS. CHAMBERS: I got one on the line. Okay.

3 MR. SCHINDLER: Well, we have to go on.

4 MS. CHAMBERS: You have to read it?

5 MR. HORNQUIST: Yeah. Edwin Hornquist, and
6 H-o-r-n-q-u-I-s-t. So kind of down to a few barriers that
7 I -- that we were looking at here that are -- sort of seem
8 to be -- I manage an emerging technologies program for
9 Southern California Edison. So -- so we run -- you know, we
10 come across these a lot. And we try to address or at least
11 identify these -- the barriers when we're going through
12 technology evaluations or assessments.

13 So one key one is -- is the cost, of course, of
14 any new technology coming out of research. So the cost of
15 consumers to adapt that technology. We always run also with
16 issues of persistence of savings. So we -- we -- there's a
17 lot of activity in the area of where are technologies are
18 intended to address some behavioral or some issues with
19 billing operations, but it's not addressing some of the
20 persistence issues with how to ensure that those savings are
21 not there just for a short period of time.

22 The evalu-ability of those technologies is another
23 key barrier. The -- another barrier is -- is that when a
24 technology is coming out of research is -- is it -- is there
25 proper interest from potential investors that are going to

1 take these technologies and commercialize them and bring
2 them to the utilities, in particular in a form that we can
3 actually do something with. The other -- so that's one --
4 one of the investor challenges.

5 The -- the other barrier that many technologies
6 face are the market adopters or the consumers knowledge of
7 the technology and their ability to dedicate any time to
8 that, to what we call the research. There's a search cost
9 or a search or understanding of the technology.

10 The other one it's -- it's consumer access to
11 technologies, how to -- you know, because the consumers
12 actually have readily accessible technologies that -- and it
13 kind of ties in with the prior barrier that I talked about.

14 Then the enforcement. There's also, further down the line
15 is the enforceability when these technologies are brought to
16 market. And a lot of times they're quite complicated. And
17 if they ever make it to kind of a code or they're going to
18 be used as part of a compliance code on a new construction
19 type project, can -- can they be enforced easily by the
20 entities charged with that?

21 And I guess I'll mention one last one which are --
22 this is a typical issue of -- of how to reach certain
23 markets, like the small and medium market, business market,
24 the SMBs, what we call SMBs, how to reach that -- those
25 markets. There's -- the tenant-owner relationships is a

1 huge barrier for adopting overall energy efficiency, but
2 even more so for any emerging demand.

3 MS. CHAMBERS: Thank you, Edwin.

4 And you have -- you have one on the line?

5 MR. SCHINDLER: Yeah. We had a couple comments
6 from people whose mikes aren't working.

7 Owen Howlett says, "I think that appliance menu
8 sufficiency is missing from our list of goals."

9 So John Carrieri with GreenNet, "As per the
10 previous section's suggestion, we need help educating
11 installers on new technology. It's a pretty big barrier."

12 And then I have someone on the line. Erin, go
13 ahead.

14 MS. FALQUIER: Hi. I think -- hello. This is
15 Erin Falquier. I'm with the California Energy Efficiency
16 Industry Council. A couple of points on barriers.

17 One is that we find that technology experts don't
18 understand their technologies very well, the market
19 information. So, one thing that would be helpful, and this
20 was brought up earlier, is information sharing. This would
21 really help technology experts to better be able to deploy
22 new efficiency technologies and target the most (inaudible
23 sentence)---or markets within the building section. That's
24 one set of barriers. Another set that was also brought up
25 earlier today was in regards to distributed generation as

1 related to business models and processes. When you were
2 asking before about potential (Inaudible - large section.) We
3 need to develop a business model for deploying efficiency so
4 it's not just enough to have really good innovative
5 technologies that are being developed through EPIC, but
6 also, innovative methods to get them implemented cost-
7 effectively. So for example, methods that bring together all
8 of the elements and sequence them in the right order to get
9 the technologies implemented. This would really help get
10 (inaudible section). And it helps get technology implemented
11 that might not otherwise be because they required
12 integration with other efforts, or required training. One
13 thing that we've brought up in our comments is EPIC is being
14 developed (inaudible). Noting that set novel business models
15 and processes should be eligible for EPIC funding. So we
16 think that would be a good additional initiative to add to
17 your list.

18 MS. CHAMBERS: Could you repeat your name please?

19 MS. FALQUIER: Yeah. Erin Falquier,
20 F-a-l-q-u-i-e-r.

21 MS. CHAMBERS: Okay. I might also invite you to
22 send written comments to the -- addressed to CEC further
23 down in the cycle just to make sure we captured your
24 comments as possible. You do have a lot to say there. Thank
25 you.

1 Any other comments?

2 MS. DELMAS: Hello? Can I speak now? It's me.

3 I'm --

4 MS. CHAMBERS: Sure. Go ahead. State your name
5 please.

6 MS. DELMAS: Okay. Magdali Delmas from UCLA. I'm
7 sorry, I'm not very used to this. It's my first time on
8 this interface. But speaking about interface, what I see, I
9 think is recent in list of items that you are providing
10 here, potential initiatives, I think are energy management
11 at a residential level. It seems to me that one of the
12 barriers to the adoption of clean energy technologies or
13 more efficient appliances is the lack of understanding from
14 consumers about what appliances are actually using a lot
15 energy and what appliances are not using a lot of energy. So
16 we now, with the development of smart meters and of energy
17 management systems, essentially, we will be able to provide
18 to residential customers this information. And I think
19 there's a lot of work to be done on how these interface
20 between existing appliances, the existing energy usage, and
21 the consumer, how this interface should be designed to be
22 the most efficient. And so, what we are doing here at UCLA,
23 we have an experiment ongoing. We have installed smart
24 meters for 120 apartments. We are providing appliance level,
25 real-time information to the (inaudible) department. One of

1 the big things that they say that we have no idea how
2 (inaudible sentence). And it's going to be hard to get
3 people to adopt these energy efficient appliances if they
4 cannot create it to their actual current energy usage. I
5 think that there's a lot of work that can be done in
6 designing these interfaces that are going to help
7 (inaudible) because people are going to realize how much
8 savings they can potentially get from that. But I think that
9 we should also have in terms of potential initiative,
10 initiatives on the energy management system between the
11 efficient technology and the end user of the residential
12 level and the commercial level, that's also a possibility.

13 MS. CHAMBERS: Thank you. Was there someone else on
14 WebEx?

15 MR. SCHINDLER: There is. Owen Howlett

16 MS. CHAMBERS: Owen, go ahead. Owen?

17 MR. HOWLETT: Oh, hi. Yes, this is Owen Howlett
18 at the California Energy Commission. My -- my role here is
19 to help develop the Title 24 building standards and the
20 Title20 Appliance Standards, specifically for (inaudible)
21 and in terms of the valley of death so that in a lot of
22 cases we -- we fast tracked technology into the (inaudible).
23 So what we want to do is take a technology that can be
24 proved to work, and proved to be cost-effective, and not
25 wait for it to get wide-spread, market adoption and

1 commercialization but just immediately jump it into the code
2 (?)and have it (inaudible). We've done that with quite a few
3 different things but for, in order to do that we need pretty
4 good info on how those technologies are used in many
5 different types of buildings by many different types of
6 users. So, it's great to have a couple—let's say somebody
7 develops a new technology that might be some type of
8 (inaudible) control thing. If they do one or two
9 demonstration sites, yeah this thing can be proved to work,
10 it saves 50% of energy at these two sites, that's great, but
11 it's not enough for us to adopt it into code. What we need
12 to have is - quite a few different buildings, and a cheap
13 way to get that, is not to pay a researcher to go in and get
14 all that data, but the cheap way is to have some kind of
15 infrastructure there, let's say a utility program can feed
16 their building's end-use data into a database, or a
17 manufacture can feed their end-use data into a database. And
18 then we can look at it and say hey we've got 30 or 40
19 buildings here. Here's how this technology performed across
20 these multiple buildings and we can identify problems and we
21 can prove that it works in a general way not just in one or
22 two places. From my perspective, that's how I'd like to see
23 that valley of death, kind of overcome. In terms of
24 providing funding, I think it would be logical for EPIC to
25 provide funding to set up that information sharing

1 infrastructure to set up databases and common data standards
2 for transferring data so we share data on how these
3 technologies work in different buildings.

4 MS. CHAMBERS: Thank you, Owen. Anyone else out
5 there? I'll ask that you come over here.

6 DR. BUNJE: Paul Bunje, UCLA. Three things. The
7 first thing I want to point out is not included here in building
8 end-use efficiency which should be water, because a
9 significant amount of energy is -- is associated with
10 heating of water within buildings. So we want to make sure
11 that that's -- that's recognized.

12 Secondly, there's a couple of other issues that
13 are particular barriers, one having to do with retrofits, in
14 particular implementing technologies associated with the
15 building envelope and such. A lot of the lighting and HVAC
16 sorts of things, the return on investment is -- is
17 financially viable, but we need to identify a way to
18 actually -- actually make it more viable and profitable, the
19 price of retrofits and stuff.

20 (WebEx background noise.) Somebody didn't like
21 that comment, apparently.

22 MS. CHAMBERS: Apparently.

23 DR. BUNJE: So in particular, a subset of data
24 within the real estate area where a particular barrier,
25 split incentives between building occupiers, managers, and

1 building owners. And if we're going to actually --
2 particularly, again, on building envelope and other sort of
3 retrofit activities that needs -- that certainly needs to be
4 squared somehow. And somebody else mentioned business
5 models.

6 And then the very last one that I want to mention
7 is permitting procedures. There are still (inaudible) in --
8 in standards and codes and such in different -- different
9 counties and municipal jurisdictions around the state. And
10 in order to incentivize and -- and improve the adoption of
11 some of these procedures it would be valuable to have
12 methods by which we have standards and permitting processes
13 themselves that are usable and transparent.

14 MS. CHAMBERS: Thank you. Anyone else in the
15 audience or online?

16 Well, then let's move on to where you think
17 funding should be placed to maximize deployment of clean
18 energy technologies as it has to do with building and energy
19 efficiency? Anyone?

20 Well, moving right along, anyone?

21 MR. HORNQUIST: I'll tell you, a lot of the --
22 I'll just say that the barriers that I mentioned earlier are
23 all areas of potential research or some funding research
24 emphasis.

25 In addition to that I think there -- I like what

1 the gentleman said earlier about the challenges with the
2 retrofit market, and also behavioral. And I won't dwell on
3 it since you have it already up there, customer behavior,
4 not only as -- as it relates to technologies that drive
5 behavior change but also study the behavior or how, not so
6 much as to energy management, but also with respect to
7 purchasing decisions.

8 The other is -- is leveraging the smart meter
9 infrastructure, is how we deploy this huge meter
10 infrastructure. We need to ensure that there's ample
11 research data in that area as well.

12 And also issues with respect to the idea of sun.
13 You know, we want to make sure that when a technology or
14 the -- that people don't adopt technologies on a piecemeal
15 basis, that they adopt it in a certain order that makes
16 economic and -- and -- and sense for them and for the
17 utilities from a cost delivery standpoint.

18 And I guess lastly I'll mention that the
19 coordination is critical. And I think -- I don't know how
20 you fund coordination or emphasis, but it's ensuring that
21 there is coordination with state efforts, regional and
22 national efforts. So that would be it. Thank you.

23 MS. CHAMBERS: Thank you, Edwin. Anyone else in
24 the audience? Online? Okay.

25 Let's move on to three. What specific initiatives

1 are recommended to advance innovative energy technologies
2 that benefit ratepayers, in addition to those we have
3 listed, or if there are any on the list that you don't think
4 ought to be there? Oh, good.

5
6 DR. FISCHLIEN: Marian Fischlien from UCLA. I
7 think you have my information already. I just wanted to
8 talk for a moment about consumer behavior, because I think
9 that's one area where it would really benefit ratepayers to
10 target some of the EPIC funding, in that a lot of the
11 benefits from consumer behavior programs benefits the
12 ratepayer directly because at the reduced energy use, of
13 course, they -- they save money. But we also need to be
14 thinking about how we can target these types of programs.
15 Because, for example, if we target high-usage consumers,
16 those benefits also percolate through the entire customer
17 base because we can then keep rates for everybody.

18 And I guess some people before me said -- have
19 spoken before about the research that is going on there.
20 And we hope that on some of the findings we have in building
21 these energy management systems and looking at how different
22 types of customers react to different types of information
23 about the energy usage, and also what strategies we can
24 evolve for how this is going to be used to apply it in the
25 product development.

1 MS. CHAMBERS: Any other comments? Okay.

2 Let's move on. Four, define the ratepayer need
3 for which EPIC investment should be targeted.

4 MR. GOODMAN: Thank you. Frank Goodman, San Diego
5 Gas and Electric. Ratepayer need; it's a function of the
6 ratepayer, I guess. I think a lot about this. And for
7 somebody like me who has lights and they're CFLs, and -- and
8 I don't watch television, what else do I use electricity
9 for? My computer. And I'm a very low user. And I'm
10 probably at the low end of use patterns. And then it ranges
11 all the way up to people with big air conditioning, big flat
12 screen TVs, pools, and so on.

13 So maybe some research is needed to understand how
14 many ratepayers are in these different spectra of use so
15 that we don't target energy efficiency measures and a lot of
16 resources at developing energy efficiency measures for only
17 five percent of the customers; understand different customer
18 behavior patterns and which of them really have anything
19 they can't be more efficient about than they already are.

20 MS. CHAMBERS: Thank you, Frank. Anyone else?
21 Ratepayer benefits.

22 MR. HORNQUIST: I don't know if this is ratepayer
23 benefits but it certainly -- it speaks to several of the
24 things we talked before about, barriers to adoption. And --
25 and I was thinking about ratepayer needs. Ratepayer needs

1 is -- they have the need to -- well, at least we'd like to
2 think that the reason that they don't install or they don't
3 pursue these technologies is because it's difficult to -- to
4 access them or difficult for them to install them because
5 they don't have access to these things. And we need to make
6 sure that there's research done, or at least a component is
7 done on ease of it, of -- of installability or ease of
8 adoption.

9 And if I can go back for a second, I think we
10 talked about these initiatives. I think we wanted -- we
11 sort of -- again, it speaks to the technology is really
12 not -- we know from a developing standpoint what the
13 issues -- what technologies people are delivering. But what
14 we don't have is really a clear understanding of behavior
15 when it comes to innovation and the delivery of those -- of
16 those technologies. So it's how to research topics
17 associated with the innovation and delivery.

18 The -- I'll mention one other topic that we were
19 just talking about. Basically, it's really -- it's maybe as
20 important as a lot of these things. We talk about -- we
21 talk about energy a lot, but we don't talk about the power
22 quality issues associated with the -- with the advanced
23 technologies. The more electronics are embedded in new
24 technologies the more challenging it is to control that,
25 which can cause problems within the grid. So there's, you

1 know, some interconnection between those two areas of
2 research.

3 MS. CHAMBERS: Thanks, Edwin.

4 Anyone else have a comment?

5 DR. BUNJE: Paul Bunje, UCLA. I just wanted to
6 highlight also this sort of diversity of ratepayer benefits,
7 particularly with respect to equity here and recognizing
8 that certain -- certain ratepayers are going to need
9 sometimes more expensive types of investments in order to
10 reduce their -- their energy load, for instance. Very
11 often, for instance, poor communities can live in less
12 insulated or -- or less efficient houses and such. That's
13 very different from improving HVAC systems and the like when
14 you have high load -- load bearers. So it's important to
15 recognize their need. We'll have -- we'll have to bear in
16 mind.

17 MR. HOLMES: I think it's important to turn the
18 question more around and to say to the ratepayer, what do
19 you need? In the case of the automotive industry we go
20 back, you know, to Henry Ford's question about what do you
21 want from a car, and he said, "Faster horses." You know,
22 Steve Jobs didn't ask his customers what they wanted; he
23 delivered something they never expected. But it's important
24 for us to understand, for example, as a utility that we are
25 delivering value added content. There are some customers

1 who could not be bothered with the energy awareness systems
2 that -- that we're talking about today. And there are
3 others, particularly enterprises looking at building energy
4 systems who stand to have great benefit from them.

5 And so I think one of the important things we need
6 to look at with respect to EPIC investment in this
7 particular area is voice of the customer.

8 MS. CHAMBERS: Thank you, John. That's John
9 Holmes.

10 Any other comments on four? Okay.

11 Well, let's move to five. Was there anyone
12 online, Cody? Okay.

13 Number five, how would you prioritize these
14 initiatives that we have out here. Is there any one that
15 sticks out, or should we -- do we need them in a particular
16 order in the energy cost savings, grid reliability, job
17 creation, economic benefits and such?

18 DR. BUNJE: Paul Bunje, UCLA again. Less about
19 prioritizing initiatives but highlighting -- a critical
20 element here is that both environmental benefits and energy
21 and cost savings. When you look at over-consumption and
22 reduction of greenhouse gasses this is an absolute metric,
23 which is different from energy efficiency, of course. And
24 so we want to make sure that that's -- that that's
25 highlighted in terms of measurements, and that we're

1 prioritizing the -- the reduction costs in those gas
2 emissions there.

3 And then, finally, I don't see your equity, again,
4 which I think is an important element that needs to be
5 addressed.

6 MS. CHAMBERS: Okay. Devin?

7 MR. RAUSS: Devin Rauss with Southern California
8 Edison. I would not necessarily prioritize them, but maybe
9 put a different spin on it of how do you integrate demand-
10 side management. And if you look at it with that -- those
11 lenses on I think all of these kind of tie together and
12 actually feed into more of the benefits at the same time.
13 So you get energy and cost savings from the EE, but the
14 reliability from demand response as also appropriately used.

15 So I would just encourage you to consider integrated
16 demand-side energy management.

17 MS. CHAMBERS: Anyone else? Okay.

18 MS. FALQUIER: Hi. This is Erin Falquier,
19 California Energy Efficiency Industry Council. One
20 additional benefit I would add is that we're achieving
21 benefits across-market sectors or subsectors.

22 MS. CHAMBERS: you said this was Erin?

23 MS. FALQUIER: Yes.

24 MS. CHAMBERS: Okay. Thank you. All right.

25 So if there are no other comments, I think we'll

1 move on to six. It's what areas might already be covered by
2 DOE and others? I think we kind of touched on this in other
3 areas where maybe we could look at collaborations. I think
4 that was a comment that was made. Any other comments in
5 that area? Okay. Let's move on to the next slide.

6 Zero-net energy buildings; we touched on this a
7 little bit in the area of communities, but I'd also like to
8 look at it from a single-, multi-family, and also commercial
9 building. We want to look at the integration of energy
10 efficiency and renewable energy and storage. If you can,
11 think of some other potential initiatives that we should
12 include in that. So also consider what mechanisms might be
13 needed to catalyze zero-net energy buildings such as
14 incentives or financing or anything else that you think
15 might maximize the plan.

16 So we're going to go through the list of questions
17 again as it applies to zero-net energy buildings. What
18 barriers do you guys see that might be prohibiting us from
19 going forward with this. And we talked about it in zero-net
20 energy communities, but I think it bears repeating.

21 MR. RAUSS: Devin Rauss, Southern California
22 Edison. I think you have to look at in terms of both -- all
23 the different market segments, and also new construction
24 versus retrofit for barriers. I mean, there's been a lot of
25 look at zero-net energy. So in my opinion, I think

1 residential is not necessarily as much of a technical
2 barrier, it's more of a cost barrier of how do you tack on
3 this added cost to a new home or retrofitting the home to
4 the customer, homeowner, potential home buyer. You know, in
5 a commercial setting it's much more is there even technology
6 that gets you to that point of being zero-net energy? Is
7 there enough roof space to get enough renewables in there if
8 you're going with solar and photovoltaic. There is
9 certainly financial barriers to get past. I mean, I would
10 just leverage these in the action plan as much as possible.

11 And I think that a lot of that effort has pointed to the
12 barriers. And even what they're working towards speaks to
13 actions to take to get past those barriers. So really maybe
14 enhancing that work, that would be great.

15 MS. CHAMBERS: Okay. So what Devin was
16 referencing is the energy action plan responds to the
17 strategic energy efficiency plan, specifically towards the
18 NEI. I think they were focusing mostly on commercial. And
19 we have talked about we're looking at lighting, and right
20 now we're also doing R&D. So that's quite a plethora across
21 the whole deal. So --

22 MR. GOODMAN: Yeah. I can remember an event where
23 someone was criticizing Al Gore for a 6,000 energy seasoned
24 house. And he said, "But I buy offsets."

25 So my point is this, not who's right in the head

1 question, but you liberalize the definition of ZNE to where
2 you can exchange with some source of renewable energy that
3 is not on the premises. And right now the CPUC definition
4 of zero-net energy would not allow that. But if you open up
5 the possibilities of a community in particular, if it can't
6 generate enough energy onsite to be zero-net energy it can
7 buy too. And then when it has a surplus, from wherever that
8 facility is offsite, it can sell it to someone else who
9 needs it. Maybe you're not talking about a zero-net energy
10 building anymore, but you may be talking about something
11 that makes economic sense anyway.

12 MR. HOLMES: This is John from SDG&E&E. I think
13 we have to look at unintended consequences as well. Zero-
14 net energy has great potential to serve the grid, as -- as
15 well as the customer. But it -- it comes with it a sense of
16 panacea. And the challenge here is that there's a
17 significant amount of grid-based infrastructure investment
18 that has to go along with that in order to facilitate the
19 actual limitation of this objective, especially at the scale
20 that we're looking at.

21 And so the approach that we need to take I think
22 has to be carefully considered in great detail in terms of
23 the grid investment to facilitate the goals.

24 MS. CHAMBERS: Thank you, John.

25 I think, Frank, you made -- made a comment early

1 that a ZNE community approach, stepped approach or phased
2 approach, perhaps that was the defining word.

3 MR. GOODMAN: Yeah. And -- and you can phase in a
4 zero-net energy concept into a community. But you can also
5 phase in utility interoperability with a zero-net energy
6 community where, I think -- I think last week I touched on
7 this somewhere, that perhaps the utility can, as a pay-for-
8 service, can handle these things for free, but interact with
9 customers, like the large commercial customer and maybe a
10 community, and eventually individual residences where -- I
11 don't like to use the word police it, but if the behavior in
12 that community or the behavior in a commercial facility is
13 not inline with the intended behavior to make -- make zero-
14 net energy, perhaps either through initially some sort of
15 manual process of monitoring it and calling them or sending
16 them a message, and eventually moving to automated processes
17 where if they're exceeding with some piece of equipment,
18 let's say in a factory, they're exceeding their energy use
19 allotment to be zero-net energy, through a prearranged
20 agreement we might, if it's a nonessential piece of
21 equipment, shut it down. Maybe it's -- maybe it's recycling
22 their air conditioning or something like that. So there may
23 be a utility role through interoperability systems and
24 helping customers manage their behavior to stay within zero-
25 net energy balance.

1 MS. CHAMBERS: Anyone else? Okay.

2 So let's move on, I think. Can you think of any
3 other specific initiatives that we should recommend that
4 would, of course, benefit the ratepayers? Okay.

5 Define the ratepayer need for which EPIC
6 investment funds should be targeted, specifically dealing
7 with zero-net energy? I can see your brains working.

8 MR. RAUSS: Devin Rauss, Southern California
9 Edison. I forget your name, sir, but I think you said it
10 very well, that zero-net energy, it should provide a lot of
11 benefit to the customer. Obviously, they have hopes of off-
12 setting their consumption, you know, lowering rates. But
13 there is potential for impacts to the grid. And so I think
14 that that's certainly an area that, you know, if you look at
15 the broader ops, considering grid ops and all the other
16 areas, that that's something that this initiative should
17 target for ratepayer benefits, of how does the need actually
18 support grid operations, so you know, safe reliable power?

19 MS. CHAMBERS: Good point.

20 MR. HOLMES: Hi. This is John for SDG&E again. I
21 mentioned this morning and earlier about the importance of
22 maybe considering something like the California Solar
23 Initiative for Energy Storage. So looking at storage as a
24 component of zero-net energy premise it's critical for
25 resolutions of remedies to the intended consequences with

1 onset generation.

2 MS. CHAMBERS: Thank you. Now, any other
3 comments?

4 Then I think I'll move on to prioritizing
5 initiatives and identifying any benefits that should be
6 anticipated and measured and such? Any comments in that
7 area, on that question?

8 MR. GOODMAN: I think the high priority has to be
9 coming up with an agreed upon definition of what zero-net
10 energy means. Because anything else you do really needs to
11 be driven by what -- what we've agreed on as the zero-net
12 energy definition. And I said earlier today, that until
13 instructed otherwise we go by the PUC definition, which is
14 the most restrictive. But once you've got the definition
15 down that will govern how you define and implement the rest
16 of the activities.

17 And then the final point is if something is
18 perceived as a part of zero-net energy solution. Like I
19 said this morning, even if after you test it you find out
20 it's not -- it may have merit in its own right as a
21 standalone energy efficiency measure.

22 MS. CHAMBERS: That's a good point. Thank you.

23 So let's go on to six. What areas might already
24 be covered by DOE or areas that you think we should be
25 complimenting, funding that's already going on? Okay.

1 Then let's move on to the next topic area.
2 Industrial, agriculture, and water energy efficiency.
3 Here's where the water comes into play. So we're -- our
4 potential initiatives are industrial process improvements,
5 integration of renewable. In agricultural, irrigation and
6 post-harvest processing. And water and waste water
7 distribution, end use, and process improvements. So the
8 same questions apply to all these different topic areas, so
9 maybe we can run through them quickly.

10 What major barriers do you see for improving
11 industrial processes? This is not your area of expertise,
12 but perhaps you might have some ideas how that could work.
13 Come on down.

14 MR. RAUSS: Devin Rauss, Southern California
15 Edison. Industrial and agricultural (inaudible) water, but
16 particularly industrial, it is extremely process driven.
17 And the lack of consistency across like a smelting plant to
18 (inaudible) facility, a manufacturing plant, it makes it
19 very hard to come with one a one-size-fits-all solution. So
20 I think efforts looking at, you know, things that are
21 consistent like air compressors or pumps that, you know,
22 regardless of what process you're doing, but you'll have
23 that same equipment, that is a much easier way to focus on
24 the research to provide benefit across the board, rather
25 than just if you were to target a manufacturer of product A

1 versus product B.

2 MS. CHAMBERS: You've touched on it. That's
3 definitely a challenge, or one of them.

4 Any other comments in this area for barriers as
5 far as industrial, ag or water?

6 I think someone mentioned the other day, of
7 course, regulations. Can you think prohibitive regulations
8 or limiting regulations, other areas like that? Okay.

9 Well, where do you think funding should be placed
10 to maximize deployment of these clean energy technologies?
11 Okay. You can always submit your written comments as well.

12 MR. HOLMES: this is John Holmes, SDG&E. I think
13 about these three categories of industry, ag -- ag and
14 water. And they're somewhat indistinguishable when you look
15 at agriculture because the -- the primary consumption of
16 energy for ag is water.

17 I think generally you have to look for a little
18 improvement in these categories. So in terms of where, we
19 can look at the larger categories of load. And I think
20 that's principally the message you would want. But we have
21 relatively small large consumers in San Diego. We're not a
22 very industrial-intensive region.

23 However, knowing the -- the balance of customers
24 throughout -- throughout California, there are megawatt
25 scale customers who generally need incentives to be able to

1 integrate the systems that -- that they need in order to --
2 to actually become more green. It's not necessarily the
3 case that everyone has a luxury, for example, that Google
4 has to be able to integrate its renewable portfolio. And --
5 and, you know, there are other entities such as Cisco and
6 other major corporations who are actively involved. But
7 there are some mid-sized organizations who are, you know,
8 heavy consumers of power that we want to, you know, keep
9 patrioted in California. So those are areas that -- that
10 really do demand a significant of attention.

11 And coming back to the previous segment, if I may
12 while I've got the microphone.

13 MS. CHAMBERS: Sure.

14 MR. HOLMES: The last question six on the previous
15 slide, the DOE is not participating in zero-net energy
16 implementation of energy management from a weather
17 perspective. It's systems which will potentially -- zero-
18 net energy -- will demand awareness from weather patterns.

19 MS. CHAMBERS: Of course, are list of questions
20 are standard for each topic area.

21 MR. WASHOM: Byron Washom from UC San Diego.
22 Two -- two areas with respect to the -- the use of water by
23 large industries. There's a lot of room for additional work
24 on thermal energy storage, which is not necessarily
25 chemicals but just thermal energy storage, which provides a

1 great advantage in load shifting.

2 Secondly, waste water treatment plants, there's
3 the opportunity -- excuse me -- to capture more waste
4 methane gas from those systems and to utilize them in either
5 gas turbines or in fuel cells. Thank you.

6 MS. CHAMBERS: Thank you, Byron.

7 MR. GOODMAN: Yeah. Thank you. Frank Goodman,
8 San Diego Gas and Electric. I know water pumping is among
9 the biggest users of electricity. I've been told that. And
10 I think at one time it was the biggest. And there's a
11 couple of interesting possibilities. One is around floating
12 solar systems on top of water. And some people use the term
13 flowtovoltaics, but it's photovoltaic systems that are
14 designed to flow. And we are pilot testing one right now
15 down at our mission control center. And they have
16 originally made a plan to put the pools out in the desert.
17 And they learned that you can't truck water out in the
18 desert and back; it's too expensive. And you can't dump it
19 in the desert, God forbid.

20 So now they're looking at floating it on waste
21 water treatment facilities. They've looked at how much land
22 is -- or, excuse me, how much water is available for
23 floating these things. But since water is a big -- pumping
24 is a big user of electricity, if you could put some
25 generation right on the water and power the pumps that way,

1 I think that it could be win-win. But you first have to get
2 a proven technology that will last while floating on the
3 water. This particular company is still prototyping.

4 And the other possibility is hydrokinetics. We
5 have a scoping study going around hydrokinetic technologies.

6 And these are small generation systems that could be put in
7 a stream or a manmade waterway like a canal to harness the
8 kinetic energy in the moving water and generate small
9 amounts of electricity. But it is a renewable energy
10 source.

11 So in trying to meet the RPS, picking up a little
12 here and there is going to be important, even though the big
13 things may come from solar in this state, and wind, we'd
14 like to pick a little wherever you can.

15 And when we get our hydrokinetic assessment done
16 of the options, if any of them look promising we don't
17 actually have any budget to follow through. So stay tuned,
18 and it may be some of the PIER money -- excuse me -- EPIC
19 money. Am I the first one that blew it today and said that?

20 Okay.

21 But what I'm saying is we will need help in
22 actually moving into a final phase by EPIC or somebody, if
23 we decide to move it to the public.

24 MS. CHAMBERS: Thank you, Frank.

25 Anyone else?

1 MR. HOLMES: Just one word: Clare adjustors
2 (phonetic).

3 MS. CHAMBERS: Say it again?

4 MR. HOLMES: Clare adjustors, biomass energy.

5 MS. CHAMBERS: Clare adjustors. Good. All right.

6

7 So I think we're on four, defining ratepayer need.

8 We may have touched on that already to some degree. Any
9 comments in this area? All right.

10 Number five, prioritizing our initiatives. Is
11 there anything in this area that you think is more important
12 that needs to be done first or differently or in addition to
13 or not at all?

14 And six, areas that might already be covered by
15 DOE or other funding? Anyone online? This is your
16 opportunity to comment. Okay.

17 Let's go to the next slide.

18 MR. HOLMES: So --

19 MS. CHAMBERS: Oh.

20 MR. HOLMES: -- I have a comment.

21 MS. CHAMBERS: Okay. Good.

22 MR. HOLMES: So the DOE does a great job of
23 helping the corn industry. We don't have corn industry in
24 California. We do have other agricultural fuel industry.
25 And I would suggest that California consider its, you know,

1 its residents fuel agriculture as -- as a target for funding
2 and for further expansion. We have one of the most fertile
3 environments in the country and I think it's under-exploited
4 for our ability to do -- to, you know, drive mutual benefit
5 for both energy and serving our population.

6 MS. CHAMBERS: Thanks, John. Anyone else? Okay.

7 So let's move to demand response. We talked a
8 little bit about home communication networks and energy
9 information systems, commercial lighting and HVAC,
10 industrial. We have refrigerated warehouses and waste water
11 and water treatment plants.

12 So under this topic area did we capture all the
13 initiatives or are there other areas that you might consider
14 under demand response? Devin?

15 MR. RAUSS: Devin Rauss, Southern California
16 Edison. I think a couple other initiatives would be
17 consumer appliances and maybe thermostats, even though
18 that's going into the Title 24 already but -- and Title 20
19 standards, particularly the interoperability standards.

20 MS. CHAMBERS: Any others? Good idea. Okay.

21 Where do you think funding should be placed to
22 maximize deployment of these clean energy technologies?

23 MR. RAUSS: So I didn't realize but -- Devin
24 Rauss, Southern California Edison. I didn't realize I was
25 supposed to be talking to the barriers. So the barriers, I

1 think, I mean, this is what you were just getting to is that
2 demand response is interesting because it's not something
3 where you just put the technology out there and it happens.

4 So there's a need -- there's barriers both to utility and
5 the customer and, potentially, manufacturers I guess.

6 But on the customers' side, and I think that's
7 where interoperability and standardization comes into play,
8 you know, you want to be able to buy something from one
9 manufacturer that works with another manufacturer that
10 hopefully talks to the meter that the utility has put in
11 place without having to buy other infrastructure that allows
12 for that to happen.

13 On the utilities' side it's the -- the
14 repeatability of the results we'll get. Obviously,
15 customers have the chose to respond new demand response or
16 not but, generally, I think CalISO, I think we all know.
17 But he talked -- he alluded to it earlier. From their
18 perspective and shared with the utility is we call demand
19 response events to help ensure that the grid maintains
20 reliability. And when we don't know what's going to occur
21 based on that even it gets very hard to plan for, and you
22 wind up using excess generation. And those are things that
23 really defeat the purpose of demand response.

24 So one of the barriers when I think you then move
25 that utility to check with the manufacturer is there are

1 different definitions of demand response based on different
2 governing bodies, standards, organizations. Like Energy
3 Star, for example, that's going through the effort of
4 creating connected appliances. And their definition of
5 demand response doesn't necessarily jibe with what other --
6 other people would call demand response. And then if you
7 look at markets like Texas and New York, they have a very
8 different definition of demand response, particular what the
9 ancillary services in California does. So if you're a
10 manufacturer and you're an aggregator it gets very hard to
11 design something that's national. And I don't even pretend
12 to know about internationally how different demand response
13 is.

14 So, you know, there's no such thing as a one-size-
15 fits-all demand response solution that will work everywhere.

16 You have to tailor it for each organization, customer,
17 whatever you're dealing with. And that -- that makes it
18 very hard from a manufacturers viewpoint.

19 MS. CHAMBERS: That sounds like that fits into the
20 challenges category, barriers.

21 MR. HOLMES: California has its own little -- it's
22 John from SDG&E -- child. In this case it's open ADR,
23 basically (inaudible) and the ability for us to exploit, you
24 know, that topology is a terrific opportunity for
25 California. The activities that -- that you were speaking

1 with -- with respect to the AHAM and how much is the
2 Manufacturers Association for Home Appliances, the Wide
3 Goods Sector Association (phonetic) is working with Energy
4 Star within the EPA to advance a connective topology. And
5 we've impressed upon them in the course of the last month
6 the importance to stay consistent with the overall smart
7 grid activities with respect to protocol development and
8 implementation of interoperability standards.

9 So the challenge here is that we've got a
10 manufacturers association wanting to get on with the
11 business of selling appliances. And they're a group of
12 individual and -- and nationwide implements stakeholders,
13 the utility sectors and RTOs (phonetic) are trying to
14 develop interoperability centers. And the consistency
15 toward achieving a spectrum of communications protocols to
16 advance this -- this facilitated through open ADR. So we
17 really need to, in my opinion, help that forward into --
18 into -- toward integration with smart energy profile
19 initiatives.

20 MS. CHAMBERS: Good comment. Is somebody online?

21 MR. SCHINDLER: Yeah.

22 MS. CHAMBERS: Let me just -- sorry about that.

23 MR. SCHINDLER: That's all right. John Carrien.

24 Referring to the point on slide, referring to commercial
25 lighting and HVAC, "Should an investment priority in this

1 case be centered around which function area uses the most
2 energy and therefore represents the greatest functional
3 areas for savings?"

4 MS. CHAMBERS: Good question. Does anyone want to
5 comment on that one? Sorry. I should use the mike. Any
6 other comments? Okay. We kind of did barriers, and also
7 two, funding.

8 So perhaps we go to three, specific initiatives
9 that we may need to include other than the ones that we've
10 listed. You've added some, I believe -- that, of course,
11 would benefit ratepayers. Any additional initiatives? Of
12 course, this is not your last opportunity to comment. You
13 can send in your written comments that you know about at the
14 address that you'll see in a few slides.

15 MR. GOODMAN: Frank Goodman, San Diego Gas and
16 Electric. I never thought about this before. This is now
17 contemplating demand response and what happened during the
18 southwest power blackout last September. And I stayed
19 around work for a while to see if there was any way I could
20 help, but I did eventually go home. And the only thing I
21 had that I could use that was electric was my computer. But
22 I had three hours of battery time on there. And it also
23 provided enough light that I could see a little. So I
24 wasn't well-prepared for that emergency. But my computer
25 worked fine.

1 So I'm wondering, you know, if it isn't some
2 opportunity where if a homeowner doesn't want to have a
3 central storage system or a central generation system at his
4 house if we can't move in the direction of essential
5 appliances -- and these days a laptop is about the most
6 essential thing, I think, maybe a refrigerator is next --
7 but where an appliance comes in with its own UPS and
8 specific critical appliances to support life in -- in
9 critical emergencies will keep operating for some period of
10 time, rather than trying to keep the whole house up.

11 MS. CHAMBERS: That's a good idea.

12 MR. RAUSS: Devin Rauss, Southern California
13 Edison. I already mentioned (inaudible). And I don't know
14 if that's extremely key to getting consistency across the
15 board.

16 But one of the other ones that you were just
17 alluding to is storage. I think that may be the next slide
18 also but, you know, it's --

19 MS. CHAMBERS: Yes.

20 MR. RAUSS: -- areas of thermal storage, chemical
21 storage, and like compressed air storage, and all those are
22 pretty plausible demand response opportunities that could be
23 covered in this.

24 MS. CHAMBERS: You peaked at the next slide.
25 Okay. Any other comments in that area?

1 How about defining ratepayer need for which EPIC
2 investment should be -- should be targeted. I think you've
3 already alluded to some of that. Anything else
4 specifically? Okay.

5 And then how might we -- or do we need to
6 prioritize our initiatives? What might be more important in
7 the next thing? Is storage more important than integration
8 or do they work hand in hand? I'm being the devil's
9 advocate. I'm just throwing stuff out there.

10 MR. HOLMES: This is John of SDG&E&E again. I
11 think it's very important that we avoid stranded assets.
12 The ability for many different developers to integrate
13 solutions with respect to demand response exists. And it's
14 a Wild Wild West environment today as we don't have a
15 standard to operate. And there are key laboratories and --
16 and, you know, corporate level initiatives to advance demand
17 response functionality. We see solutions coming from GE,
18 from Whirlpool, from Mosh (phonetic), the Korean vendors
19 that -- that account for a large portion of (inaudible)
20 plants that's here already.

21 But my suggestion is that prioritization of a
22 standard, that option really is important.

23 MS. CHAMBERS: Thank you, John. I think we're
24 starting to run out of time. So why don't we just go -- oh,
25 sorry. Laurie has a comment.

1 MS. TEN HOPE: I have a question for some of our
2 experts, because several people have mentioned the important
3 of interoperability standards or plug-and-play. And I
4 think, you know, I don't disagree. I think they're really
5 important. But how do you measure success at something like
6 that? You know, it's a little easier to measure a
7 technology that's build and sold. How do you measure
8 something that takes ten years, perhaps, before it becomes a
9 standard and that it's providing value and benefits back to
10 the ratepayers?

11 MR. HOLMES: You measure it in phases.

12 MS. CHAMBERS: John says you measure in phases.
13 You want to --

14 MR. HOLMES: Progress won't be made unless you
15 chop it up into phased approaches. And so the measurement
16 of a particular segment or a phase can be looked at as -- as
17 a quantifiable achievement in terms of the eventual goal of
18 a fully developed environment.

19 So my suggestion is that there are areas that we
20 need to look at in terms of (inaudible) for the first. For
21 example, the classic demand response initiatives we've heard
22 about. Air conditioners in certain locations around the
23 country might have electric water heaters when primarily in
24 California we have gas water heaters, pool pumps, all of
25 these relatively large loads.

1 What's not currently contemplated in ZNE
2 discussions is the fact that California is likely to see
3 some penetration of electric vehicles and those chargers at
4 homes, business premises, are not currently contemplated.
5 So you look at the ability to facilitate demand response
6 solutions for vehicle charging as well.

7 And I think you have, in my sense of chopping
8 things up here, you have to look at a roadmap toward
9 implementation and quantifying success along the way is
10 the -- is I think the appropriate approach.

11 MS. TEN HOPE: And what are you measuring?

12 MR. HOLMES: Well, your measuring adoption, the
13 rate at which people are willing to participate in -- in the
14 program. If you give a party nobody attends it's not, you
15 know, a viable solution. So the challenge here is educating
16 the public as to the benefit, and potentially even rewarding
17 them for that benefit.

18 MR. RAUSS: So, Devin Rauss, Southern California
19 Edison. One -- I think one very good example of a success
20 story with interoperability and standardization is Title 24
21 and communicating towards that. And that wasn't a ten-year
22 process. It was a multi-year process. But now there some -
23 - some exemptions here, but for example, say any thermostat
24 sold in California, it will be communicating and it will be
25 standardized, that it will work with our meters in a

1 different communication protocol, and that is a tremendous
2 benefit to any manufacturer for thermostats because they
3 know what they need to do for Californians market which is,
4 what, 10 percent, 15 percent of the national market. So I
5 think efforts like that.

6 I know another thing that was mentioned earlier,
7 it's like Energy Star, they originally left out the idea of
8 interoperability. So even the success of getting them to
9 incorporate the idea of interoperable standards in their
10 discussions, that's a success point that you can quantify.
11 So I think it's the idea of chopping it up. But that -- you
12 know, those are some examples of how to chop it, I guess.

13 MR. GOODMAN: Yeah. Frank Goodman, San Diego Gas
14 and Electric. Just to come up with one indicator, one
15 metric, I agree with what John and Devin said. But a
16 metric, for example, used at the business-case stage of
17 trying to decide whether to develop a standard and
18 committing resources to it, and there's a lot of volunteer
19 work goes into standards by the way, but the metric is this,
20 that what is it like without the standard and what it would
21 be like with the standard. And, for example, if installing
22 a specific device requires a lot of custom engineering to
23 develop the interfaces and make devices talk to each other
24 without the standard and it becomes a plug-and-play process
25 without the standard, if you look at the cost of doing it

1 without and then with, there is an indicator for a specific
2 installation. And that kind of thing was done around
3 substations and IEC 61850. And what the engineering cost
4 was for a substation without IEC 61850, and now in the case
5 of European countries and where they are starting to use
6 61850 they are definitely seeing a cost savings and -- and
7 ease of integrating different vendors' products together,
8 which is an additional dimension to the cost savings.

9 So I think it's -- the cost savings is probably
10 one of the biggest metrics. And then if you look at IEEE
11 standards, the electric standards around interconnection,
12 like 61850, maybe like have like 1647, which is part of Rule
13 21, you not only save costs by having standards, so somebody
14 who wants to deploy something doesn't have to say what
15 should I develop in the way of interconnection system,
16 what's the permitting process, what will be the inspections.

17 And, in fact, we just went through this with a small wind
18 turbine on Harbor Island coming in from Japan that did not
19 perform to Rule 21, and they had to redo it.

20 So it's -- it's, again, it's a plug-and-play
21 process with the electrical works when you have the
22 electrical standard, just like it can be with a
23 communication system when you have the 61850 or whatever it
24 is.

25 And then the final point I was going to make was

1 there are engineering costs that are -- save -- there are
2 tools that can save costs and operative modifications,
3 allowing an engineer to sit at his desk and make resettings
4 on a piece of equipment without having to send somebody out
5 there.

6 And the bottom line, though, is to really have an
7 ability to quantify these things. You need the baseline.
8 And this came up in the workshop I was at the last two days.

9 We need to get a feeling for what our baseline situation
10 is, what crease mark grid costs are, in order to be able to
11 understand what benefits really were realized, so when you
12 do the business case to decide to deploy something. But
13 maybe you get to one sector of your system deployed. And
14 before you go to your whole system you go back and do that
15 cost-benefit analysis with real data and say here's what we
16 really saved versus what the business case said we were
17 going to save before you do more deployment.

18 Does that help? Okay. I got a little off,
19 carried away.

20 MS. CHAMBERS: Good point, Frank.

21 Any other comments in that area? Okay. Let's
22 move to the next slide, unless anyone wants to discuss any
23 areas that are already funded by DOE or others? No?

24 Let's go to the next slide.

25 MR. HOLMES: My perspective is the DOE is not

1 funding demand side management issues.

2 COMMISSIONER DEREK: Others?

3 MR. HOLMES: My point is that the DOE is not
4 focused on demand side management.

5 MR. GOODMAN: This is storage, John.

6 MS. CHAMBERS: Well, I switched over to the next
7 slide. You can -- you can answer number six as far as
8 demand side management goes.

9 MR. GOODMAN: I wanted to be sure which one that
10 was on.

11 MS. CHAMBERS: Okay. Okay. Demand side storage.
12 Customer side energy storage, renewable energy integration
13 for ZNE and industrial applications, thermal energy storage
14 off peak, I think we've alluded to some of these in some
15 earlier comments. If you want to bring up barriers to these
16 specific areas.

17 MR. GOODMAN: There's a barrier which I'll call
18 the -- the battery mind set, and that is people immediately
19 start thinking of batteries as the only demand-side storage
20 option. And we really need to consider others. And
21 somebody a minute ago, it was Byron, brought up thermal
22 storage. And there are things like ice spheres and some of
23 these we talked for a little bit last week so I won't
24 belabor it. So look at thermal storage options for
25 customers, and maybe coupled to solar water heaters. And it

1 doesn't always have to be PV on the roof. I have a next
2 door neighbor that has had a solar water heater on their
3 roof for 30 years. And they added a second story, and they
4 took the water heater and moved it up on the roof.

5 So that's not always just to right away focus on
6 batteries but to consider other storage options.

7 MS. CHAMBERS: Anyone else? Barriers.

8 MR. RAUSS: Devin Rauss, Southern California
9 Edison. I think probably one of the biggest barriers is
10 complete lack of understanding. Energy storage is a fairly
11 new concept. And the idea of grid interaction with it is
12 even less understood. So again, you know, demand response
13 might be availability to both utility and customer. I think
14 that's very, at this point, clearly demonstrated, and nobody
15 really understands it. So to have a pitch, a sales pitch to
16 a customer of a utility of this is why this is such a great
17 idea, that's not there yet.

18 Under the topic of maybe other initiatives, I
19 think industrial storage or compressed air is another
20 storage topic, and even pumped hydro is one I prefer. So
21 those are others. But again, it's standards. And if you're
22 going to have the storage talking to a meter, talking to
23 CAISO, talking to whoever, those are -- they need to be
24 developed and defined.

25 Another one that -- I wish the guy from CAISO was

1 here because that's where I've heard this before, is a
2 concept of actually using like a data center and their
3 uninterruptible power supplies as a demand resource and kind
4 of a storage site of saying, you know, for the next half an
5 hour maybe we'll put you under UPS and then provide power to
6 you as a very short way. So it's that idea of distributed
7 storage devices within a home or a commercial setting that
8 maybe you leverage in an aggregate as enough to offset some
9 part of a building's load.

10 MS. CHAMBERS: Good job.

11 MR. HOLMES: John, SDG&E. There are, in addition
12 to the other forms of storage that are viable in looking at
13 demand-side applications, there are -- there's a great
14 parity with the transportation sector, both Tesla and Coda,
15 two fledgling California automotive companies, are working
16 toward siting customer premise energy storage as part of
17 their strategy to advance vehicle charging capabilities and
18 various demand charges associated with vehicle charging. So
19 we're going to be looking at the integration of storage
20 that's essentially got control architecture already taken
21 care of by the automotive manufacturers, their ability to
22 integrate that stuff.

23 We're also going to be seen in the very --
24 immediately, and also in the new future, system integrators
25 who are taking storage and putting it next to rivers and

1 renewables and coming into the utility phase as PPA, for
2 instance, exploding the fast-tracking capabilities for not
3 only utility purposes, but also for market participation.
4 So in terms of technology barriers, the communications
5 interfaces that are necessary to integrate with the
6 utilities' network, communications network to CalISO, that's
7 an area where we really need to see some very immediate
8 focus on in order to facilitate the integration of these
9 systems which are coming fast and furious to the industry.

10 So what we're talking here about, integrated
11 storage of, you know, 25 to 100 kilowatt are a scale -- a
12 relatively small scale of the, you know, of the residential
13 of multi-unit or commercial-industrial facility that would
14 give operational benefits to the premise, but then it could
15 also be exploited for market participation and to generate
16 revenue for the owner. And those systems likely will be
17 networked by the third-party integrators who are marketing
18 the operation of those systems into the energy markets. So
19 megawatt scale integration on both of those networks.

20 MS. CHAMBERS: So we've added some prioritization.
21 Thank you.

22 Yes, Byron?

23 MR. WASHOM: Byron Washom from UC San Diego.
24 There's a severe need to measure the technical benefits of
25 distributed energy storage at the small-scale market

1 participation. Right now we know there's a value but we
2 can't quantify it. We haven't measured it, and we can't.
3 And if we haven't measured it and quantified then we can't
4 monetize it. So that type of information is very much
5 needed at the scale that John Holmes just mentioned. Thank
6 you.

7 MS. CHAMBERS: Thank you. Are there any other
8 questions on this list that you would like to respond to
9 in -- as far as demand-side storage is -- is concerned?
10 Please do so. I think we're kind of running out of time, so
11 let's skip forward.

12 MR. HORNQUIST: Can I ask a question?

13 MS. CHAMBERS: Sure. Please.

14 MR. HORNQUIST: I was just wondering, generally
15 speaking, what our other methods of giving input, other than
16 today, for prioritization. It seems like there are some
17 experts here in the room. But somewhat concerned about
18 the -- the depth of -- of the input.

19 MS. CHAMBERS: We have your comments, but Laurie
20 has something to add here.

21 MS. TEN HOPE: This is Laurie ten Hope. I
22 encourage you to spread the word to your colleagues, other
23 people that you know. We are soliciting written comments in
24 response to these questions and would welcome them from
25 anyone in the energy community on, you know, any one of

1 these topics.

2 Sorry, this is repetitive for many of you who have
3 been here all day. We also will be issuing an investment
4 plan early in September. So we'll take this input and, you
5 know, experience from running other programs and suggestions
6 that we get, we'll put together this investment plan and
7 we'll have a workshop in September to take comments on that
8 investment plan. And so I think we'll -- you know, that
9 will be an opportunity where I think a lot more people will
10 engage in terms of saying you missed something or you don't
11 need to do that.

12 So, yeah, this is -- we're taking written -- we're
13 asking that written comments be submitted by the 17th so
14 that we do have time to think about them in our preparation
15 of the investment plan. And I think the utilities are
16 opening up their comment period for their investments until
17 the 24th, so --

18 MS. CHAMBERS: Any other comments? Okay.

19 Let's go to the next slide. He's already there.
20 Environmental and public health impacts. I'm going to go
21 through this one quickly because we also might have a few
22 comments, perhaps, on market facilitation.

23 Indoor air quality; informative advice future
24 building and applicant efficiency standards, and also
25 informative advice future and water regulations. What might

1 be some of these barriers in these initiative areas. Be
2 thinking about that, and I'm going to buzz right along. Any
3 other comments? Okay.

4 Where might you think funding should be placed to
5 maximize deployment of clean energy technologies? Where is
6 innovation needed versus the support for commercial scale-up
7 for critical need. Specific initiatives recommended to
8 advance innovative energy technologies that benefit
9 ratepayers? Defining the ratepayer need. I think these are
10 questions -- comments, send your written responses in these
11 areas. Also, prioritizing our initiative -- pardon me --
12 and identifying benefits that should be anticipated or
13 measured. And lastly, what areas might already be covered
14 by other funding sources, the DOE or whoever?

15 No particular? We have one speaker.

16 MR. HOLMES: This is John from SDG&E. I just want
17 to say we really need to exploit the capabilities of Cal EPA
18 and the Air Resources Board to maximize the potential
19 benefits that we would have as investments here. I think
20 this is an area of key concern. And I know that, for
21 example, Peggy Jenkins at the ARB is endorsing her
22 initiatives in indoor air quality. And so I think that's a
23 great opportunity to build upon the -- the body of research
24 that's -- that's undergoing development there.

25 MS. CHAMBERS: Thank you, John.

1 MS. TEN HOPE: This is Laurie again. And I
2 just -- other suggestions that you have on processes to do
3 these kind of cross-cutting initiatives are appreciated
4 because the underlying assumption here is that sometimes the
5 barrier to adopting and energy efficiency technology or a
6 renewable technology is a water permit or an air permit or a
7 related environmental issue. And, you know, so you're
8 not -- we're not going to get to the energy goal without
9 looking at the interface with environmental issues and
10 public health issues.

11 But then when you cross -- energy is complicated
12 enough. But then when you're -- you know, you have
13 different regulators and a broader community, suggestions on
14 how -- the -- the best way to -- to think about initiatives
15 like that and make sure that we have the right participation
16 is -- is appreciated.

17 So it's about initiatives. It's also about the
18 structure of the program.

19 MR. HOLMES: So great comments. And I think maybe
20 my suggestion -- this is John again -- is that we have
21 active participation in the academic environments in the UC
22 system, both at UC Berkeley with the Center for the Built
23 Environment which receives essential funding annually from
24 the Energy Commission, as well as the energy centers at UC
25 Davis facilities, the Western Co-Efficiency Center, the

1 California Energy Technology Center, the Ph.D. and ITS
2 programs, as well as the energy efficiency overall program
3 that we as a chair, have a professorship there, SDG&E&E.

4 MS. CHAMBERS: Thank you, John. Okay.

5 So let's quickly go to the next slide.

6 MR. SCHINDLER: Sure.

7 MS. CHAMBERS: Market facilitation. As everyone
8 else has said, this -- there will be full discussion
9 tomorrow. But if there is anything you would like to talk
10 about in this -- under --

11 MS. TEN HOPE: On efficiency.

12 MS. CHAMBERS: -- yeah, efficiency and demand-side
13 management. Innovation clusters, workforce development,
14 those areas will be covered tomorrow. But if there's
15 something specific you would like to say about it today, we
16 welcome your comments. Anybody online? Okay.

17 MR. WASHOM: This is Byron Washom from UC San
18 Diego. I think the concept developed in the former
19 governor's administration of the I-hubs was very helpful,
20 particularly with the Department of Energy, when they
21 evaluated bids, there were a number of different centers
22 people claiming to be the lead in California, if you will.
23 But this i-hub concept of focusing and specializing by
24 region would really enhance the competitiveness of at least
25 one person in California or one entity in California

1 prevailing in the national bid. So I think that the process
2 of i-hubs is very valuable on a national level.

3 MS. CHAMBERS: Thank you, Byron. Any other
4 comments?

5 MR. HORNQUIST: Edwin Hornquist, Southern
6 California Edison. I'll just say similar to my earlier
7 comment regarding coordination and collaboration that --
8 maybe this is related because it does facilitate the market
9 for energy efficiency -- one of the things that I'm looking
10 at as I'm reviewing for the technology action plan I'm
11 seeing a lot of coordination and facilitation that is going
12 to be required going forward, pull the right stakeholders
13 and the right monitor actors to deliver on some of these
14 initiatives. So I encourage the commission to play -- I
15 know you're playing a big role in the development of the
16 plan. But I envision a greater role in the actual
17 implementation of it.

18 MS. CHAMBERS: Thanks. Any other comments?
19 Great. I think we are over. But did you want to go to
20 public comment?

21 MS. TEN HOPE: Yeah.

22 MS. CHAMBERS: So I'll turn this back over to
23 Laurie. Thank you for your time.

24 MS. TEN HOPE: All right. We're going to open it
25 up for public comment for any of the topics that you've

1 heard today. If you have a question or a comment about the
2 process, the schedule, what we're going, or any of the
3 sessions today, this is an opportunity to speak. And we'll
4 also take comments online. Do we have any comments online?

5 You'll note that on the agenda Rob Oglesby, who is
6 our executive director, was going to provide closing
7 remarks, but he's caught in traffic. So he's landed but
8 he's not going to make it here before we conclude this
9 session. He -- he will be here tomorrow morning for those
10 of you who are staying. He -- he wanted to convey that, you
11 know, this process is really important to the Energy
12 Commission, and your public participation was really
13 important. And he'll -- he'll be here to kick it off in the
14 morning and answer any questions that you might have.

15 So the address for comments is posted. And I
16 thank those of you who have stuck it out for the day, and it
17 was, you know, it was a pleasure to -- to have the dialogue
18 and get your input. Thanks very much.

19 Oh, let me just say, we start tomorrow at nine
20 o'clock. Tomorrow is -- it's going to be a really
21 interesting set of three panelists. It will be a different
22 format than today. So we have several folks coming to speak
23 specifically about innovation clusters around the state and
24 what's -- what they're doing, what they see as some of the
25 pros and cons of those models, and what they recommend for

1 the program going forward. There's a second panel, permit
2 streamlining. And a third one on workforce development.
3 And there will be an opportunity to comment as well. And if
4 you choose to participate by WebEx, that option will be
5 provided tomorrow as well. Again, thank you.

6 (The California Energy Commission, Staff Workshop on the
7 Electric Program Investment Charge Program, Adjourned at
8 4:06 P.M.)

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I further certify that I am not of counsel or attorney for any of the parties to said conference, nor in any way interested in outcome of said conference.

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August 9, 2012

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