

BEFORE THE
CALIFORNIA ENERGY COMMISSION

DOCKET

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Commissioner Workshop) Docket No. 12-IEP-1D
Evaluating and Capturing Benefits)
of Renewable Energy for California)

CALIFORNIA ENERGY COMMISSION
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SACRAMENTO, CALIFORNIA

THURSDAY, APRIL 12, 2012
9:00 A.M.

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APPEARANCES

Commissioners Present:

Robert Weisenmiller, Chair
Carla Peterman, Lead Commissioner

Staff Present:

Suzanne Korosec, IEPR Lead
Kate Moore, Energy Commission Staff

Panel 1:

Al Alvarado, Energy Commission Staff, Moderator
Arne Olson, E3 Consulting
James Nelson, UC Berkeley
Warren Leon, Clean Energy States Alliance
Heather Sanders, California Independent System Operator
Shana Lazerow, Communities for a Better Environment
Ben Machol, US Environmental Protection Agency
Margaret Mann, National Renewable Energy Laboratory

Panel 2:

Gary O'Neill, Energy Commission Staff, Moderator
Steve Cliff, California Air Resources Board
Bill Snyder, CAL FIRE
Tim Snellings, Butte County Dept. of Development Services
Steve Weissman, UC Berkeley Center for Law, Energy & Environment
Heather Sanders, California Independent System Operator
Jim Houston, California Department of Food and Agriculture

Panel 3:

Kate Zocchetti, Energy Commission Staff, Moderator
Aaron Johnson, Pacific Gas & Electric
JC Thomas, San Diego Gas & Electric
Tamara Raspberry, Sempra Energy Utilities
Marc Ulrich, Southern California Edison
Andrew McAllister, California Center for Sustainable Energy
Nicole Capretz, California Environmental Justice Alliance
Steven Kelly, Independent Energy Producers Association
Craig Lewis, Clean Coalition
Lori Schell, UC Irvine/Empowered Energy
Laura Wisland, Union of Concerned Scientists
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Public Comment:

John Larrea
V. John White

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1 P R O C E E D I N G S

2 APRIL 12, 2012 9:07 A.M.

3 MS. KOROSEC: All right, good morning, I think
4 we'll go ahead and get started. I'm Suzanne Korosec, I
5 manage the Energy Commission's Integrated Energy Policy
6 Report Unit. Welcome to today's workshop on Evaluating
7 and Capturing Benefits of Renewable Energy for
8 California.

9 Just a few quick housekeeping items before we
10 begin, restrooms are in the atrium, out the double doors
11 and to your left. We have a snack room on the second
12 floor, at the top of the atrium stairs, under the white
13 awning. But you'll notice there's construction on the
14 central stairway so please take the elevator to the
15 second floor, if you want to go to the snack room.

16 And if there's an emergency and we need to
17 evacuate the building, please follow the staff out the
18 door to the park, that's diagonal to the building, and
19 wait there for the all-clear signal, and bring your
20 umbrellas because it's raining.

21 Today's workshop is being broadcast through our
22 WebEx conferencing system and parties do need to be
23 aware that it is being recorded.

24 We'll make an audio recording available on our
25 website a couple days after the workshop and we'll also

1 provide a written transcript in about two weeks.

2 We plan to break for lunch a little later than
3 usual today, around 12:30.

4 And in addition to our panel discussions today,
5 we've set aside time at the end of the day for public
6 comments. During the public comment period we'll take
7 comments, first, from those of you here in the room and
8 then followed by those participating via WebEx.

9 When you're making comments today we ask that
10 you come up to the center podium and use the microphone,
11 so that we can make sure that the WebEx participants can
12 hear you.

13 And it's also helpful if you can give your
14 transcriber, at the end of the table, your business card
15 so that we can make sure that your name and affiliation
16 are reflected correctly in the transcript.

17 For WebEx participants, you can use either the
18 chat or raise hand functions to let our coordinator know
19 that you would like to ask a question or make a comment,
20 and we'll either relay your question or open your line
21 at the appropriate time.

22 We're also accepting written comments on today's
23 topics until close of business April 19th. And the
24 notice for today's workshop, which is available on the
25 table in the foyer and also on our website, explains the

1 process for submitting comments to the IEPR docket.

2 What I'd like to do now is provide a little
3 context for today's workshop. Every two years the
4 Energy Commission prepares an Integrated Energy Policy
5 report that covers a variety of energy topics and
6 provides policy recommendations to the Governor.

7 In 2010, as part of his Clean Energy Jobs Plan,
8 Governor Brown directed the Energy Commission to prepare
9 a plan to expedite permitting of the highest priority
10 renewable generation and transmission projects.

11 In response to that direction much of the focus
12 of the 2011 IEPR proceeding was on identifying
13 challenges to renewable development and the many
14 activities that are already completed or underway to
15 address those challenges.

16 The result was the Renewable Power In California
17 Status and Issues report, which was issued in late 2011,
18 which discussed the various challenges and laid out five
19 high-level strategies to be used as the basis for a
20 renewable strategic plan to be developed during the 2012
21 IEPR update proceeding.

22 At this point I'd like to introduce Heather
23 Rait, the Project Manager for the Renewable Strategic
24 Plan. You want to wave your hand, Heather?

25 Heather's the Assistant Executive Director for

1 Renewables and Climate Change here, at the Commission,
2 and is working closely with our technical staff on the
3 issues associated with each of the five high-level
4 strategies.

5 Today's workshop is the first of seven workshops
6 that we're holding over the next several months, related
7 to those strategies, the dates of which are shown here.

8 And the discussions and input from the workshops
9 will be used to develop specific near-term actions that
10 the State needs to take to begin addressing the
11 challenges identified in the Renewable Power in
12 California report.

13 As I said, that report focused on identifying
14 challenges and efforts to address those challenges and,
15 therefore, it didn't include any analysis of renewable
16 benefits.

17 The report did, however, acknowledge the general
18 benefits of renewables that often touted. For example,
19 benefits identified in the RPS legislation, things like
20 promoting stable electricity prices, protecting public
21 health by improving air quality, improving environmental
22 quality by reducing the burning of fossil fuels,
23 stimulating economic development, creating new
24 employment opportunities, and reducing reliance on
25 imported fuels.

1 The report also included a qualitative
2 discussion of the benefits of renewables in the context
3 of concerns about the RPS driving up electricity prices.

4 The cost chapter of the report noted that
5 "Diversifying the State's portfolio with renewable
6 energy could ultimately reduce the overall cost of
7 energy to the consumer," referencing work that was done
8 by Shimon Awerbuch on portfolio-based capacity planning,
9 showing the beneficial contribution of renewables
10 towards meeting overall generating cost and increasing
11 energy security.

12 The report also mentioned the economic benefits
13 of renewables from increased property and sales taxes
14 associated with renewable generating facilities, and
15 discussed the need for renewable prices to reflect the
16 volatility or unpredictability of future fossil fuel
17 prices since an energy portfolio that's heavily weighted
18 towards fossil fuels is extremely vulnerable to
19 movements in fossil fuel prices.

20 As an illustration, the report notes that there
21 are estimates by Oakridge National Laboratory that
22 volatility costs the U.S. economy \$7 trillion in
23 employment and GDP growth from 1970 to 2000.

24 The report also referenced two studies that
25 looked at valuing the environmental benefits of

1 renewables. One was the German Federal Ministry for the
2 Environment estimates that the combined costs of climate
3 change in air pollution resulting from natural gas-fired
4 generation are more than three times higher than solar
5 PV and 13 times higher than wind energy.

6 They also estimated that societal costs of
7 natural gas were near five cents per kilowatt hour and
8 coal at more than eight cents per kilowatt hour, while
9 the societal costs for wind are around a quarter cent
10 per kilowatt hour, solar PV is one cent per kilowatt
11 hour, and biomass is between two-fifths of a cent to
12 five cents per kilowatt hour, depending on the
13 technology.

14 The second study discussed in the report was
15 conducted by the Oregon Forest Resources Institute and
16 suggests that using forest biomass for energy provides
17 environmental benefits well in excess of the market
18 value of the electricity produced, with the energy value
19 estimated around 11 cents per kilowatt hour, while the
20 value of the avoided forest overgrowth represented an
21 additional 20 cents per kilowatt hour.

22 Obviously, these are only two of the many
23 studies that have looked at valuing the renewable
24 benefits, a list of which was included in today's --
25 with today's workshop agenda.

1 And these were used as illustrative purposes
2 since, as I said earlier, the Renewable Status and
3 Issues Report did not include a detailed analysis of
4 benefits.

5 Many of the stakeholder comments throughout the
6 2011 IEPR proceeding also referenced benefits of
7 renewables. With the emphasis on the Governor's goal of
8 adding 12,000 megawatts of renewable distributed
9 generation by 2020, many of the workshop comments
10 focused on DG benefits.

11 Benefits identified by parties included economic
12 benefits from reducing congestion on existing lines,
13 avoiding transmission and distribution line losses,
14 reducing the need for new transmission lines.

15 For example, it was pointed out that according
16 to the CSI 2009 Impacts Report, current installed
17 capacity under the CSI is providing transmission
18 capacity benefits comparable to a 230-kilovolt
19 transmission line.

20 Other benefits of DG identified in IEPR
21 workshops included providing an environmentally sound
22 alternative to large-scale renewables that may have
23 negative environmental impacts, increasing system
24 reliability by reducing unserved energy, which reduces
25 utility costs, and increasing power quality, which

1 reduces customer impacts from voltage variability.

2 Parties also mentioned that DG is less likely to
3 be sited on virgin land and can be sited on brown field
4 properties in urban and suburban environments that would
5 otherwise be undeveloped and, therefore, provides land
6 use benefits.

7 Several parties focused, also, on benefits to
8 local communities, including increased private
9 investment and bringing additional money into those
10 communities, as well as improved air quality and
11 increased asthma rates particularly in low-income
12 communities that are often disproportionately affected
13 by fossil fuel generation.

14 Environmental justice advocates also noted that
15 DG development in these communities provides jobs and
16 gives consumers a sense of control over their energy
17 sources.

18 And others identified the benefit of enabling
19 consumers to take an active role in managing their own
20 energy costs.

21 The overarching strategy that we're talking
22 about today involves evaluating the cost of renewable
23 energy projects beyond technology costs, coupled with
24 the value assessment about system and non-energy
25 benefits.

1 Today's workshop is focused on the benefits side
2 of that equation, including health, environmental, and
3 economic benefits, but we fully recognize the importance
4 of looking at costs and retail rate impacts, as well.
5 And we'll be holding a workshop on that, on May 22nd.

6 We also recognize that there are significant job
7 benefits associated with renewable development and we'll
8 cover that topic at the May 30th workshop.

9 One last comment before I move on, while the
10 strategy we're discussing today refers to potentially
11 monetizing the system and non-energy benefits, our focus
12 today is on assessing these benefits and capturing them
13 for California, rather than on quantification.

14 So with that, I'll turn it over to the dais for
15 opening remarks.

16 COMMISSIONER PETERMAN: Good morning, everyone,
17 thank you for being here. Glad to see so many of you in
18 the room on this rainy day, and hello to all of those on
19 WebEx.

20 First, Suzanne, this is Commissioner Carla
21 Peterman, I'm lead on the 2012 IEPR and very excited to
22 have you all here for our first workshop of the series.

23 Thank you very much to Suzanne Korosec for that
24 excellent introduction. I think she summarized well why
25 we're here and how this ties to the efforts the

1 Commission has been engaged in over the last year.

2 Many of you were involved in submitting comments
3 in workshops for our 2011 IEPR. And this is the
4 exciting part, we've talked about the challenges, we've
5 talked about the data, and now we're going to come up
6 with some solutions.

7 The intent of these next seven workshops is to
8 really come up with some actionable items to help us
9 reach some of the State's goals for 2020 for renewables
10 and beyond.

11 One thing that's very nice, though, being a
12 Commissioner is that you get to call a lot of smart
13 people together in a room and they show up, ready to
14 talk. You know, I wish I could do the same thing in my
15 dissertation but I've been told that's not allowed.

16 But it's good to see you all here and so, with
17 that, I'll turn to our Chairman for additional opening
18 remarks.

19 CHAIRPERSON WEISENMILLER: Yeah, certainly, we'd
20 like to thank everyone for being here today and for
21 sharing their thinking.

22 Obviously, we're looking at renewable energy to
23 really transforming our electric system, particularly
24 the DG, and that means a lot of our conventional tools
25 and ways of thinking about things need to be similarly

1 transformed.

2 And, obviously, to this part where we're trying
3 to understand the benefits and also how to include those
4 in our evaluation.

5 So, certainly look forward to an interesting day
6 on this and want to thank Commissioner Peterman and the
7 staff for helping to flesh this out.

8 MS. KOROSSEC: All right, we'll start with Katie
9 Moore, of the Energy Commission staff, who will give us
10 an overview of today's goals of the workshop

11 MS. MOORE: Hi, I'm Katie Moore and I work here,
12 in the Renewable Energy Office. I'm just going to
13 provide a brief presentation, a little more background
14 information and some information on how the workshop
15 will work today.

16 The purpose of this workshop is to seek input
17 from stakeholders on evaluating and capturing the
18 benefits of renewable energy for California. And today
19 we're going to focus on health and environmental
20 benefits. We'll also include some economic benefits
21 but, as Suzanne said, we'll discuss employment benefits
22 at a later workshop.

23 Today we'll discuss recent assessments of public
24 benefits from different types of renewable energy,
25 whether those benefits are sufficiently considered in

1 renewable energy procurement and other related programs,
2 and some new ideas to better capture benefits of
3 renewable energy for California.

4 The input that we gather at this workshop will
5 be used, along with other information from the 2012 IEPR
6 proceeding, to develop strategies for quantifying and
7 capturing public benefits in the energy procurement --
8 renewable energy procurement and other programs.

9 And this is our agenda for the day; in just a
10 few minutes, when I'm done, we'll begin with Panel One,
11 at 9:30, on assessing the public benefits of renewable
12 energy generation.

13 And after that panel we'll have Panel Number Two
14 on State and local policies and programs to capture the
15 public benefits of renewable energy.

16 At 12:30 we'll break for an hour lunch. At 1:30
17 we'll resume with Panel Number Three on stakeholder
18 experience and new ideas to better capture the benefits
19 of renewable energy.

20 And from 4:30 to 5:00 we'll have public
21 comments.

22 The panel discussions will begin with brief
23 opening statements from each panelists and then the
24 panelists will discuss the questions that are on the
25 workshop agenda.

1 There will probably be additional questions from
2 the panel moderators and the Commissioners.

3 I'm going to just provide a brief overview on
4 the topics that will be discussed in each panel. For
5 the first panel, on assessing public benefits of
6 renewable energy, we will discuss the various public
7 benefits that renewable energy generation can provide,
8 factors that affect those benefits and methods and tools
9 to assess and quantify those benefits.

10 We'll also discuss how to reduce the uncertainty
11 of the benefits and maximize the value of renewable
12 resources.

13 Our second panel, on State and local policies
14 and programs to capture public benefits of renewable
15 energy, will include topics such as ways in which
16 different agencies incorporate renewable energy benefits
17 into their policies and programs, barriers that agencies
18 face in incorporating more renewable energy benefits
19 into their policies, and ideas to overcome those
20 barriers.

21 And also, how renewable resources are currently
22 being rewarded and how they can be better incentivized.

23 Panel Number Three, on stakeholder and utility
24 experience and new ideas to better capture the benefits
25 of renewable energy, will include topics such as current

1 policies and programs that capture the benefit values of
2 renewable energy, barriers to including benefits of
3 renewable energy that are not currently considered into
4 policies and programs, and ideas to address those
5 barriers and reduce the uncertainty about the benefits
6 of renewable energy.

7 And as Suzanne said, we'll be accepting written
8 comments on today's topics through April 19th. When you
9 submit your comments please include the docket number
10 and the title of the workshop in your subject or first
11 paragraph of your e-mail.

12 And you can send those to docket@energy.ca.gov,
13 with a copy to me, kmoore@energy.ca.gov.

14 And all the workshop documents, transcripts,
15 along with more detailed instructions for submitting
16 written comments can be found under the April 12th
17 heading at this link.

18 Thank you all for being here and let's let the
19 fun begin with Panel Number One, Moderated by Al
20 Alvarado.

21 MR. ALVARADO: Thank you, Katie. Good morning,
22 good morning Chairman Weisenmiller, Commissioner
23 Peterman, and Mr. Bartridge and Mr. Barker, panelists
24 and workshop participants.

25 My name is Al Alvarado, I'm with the Electricity

1 Analysis Office here at the Energy Commission. It's
2 vibrating.

3 (Microphone noise)

4 MR. ALVARADO: I have the privilege of being the
5 moderator for this first panel and I do think we have a
6 very interesting set of questions that I think, in
7 itself, could probably take up most of the whole day.

8 However, as moderator, I have the unkindly task
9 of moving the discussion along and trying to keep our
10 discussion within our allotted time.

11 I'm really, personally, very interested in this
12 topic since over the years I've worked on numerous,
13 different types of studies to try to understand the
14 implications of different supply and demand options, as
15 we added to the electricity system.

16 Not just in California, but also understanding
17 implications of how it affects generation dispatch
18 through the whole west and imports.

19 The scope of these questions, I think we'll
20 first start opening up with questions related to
21 identifying the types of benefits associated with the
22 penetration of an increasing number of renewables.

23 Also very important to identify not only the
24 potential list of benefits, and as we get into benefits
25 I think we need to also consider the benefits that

1 different types of renewables can provide, since each --
2 not all renewables are alike and each do provide
3 different system attributes.

4 But I think key also to the analysis would be
5 when you add renewables how will it actually affect
6 dispatch of the system, and as we consider long-term
7 implications how it might also change procurement
8 decisions.

9 As we move along, the next set of questions will
10 also cover examination or discussion about different
11 types of tools that would be available for examining
12 these issues. And key to everything is always dealing
13 with uncertainty.

14 We used to conduct single-point forecasts, but I
15 think we've moved along and any of our analysis that we
16 engage in we do try to examine a range of potential
17 variables and how it might affect the system.

18 With that, we do have an excellent group of
19 panelists today, with a wide range of expertise. As
20 Katie indicated, if each of you could please introduce
21 yourself, maybe have some opening comments, but please
22 limit it to maybe three to five minutes so we won't take
23 away from as we move into the discussion.

24 COMMISSIONER PETERMAN: Mr. Alvarado, before you
25 move on, I'll ask everyone to speak closely to the mic,

1 and perhaps if you can speak a little bit louder as
2 well. Maybe it's just me, but I can't -- I'm really
3 trying to strain to hear. Thank you.

4 MR. ALVARADO: Okay. Well, actually, so much
5 for my opening comments. I mean how about if we just
6 proceed --

7 COMMISSIONER PETERMAN: They were heard, but it
8 was quiet as a pin and people will come in and out, and
9 I want everyone to hear the questions.

10 MR. ALVARADO: Yeah, I have an interesting
11 vibration here with this one.

12 So with that, how about if we go down the line
13 and, please, if each of you will introduce yourself.
14 Arne Olson.

15 MR. OLSON: Thank you. Commissioner Peterman
16 and Chair Weisenmiller, thank you for inviting me to be
17 here to speak to you on this topic, I'm really excited
18 to join the conversation today.

19 My name's Arne Olson, I'm a partner with Energy
20 and Environmental Economics and we're based out of San
21 Francisco, and we've been involved with a number of
22 studies of renewable energy, particularly in California
23 and throughout the west. And I'll spare you all the
24 details on that.

25 I just have a couple of remarks that I wanted to

1 make, to start off with, and so if we can go to the next
2 slide. I wanted to sort of throw a note of caution into
3 this discussion at some point, and I know that there are
4 future workshops scheduled on cost, but I think it's
5 important when we think about maximizing the value and
6 harvesting the value of renewable energy resources, that
7 we also keep in mind that costs of renewable energy
8 resources can vary.

9 You know, we know, and as Al said, that the
10 different types of renewables have different values.
11 Solar energy produces more energy during the summertime,
12 during the peak hours when it's the most valuable.

13 Wind tends to have the opposite provide, more
14 production during the winter and more production at
15 night.

16 Geothermal's kind of a nice steady resource
17 provides, you know, inertia, it's a spinning machine and
18 it has its own benefits.

19 And the benefits can vary by location as well.
20 There's been a lot of discussion in this State about,
21 you know, are there more benefits from siting renewables
22 in California versus siting them in our neighboring
23 states.

24 And, you know, even further now is it are there
25 more benefits from siting them closer to load? And we

1 had sort of a good discussion at the beginning here
2 about some of the benefits of distributed generation.
3 So, this question of geography is important, as well as
4 the question of type.

5 But I wanted to just sort of make sure that we
6 don't lose sight of the fact -- as we're trying to
7 maximize the value of renewables, that we don't lose
8 sight of the fact that the costs can be very different,
9 too.

10 And so what I've thrown up here is just a sample
11 of PV costs from various different locations, and
12 different installation types around the State. And
13 these are from the most recent PUC 33 percent RPS
14 calculated that was just posted a week or so ago.

15 And what we see here is, so if you look at sort
16 of the bottom right corner you can see this would be a
17 large, sort of ground-mounted, thin fill installation in
18 the Mojave Desert, which would have a levelized cost
19 according to the calculator of around \$105 per megawatt
20 hour.

21 Another large facility, sort of a 150-megawatt
22 facility in the Central Valley would be a little bit
23 more expensive, \$120 a megawatt hour. And the
24 difference there is largely due to resource quality, the
25 sun doesn't shine quite as often, quite as consistently

1 in the valley as it does out in the desert.

2 Now, as you move closer to load, the sort of the
3 \$149 number down in the L.A. area and the \$160 number up
4 closer to the Bay Area, these would be smaller, still
5 ground-mounted facilities, but smaller facilities don't
6 have quite the same economies of scale.

7 And in California, as you get closer and closer
8 to the coast of course the resource quality degrades a
9 little bit so you don't get quite as much production out
10 of the same facilities as you get closer to the coast.

11 So now you have a cost difference that's pretty
12 substantial, \$50 a megawatt hour or, really, 50 percent
13 more expensive than renewables that are cited in areas
14 where there's a better resource.

15 And then, lastly, the highest numbers on the
16 chart there, the \$213 in the L.A. area and \$231 in the
17 Bay Area, these would be for large rooftop
18 installations. These would be sort of commercial
19 warehouse roofs, which are more expensive to install.
20 Again, closer to the coast and so don't have quite the
21 same resource quality.

22 So, to me, this is a big hurdle that if we want
23 to site renewables closer to load, this is the hurdle
24 that we have to get over.

25 And back to the question of uncertainty, we want

1 to be sure that the benefits that we're getting from
2 siting those renewables in those locations are enough to
3 outweigh this very different cost impact that renewables
4 have in those locations.

5 And if you want to go to the next slide, I
6 wanted to sort of think about this issue of the local
7 benefits a bit as well, and sort of talk about some of
8 the uncertainty around that.

9 And to me, this gets to the question of kind of
10 what's the optimal geography for renewable resources.

11 If you look at the cost profile and who pays the
12 costs of the renewables, that's really not a local
13 issue, that's really more of a regional issue. If PG&E
14 signs a contract with a renewable resource, it recovers
15 those costs from all of its ratepayers over its entire
16 service area, not just the ratepayers in Oakland, or in
17 San Francisco, or in the Bay Area.

18 The construction impacts of those resources are
19 experienced very locally. There are local environmental
20 impacts to those resources.

21 Tax base is another issue that's very, very
22 local, it depends on are you on this side of the
23 boundary line or the other side of the boundary line,
24 depending on -- you know, that determines which entity
25 gets the tax benefits from those resources.

1 On the other hand, climate change is a global
2 phenomenon so the right geography for climate change is
3 really global. We don't care -- if the goal is to
4 reduce greenhouse gas emissions, in essence we probably
5 don't care whether the resource is in San Francisco, or
6 the Central Valley, or even in Wyoming because it really
7 is a global phenomenon, trying to reduce greenhouse gas
8 emissions.

9 So this is just some of the sort of thoughts I
10 wanted to put in here on what the right geography is.

11 Oh, and the last point I wanted to make was on
12 emission impacts. And there's been a lot of focus, I've
13 heard a lot of focus, very rightly so, on the
14 disproportionate burden that some members of society in
15 California bear in terms of emissions, in terms of the
16 environmental justice. And I think that's a very
17 important topic to focus on.

18 At the same time we have to ask the question,
19 how much does renewables really help with that? If you
20 put a PV system on a roof in Los Angeles, does that
21 really displace a fossil-generating resource in Los
22 Angeles or, you know, what exactly does that resource
23 displace?

24 And some of the work that we've done indicates
25 that this might displace -- it definitely displaces a

1 fossil resource that emits pollutants, but it might
2 displace a resource in Oregon, or a resource in Northern
3 California, or a resource in Arizona in addition to a
4 resource locally. And what proportion of that
5 production displaces local emissions versus regional
6 emissions is another question that's very difficult to
7 answer.

8 And so I think the focus on what's actionable I
9 think is really important, but I wanted to sort of throw
10 some notes of caution in there on what we think we can
11 know and what we can really analyze and assess about the
12 differences based on geography.

13 MR. ALVARADO: Thank you, Arne.

14 MR. NELSON: Okay. I'm James Nelson, or Jimmy
15 Nelson, as most people call me. I am a PhD candidate in
16 the Energy and Resources Group. I work under Professor
17 Dan Kammen at UC Berkeley.

18 And so I'd like to talk to you today about some
19 of the work that we're doing using the SWITCH electric
20 power system model, which we've been under contract with
21 the CEC to produce work looking at long-term, low-carbon
22 planning.

23 Could we go to the next slide? So, SWITCH is a
24 model that's built on the idea that the long-term costs
25 and benefits of especially intermittent sources of

1 power, namely wind and solar power, can't really be
2 valued without knowing what other infrastructure is in
3 place once you -- once you get to the point where you
4 have a lot of them on the grid.

5 And so this means, you know, what generation
6 transmission and storage has been built and where it's
7 been built.

8 And also, the dispatch of the electric power
9 system changes in kind of fundamental ways when you get
10 to large penetrations of intermittent renewables and
11 that changes the valuation of not only your intermittent
12 renewables, but also the rest of the power system assets
13 which should, seeing as we're thinking long term,
14 actually change your investment decision.

15 So all these things need to be optimized in an
16 integrated framework and that's kind of what we're
17 working towards. And part of the integrated framework
18 is policy and reliability constraints, so making sure we
19 have enough sub-hourly reserves around to compensate for
20 the variability of intermittent renewables, making sure
21 we meet renewable portfolio standard targets, carbon
22 targets, you know, just meeting load is even sometimes
23 problematic with intermittent renewables.

24 So, can we -- oh, sorry, the picture that I've
25 shown here is an example that SWITCH has designed for

1 2030 across WECC, so not just in California but across
2 the whole Western Electricity Coordinating Council. It
3 shows the dispatch of a 2030 system that meets climate
4 targets consistent with California's targets. So, this
5 one's 54 percent of 1990 emissions by 2030 which then
6 you can imagine ramping down further to 80 percent below
7 1990 emissions by 2050.

8 So, you can see that there's a lot of solar and
9 wind generation, roughly 10 percent of energy, but
10 there's enough natural gas generation to compensate for
11 the variability.

12 Can we go to the next slide? And so this slide
13 also shows how we deal with sensitivity so it's very
14 important, as was discussed earlier, to try and run
15 multiple scenarios in many cases to try and figure out
16 the possible benefits of renewables because it changes a
17 lot in the face of what grid you're looking at.

18 So this shows six different possible realistic
19 scenarios for WECC, so don't worry about all the nuclear
20 build out, it's not in California, but only if nuclear
21 becomes cheap.

22 And so we can show -- one of the things that
23 SWITCH can show is what kind of costs we're going to
24 have to pay for certain benefits. So, if we want to
25 meet our carbon targets in WECC, the line that says

1 "carbon price" says that, you know, we're roughly going
2 to have to pay \$70 per ton CO2 by 2030. That's going to
3 be the -- that's one possible carbon price that might
4 result from a low carbon system. And so that, you know,
5 we need to think about whether the benefits of reducing
6 that carbon in WECC are equal to that price.

7 Can we go to the next slide? So, as I mentioned
8 before SWITCH is a CEC-supported modeling program. We
9 appreciate the CEC's support greatly, from Guido Franco
10 and Joe O'Hagan.

11 And so we have done one preliminary study with
12 the CEC already, it should be coming out somewhat soon,
13 about looking at 2050 carbon targets for California, but
14 our model takes into account the whole WECC because
15 there's a lot of imports and, also, you know, at times
16 exports from California.

17 And we're also looking at high solar energy
18 scenarios, demand response, I guess electrification of
19 vehicles and electrification of heating to meet carbon
20 targets. And, of course, yes, just carbon quantity and
21 cost constraints.

22 COMMISSIONER PETERMAN: Quick question, can you
23 go back to the slide with the graph?

24 What is the assumed renewable target here that I
25 should be thinking about? Is it 33 percent?

1 MR. NELSON: So it's each state's renewable
2 target that increases over time, so for California it
3 will be 33 percent by 2020 and then it stays there
4 through -- this is a 2030 study so it stays there
5 through 2030.

6 Other states have different targets that move up
7 over time. But in the end those constraints aren't
8 binding when you get to a 2030 carbon target that's at
9 54 percent of 1990 levels because there's just more
10 carbon abatement needed than the renewable portfolio
11 standards actually do currently.

12 COMMISSIONER PETERMAN: Thank you.

13 MR. ALVARADO: Thank you, Jimmy.

14 Mr. Warren Leon.

15 MR. LEON: Hi, I'm Warren Leon, I'm with the
16 Clean Energy States Alliance and we're a national
17 organization that has a large number of members of State
18 Clean Energy Agencies across the country that work with
19 us.

20 And what we do is help them exchange
21 information, identify best practices, we provide advice
22 to those various agencies.

23 And one thing I could say to you right from the
24 start is the exercise you're engaged in today is not
25 that common and it's very admirable, and you're taking a

1 sophisticated approach.

2 And the reason I say that is oftentimes in
3 states folks have a general sense that renewable energy
4 is a good idea, they have a general sense that we should
5 have more of it and then they leave it at that. And
6 they don't really start to look at what are the specific
7 benefits we're getting out of it and what are the
8 specific costs.

9 Now, I've listed a bunch of different benefits
10 up there on the slide and one thing that's important to
11 think about is that although renewable energy is a broad
12 term, it's composed of a large number of different
13 technologies and different applications.

14 And depending on what benefit matters most to
15 you, certain technologies and certain applications are
16 going to be more desirable than others. It's not the
17 case that all renewable energy gives you all the
18 benefits or gives them to you equally.

19 And in terms of the categories I've put up there
20 on the slide, I've talked about four different ones, one
21 is environmental benefits, which are the most obvious;
22 things like slowing climate change or improving air
23 quality.

24 But there are also some energy system benefits
25 that we have heard about earlier. You know, there are

1 reasons for reducing dependence on fossil fuel, that
2 doesn't have to do with the environment.

3 In addition to the ones up there, there's a
4 benefit involved in deferring transmission and
5 distribution costs.

6 In terms of economic benefits, there are some
7 aspects of renewable energy that advance overall
8 economic growth and are good for the economy as a whole,
9 but many of the benefits of renewable energy are
10 distributed unequally.

11 Some individuals, some geographies, some
12 businesses, some types of communities benefit more from
13 renewable energy than others.

14 And one important thing to do when you're
15 looking at benefits is to try to be very specific as to
16 how those benefits are distributed through society and
17 then be comfortable, then decide are you comfortable
18 with the way those benefits are being distributed.

19 And if there is an unequal distribution of
20 benefits, is there anything you can do to redistribute
21 those benefits in a way that, from your stand point, is
22 more desirable. That can have to do with either
23 emphasizing different technologies, different types of
24 applications, or finding some ways in the cost structure
25 to charge the folks who are getting the largest

1 benefits, charging them disproportionately so that it
2 relates to what they're getting out of it.

3 One other thing I would like to say is that when
4 we look at benefits there are certain benefits that are
5 real, but oftentimes when folks go to measure them they
6 don't go beyond the theoretical.

7 And let me take the case of transmission and
8 distribution benefits. It is undoubtedly true that
9 having more renewable energy in a distributed generation
10 application allows you to defer transmission and
11 distribution upgrades.

12 But actually being able to pin down how much
13 that is actually saving you, and where it's saving you,
14 that can be devilishly hard.

15 There are cases where in theory you're saving
16 transmission and distribution costs but because the
17 utility companies do not believe that you're going to
18 actually have enough renewable energy on the system to
19 defer those transmission upgrades, they go ahead and
20 make them anyway, and so you don't actually get the
21 benefit you think you're going to get.

22 So that's another case where you need to be very
23 specific in trying to pin down where these benefits are
24 occurring and what they are.

25 And with that, I will pass on to the next

1 person.

2 MR. ALVARADO: Thank you, Warren.

3 Ms. Sanders.

4 MS. SANDERS: Hi, I'm Heather Sanders, I'm the
5 Director of Smart Grid Technology and Strategy at the
6 ISO. I'm filling at the last minute for Mark Rothleder,
7 who was called to the PUC late yesterday. So, I will do
8 my best to answer the questions and provide the
9 information from the ISO perspective.

10 So what we wanted to focus on for the opening
11 comments is, really, what is the ISO role in talking
12 about these benefits?

13 And from our perspective, we have been engaged
14 in a number of operational and planning studies to
15 understand what the impact is and the benefit of the
16 renewable generation on the system.

17 So to list the studies that we are engaged in,
18 on an ongoing basis, and I do not have slides unless
19 Mark sent some -- I don't have any slides.

20 First of all, transmission planning, of course,
21 from an adequacy and needs perspective to support the
22 renewable scenarios. And those scenarios have been
23 defined through the CPUC, LTPP and other areas external
24 to the ISO. So, we're focused on the scenarios defined
25 by others, as well as the CEC RETI.

1 Operational impact studies on reserves for
2 flexibility because as you know, with renewables and the
3 uncertainty that those introduce, we have to have more
4 flexible capacity on the system.

5 Operational impacts on frequency response and
6 inertia. So, as we reduce the spinning mass on the
7 system, the governor-controlled natural and conventional
8 generators, we have to make sure that we're able to have
9 enough frequency response on the system so we can
10 recover in contingency events.

11 Market effects, unexpected energy prices and
12 revenue adequacy. Again, conventional generators and
13 the impact on their revenue adequacy, as well as other
14 participants in the market, are impacted with renewable
15 generators of low, zero fuel cost.

16 And we're also engaged in production simulations
17 that provide insights into this fuel and emissions cost.

18 In our transmission planning role, the ISO can
19 help ensure that renewable resources can be efficiently
20 and reliably accommodated, you know, based on the
21 different scenarios that are put forth.

22 And the ISO can help provide for the societal
23 benefits by incorporating the costs into the dispatch.
24 So by doing this, the reduction of greenhouse gases due
25 to dispatch can be realized.

1 And I phoned a friend while I was sitting here,
2 you know, this is the great thing about technology, from
3 the 33-percent studies that we've been doing, and this
4 was filed in testimony in the PUC's LTTP proceeding I
5 believe last June, of 2010, WECC-wide our production
6 simulation, so this is just production cost, not
7 transmission cost, but production cost simulation is
8 looking at about a \$2.5 billion savings over an all-gas
9 case.

10 So, we did a study based on if you had all gas
11 units, again that's not a 33-percent scenario, against a
12 renewable case, and we got about \$2.5 billion savings
13 WECC-wide.

14 And then to serve California load it's about a
15 \$1 billion savings over an all-gas case for a 33 percent
16 renewable case.

17 So, I thought I'd just start out by saying what
18 the ISO's role is and I'll do my best to answer your
19 questions as we go through. Thank you.

20 CHAIRPERSON WEISENMILLER: Okay, just one quick
21 question, Heather. That's 2.5 out of what's the total
22 number, or one out of, again, a total number, just
23 trying to get a sense of the percentage.

24 MS. SANDERS: Oh, I understand. The all-gas
25 case projected a production cost of \$20.5 billion and

1 the renewable case projected a production cost of \$18.5
2 billion.

3 Now, there's a lot of assumptions in there and a
4 lot of what was said earlier, depending on how you
5 assume costs and so forth, so we assumed average costs
6 and so forth, but those are the high level numbers.

7 CHAIRPERSON WEISENMILLER: Thank you.

8 COMMISSIONER PETERMAN: And then just to follow
9 up on that, and so those savings are from -- can you
10 explain more what the savings are from?

11 MS. SANDERS: The savings are mostly from the
12 cost of those generation resources, fuel costs, their
13 dispatch cost, so we're talking about production cost.

14 COMMISSIONER PETERMAN: And do you see those
15 results changing in light of projections for lower
16 natural gas costs?

17 MS. SANDERS: I don't know. I don't know what
18 the natural gas cost assumption was, so I would assume
19 they would go down. Help.

20 MR. OLSON: Yeah, this is Arne. I think they
21 would -- those probably used sort of \$5.50, so I think
22 if we would do that study again, today, those gas costs
23 would be more like \$3.50 to \$4.00 in 2020, so you would
24 be a proportionate reduction in that dispatch cost
25 savings.

1 COMMISSIONER PETERMAN: Thank you.

2 MS. LAZEROW: Hi, good morning, my name is Shana
3 Lazerow, I'm a Staff Attorney at Communities for a
4 Better Environment.

5 I'm actually here, today, on behalf of the
6 California Environmental Justice Alliance, CEJA, which
7 is working statewide around energy issues from the
8 perspective of our members who are living in low-income
9 communities of color and are very concerned to see that
10 the energy system change over to a just distributed
11 generation system.

12 I really appreciate this workshop being held.
13 It's vital for our communities and for the State, as a
14 whole, to be deliberate about how we change our system.

15 So, a lot of really good work has already gone
16 into this process and it's wonderful to see it in the
17 summaries.

18 I wanted to highlight a couple of real concerns
19 that our communities have. So, as you all know, from a
20 public health and environmental justice perspective we
21 are going to need to transition from the status quo to a
22 new system.

23 And the benefits of that system, as Warren
24 pointed out, should be quantified and we need to decide
25 whether they're going to be equitably distributed

1 throughout the State and how we're going to do it.

2 So, I wanted to take a moment to just kind of
3 highlight some of the impacts that our members are
4 actually, today, although if it's like this in L.A.,
5 maybe not today, suffering from the existing system.

6 I wanted to talk about one of the OTC plants
7 that's currently operating in Wilmington, it's called
8 Harbor. It's one of the newer OTC plants. It's in --
9 basically in the Port of L.A.

10 We have members who live in Wilmington, the
11 fence line to one of the refineries, the Conoco
12 Refinery. There are five refineries in that area,
13 there's the Port Of L.A. There's a freeway that has
14 constant goods movement of diesel trucks.

15 It sits on the third largest oil field, so there
16 is -- next to our Little League field there's oil
17 drilling going on.

18 And on top of this, on the hottest peak days
19 there's the Harbor OTC plant which is cranked up.

20 And so I was interested to hear that E3 is not
21 at all confident that distributed generation is going to
22 displace local gas-fired generation because the CEC's
23 2010 OTC report sort of went through, at least for the
24 older generation and the OTC plants, which were not
25 designed to be peaker plants, that they are actually

1 running during the peak at the moment.

2 So, my hope would be that if we can smooth out
3 the peak through a distributed generation system that,
4 in fact, it would displace that use.

5 And it's my understanding that there are
6 transmission bottle necks, that when you're at peak sort
7 of prevent some of that Northern California power from
8 coming into our community in Wilmington, or even the
9 L.A. Basin.

10 But as I said at the start, I'm a lawyer, so I
11 would defer to your technical analysis.

12 So I also wanted to point out, and if we can
13 flip to the next slide, please, that if we do nothing
14 this is what we're going to get to replace those OTC
15 plants.

16 Some of you in this room may remember the
17 proposed run-in power plants, CBE fought this plant for
18 two years. These are the projected emissions from this
19 plant, which the CEC approved, all but for the air
20 analysis.

21 East South Coast Air District approved all but
22 for the Federal requirement that these emissions be
23 offset with valid offsets, which the Air District wanted
24 to provide but a couple of lawsuits stood in its way.

25 So, the South Coast Air District estimated that

1 this plant would kill about 11 adults each year. There
2 were other health impacts from these air emissions.

3 Vernon sits in Southeast L.A., which is a very
4 densely populated part of Los Angeles. It's about 99.8
5 percent people of color, very low income, and the City
6 of Vernon is an industrial city surrounded by
7 communities like Huntington Park, where CBE's office is.

8 So, this power plant was not acceptable to our
9 community and as a substitute for the Harbor Power Plant
10 is not really a good option.

11 So, I wanted to talk a little bit about the
12 benefits that we are expecting from the new system in
13 our communities. We are expecting, first of all, that
14 this new system will provide answers other than the
15 Vernon Power Plant, or other similar gas-fired plants in
16 our communities or in someone else's communities.

17 We believe that a distributed generation system
18 will address a lot of the peak demand, which is what the
19 new power plants are being proposed to address.

20 Also, renewables generation is the other, you
21 know, basis that we're hearing for siting new power
22 plants, like Vernon.

23 And I believe there are technological fixes for
24 this. There's a lot of -- every day you hear new
25 storage solutions coming on the market.

1 So I believe that between bringing online a
2 distributed system that, yes, does site some of the
3 generation in low-income communities of color, on your
4 more expensive side of the State, which is where the
5 demand is.

6 And if you could actually flip to the last
7 slide; so this is a map of where the installed solar is,
8 now, you'll see "California now." This is a map that
9 came out of UCSD. I'm not actually sure what the "now"
10 date is.

11 But I think that given the discussion around
12 local capacity requirements in our State, we know that
13 the demand tends to be more on the west side of the
14 State.

15 And as you can see, the generation is more on
16 the east side of the State, which is certainly a problem
17 if what you want to do is replace your old power plants
18 with a renewable system.

19 So, I trust that this group is the right group
20 to help move that process forward. Thank you.

21 MR. ALVARADO: Thank you, Shana.

22 MR. MACHOL: Hi, I'm Ben Machol, I manage the
23 Clean Energy and Climate Change Office of the USEPA, in
24 our Region 9 office.

25 You know, I have some animation on these slides

1 and I don't know if it will work. So, if you want to
2 just scroll forward until you see the word "particulate
3 matter," it will probably be easier to do that.

4 I was going to lead up to this, but I might as
5 well just get it all out there at once.

6 So, the main thing that I want to talk about
7 here is, you know, we know what the retail price is of
8 the electricity that we purchase, we have this bunch or
9 panelists who have already talked about the external
10 costs, we try to quantify what we can.

11 I wanted to focus in on the health impacts but,
12 more specifically, the health impacts from air emissions
13 and even more specifically than that, the health impacts
14 from air emissions from particulate matter levels.

15 And I wanted to focus there just because this is
16 an area that we have ready access to power plant
17 emission data from around the country. We can easily
18 quantify the health impacts from changes in particulate
19 matter levels. I'll probably start saying PM at some
20 time, it's still particulate matter.

21 And we can monetize those impacts or I guess
22 more accurately we can assess the economic value of
23 avoiding those impacts.

24 So, when I'm talking about benefits to renewable
25 energy, I'm really looking at some of the costs of

1 fossil fuel electricity.

2 So, when we look at those numbers we look at the
3 health impacts, monetize those and just divide out by
4 the kilowatt hours of power that were produced when
5 those emissions were created.

6 You can look at California electricity and find
7 that on average, for what's generated in the State,
8 those health impacts run -- again, health impacts, just
9 that subset from PM emissions, or secondary formation of
10 PM, it's about a penny-a-kilowatt hour.

11 And when you look at the energy that's imported
12 into the State, that number rises to about three to
13 seven cents a kilowatt hour.

14 And can you go to the next slide? So, another
15 way to look at this is by fossil fuel source. So, you
16 know, our mix in California, on a fossil fuel level,
17 almost all natural gas.

18 And when it's imported, of course there's more
19 coal in the mixture as well.

20 If you look around the country and you look at
21 the PM that's caused by the emissions from power plants,
22 you get roughly 32 cents a kilowatt hour is the health
23 impact of cost of coal, about 13 cents for fuel oil, and
24 natural gas in the two-cents-a-kilowatt hour range.

25 So, you know, these are significant, but largely

1 ignored when we set energy policy just because it is
2 difficult to quantify.

3 But we can look at PM emissions from power
4 plants and we can put some numbers to it. But as we set
5 policy today usually, because it's hard to quantify, we
6 set it to zero.

7 That's all I wanted to start with.

8 MR. ALVARADO: Thank you, Ben.

9 Ms. Mann.

10 MS. MANN: Thank you. I'm Margaret Mann, I work
11 at the National -- hi, I'm Maggie, Margaret Mann, I work
12 at the National Renewable Energy Laboratory, in Golden,
13 Colorado. We're a national laboratory, funded largely
14 by the U.S. Department of Energy.

15 My particular background is in economic analysis
16 of specific energy technologies, as well as lifecycle
17 assessment to quantify environmental benefits and
18 drawbacks of various technologies.

19 I always like to say that the worst thing that
20 could happen to me in life is, you know, years from now
21 when I'm retired and, you know, planning my next
22 excursion that the Sierra Club comes and knocks on my
23 door, and says that we got it all wrong.

24 I don't want that to happen. I really believe
25 that we need to take a very close look at the

1 technologies and systems we're talking about deploying,
2 and supporting, and making sure that we're making the
3 right choices.

4 When I started at NREL, you know, renewables as
5 a big thing was kind of a dream. We didn't -- we
6 thought we were still needing some very basic research.
7 You know, the installation of renewables was few and far
8 between and I'm just amazed at how far we've come. It's
9 really, really a delight to see how things have
10 progressed.

11 And I think even with everything that we've
12 deployed and looking at actual installations we can say
13 that renewables do continue to offer benefits in the
14 areas of the three E's, the environment, the economy,
15 and energy security.

16 In my view, after doing analysis of renewables
17 and conventional energy, both transportation and
18 electric technologies, it's my feeling that what we need
19 now is greater certainty in the quantifications of these
20 benefits, along with greater dissemination of the
21 benefits.

22 I am an analyst, but I really would like to say
23 that we don't need just more analysis, we don't want to
24 become paralyzed and stop in our tracks because we can
25 always analyze more.

1 But right now the message to policymakers and
2 decision makers is very mixed. We can always go and do
3 literature reviews and pull together the greatest
4 experts and they can talk about their individual papers.
5 I mean we have our own, as well. And I think we should
6 do that.

7 But I think that right now policymakers are
8 stuck and trapped because they receive so much input.

9 One - somebody might come to them and say, you
10 know, the answer is 62, and then the next guy says no,
11 no, my study says the answer is 94. And it's very hard
12 for decision makers to have confidence in moving forward
13 with this kind of very mixed message.

14 Now, we've gotten really good at doing really
15 cool analysis work over the years. I mean the work
16 that's recently been done at UC Berkeley, that was
17 spoken about earlier, is just a really, really cool
18 study.

19 And we've recently completed a study looking at
20 high penetration of renewables on the grid across the
21 U.S. and it's, in my mind, one of the greatest break
22 throughs in being able to pull all of these -- all of
23 this knowledge base together so that we can really
24 understand what could be ahead of us, and where might we
25 get stopped, and what might be the problems and,

1 therefore, what to focus our efforts on.

2 But these really cool analyses can be hard to
3 drill down into and really understand what's going on.

4 So, I am an advocate of taking a step back right
5 now and pulling together the vast knowledge that we've
6 been able to put forth and try to distill it into more
7 common messages.

8 Right now everybody, since the economic crash,
9 the most commonly wanted benefit is jobs, jobs, jobs.
10 It's jobs.

11 You know, I've seen in my career greenhouse gas
12 emissions being the most important part, water being the
13 most important part, and that's actually coming around
14 again, of course.

15 I'm from Colorado, I know California, you know,
16 as western states we think a lot about water.

17 And right now, I mean it's only jobs, that's all
18 the policy makers are focused on. And to me, you know,
19 this too will pass and we will then focus on something
20 else.

21 I think it's really important for us to
22 understand that the public perception and, therefore,
23 the force behind what gets deployed is driven by public
24 perception of what's important right now.

25 So, it has very little to do with the whole

1 suite of benefits, all of the things that we can care
2 about or really, you know, what we've quantified in all
3 of our studies, it's being nimble enough to understand
4 that it is a multitude of benefits and we can quantify
5 and discuss the benefits in all of those areas.

6 The benefits of renewable energy depends, as Mr.
7 Leon was saying, on the technology, the location and the
8 existing system into which the renewable energy is
9 deployed. We can't -- on some of these technologies we
10 can paint a broad brush and say that there are benefits
11 that we can really feel confident about no matter where
12 the system is deployed.

13 Of course, there's always going to be a range in
14 that, the number's never going to be 64.2. But we do
15 need to make sure that we understand what the
16 uncertainty in our assessment is and how location, and
17 technology, and existing system-specific those benefits
18 are.

19 In my mind, the most important thing for really
20 moving deployment forward is a better understanding of
21 the range of benefits that can be seen, pulling together
22 everything that we've been working on over the last
23 15ish, 20ish years, and so that we can have a clearer
24 message for the decision makers.

25 In terms of technical areas, I think that we

1 have to be very concerned about the need to expand
2 infrastructure. You've got a very large NIMBY syndrome
3 when we talk about putting large transmission lines in
4 an area, you've got, you know, the question of what
5 could be deployed where and what would be displacing
6 somewhere else.

7 There are environmental impacts of
8 infrastructure that we can't ignore. And then, of
9 course, how are we going to fund what's necessary for
10 infrastructure?

11 There's great integration, curtailment, and
12 dispatch protocols that need to be focused on. We have
13 a lot of really great studies that touch on those but we
14 really need to start talking about, well, what will we
15 do with large scales of penetration in various places,
16 how would we dispatch the renewables, what would be
17 curtailed.

18 Water availability and variability, most
19 renewables use less water than conventional thermal,
20 fossil-fueled power plants, but some of these
21 technologies will have to find ways in which to displace
22 the right water in the right places, because water is
23 not evenly distributed.

24 Concentrated solar power, the map of California
25 shows that a lot of the solar resource -- I mean,

1 really, California, you have wonderful solar resources.
2 So, even if it's yellow where you are, that's still
3 awesome.

4 But, of course, the red, the really great solar
5 resource, is out away from the population centers. And
6 we're talking about things like concentrated solar power
7 which, if we need to do dry cooling, which is
8 technically feasible, it will hurt efficiency a little
9 bit and cost a little bit more.

10 And then I think we need the consistent or at
11 least consensual understanding of the magnitude of the
12 likelihood of the benefits.

13 And we have a lot of very significant and high
14 quality understanding of the resources. We know where
15 the resources are. One of the issues, though, is
16 financing the specific projects and how specific that is
17 to an individual municipality or a state.

18 Thank you very much.

19 MR. ALVARADO: Thank you, Maggie. We have about
20 50 minutes to really cover all of these questions and I
21 think --

22 COMMISSIONER PETERMAN: I actually have a
23 follow-up questions for Ms. Mann, if you don't mind,
24 before we move on.

25 MR. ALVARADO: I'm sorry, Commissioner Peterman.

1 COMMISSIONER PETERMAN: Sorry to interrupt, I
2 just wanted to catch you while you were still on that
3 thought.

4 So, you were talking about magnitude and the
5 range of studies and so in terms of an orders-of-
6 magnitude estimation I mean are you saying consistency
7 across the different studies in terms of the orders of
8 magnitude of some of these public benefits, as well as
9 the sign on them, consistently being positive?

10 MS. MANN: Well, it depends on the benefit that
11 you're talking about.

12 COMMISSIONER PETERMAN: Okay.

13 MS. MANN: I can give a concrete example about
14 greenhouse gas emissions because we've just recently
15 finished up a very large study of the META analysis of
16 the literature.

17 So, you know, we had people, decision makers who
18 would say to us, well, I heard that the greenhouse gas
19 emissions of PV are worse than coal, or I heard -- you
20 know, and so they keep hearing these studies, they keep
21 hearing what's in the press.

22 And so what we did was we took all of the peer-
23 reviewed literature and we analyzed it, and brought as
24 much into consistent understanding as we could in order
25 to define the variability, the median values.

1 So for the case of wind, you know, you can say,
2 okay, it doesn't matter if someone says the greenhouse
3 emissions are 35 and somebody else said they're 25,
4 relative to, say coal, that's still low and the
5 variability is not great.

6 Now, other technologies have greater variability
7 and so then that allows you to go in and see what the
8 magnitude is and what causes that variability in
9 understanding. Sometimes it's a one-off study, looking
10 at a specific location which, of course, you're going to
11 get differences and sometimes it's a variation in the
12 assumptions.

13 Those things need to be talked about so that the
14 policymakers really feel more confident in the
15 information they're receiving.

16 And I think that applies to even -- to all the
17 benefits and even including those that are difficult to
18 quantify.

19 COMMISSIONER PETERMAN: Thank you, that's very
20 useful because one of the overarching questions I have
21 is as we think about what the different benefits are
22 that we're not capturing, if we do capture them and
23 monetize them does that ultimately change, overall, what
24 the State will procure?

25 Does that ultimately change how much solar we'll

1 want relative to wind? And so there's the -- does it
2 change what we buy?

3 And then there's the next question of it might
4 change where you locate it and it seems like that's been
5 a key issue raised here.

6 Al, I have some overall observations from just
7 what I've heard so far, if you don't mind me sharing
8 them.

9 MR. ALVARADO: Please.

10 COMMISSIONER PETERMAN: With questions. So, as
11 you then answer various questions, you'll have a sense
12 of some of the things I'm thinking.

13 Great information so far, a couple of thoughts
14 come to mind. One, it seems like the technologies we
15 choose to integrate renewables can have significant
16 impact on the renewable benefits.

17 And looking at the work presented about the
18 SWITCH model, and also some of the comments from the
19 ISO, there seems to be, still, substantial reliance on
20 natural gas plants as the integrating technology. And
21 so, you know, I think that's an interesting observation,
22 as well as what the assumptions on the share of DG are
23 going to be seems to have an impact, as well, about some
24 of the, particularly, local benefits.

25 And so I'd be curious to hear from Jimmy, as

1 well as Heather, what the assumptions were about DG in
2 the models they discussed and they presented.

3 Also, a key question is what plants are being
4 displaced? There seems to be a mix of views about
5 potentially what will be displaced versus, perhaps, what
6 the expectation is around what will be displaced.

7 And, also, I haven't heard anyone talk at all
8 about bioenergy. And one of the comments that we heard
9 during the summer was that bioenergy has these other
10 benefits, such as fire reduction, for example.

11 And I was just wondering if in some of the
12 models did this come up or if it's factored into any of
13 your calculations?

14 And so those are some of the things I've been
15 observing.

16 The Chair?

17 CHAIRPERSON WEISENMILLER: Yeah, I had, also,
18 some observations and questions.

19 First, on the environmental impact side,
20 probably the article that I always look back to is one
21 that was done by Holdren & Budnitz, an annual review of
22 energy article in the, let's say, late seventies, early
23 eighties.

24 And that actually -- I mean both of them spent
25 their careers on it in a way and that article sort of

1 captured a lot of things, but at the end concluded there
2 were certain things you really couldn't come to grips
3 with, and so they sort of stopped trying in a way.

4 And so part of it was obviously energy --
5 production of energy has environmental consequences, all
6 of them do. And so the question, in part, is what are
7 the big picture things that are not captured?

8 And so from their perspective, obviously when
9 you say look at nuclear, you've got to worry about
10 proliferation, which is a real, you know, civilization
11 threatening issue.

12 When you look at coal, climate change, and when
13 you look at oil and gas, you're really tied into the
14 geopolitics in the Middle East.

15 And so, as we go through and try to do some of
16 the quantification of stuff, those are very big effects
17 that no one's really done a very good job of
18 incorporating in our calculus.

19 Although, certainly one would argue like the
20 California nuclear laws in part reflect some of those
21 concerns although, obviously, what we do in this State
22 doesn't drive global proliferation issues.

23 And, obviously, some of these technologies have
24 implications, like Carla had mentioned, Commissioner
25 Peterman had mentioned the benefits of biomass in terms

1 of forest control.

2 But at the same time, when you look at the
3 German study, where they tried to quantify the
4 environmental benefits of renewables, they actually
5 found offsets for biomass, in particular, emissions.

6 And so, you know, and they found that to be
7 relatively significant, you know, and I think certainly
8 from their perspective, particularly the emissions from
9 biomass plants were much greater than, say, from gas
10 plants.

11 So I would be interested in getting, you know,
12 South Coast's site and, you know, particulates are a key
13 part.

14 So, you know, really trying to quantify the
15 environmental implications are important. But, again,
16 there are certainly offsets and it's certainly
17 complicated on the things that are not easy to model.

18 I think the other thing to really key up in
19 terms of benefits of renewables, which partially gets to
20 the displacement part, but when Edison was justifying
21 the steam generator retrofits of San Onofre, in the
22 early 2000ish period, they quantified two significant
23 benefits. One was transmission that, you know, as we're
24 finding without SONGS it has real implications for the
25 transmission system and the operations in Southern

1 California.

2 But the other thing they did was natural gas
3 benefits and they found substantial benefits, which they
4 quantified. And basically, you know, it's a fairly
5 simple analysis that if you have a nuclear plant which
6 reduces, you know, fossil fuel consumption or natural
7 gas consumption, that that reduced consumption, when you
8 look at the elasticity of natural gas, would tend to
9 drive down natural gas prices.

10 And so, even relatively small reductions in
11 price, once you look at the quality of gas consumed, are
12 fairly significant dollar amounts. And, certainly,
13 that's not something which I've seen in these types of
14 analysis here which, again, I think people need to start
15 building that in.

16 And that we talk about volatility but I mean,
17 again, it's very simple, if you reduce the demand for
18 gas relative to the supply curves, you're going to have
19 some price effect.

20 Certainly, the other issue which the Germans
21 talk a lot about, which we don't talk as much about, is
22 merit order, in the sense that as you -- a lot of the
23 technologies that we're talking about, like PV, you
24 know, frankly, reduce demand. They don't have
25 characteristics like peakers, they're not lot power

1 plants, they reduce demand.

2 And by doing that, again once you look at the
3 loading order of generation, you're reducing what's
4 operating. Right, again, so it's sort of an elasticity
5 effect. And so, again, you have a savings. And,
6 certainly, the Germans have done a lot of quantification
7 to, say, from all their PV and the benefits of it.

8 Again, they're not necessarily seeing the future
9 liability benefit, but they are seeing the benefit by
10 reducing energy demand, electricity demand, that you're,
11 you know, displacing your less efficient generation.

12 I guess that's also occurring in Texas, that
13 Texas is really reducing gas generation there and
14 getting to use the more efficient units operating, but
15 also reducing gas costs by doing that.

16 So, again, those sort of effects on the markets,
17 particularly as we go to large-scale renewables -- I
18 mean if we're talking about small amounts, that's one
19 thing. If we're talking 53 percent, you know, these
20 have significant impacts on our system.

21 And we haven't talked very much about that. I
22 guess the other two things to talk about are, you know,
23 certainly it's always interesting to look at the
24 projections out to 2030 in the sense of we've done these
25 types of things in the past, where you go out 20 years

1 or something. And then eventually, when you go back and
2 look at them, and you try to figure out why you're
3 wrong, because you always are wrong, and then you try to
4 figure out what caused that, you know, there's
5 substantial uncertainties as we go forward.

6 I mean, typically, I've found fuel, fossil fuel
7 prices -- again, if you look at forecasts we did in the
8 1980s for the value of assets, and you look at them now,
9 you know, no one expected gas prices to go through the
10 ups and downs they've gone through, or oil prices, or
11 the volatility.

12 so, I think one really is deluding themselves if
13 they think we can do a very good gas or oil price
14 forecast out to 2030 or 2050.

15 And, similarly, regulatory change; again, I
16 remember doing forecasts of the value of power plants
17 and we -- you know, we really didn't realize that gas
18 was going to be deregulated, which had huge
19 implications.

20 So, again, or as you go through, so in terms
21 of -- or environmental regulations.

22 Again, it's just that you do these huge
23 forecasts and there are very detailed things in those
24 but -- and sometimes you hope that things offset some of
25 these central limit theorem, that if you have enough

1 different variables you're going to be wrong on some,
2 high on some, and low on others, and you hope they
3 offset, and we certainly saw that type of effect.

4 But, again, there's a lot of uncertainty. And,
5 again, like when I looked at the results, you know, from
6 the modeling, I'm sort of wondering are the differences
7 significant, you know, within the range of uncertainties
8 for some of these things in 2030.

9 And another way of looking at it was when Amory
10 did -- reinventing fire, now. I mean his argument is
11 looking at the differences on these mega scenarios, that
12 they're not significant. You know, he has dollar
13 differences, but that the types of energy systems we
14 would need between now and 2050, that the differences
15 are really noise or uncertainty.

16 So I mean that's, again, something we have to
17 really focus on is when you do the quantification are
18 the differences significant or are they illusory.

19 And, you know, finally, I would suggest we
20 really have to think about this more in terms of risk
21 and hedging those risks. That, again, from any
22 portfolio you want a balance of -- you want to balance
23 your risk by hedging and so you're not going to put a
24 lot of -- you know, you're making bets one way or
25 another, and so you want to make sure at least the most

1 likely outcomes are hedged, even though you don't know
2 the precise outcome.

3 And so, again, I think one needs to think more
4 and more about renewables in the context of a hedging
5 strategy.

6 Anyway, those are certainly the types of things
7 I would encourage people to talk about. I sort of --
8 you know, when I asked Heather the range, again she was
9 saying it's about ten percent.

10 So, again, is ten percent with the modeling, you
11 know, is that -- it sounds like it's probably
12 significant but certainly, again, the further out you
13 go, the less confidence I would have that ten percent is
14 really a meaningful difference.

15 COMMISSIONER PETERMAN: What's the ten percent,
16 what ten percent are you referring to?

17 CHAIRPERSON WEISENMILLER: Well, she had talked
18 about the difference between an all-gas case and one
19 with 33 percent renewable.

20 So, again, it may be much more in terms of
21 hedging benefits than, necessarily, the precise dollar
22 values.

23 COMMISSIONER PETERMAN: So discuss.

24 MR. ALVARADO: Okay, we do have about 40 minutes
25 to cover these nine questions, but I think some of them

1 can be sort of grouped together.

2 A number of you have already -- starting with
3 the first question, we talked about what are the public
4 benefits that various renewable technologies provide,
5 and that's a two-part, and what benefit or benefits are
6 the most important drivers for the increased penetration
7 of renewable energy.

8 Now, a number of you have discussed, provided a
9 list of potential benefits. I was wondering, maybe, if
10 we can either narrow the focus in terms of key drivers.

11 Warren, you had a very good list in your slides.

12 MR. LEON: Well, let me say a couple of things
13 about this. Yeah, I think we had a lot of benefits
14 listed out there, but when you talk about the key
15 drivers of renewable energy development across the
16 country, I'll go back to what Margaret was saying
17 earlier.

18 That early on, in states across the country, the
19 key driver was just a general sense that renewable
20 energy was good.

21 Now, the main driver in states, influencing
22 state policy, is the issue of local jobs. But it tends
23 to be promoted in a fairly simple-minded way, and that
24 is people focus on the jobs they can easily count and
25 easily see. Where, you know, they could say, hey, this

1 facility opened up in this community and that led to 42
2 people working at that facility, and they don't count
3 the jobs, as being as significant, the ones that are
4 harder to count on.

5 You know, for example, if you reduce imports of
6 natural gas into the State, to what extent does that put
7 more money into people's pockets and thereby they spend
8 that money on something in society, and that causes more
9 jobs to be created.

10 Or to what extent do more distant renewable
11 energy facilities that come online, even if they're out
12 of state if they come online at a lower cost, and that
13 puts more money into people's pockets, does that create
14 more jobs than actually having the facility local where
15 you could count up those jobs.

16 So at the moment the main driver on the policy
17 front is this issue of local jobs.

18 One thing I would -- listening to this whole
19 conversation, I would suggest what might be a useful
20 exercise and to get folks -- you know, we could do some
21 of this, and folks at the National Renewable Energy Lab
22 could do some, is to put the issue of uncertainty into
23 three categories.

24 In terms of public benefits of renewables, you
25 could ask what are the things we feel pretty confident

1 we know about the public benefits of renewables?

2 There are certain things we know within a
3 relatively modest amount of margin of error.

4 Then, on the other side, there's a area of what
5 are the things that are uncertain and are inherently
6 uncertain and we're not going to be able to get too much
7 further in narrowing the band of uncertainty.

8 That goes back to some of the things that
9 Commissioner Weisenmiller was saying, that if the
10 benefit relies on an accurate prediction of the price of
11 fossil fuels 20 years from now, you're going to have
12 some inherent uncertainty in that prediction of that
13 benefit, and you've just got to live with that.

14 Then there's a third category where there's
15 currently uncertainty, but if we did a little more
16 analysis, we'd be able to figure it out and have a much
17 more accurate estimate of what the benefit is.

18 An example of that is this issue that
19 Commissioner Peterman talked about, which has to do with
20 bioenergy. That's a case where, with a little more
21 analysis, you could narrow down and have a much better
22 sense of what the benefit is and you could quantify
23 that.

24 The reason why I say more analysis is needed in
25 that area is that, first of all, there's been a

1 gradually improving understanding of how biomass impacts
2 issues like global warming. There's a much better
3 understanding now, than there was five years from now --
4 five years before now.

5 And then the second thing is when it comes to a
6 benefit related to bioenergy, a lot of it is very
7 regionally and locally specific. You can't just take
8 the study that was done in Massachusetts, or Germany, or
9 Oregon and assume it applies here in Massachusetts. But
10 with some analysis you could have a better sense of
11 what's going on in California.

12 So, I would suggest you try to put your benefits
13 into those three different categories of uncertainty and
14 focus on the ones where you can get a better
15 understanding.

16 COMMISSIONER PETERMAN: I think that's a
17 reasonable framework, thanks.

18 MR. ALVARADO: Jimmy, I'll focus on you. I
19 think your study using the SWITCH model, you do go out
20 quite a few years, but it appears that you've added
21 different types of renewable technologies, and given
22 some of the curves you probably could glean different
23 types of benefits.

24 I was wondering if you could maybe expand a bit
25 and focus on what your observations were in terms of

1 some of the more key benefits from your study.

2 MR. NELSON: So, one of the more interesting
3 things that I haven't shown here is that for our study
4 with the CEC, looking out to 2050, the kind of relative
5 benefits of peak and off-peak for solar and wind change
6 if you do more drastic changes to the energy system,
7 like electrifying vehicles and electrifying heating.

8 So, electrifying vehicles and electrifying
9 heating also combine with energy efficiency, which moves
10 your load down, in general, kind of in all hours but
11 perhaps most in the peak hours, because that's where
12 you're targeting, and end up making a nighttime peaking
13 in the winter system, as well as a summer peaking
14 system.

15 So, that changes your idea of whether solar is
16 kind of the marginal resource displacing the marginal
17 generator or not.

18 And I guess more broadly to answer this
19 question, one of the things that I was thinking about is
20 what is the most important driver for increased
21 penetration of renewable energy and it's hard to not
22 think of carbon as one of the most important drivers.
23 But if you think about what the State can actually do
24 for carbon, it's really rather a small percentage of
25 global.

1 And so it seems like what we're doing in this
2 State is helping to buy down carbon technologies and
3 also using our keen intellect to really go at driving
4 down these technology costs. So, that seems to be a
5 benefit that's difficult to quantify, but is a real
6 benefit of kind of disseminating this technology to the
7 world.

8 COMMISSIONER PETERMAN: I do have one follow-up
9 question for you, Jimmy. In the scenarios you presented
10 you had a high gas case and I didn't see, what were your
11 assumptions for PV costs, in particular, or wind costs
12 in particular, what was your most optimistic least-cost
13 assumptions there?

14 MR. OLSON: So these cases didn't include
15 anything like a sun shot scenario, where you get down to
16 like a dollar a watt for PV by 2020. I want to say the
17 central station PV cost got down to about \$2.20, \$2.50 a
18 watt by 2030 and I think wind is probably \$1.70 a watt.

19 So, the solar costs are less aggressive than the
20 sun shot, but then they're more aggressive than kind of
21 people who don't think that solar energy's going to get
22 down very far.

23 MR. ALVARADO: The second question gets into
24 health impacts, but maybe before we get there I was just
25 wondering if I can open it up to any of the other

1 panelists, if you have any comments about any of the key
2 benefits that you think we really should consider with
3 different renewables?

4 Well, let's jump to the health question, then.
5 So this question focuses on to what extent to renewable
6 energy resources reduce localized pollution impacts and
7 provide public health benefits?

8 I think that the natural first person to pick on
9 might be Ben, since he's done some health impact
10 studies.

11 MR. MACHOL: Okay, and I guess I would be --
12 going back to Warren's bucket of uncertainty, I would
13 put public health impacts in the pretty well known
14 category.

15 For fossil fuel power plants I mean we know how
16 much emissions are generated, we know the health
17 impacts, and for particulate matter that includes
18 decreased lung function, increased asthma rates,
19 bronchitis, heart attacks.

20 And from an economic value point of view, the
21 largest one would be premature death.

22 So, we can evaluate the health impacts and every
23 time EPA does a new air rule we look at the costs and
24 benefits of our rules, so we know how to monetize those
25 impacts, we do this routinely.

1 And it's only taking it one step further to take
2 those monetized health impacts and put it on a per-
3 kilowatt hour basis.

4 So, again, when you do that, California with
5 natural gas as a primary fossil fuel source here, it's a
6 relatively clean grid. But you still -- those monetized
7 impacts come in the one cent or so per-kilowatt hour
8 range.

9 And when you look at the impacts from imported
10 fuel, it's more in the three- to seven-cent range, which
11 still is a very significant number.

12 I mean if you look at other states, in Texas it
13 would be closer to 15 cents a kilowatt hour,
14 Pennsylvania, more like 50 cents a kilowatt hour. So,
15 looking at other states it looks great here, but still
16 there's a huge opportunity to look at those health
17 impacts, that you're avoiding, by switching to non-
18 combustion sources of fuel -- of energy, and building an
19 energy policy around that.

20 If you just compare, look for the lowest priced
21 alternative, including health impacts, you can really
22 make a huge difference in choices.

23 COMMISSIONER PETERMAN: Ben, a follow-up
24 question. So, you used the average California gas
25 emissions. I was wondering if you had any information

1 about looking at, perhaps, areas most concentrated in
2 the State with the least efficient plans, with the
3 peakers, who would that value change? You mentioned the
4 cent per kilowatt hour, would that be a higher value if
5 we're going to displace specifically in those areas?

6 MR. MACHOL: There is. I mean it's always going
7 to be the older plants, the less-efficient plants that
8 are going to have dramatically more impacts.

9 And if you're talking about something like coal,
10 which may not be relevant in-state here, but I mean it
11 could go from, you know, 10 cents a kilowatt hour to a
12 dollar, two dollars a kilowatt hour at that plant with
13 the least controls.

14 For natural gas it's a much tighter range and,
15 you know, 30 percent of the natural gas plants would be
16 more than two cents a kilowatt hour. So, 70 percent of
17 them would be, you know, much less, they would be two
18 cents a kilowatt hour or less.

19 So, a narrow range but, still, I would say two
20 cents is very significant when you're comparing
21 different energy alternatives.

22 COMMISSIONER PETERMAN: Thank you.

23 MR. ALVARADO: Well, there's a second part to
24 this question and the second part's dealing with are
25 there any particular locations or siting strategies to

1 maximize these health benefits?

2 And, Shana, I was wondering if you might have a
3 cut at this question?

4 MS. LAZEROW: Yes, thanks. Oh, did I turn this
5 off?

6 So, I think, as I said in my presentation, that
7 if you look at where the local capacity areas are in the
8 State and where the old OTC plants are, they tend to
9 kind of group over there along the coast.

10 And so in the current framework of -- you know,
11 and I have not actually projected out to 2030,
12 unfortunately, we'll have to rely over on Berkeley or
13 NREL to do those projections.

14 And, unfortunately, the pockets of really poor
15 air quality and, also, lack of access to adequate health
16 care, to adequate child care when your child is home
17 from an asthma attack, the lost days of work are all
18 very much concentrated over on the west side of that
19 east/west divide.

20 So to the extent that you are able to reduce the
21 operation of these older, more polluting plants on that
22 side the public health benefits, I think, would have a
23 much higher monetary value, which is not actually the
24 perspective from which my organization approaches human
25 impacts. But I realize that there's a value to

1 quantifying it in terms of dollars and sense for, you
2 know, people's lives and children's hospitalizations.

3 So, definitely I think that looking at targeting
4 the siting to reduce operation of the plants in these
5 already impacted communities has a great social benefit.

6 I think also there's a value to be had in
7 actually investing in communities in putting local hire
8 provisions into, say, feed-in tariffs that would target
9 communities.

10 And I realize that I'm transitioning back to
11 question one, which is what could be some of the drivers
12 for this. But you could have a very targeted feed-in
13 tariff policy that would provide an incentive for
14 installation specifically in targeted locations.

15 So that's one of the solutions that we're
16 looking at to see -- to trying to get some of these
17 benefits in low-income communities of color in
18 California.

19 COMMISSIONER PETERMAN: And if I may, following
20 up on Shana's point, because you mentioned benefits from
21 displacing, like you say, plants from the west side of
22 the State in Southern California, can Heather or Jimmy
23 speak to, in terms of their analysis, where the
24 expectation is around the renewables in the 33 percent,
25 and in your model, and just from our work? A lot of

1 it's in the desert, we know, and I'm thinking it's not
2 in the west part of the State, so I'm trying to see how
3 much disalignment there might be between where maybe the
4 health impact benefits would be versus where we're
5 siting it for other reasons.

6 MR. NELSON: I guess in our work you end up
7 retiring almost all of the old really nasty plants, and
8 the cost for moving a natural gas plant around is kind
9 of do you have transmission capacity or not.

10 So to the extent that you can build a little
11 more transmission and move a natural gas plant out of a
12 really, you know, highly populated area in the west,
13 then it might be worth it.

14 The solar kind of, yes, just in the east of the
15 State.

16 MS. SANDERS: Okay, I'll do my best on this one.
17 We did a zonal analysis to -- for assumptions of
18 different renewable penetrations.

19 In light of your question, earlier, I did look
20 up the amount of distributed generation that was assumed
21 in solar PV, and each of the cases varied.

22 And in most of the cases it was between 1,000
23 and 2,500 megawatts of solar. However, we did do an
24 environmentally constrained case that was 9,000
25 megawatts.

1 There are also assumptions of additional
2 combined heat and power.

3 In our studies we also included 7,000 megawatts
4 of energy efficiency savings and 2,500 megawatts of
5 additional demand response.

6 So what we want to say is that we are not
7 expecting all of the flexibility to come from natural
8 gas, but from other resources as well.

9 We did a high-load case just to make sure we
10 covered that bookend if energy efficiency didn't come in
11 at 7,000, but rather adding an additional 5,500 to look
12 at what that meant.

13 I just want to make one comment to like a feed-
14 in tariff, or something in a local capacity area. One
15 thing that's really important in a local area is that
16 generation has to be reliable.

17 And so if you're going to supply that from an
18 uncertain or a variable resource, you need to be able to
19 balance that locally.

20 So, I know we all know that, but if we think
21 about those incentives, we also need to think about
22 balancing that locally because of the constraint in
23 those areas.

24 COMMISSIONER PETERMAN: Well, thank you. I
25 think the local liability concern is one of the reasons

1 why you're seeing, perhaps, this disconnect between
2 where the displacement -- where we're displacing versus
3 where we're building renewables.

4 MS. SANDERS: Oh, in all of our cases we didn't
5 assume all of the retirements for OTC, we assumed some
6 would be repowered. But I'd need to go look into the
7 details of which case assumed which, retirements and
8 repowering, I'd have to get those details.

9 COMMISSIONER PETERMAN: And that was my
10 understanding as well, that an amount will be repowered,
11 so that's something to keep in mind as we move forward
12 and think about expectations around health benefits and
13 such.

14 MR. LEON: Can I jump in with one comment
15 related to this? You know, one thing, listening to
16 this, that might be a useful exercise would be to say,
17 look, here are the facilities that we think are the most
18 polluting, that have the highest health impacts, and
19 then just ask the question what is the cheapest way to
20 get those facilities offline.

21 And it may or may not be doing distributed
22 generation in those communities. It may be possible
23 that the way you get those offline is by some larger
24 facilities elsewhere, rather than small DG locally. It
25 may be DG locally, but just asking the question as how

1 do we get the facilities offline at the lowest cost
2 might get you to some answers that you could be using in
3 setting policy.

4 MR. OLSON: I was going to tackle that one, too.
5 I mean you could almost take the question up to a higher
6 level than that, even, which is how can you reduce
7 emissions from those facilities?

8 So one way might be to repower them with cleaner
9 facilities that have, you know, more emission controls.

10 And, you know, this issue of which plants get
11 displaced, local versus regional, you know, we are on a
12 regional grid. And so everything that we do at one
13 location affects how the grid operates at every
14 location, really, in the west. It's one synchronous
15 machine for the entire west.

16 And this question is really -- it's really
17 complicated when you put a facility in one place of what
18 actually gets displaced.

19 And particularly in load areas that are
20 constrained, like the L.A. Basin, or like the Bay Area,
21 it's almost a separate question of when do we need to
22 operate the peakers versus what generation renewable is
23 displaced?

24 Because, really, for the most part I think we're
25 operating those peakers for local reliability needs, to

1 meet the peak demand in that area and for transmission
2 stability.

3 There needs to be a certain number of machines
4 in an area spinning so that if there's a contingency on
5 the grid that there's enough response so that the whole
6 grid doesn't fall down and we have blackouts.

7 So that's sort of the reality of operations in
8 some of these areas. And that's why it may be that that
9 machine that's next door to you, it has to run during
10 that system. And it doesn't matter whether you're --
11 you know, what your load is, whether you have your
12 lights on or not, or whether you have a PV panel or not,
13 just to serve the general need in that local area that
14 plant needs to run.

15 And so, you know, if you put a solar panel on
16 your roof, that may be displacing a facility that's 50
17 miles away, or 100 miles away.

18 So I think we know, you know, generally that
19 renewables displace fossil fuel resources, they reduce
20 emissions generally.

21 I think it's another step to say from there, you
22 know, which specific plants are reduced, what are the --
23 how much are people's exposure to air pollution reduced
24 because of that renewable resource. And then even
25 another step to say what are the health impacts from

1 that.

2 CHAIRPERSON WEISENMILLER: Shana?

3 MS. LAZEROW: Yes, please. So I actually --
4 thank you. I had a couple of comments, I think this
5 really highlights the question of what is our goal in,
6 you know, transitioning. There are many benefits,
7 right, so the reduction of air impacts from the old gas-
8 fired fleet is one benefit.

9 Replacing them with new gas-fired power plants,
10 you know, having an electrical system that works is very
11 important to our community as we need our lights to turn
12 on and our hospitals to work.

13 But replacing that same plant with another plant
14 that's going to operate for another 40, 50 years is not
15 going to meet all of those goals, it would only meet the
16 spinning reserves goal.

17 So, that's what this body that is -- this is one
18 body that is supposed to be considering what these
19 benefits are.

20 I was over at the Public Utilities Commission
21 yesterday, their energy staff was doing a workshop and
22 we were actually talking about the different scenarios
23 that we ran in the 2010 LTPP and talking about the
24 inputs on those.

25 One of the things that the LTPP group was very

1 concerned to highlight was that the scenarios didn't
2 account for storage. So, and there was also a lot of
3 discussion about the results of the different scenarios
4 being very similar and kind of plain vanilla, which I
5 thought was interesting. It wasn't my point, but it was
6 one that came out of this workshop of people far smarter
7 than I am, who were hoping that the inputs the next time
8 around would really reflect some of this geographic and
9 other concerns.

10 So, I think that that working group is going to
11 be, obviously, operating at the same time as the IEPR
12 and coming out with yet more interesting, less plain
13 vanilla results.

14 COMMISSIONER PETERMAN: And I'll also add that,
15 you know, to your point, Shana, about goals. I mean the
16 RPS legislation has nine goals and pieces of intent in
17 it, and none of them are jobs or economic growth, right.

18 And so, you know, it's interesting the point
19 that it is true consistently what we've heard is a
20 demand for job opportunities.

21 And so, ultimately, we're never going to
22 optimize every single goal.

23 And what I'd like to do here and what we're
24 trying to do is since we're spending money, anyway, in
25 building this system can we get some more of those

1 benefits? You know, not dismiss one at the sake of
2 another, but acknowledging that they all won't be
3 obtained at the maximum, but we've got an opportunity
4 now to do it more smartly. And if we can think about
5 how to reduce air pollution, especially in communities
6 that have suffered more, then let's see what that would
7 cost and what we'd have to do.

8 So, the point's well taken but I'll tell you
9 it's -- people want a lot of things.

10 MR. ALVARADO: Well, we're really getting into
11 the question about displacement. And, actually, I want
12 to touch on something that you mentioned, Arne.

13 This is a complicated question. We've got local
14 reliability concerns, but you've indicated that whatever
15 decisions or new additions in California also affects
16 the dispatch in other regions, and possibly imports. I
17 was wondering if you could expand on what you were
18 saying about that?

19 MR. OLSON: Well, I think it goes back to the
20 question of so if you generate a megawatt hour of
21 renewables in a given location, what changes elsewhere
22 in the grid?

23 One of the studies that we did a couple of years
24 ago, working for the ARB on the 33-percent RAS study, we
25 wanted to try to estimate that question and wanted to

1 try to estimate what's the reduction in criteria
2 pollutant emissions in California as a result of moving
3 to a 33-percent RAS, and that's an obvious benefit if
4 you can reduce those emissions.

5 So, we started off with this idea that we would
6 take these wonderful tools that we have, these
7 production simulation models where you have, you know,
8 nearly every generator in the west represented, with
9 something like a relatively reasonable heat rate, and
10 the transmission constraints represented as well.

11 And go from that to plant-specific emission
12 factors so that we can really understand what exactly
13 happens when I put renewables in California.

14 And the first problem we had was that we
15 couldn't line up the plants that were in the production
16 simulation model with the data that the ARB had and
17 it's -- you know, of emission factors that it had in its
18 database because it's just the names are different, you
19 know, the plants aren't specified exactly right in the
20 production model. We just -- we tried for a while to
21 get there and we really couldn't. So, it was a
22 limitation of the tools that we have available to us.

23 So we ended up using something more like generic
24 emission factors by type, you know, old versus new CT,
25 versus CCGT. And that gave us, I think, some really

1 interesting and reasonable answers from the perspective
2 of the State of California.

3 It didn't really give us very interesting
4 results at any level of geography that was below that.

5 And to this question of in-state versus out-of-
6 state, those studies would seem to indicate that placing
7 renewables in California reduced generation on emissions
8 in California relative to other states on about a 50/50
9 basis. So, if we put renewables in California, we were
10 displacing half the gas plants in California and half
11 gas plants in other states.

12 Now, again, there's lots of limitations on those
13 tools and I think if we -- in knowing what I know now
14 about those tools, I think that probably overstates a
15 little bit the amount of reduction. And in other states
16 it probably does have more of an impact in California
17 than that.

18 But it still is a caution that, you know, we are
19 on a regional grid and a regional system. And the unit
20 that's marginal, in other words the unit that moves when
21 you do something, might not be the one that you expect.

22 MR. ALVARADO: Part of the question is
23 displacement, but I think renewables also will provide
24 some benefit when we talk about replacing other
25 generation resources. So, we got into the discussion

1 about some of the once-through cooling plants, those
2 will -- some of them may need to be replaced.

3 We're going to have a number of the coal
4 contracts that are probably going to expire, so I guess
5 our California utilities may need to procure some other
6 resources to replace those supplies.

7 Any comments about the notion about replacements
8 and the benefits?

9 MS. SANDERS: So when we think about displacing
10 other generation and counting renewable resources as
11 resource adequacy, that's leaving fewer plants available
12 with flexible capacity.

13 The other thing that's happening, that we need
14 to really keep in mind, is that the renewables will
15 likely, as the studies show, reduce the marginal cost in
16 the price.

17 And so there's going to be challenges in revenue
18 sufficiency for those flexible type resources as we go
19 forward. So that is something that we need to really
20 think about and our need for, you know, flexible
21 resources to balance and manage the uncertainty. So, I
22 just want to bring that up as part of the replacement.

23 MR. OLSON: You know, maybe I can summarize
24 this, generally. I think where we're at is that we can
25 very easily look at and see renewables as a way to

1 displace fuel use. And that I think is pretty -- it's
2 pretty well understood that it does that, it displaces
3 CO2 emissions, it displaces purchases of fossil fuel,
4 and it displaces criteria pollutant emissions.

5 I think the jury is still out on how much it
6 saves in terms of other benefits, like capacity, or
7 transmission and distribution savings.

8 And Warren made the point earlier, very well I
9 thought, that we can say in theory renewables should
10 reduce capacity needs, and they should reduce the need
11 to invest in new transmission and distribution
12 investments.

13 But the geography of the electric system is very
14 specific. A plant that's located in one area might
15 cause a transmission addition to occur, whereas one
16 that's 50 miles away, or 100 miles away, that's on a
17 different corridor might actually prevent or, you know,
18 displace an investment from occurring that would
19 otherwise have occurred. So it's very, very specific.

20 And, you know, in terms of capacity, I don't
21 think we know, yet -- you know, we don't have
22 renewables, yet, that are widely available that can
23 displace the services that flexible generators provide
24 in terms of integration and in terms of being there, and
25 being reliable, and being available when you need them.

1 Photovoltaics don't have that characteristic or
2 that ability, yet. Some of the solar thermal resources
3 would. Those are spinning machines that do have inertia
4 that if you can do a little bit of gas and, say, a
5 little bit of storage, could be much more dispatchable.

6 But those resources are, themselves, going to be
7 very constrained in terms of where they can locate, just
8 in terms of environmental impacts, and in terms of
9 costs, and in terms of the resource quality that's
10 needed to support that type of an investment.

11 So, I don't think we're to the point, yet, where
12 we can really think of renewables as truly a substitute
13 for some of the gas-fired, and flexible, and locally-
14 sited resources that we still are and will rely on.

15 MR. LEON: If I can make a comment about that
16 issue of transmission and distribution, when I was
17 directing the Renewable Energy Trust in Massachusetts,
18 we did a project to try to get utilities to defer
19 distribution upgrades because of the implementation of
20 distributed generation, and we found it was really hard.

21 But the way it worked was to sit down with the
22 utility company, on a sort of feed-a-line-by-feed-a-line
23 basis and go over their schedule of where they were
24 predicting they were going to have to make upgrades.

25 And there was some that they said, hey, we're

1 going to have to make an upgrade in the next two years
2 on this line and there's nothing you can do fast enough
3 to make a difference.

4 But there were some we could identify where they
5 said, hey if you could guarantee X amount of distributed
6 generation in this neighborhood, that means we could
7 avoid having to make that distribution system upgrade in
8 this area.

9 But it would involve a real partnership between
10 the CEC and the utilities to identify specific locations
11 and to then guarantee in some way that you were going to
12 give the amount of distributed generation needed so that
13 they could stop their planning for upgrades in that
14 particular location.

15 COMMISSIONER PETERMAN: I think that's a good
16 observation that there are some benefits that are
17 automatic, and then there are some benefits that also
18 require some stakeholder action to make them come to
19 pass, and that's something for us to give some thought
20 to.

21 And to your point earlier, Arne, I like to think
22 about renewables plus what displacing gas plants, and I
23 think that's where we need to take the conversation, and
24 otherwise make a call and we'll talk about this in the
25 retail rate impact and cost workshop a bit.

1 But looking at the all-in costs of what that
2 substitute product needs to be, and not just focusing on
3 the renewable component, but adding integration
4 component as well, and seeing if you can get that unit
5 to be cost competitive.

6 Al, back to you.

7 MR. ALVARADO: Well, I was just reminded that
8 we're coming close to the allocated time and there is
9 quite a few other -- there's several other panels that
10 we want to discuss. And we've barely just even
11 scratched half of these questions, let alone drill in
12 much deeper.

13 I mean I could have a lot of questions. Ben, I
14 would have liked to have quizzed you more about the
15 actual values that you placed on some of the health
16 benefits.

17 Maggie, I really -- I haven't had a chance to
18 sort of pick on you but, you know, you brought up some
19 issues about uncertainty, also.

20 In Suzanne's comment, she did remind me to
21 encourage each of you, if you could please file
22 comments, more detailed comments in response to these
23 questions, I think it would be very important to feed to
24 the record of the workshop.

25 COMMISSIONER PETERMAN: And, Al, if I may, I'm

1 going to put the panel quickly on the spot, and that
2 forewarns all the panels to come up. And if you don't
3 have an answer now, you don't have to give it. But if
4 you were to throw out one recommendation related to this
5 issue, that the Energy Commission should consider or the
6 other stakeholders should consider what is it? And it
7 can be as crazy or as boring as you want it to be.

8 MR. ALVARADO: Maggie.

9 MS. MANN: Well, I don't know if this would be
10 my one recommendation, right, you know, how can I come
11 up with one, but I think that --

12 COMMISSIONER PETERMAN: Your first, how about
13 your first recommendation? We'll say it and that puts
14 everyone off the hook.

15 MS. MANN: The first that comes to mind. The
16 first one that popped to mind is that we haven't really
17 discussed here the integration of the transportation and
18 electric sector.

19 And I think with the very, very quickening
20 evolution of the electric and hybrid-electric plug-in
21 vehicles, and the reduction in cost, and everything
22 that's going on with that is that in your dialogue about
23 how to take into account the benefits of renewables, and
24 how to deploy more renewables in the State to not
25 exclude the transportation sector. Because that could

1 really change the way we look at how electricity is
2 deployed.

3 MR. MACHOL: And I would say, I think I already
4 said this, but I'll take this opportunity to say it
5 again, but just to encourage you to consider a health
6 adder that would allow you to fully account for the
7 differences between energy alternatives.

8 MS. LAZEROW: I would absolutely second what Ben
9 said and consider that adder might well be used to
10 offset something like a feed-in tariff that would
11 provide an economic driver to encourage renewables.

12 MS. SANDERS: From our perspective it always
13 comes back to flexible capacity and the ability to
14 balance these renewables, especially locally. So, if
15 you're talking about distributed generation and if it's
16 PV, it doesn't solve the problem on its own.

17 So, you know, the consideration of flexible
18 capacity in local areas.

19 MR. LEON: I would say my one recommendation is
20 what I said before of trying to develop the list of what
21 are the things you already -- or someone already knows
22 with a high degree of confidence, and what are a few
23 things that you need answers to in the short term, that
24 you can get answers to relatively easily with additional
25 studies and just focus on those few questions.

1 MR. NELSON: So, I guess my recommendation
2 pertains to national security people a lot of times get
3 the idea that moving to clean electricity gets us more
4 nationally secure. And that's not really the case
5 because all the fuels are produced domestically.

6 But getting to Margaret's point, if we electrify
7 transportation it actually has the co-benefit of
8 reducing our dependence on oil. And, you know, that has
9 other benefits, like reducing our dependence on oil
10 price shocks, as well, not just the national security
11 benefits.

12 MS. MANN: And if I can just add to that, there
13 are benefits with the electrification of transportation
14 on things like health.

15 MR. OLSON: I think my recommendation may seem
16 like it's going to come a little bit out of left field
17 because it's not going to be related to anything I've
18 said previous on this panel.

19 But my -- and I think some of this work is
20 already going on, but my recommendation would be to
21 identify those locations where you have that
22 intersection of high quality renewable resources and
23 land that is either already degraded, or sort of not
24 pristine, not of high environmental value. That seems
25 to me to be the highest priority target for where we

1 should be targeting location of renewable resources.

2 I think that's an easier benefit for us to grasp
3 and to quantify than, you know, trying to quantify a
4 local emission benefit.

5 MR. MACHOL: You know, on that note we're
6 working with NREL and we're mapping degraded lands
7 across California, fallow ag lands, and there's 10,000
8 plus in the State. So, we're looking at that map
9 compared to renewable resources and certainly want to
10 utilize that as much as possible.

11 COMMISSIONER PETERMAN: Great, thank you. Al,
12 any recommendations?

13 MR. ALVARADO: Well, I'm more of the systems
14 person and I'm very interested in terms of, you know, we
15 didn't get into a discussion about tools but, you know,
16 ultimately not only our agency, but with input from
17 everyone else I do think, you know, that something
18 similar to maybe, Jimmy, what you've done of doing a
19 total system type analysis, Arne, or even the ISO
20 dealing with some of the systems reliability aspects.

21 I think that would be one step in the direction
22 towards trying to identify how best to maximize the
23 benefits of any of the renewables.

24 With that --

25 COMMISSIONER PETERMAN: Well, with that, thank

1 you, great job moderating. Thank you to all the
2 panelists, that was very interesting. Any additional
3 comments you want to provide, written or otherwise,
4 please do.

5 And all the topics raised here today feed into
6 the six other workshops we have planned. So, if you
7 liked this panel, stay tuned for the next 30.

8 MS. KOROSSEC: All right, if we can ask the
9 members of the Panel Two and the moderator to join us up
10 at the table, please.

11 We'll be starting in just a moment, when
12 Commissioner Peterman returns.

13 MR. O'NEILL: All right, everybody, we're going
14 to go ahead and get started.

15 My name is Gary O'Neill, with the Renewable
16 Energy Office. This is the second panel of the day,
17 we're going to try to wrap up at 12:30 so everybody can
18 go off to lunch.

19 On this panel we'll be discussing the State and
20 local policies and programs to capture the public
21 benefits of renewable energy.

22 State and local agencies are charged with
23 balancing the land and natural resources with the
24 impacts of their use to their citizens, neighboring
25 citizens, and the environment.

1 Through this panel we would like to identify and
2 explore the various renewable energy technologies, the
3 benefits that influence policy decisions at these
4 agencies and what your agency sees as the resources and
5 benefits that complement your charge.

6 We'd like to also discuss what the challenges
7 are to realizing these renewable energy benefits on the
8 ground and what needs to be done to overcome these
9 challenges.

10 With that I'm going to go ahead and turn it
11 over, I'm going to ask each one of you to provide a
12 five-minute, brief introduction.

13 And we'll go ahead and start with Steve, the
14 California Air Resources Board.

15 MR. CLIFF: Thank you. Good morning, I'm Steve
16 Cliff; I'm Chief of the Climate Change Program
17 Evaluation Branch at the California Air Resources Board.

18 And I'm here today to discuss renewables in the
19 context of the greenhouse gas cap and trade program.

20 The Cap and Trade Program works by establishing
21 a firm cap on emissions, which is a strict limit on
22 emissions, on greenhouse gas emissions from all covered
23 sources.

24 The cap declines each year, which ensures that
25 reductions in greenhouse gas emissions are achieved.

1 It's important to note that no facility-specific
2 requirement to reduce emissions under the program, nor
3 is there a limit on the emissions from any single
4 entity.

5 In the first phase of the program covered
6 entities will include any stationery source of
7 greenhouse gas emissions at or above 25,000 metric tons
8 of carbon dioxide equivalent annually.

9 These sources include the State's largest
10 emitters, such as power plants, refineries, cement
11 plants, and crude petroleum production.

12 Imported electricity is also covered in the
13 first phase.

14 In 2015 fuel providers, such as natural gas
15 utilities, and distributors of gasoline and diesel fuel
16 are added to the list of covered entities, and they must
17 account for the fuel that they sell for consumption in
18 California.

19 Because the cap and trade program causes dirty
20 energy to cost more, clean energy, such as that from
21 renewables is incentivized.

22 The regulations has mechanisms to ensure the
23 incentive for clean electricity delivered to the
24 California grid is recognized when it avoids greenhouse
25 gas emissions in the generation of that electricity.

1 The cap is in force with tradable allowances,
2 where each allowance equals one metric ton of greenhouse
3 gases.

4 Those covered by the program submit the
5 allowances to the State in an amount equal to their
6 greenhouse gas emissions during each phase of the
7 program.

8 Entities can trade these allowances among each
9 other, which enables them to find the least expensive
10 reductions and comply in a manner that makes the most
11 sense for them.

12 Each year, ARB will issue allowances directly.
13 Initially, we allocate allowances for free to industrial
14 producers to make sure they can remain competitive in a
15 global marketplace and to ease the transition into the
16 program.

17 We also provide allowances for free to utilities
18 to protect electricity ratepayers from program costs.

19 Some allowances are set aside in a reserve
20 account to protect against the potential for high
21 prices.

22 The remaining allowances go to auction, where
23 the money from auction can be used by the State to pay
24 for emission reducing measures consistent with AB 32.

25 We estimate the potential proceeds to the State,

1 from the auction of allowances, in the range of \$16
2 billion to \$70 billion in total between now and 2020.
3 We've estimated nearly \$1 billion will be available in
4 fiscal year 2012 through 2013.

5 ARB will be holding a workshop in the near
6 future to discuss potential uses for revenue generated
7 from the auction of allowances and, ultimately, the
8 appropriation of these funds will be determined in the
9 budget process.

10 Imported electricity to meet the RPS standard is
11 recognized by the program by allowing an adjustment to
12 an importer's compliance obligation for that energy.

13 Likewise, zero emitting, renewable energy
14 generated in California avoids a compliance obligation
15 altogether.

16 Renewable electricity is incentivized because it
17 has no carbon cost for its generation, but competes with
18 greenhouse gas-emitting electricity that will face these
19 costs.

20 The Cap and Trade Program also incentivizes
21 biomass-derived energy by exempting emissions from
22 verified biomass from a compliance obligation.

23 In addition, reduction of methane emissions to
24 the atmosphere, that are quantified using ARB-approved
25 protocols may also generate offset credits, which can be

1 used by an entity for a portion of their compliance
2 obligation.

3 Lastly, we recognize that once the Cap and Trade
4 Program is in place voluntary renewable electricity
5 production no longer reduces emissions overall.

6 For this reason we have rules in the regulation
7 to retire some allowances to account for voluntary
8 renewables so that they may continue to reduce
9 greenhouse gas emissions.

10 Thank you.

11 COMMISSIONER PETERMAN: A quick question for
12 you, Steve. You mentioned a couple of the ways in which
13 the Cap and Trade Program incentivizes bioenergy and
14 methane reduction, are there any geographic factors
15 considered or variation in the implied incentive, based
16 on geography?

17 MR. CLIFF: For renewable electricity --

18 COMMISSIONER PETERMAN: Right.

19 MR. CLIFF: -- that's delivered to the grid, no.
20 Essentially, if that renewable electricity is to meet
21 the RPS obligation, then that can be netted out from an
22 obligation for those who import.

23 Likewise, if it doesn't emit in the generation
24 of electricity in-state, there's essentially nothing to
25 report and, therefore, there's no compliance obligation,

1 so in that way, no.

2 If, for example, you had renewable energy that
3 isn't to meet the RPS obligation, that wouldn't avoid a
4 compliance obligation. Nevertheless, that also wouldn't
5 be electricity that's reported to California that would
6 be essentially out of the WECC.

7 COMMISSIONER PETERMAN: I see. One of the
8 issues raised in the first panel is just that even with,
9 say, something like biomass the environmental benefits
10 could vary across the State due to location.

11 And so it seems like, at least with the approach
12 so far, that there's acknowledgement of the value of the
13 biomass, for example, but that's not differentiated
14 based on location within the State.

15 MR. CLIFF: That's right. For cap and trade
16 it's really a statewide look. Cap and trade's really
17 meant to complement other policies.

18 COMMISSIONER PETERMAN: Right.

19 MR. CLIFF: So to the extent that other policies
20 would restrict a particular type of source of
21 electricity in a given region then, you know, that would
22 be fine for cap and trade because we're looking at
23 emissions, not reductions.

24 COMMISSIONER PETERMAN: Thank you.

25 MR. HOUSTON: This is Jim Houston with the

1 California Department of Food and Agriculture and the
2 Deputy Secretary for Legislation and Public Engagement.

3 Our department is a little short on authority in
4 this area, but we are long in enthusiasm and energy.

5 And so what -- you know, we do have a couple
6 things that we're trying to do, and what the Secretary
7 likes to say is, you know, we can always convene
8 meetings.

9 So, the sort of primary function that we serve
10 right now is the Fed/State Task Force on Digesters. So
11 for the past year we've been heavily engaged with both
12 the Federal government and regional air districts in
13 trying to find ways to get more digesters in the State.

14 As many of you know, the ratio of digesters to
15 cows in California is significantly lower than it is in
16 pretty much any other state. Wisconsin, primarily, is
17 significantly far ahead, so we're trying to rectify
18 that.

19 I mean we do face much more significant
20 challenges, specifically air quality, than Wisconsin
21 does, which have impeded our progress, but we are
22 undaunted.

23 So, one of the things that we've been focused on
24 in that is really this question of trying to quantify
25 the benefits of biomass, specifically.

1 You know, from our perspective one of the really
2 neat things about biomass is that it does have these
3 benefits on a local scale.

4 You know, solar and wind are very valuable but
5 their benefits primarily come from displacement of
6 fossil fuel. There's nothing inherently beneficial
7 about having a solar facility on a plot of land.

8 What digesters attempt to do, and I understand
9 there are some concerns with the whole internal
10 combustion aspect of biomass, but it takes an existing
11 externality and harnesses that to, you know, displace
12 fossil fuel burning somewhere else.

13 So there are some local benefits that come from,
14 you know, utilizing that waste, not trucking that to a
15 landfill, not burning it on a field, which is much more
16 difficult now than it used to be, obviously. And you
17 have water quality benefits.

18 But on the flip side, it's much more difficult
19 to quantify those benefits because, you know, air -- air
20 benefits have been widely studied and understanding the
21 displacement of greenhouse gas, something we're very
22 well steeped in.

23 But understanding soil and water quality
24 improvements take a lot more resources. And due to our
25 budget situation, our resources are low. But as I said,

1 we can convene meetings.

2 And we're currently working with our Federal
3 partners and State partners to try and get projects off
4 the ground, in the Central Valley, that will look at
5 these benefits, quantify them and, hopefully, utilize
6 that to either, you know, drive policy in the
7 Legislature, here at the CEC, or the PUC so that
8 policymakers can have real numbers that they can use to
9 make decisions, as opposed to speculation.

10 I mean we -- you know, I think we're in that
11 third category of, you know, we need a little bit
12 further analysis.

13 COMMISSIONER PETERMAN: I was just thinking
14 that, actually, that's what I whispered to Jim over
15 here, on my left.

16 MR. HOUSTON: Yeah, I thought that that
17 framework was very helpful. So, I think that's what
18 we're trying to do right now, so look forward to
19 discussion. Thank you.

20 MS. SANDERS: Hi, this is Heather Sanders with
21 the California ISO. From this perspective, again, I
22 would point back to the ISO's role in renewables and
23 it's really about reliability, and reliably integrating
24 as much renewable generation as we can.

25 So, in the development of our markets, in the

1 design and policy around our markets we are really
2 looking to incent additional resources, other than just
3 conventional generators to come in and provide the
4 flexible capacity that I continue to talk about in
5 reference in our markets, including demand response,
6 energy storage, virtual power plants, which is a
7 combination of generation, demand response, energy
8 storage, fuel cells, and so forth to provide resources
9 into our market.

10 So our policies are really around, you know, how
11 can we integrate these renewables most reliably in this
12 system, how do we minimize the cost of those?

13 How do we enable additional resources to provide
14 the flexible capacity that we'll need based on the
15 renewable generation that's coming into our market.

16 So, I don't have a lot more to add. As I
17 outlined the studies we're already looking at to ensure
18 that we can incorporate these renewables. And, again,
19 as I'm substituting for Mark Rothleder, I'll do the best
20 I can to answer the questions of the panel. Thank you.

21 COMMISSIONER PETERMAN: Well, acknowledging that
22 you're substituting and doing double duty, because this
23 is your second panel, and I imagine you might be on all
24 of them, it's always good to have ISO at the table.

25 One thing to think about, following up on Jim

1 Houston's comments, so they're working with digesters
2 and trying to look for opportunities there in terms of a
3 base load biogas.

4 And in terms of flexibility and the needs of the
5 ISO, is there a minimum aggregated, you know, megawatt
6 quantity of resources we need to have it be flexible.
7 So we've got, perhaps, a couple kilowatts in some of
8 these systems, or less than one megawatt. You know, how
9 are you thinking about biogas resources in general to
10 meet that need?

11 MS. SANDERS: Okay. Well, not specific to
12 biogas, but to expand a little bit more on flexible
13 capacity needs, what we're working on right now in the
14 framework of the CPUC's Resource Adequacy proceeding and
15 the Long-Term Procurement Planning proceeding is to
16 define what flexible capacity means.

17 We've defined three general categories. One is
18 maximum continuous ramping and what that means is what
19 is the capability that we need of a fleet to
20 continuously ramp up to meet the load.

21 And from last year's data we need -- in August
22 we had a continuous ramping up, meaning the energy we
23 needed to supply the net load, load minus wind, minus
24 solar occurred over an 11-hour time period of over
25 18,000 megawatts. So, the ramp rate of that was 27

1 megawatts per minute.

2 The second category that we need, from a
3 flexible capacity perspective, is load following. And
4 load following is when you get into that inter-hour time
5 frame and you're balancing the uncertainty relating to
6 the renewables that come onto the system, you know,
7 what's the maximum amount you need to be able to recover
8 in that inter-hour period?

9 And setting last year's actual numbers, because
10 that's what we have, with the amount of renewables we
11 have on the system it was about 4,500 megawatts. And it
12 was in December. We like our Christmas lights in
13 California, so we need to be able to handle that maximum
14 ramping.

15 And then the third category of flexibility's
16 about regulation. That's our four-second ability to
17 maintain our ACE, our area control area and maintain
18 frequency within the State of California. And that's
19 much faster. I can't remember the numbers off the top
20 of my head, but it's a much faster resource.

21 So in terms of flexible capacity, we're working
22 to find how many megawatts we need by month because it
23 depends, you know, on how much wind, and solar and
24 uncertainty your net load is over the different months,
25 and so we've defined that.

1 Now, in terms of a base load resource, it
2 depends on its dispatchability, its ability to come up
3 when it's needed, how fast it comes up and then also
4 come off when it's needed.

5 And that's one of the things we have trouble
6 with right now, in over-generation situations, is that
7 when the wind is blowing very, very hard at night, which
8 it does, and we have every base load generation on its
9 minimum, there's nowhere to go.

10 So, the ability of some resources to come off,
11 as well, is also important.

12 COMMISSIONER PETERMAN: Thank you. I think
13 you've hit on the key point. Yeah, we talk a lot about
14 the actual resources, solar, wind, or digester gas, but
15 for your purposes the technology that they're running
16 through is going to be key into fitting into one of
17 those categories.

18 MS. SANDERS: Yeah, and I think that's really
19 important from the ISO perspective. Our market policy
20 and our market design really attempts to be resource
21 agnostic because we have different needs that we're
22 trying to define, and the resources should be able to
23 come to market on an equal footing based on their
24 capabilities.

25 COMMISSIONER PETERMAN: Thank you.

1 MR. O'NEILL: Thank you, Heather.

2 Tim, please.

3 MR. SNELLINGS: Okay. Hi, good morning, Tim
4 Snellings with Butte County. Good morning,
5 Commissioners.

6 Well, Butte County, everybody knows where that
7 is, 70 miles north of Sacramento, and we were actually
8 one of the early adopters of solar, putting in a one-
9 megawatt PV system about eight years ago to help our
10 government center meet its energy needs.

11 Just this last summer Butte College announced
12 that it was the first grid positive college in the
13 country.

14 So, there's a lot of energy and enthusiasm about
15 energy, renewable energy in Northern California, so just
16 wanted to put that right out there.

17 I'm also the President of the California County
18 Planning Directors Association and in that role I
19 represent 58 California County Planning Directors.

20 And our mission really is to facilitate best
21 practices around California counties and to make sure we
22 don't go about reinventing the wheel.

23 So, when somebody identifies a process that is
24 working in local government, we want to utilize that
25 throughout California and create some consistency and

1 standardization.

2 There are two phases of local regulation at
3 cities and counties that I want to just make sure we all
4 understand, I guess, because a lot of reference is made
5 to "regulatory problems."

6 And the two processes are -- the first question
7 is, is the proposed use allowed on the land? And this
8 is known as the land use process or also called the
9 planning process, so that's the entitlement stage.

10 The second process is if the answer is yes to
11 that question then we move into the building permit
12 process, which we also refer to as the building permit
13 process.

14 People complain, though, about regulatory
15 issues. And so I always ask them, well, what are you
16 referring to, are you referring to the planning process
17 or the building process? Because they each have their
18 own challenges and hurdles.

19 So, let's just talk about the planning process
20 for a second. About a year ago I surveyed our
21 membership and asked them some questions about what size
22 of solar PV projects are allowed by right in their
23 jurisdictions, what size need use permits, what are the
24 rules for proposed PV on ag land, how are they
25 addressing Williamson Act contracts, which is our

1 Farmland Preservation Program in California that
2 protects millions of acres of conversion to non-ag uses
3 in exchange for tax relief.

4 And found out that around California there were
5 a lot of different answers; that people were either
6 doing it differently in their counties, across county
7 lines, or they didn't have rules and regulations in
8 their zoning codes at all, that general plan policies
9 put nothing on the really -- the implementation side.

10 So in short, we convened a lot of people around
11 California, about 80 people, the Governor's Office,
12 Planning and Research was helpful, the CEC was helpful,
13 CSAC, League of Cities, Solar Industry, and we had over
14 80 people help us draft what we -- what came to be known
15 as the Model Solar Energy Facility Permit Streamlining
16 Ordinance.

17 And I thought it would be done in four meetings,
18 it took 15 meetings. So, on February 3rd, the California
19 County Planning Directors adopted this. And really what
20 it does is it creates a framework for each county to
21 consider how to utilize this model ordinance for their
22 own local adoption.

23 And if you go to the next slide, I'll show you
24 one of the key things. Everybody can read this okay,
25 everybody understands it, no questions?

1 This is actually very helpful to a planning
2 department in California. And what this does is this
3 sets thresholds for how we process projects. And
4 through this process we invented four tiers of
5 permitting. And the lowest tier, tier one, is for
6 rooftop solar or up to half-acre ground-mounted solar.

7 And, you know, that's the low-hanging fruit that
8 we all talk about. Every place that can have rooftop
9 solar, we should make it as easy as possible in a city
10 and county to accomplish in California, and that's
11 really just going through a building permit process.

12 And, you know, in Butte County we issue those
13 kind of permits online and on our website 24/7. And so
14 there's a lot of encouragement around California to do
15 just that in cities and counties, to make tier one
16 permits easy to install, whether it's commercial or
17 residential rooftops.

18 Tier two is -- and this is where we spent
19 probably the most of our debate and discussion in these
20 meetings was allowing a process, we have an
21 administrative process in counties, and it's really
22 where there are standards that if you meet these
23 standards -- it's very similar to administrative permit,
24 a building permit -- if you meet these standards, we'll
25 issue you a permit.

1 And so the question is what's the threshold that
2 we can go up to without triggering CEQA? And we
3 identified, and that's what that table really seeks to
4 address, where all -- where you see all those APs, we
5 identified up to 15 -- up to five acres or 15 percent of
6 solar PV on even prime farmland would be allowed with
7 just a building permit, through an administrative
8 process.

9 And we had the Farm Bureau, and Large Scale
10 Solar, and we went at it pretty good and debated, and
11 this was the compromise that was settled on.

12 And so this tier two is a very important part of
13 the distributed generation strategy. And this allows a
14 farm to have some solar PV to offset whether it's pump
15 usage, or some commercial farm operations they may have
16 on site, refrigeration, things like that.

17 Tier three is kind of interesting because it
18 triggers CEQA, but through a lower level hearing
19 process. Typically, in most counties, we have an
20 administrative hearing office, known as a zoning
21 administrator, and that's a more streamlined process
22 where we think the answer's yes, we use that process,
23 and so we think there's not as much controversy.

24 And so we identified a threshold and, really,
25 this is up to 30 acres of non-prime ag land is where

1 this minor use permit process, through a zoning
2 administrator, is recommended to be used.

3 And then above that is what we call tier four,
4 and that's where you get into full-blown use permits,
5 CEQA, all the issues of visual impacts, ag, the
6 Williamson Act, decommissioning, all of those issues are
7 going to be addressed on the larger-scale projects.

8 And so I think the main thing I wanted to just
9 introduce with is the accomplishment of this and the
10 partnership that we utilized to create this. It was a
11 real spirit of compromise.

12 And the important role that local government
13 plays in this discussion, all of these rules and laws
14 are going to be implemented locally, for the most part,
15 unless it's State or Federal land.

16 And so with 500 cities and 58 counties, we need
17 to really coordinate, and I think partnership is the key
18 between State and local, and I think there is a
19 framework that's been established to do just that.

20 Thanks.

21 COMMISSIONER PETERMAN: Well, congratulations
22 on, first, getting that much collaboration amongst the
23 counties and getting a standardized ordinance out there,
24 something I'm very glad to hear about.

25 And in the discussions you've been having has

1 there been discussion about perhaps allowing faster
2 permitting for projects that provide certain local
3 benefits or other environmental benefits?

4 MR. SNELLINGS: It's all about speed in
5 counties. And on the economic development front that we
6 heard talked about, it's all about location, too.

7 And one of the strategies we came up with is the
8 idea of creating an overlay, a renewable energy overlay
9 and that would be an area that we could -- if we had
10 funding in cities and counties we would study this area,
11 it would be a kind of a subset of a general plan that
12 would be the prime locations.

13 We heard one of the early panel members talk
14 about, you know, the areas where you're on marginal
15 farmlands, brown fields, other non-prime soils, and
16 you're also close to transmission lines or substations
17 with capacity. We want to find those locations and then
18 make it as easy as possible.

19 And if we did some advanced planning work we
20 would be able to facilitate a more streamlined process.

21 COMMISSIONER PETERMAN: And also, have there
22 been any discussions about more model permitting
23 procedures for some of the bioenergy projects?

24 MR. SNELLINGS: I think the next area we're
25 tacking is wind. And I think there's enough information

1 out there that probably what we'll do is pull together
2 best practices around California, and we'll convene a
3 group of people, also, to review that and make sure
4 we're on target.

5 COMMISSIONER PETERMAN: Thank you.

6 MR. O'NEILL: Thank you.

7 MR. SNYDER: Hello Commissioners, Bill Snyder
8 with the Department of Forestry and Fire Protection.
9 I'm the Deputy Director for the Resource Management
10 Program areas.

11 I'm here today, I think basically, from our
12 perspective our role in this is several, it's kind of
13 like looking at a four-legged stool, if you will.

14 Certainly, we're directed in the Public
15 Resources Code to provide for facilitation of energy
16 production using biomass resources, and that
17 facilitation comes in a number of forms.

18 The second leg of that stool is looking at our
19 assessment responsibilities where we are required, by
20 the Public Resources Code, to assess resources
21 statewide, some of which include biomass resources and
22 bioenergy production.

23 The third piece of this comes through our
24 regulatory role relative to commercialization of biomass
25 and removal of biomass from forest lands within the

1 State.

2 And the fourth and probably biggest issue that
3 we have an interest with is respect to fire protection
4 and the threat that some of these extraordinarily high
5 levels of biomass on these forested landscapes pose to
6 communities.

7 I have provided a copy of a number of things for
8 your reference, which include just an overall assessment
9 on the importance of biomass and biomass removal, as
10 well as some products from our Forest and Resources
11 Assessment Program, or Fire and Resources Assessment
12 Program that looks at the biomass resources.

13 And I think one of the things as you look at
14 that then are some chapters there relative to the
15 emerging markets and where those locational
16 opportunities might reside relative to potential
17 utilization for woody biomass.

18 As we look at things currently, there is a lot
19 of fuel reduction work that is going on. Unfortunately,
20 while the Forest Service is currently doing 100,000
21 acres a year and the department is doing up to 15,000
22 acres a year, there's not a lot of that, that
23 economically can be moved off those sites, and moved to
24 woody biomass plants.

25 Recognizing that that is an issue, I think we've

1 been working closely with a number of folks, Placer
2 County, to look at what we might be able to do to look
3 at economics associated with that.

4 We know currently we have about 800,000 bone-dry
5 tons of woody biomass that are used for energy
6 production in California. We also know that there's
7 probably an untapped potential of another 2.8 million
8 bone-dry tons, annually, that could be brought into the
9 market.

10 So there are a lot of potential there, but there
11 are some significant challenges. And I think, you know,
12 as we look at the challenges there's certainly
13 uncertainty over the future energy prices, which affect
14 biomass value.

15 And biomass production and kilowatt production
16 generally with biomass is higher than other forms of
17 energy production. So that's a significant hurdle to
18 us, currently.

19 Certainly, there are some uncertainties
20 regarding supply, particularly from public lands
21 relative to biomass.

22 There's opposition to siting of new biomass
23 facilities. We have permitting barriers, certainly in
24 terms of just the cost and time to get through
25 permitting hurdles.

1 And then there are public concerns regarding
2 impacts and sustainability of the biomass harvesting on
3 forested landscapes.

4 As we looked at the process through our 2010
5 assessment, we found that of the areas, and communities,
6 and landscapes that are threatened by high levels of
7 biomass and could benefit from some biomass treatment,
8 only about 22 percent of those currently lie within a
9 reasonable distance of a woody biomass plant in order to
10 facilitate getting some of that treatment done.

11 We also looked at what benefit there would be at
12 a little higher value for the kilowatt production and
13 estimated that every one cent of kilowatt value could
14 provide an additional \$10 per ton that would assist in
15 the delivery of biomass to biomass plants.

16 So there's a lot of potential there and I think
17 as we look at some of the existing facilities, look at
18 some of those that we know have made applications, as
19 well as look at the potential for small distributed
20 facilities that are looking at technologies using
21 combined heat and power, there's a lot of potential
22 there, it's just how to get to it.

23 So I think I'll probably stop now. In your
24 document you have a PowerPoint that basically shows and
25 quantifies some of the biomass resources and shows some

1 of the locational issues that you are looking at. And,
2 clearly, biomass potential really resides primarily in
3 the northern part of the State and is associated with
4 forested resources.

5 There's a lot of mapping and it will show you
6 what we were looking at in terms of evaluations on
7 wildfire threats to communities, as well as wildfire
8 threats to forested landscape, and forest health.

9 And based upon those we made some projects of
10 total acres that would need to be treated.

11 You should also have two excerpts from the 2010
12 Fire and Resource Assessment. One that talks about
13 emerging products and services, one of which is woody
14 biomass and then the second part is the strategy in
15 terms of how we anticipate going forward and dealing
16 with continuing to facilitate looking at market
17 development and utilization of this resource.

18 And then, within that you also have some tools
19 that we have been able to use in terms of looking at
20 wildfire behavior modeling in terms of the benefits of
21 removing biomass and reducing fuel loads on acres from
22 any consistent perspective.

23 And then there's also an article that deals with
24 biomass use in feed stock issues.

25 With that, I'll stop at the correct point in

1 time.

2 COMMISSIONER PETERMAN: Bill, these are great.
3 I'm glad I have a copy. I hope that you will submit
4 them to our docket as comments so that others can
5 receive them, as well.

6 And when you were talking about fire protection,
7 I was just thinking about all of the other benefits that
8 come from reducing the fires in terms of air pollution
9 benefits, and even system reliability, potentially, when
10 we think about some of the effects we've seen fires have
11 on the grid.

12 But then you've also pointed out that most of
13 the potential is in the northern part of the State. And
14 so I was just thinking about, you know, how much
15 alignment is there between the parts of the State that
16 suffer from some significant fires for various types
17 of -- from various types of woody waste versus where you
18 see the biomass potential? And if we were better to
19 align that, what would that cost?

20 MR. SNELLINGS: Well, I think, clearly, the
21 communities in the northern part of the State are
22 sitting on a tinderbox relative to the forested
23 conditions. There are high fuel load levels.

24 I think overlaid with that is a changing climate
25 condition where we're recognizing longer summers, hotter

1 summers. The potential for wildfires affecting those
2 communities directly is only going to increase as time
3 goes on.

4 So I think locationally woody biomass and
5 utilization that woody biomass would provide a number of
6 benefits, not only from a fuel reduction and community
7 safety perspective, but looking at a landscape health
8 and ecosystem resilience perspective. Removing some of
9 that excess biomass will benefit the remaining
10 vegetation and make it more resilient to changes, and
11 climate changes, and precipitation patterns, and other
12 pieces of it. So, you know, there are a lot of
13 significant benefits to it.

14 You know, the difficulty is how to quantify
15 those benefits and then basically monetize them, which
16 has been a challenge for us all along.

17 COMMISSIONER PETERMAN: Thank you.

18 MR. O'NEILL: Thank you, Bill.

19 Before we move on to Steve Weissman, I'm told
20 that somebody from the U.S. Forest Service is here.
21 We'd like to invite them to join us at the panel, if
22 they'd like.

23 And while we're waiting, we'll move on to Steve
24 Weissman.

25 MR. WEISSMAN: Good morning, Commissioners, I'm

1 Steve Weissman, I teach energy law at UC Berkeley Law
2 School and director the energy program in the Center for
3 Law, Energy and the Environment.

4 One of the activities we've been involved with
5 for the last year has been to assist the Governor's
6 Office in his effort to promote his 12,000 megawatts of
7 local renewables policy.

8 We helped him put on a conference last summer
9 that many of you attended, and now have been working on
10 a report based on that conference to try and identify
11 barriers and solutions.

12 We issued a draft report about six weeks ago,
13 received over 30 sets of comments. We're feverishly
14 working through those comments, now, and hope to have a
15 final report out, hopefully, by the end of next month.

16 The topic for this panel is "Capturing the
17 Benefits" and there clearly has been a lot that's been
18 done thus far just in the form of having put forth so
19 many programs to encourage people, encourage companies,
20 encourage industries to develop renewable energy,
21 generally, local renewables as well.

22 And so we can go through some of those specific
23 programs and try to identify where some of the
24 particular benefits related to field diversity, reducing
25 the need for distribution transmission upgrades, how

1 those things are affected by the various programs.

2 I want to take this opportunity to answer
3 Commissioner Peterman's final question, now, and that
4 way if you ask it again later, I can repeat my answer,
5 which I actually look forward to doing.

6 And this really, largely, comes out of comments
7 that you've heard from other so far. In the first panel
8 you had Arne Olson talking about the uneven distribution
9 of cost when it comes to solar energy.

10 You had Warren Leon talking about the fact that
11 benefits are not distributed in an equal way when these
12 projects are deployed. He also talked about some of the
13 work he did back in Massachusetts to try to identify
14 specific resources that they wanted to try to get
15 offline, and fine ways to strategically go over those
16 individual resources.

17 And again, Bill just a minute ago talking about
18 biomass and its unequal distribution across the State.

19 From the filter of people who have been staring
20 at local renewables issues for a long time, it really
21 seems, again, to come down to the question of how are we
22 going to plan our energy resources, how are we going to
23 use them?

24 And we still have very much of a fragmented
25 planning process throughout the State. We have the

1 transmission planning that happens at the ISO, that
2 happens at the individual utilities, it's happening now,
3 thanks to FERCs Order 100, at the regional level.

4 We've got the Western Renewable Energy Zone
5 process, the process within California as well. We have
6 these various transmission planning process, you have
7 the long-term procurement plan processes that are
8 looking more specifically, more at a high level,
9 generally, in terms of understanding loads, existing
10 resources, and gaps that need to be filled by going out
11 for bid for resources.

12 And what's still not happening in a sufficiently
13 fine-grained way is local integrated renewable planning,
14 where the utilities would break their service
15 territories down into lateral, smaller planning units
16 and would, in the context of renewables, go into these
17 areas, understand the particular renewable resources
18 that are promising in that area, understand the nature
19 of the distribution grid in that area, where are the
20 places that could currently benefit from strategically
21 placed local renewables, where are there places where
22 there's a need for distribution upgrades, try to
23 identify transmission bottlenecks and the way --
24 addressing load and resources in a particularly small
25 area can wind up affecting the need for those

1 transmission upgrades either through strategic, focused
2 energy efficiency initiatives, or local renewables, or a
3 combination of all these factors.

4 With planning on that kind of smaller unit level
5 it's possible to aggregate those units, see how when you
6 add up those pieces how close you've come to reaching
7 your overarching policy goals and then adjust
8 accordingly.

9 But you do it from a much more informed basis
10 than we largely do now by having the planning of these
11 various units being addressed in different fora, and by
12 different people and also, so much on a high level, on a
13 general level and not understanding the nature of these
14 local resources.

15 It seems that the utilities and, frankly, the
16 agencies are going to have to get much more local, now,
17 in terms of understanding how to work with resources and
18 opportunities in order to, I think, capture more of the
19 benefits than we currently are.

20 And with that I'll step back and wait until we
21 get into some of the details later.

22 MR. O'NEILL: Thank you, Steve. Since you've
23 brought up that point do you want to go ahead and jump
24 in?

25 COMMISSIONER PETERMAN: Before you get into

1 questions I want to just offer -- there's one on each
2 panel, so every moderator's not surprised. Offer an
3 observation before you get into responses, so you see
4 some of the things that I'm thinking about.

5 One thing that seems clear to me, at least from
6 the presentations we've had so far, is that a number of
7 agencies and entities are considering benefits and in
8 their programs are trying to encourage different types
9 of renewables.

10 But I would probably say except, at least for
11 the parties at the table, except for ARB, no one is
12 monetizing, yet, or incentivizing these benefits.

13 And so an overarching question I'm thinking
14 about is if we do think there are significant benefits
15 and the size of them, we talked about, is not very
16 clear, from the first panel, and we want to monetize and
17 incentivize them, then do you do that through the
18 existing procurement programs for electricity, which is
19 primarily how we're funding renewable energy now,
20 through the Public Utilities Commission and through the
21 various POU programs, or do you set up a separate
22 incentive program for these particular benefits?

23 And partly it comes from size and also it
24 becomes partly tied, as Jim pointed out to you,
25 authority that each agency has, as well as income

1 streams.

2 And so that's the general question I'm going to
3 like some feedback on going forward, if anyone has any
4 ideas.

5 So, Gary, back to you.

6 MR. O'NEILL: Okay, anybody want to respond to
7 Commissioner Peterman?

8 MR. SNELLINGS: Well, I can offer a bit of a
9 response. This came up recently in a geothermal project
10 in Sonoma County, and it went through the permitting
11 process and the finances, you know, and the tax system
12 and the exemptions comes up whenever we have the
13 discussions about the renewables.

14 And one thing that they did that didn't cost
15 anybody any money was to establish a point of sale in
16 Sonoma County. And that meant that the distribution of
17 the sales tax could go to the county government, you
18 know, at their proportionate rate.

19 And that was, I thought, a very clever idea and
20 that came about through the discussions of CCPDA because
21 San Luis Obispo County did something similar.

22 COMMISSIONER PETERMAN: Good suggestion.

23 MR. SNYDER: To get to that question partially,
24 I think we were working with Placer County relative to
25 trying to monetize the benefits from a fire threat and

1 fire reduction for some of the proceedings before the
2 CPUC relative to the feed-in tariff for small
3 distributed energy.

4 And that is a difficult road and it's very
5 difficult to separate the public part of the benefit
6 from the ratepayer part of the benefit.

7 So, looking at an adder that would be basically
8 serviced through the CPUC rate fee increase on a feed-in
9 tariff basis was hard, it's hard to separate those two
10 pieces out. We thought we'd done a good job but in the
11 end I think they decided to go a different direction.

12 The other piece I think that is of importance
13 relative to us looking forward is this location pieces
14 of it because I do think there were a number of areas
15 that were identified, given where there might be
16 opportunities for biomass, that also could be brought
17 online that would provide some locational advantages
18 relative to basically minimizing the need to upgrade the
19 transmission capacity.

20 So, I'm not an expert in that piece, but I think
21 there are locational advantages that could be brought to
22 bear relative to woody biomass. And woody biomass I
23 think, in general, also has a lot of advantages in terms
24 of its base load properties, as well as its abilities to
25 provide and be online at peak periods.

1 So there are, I think, a lot of synergism there
2 which I think could be taken advantage of.

3 COMMISSIONER PETERMAN: Thank you.

4 MR. HOUSTON: Yeah, I guess taking off from the
5 cap and trade system, we have an environmental science
6 panel, which we have three appointees, natural resources
7 has one, and EPA has one, and the Secretary's really
8 made it a point to get this off the ground.

9 And one of the things they're trying to bite off
10 right now is ecosystem services, which is essentially
11 trying to monetize a benefit from an existing practice
12 and then find a trading partner who needs that benefit.

13 And it runs the gamut from habitat mitigation,
14 which is one of the things that started this in Texas,
15 was there was an endangered species issue, and they
16 found a farmer who had proper habitat and so they
17 basically developed a trading mechanism where the farmer
18 would create this habitat and get paid by the other
19 entity that was displacing the habitat.

20 And so trying to utilize that type of trading
21 system to, I guess, supplement what is already occurring
22 at PUC and CEC is something we hope to get out of the
23 environmental science panel, out of their work.

24 MR. WEISSMAN: I guess I could offer a couple of
25 comments as a definitely non-quiet kind of person. Like

1 I said, more questions than answers. What are we going
2 to do with this information once we've monetized all
3 these benefits?

4 For instance, you talk about what the PUC is
5 going to be doing with its decisions, the way it sets up
6 programs. Its obligation is to try to reflect ratepayer
7 benefits and to stay within that context.

8 If we're starting to monetize environmental
9 benefits, national security, other factors that clearly
10 get beyond the kind of limited selfish scope of a
11 ratepayer in that particular role, then what do you do
12 with that information, how does it affect the outcome?

13 Of course, these things can help inform the
14 public policy debate about what the legislation ought to
15 look like and what the broad policy's going to be.

16 But so much of what has driven policy in
17 California, of course, has been such non-monetized
18 things as the loading order, and the renewable portfolio
19 standard, and general strategies such as metering, which
20 are based on that laundry list of objections you
21 referred to that's in the RPS legislation, as opposed to
22 strictly looking at a cost and benefit approach.

23 And so mixing these things is always going to be
24 a challenge.

25 COMMISSIONER PETERMAN: I think that's a good

1 point and I think even short of monetization formally we
2 do offer, provide preferences for different types of
3 resources which inherently then provide an additional
4 higher value. So in addition to what can State agencies
5 do or the State do, it's also what's the signal to be
6 sent to the private investors about how much they should
7 be valuing a resource. But your point is well taken.

8 MR. O'NEILL: Thank you. So, I want to take a
9 step back and talk briefly about what Steve had
10 mentioned during his comments about looking at smaller
11 regions for procurement through the utilities, and local
12 governments working with the utilities for procurement.

13 We conducted a survey, recently, of local
14 governments and found that they tend to not work very
15 closely with the utilities, specifically on energy
16 production or energy placement.

17 I was hoping maybe Tim could comment a little
18 bit on that. I mean would there be more benefit to when
19 we're talking about land use planning or zoning for the
20 utilities and the local governments to work closer
21 together, and especially when we're talking about these
22 benefits that link so closely to the surrounding
23 community, or the costs to the community.

24 MR. SNELLINGS: Well, I can just mention that
25 you're right, that's a very accurate assessment that

1 there isn't a lot of connectivity with the utilities and
2 local government. It seems like there's really two
3 different worlds that go on and I think that's part of
4 what we're seeing as well, and looking to bridge that
5 gap.

6 We've met with our PG&E in Butte County and
7 there's a lot of work to be done there. And their
8 priorities, you know, and their agenda, their processes,
9 their bureaucracy and how it interfaces with the local
10 people, you know, our bureaucracy, there's a lot of work
11 to be done there. And I think I can just acknowledge
12 that and we're just beginning that process.

13 And I think around the State that is also a
14 point of view occurring.

15 MR. O'NEILL: From -- this is for Heather.
16 Heather, from Cal-ISO's perspective would there be more
17 of a benefit to bringing this kind of a local view from
18 a reliability stand point?

19 MS. SANDERS: Well, you probably know we already
20 do look at local capacity requirements in areas, from
21 the transmission perspective, that are congested.

22 I also know that we have been working recently
23 with the CPUC and the utilities on deliverability for
24 distributed energy resources, so they can quality for
25 resource adequacy. So, that's a local area need as

1 well.

2 This is a really complicated problem when you
3 start thinking about distributed energy resources.
4 Distributed generation, back-feeding onto the system and
5 completely, potentially, modifying the power flows on
6 the system in terms of system protection and control, as
7 well as reliability.

8 So, there are definitely benefits. We do work
9 very closely with the utilities for reliability studies
10 and local impacts. It's just very, very complicated and
11 it can't -- and it's time consuming, and we're working
12 very hard to figure out ways to streamline the process.

13 But we have a responsibility to maintain
14 reliability, us and the utilities, together. So we also
15 don't want to speed through just, you know, yes, let's
16 put everything everywhere and hope nothing bad happens.
17 So, it's a very complicated problem.

18 MR. O'NEILL: Anybody else like to add anything?

19 MR. WEISSMAN: Yes, it's a very complicated
20 problem, but there not only are complicated questions
21 about how you do planning on a local level, there are
22 also complicated effects from what happens in local
23 areas.

24 And so as I think that maintaining that mission
25 of system reliability, I think we've had a tendency --

1 we, I guess I'm thinking about my past role at the PUC,
2 and other governmental entities have probably had a
3 tendency to encourage a movement back from looking at
4 what's actually happening on the ground in local areas,
5 both in terms of agreeing with the utilities as over the
6 last few years they've cut back on local offices and
7 presence within various communities.

8 Utilities probably used to be in the strongest
9 position to understand what was going on in individual
10 communities because of relationships that they
11 maintained on that level.

12 There still are people in the local areas, but
13 it's not at the level of intensity that it used to be.

14 And then with things like the long-term
15 procurement process, where year after year the utilities
16 have been permitted to take a very high level look at
17 their resource needs by the fact that the PUC tends to
18 create, the word's got to come up at some point, so many
19 silos for considering these policy matters.

20 Look at some of the long-term procurement
21 decisions and you'll see, for instance one classic
22 decision a small number of years ago, that you opened up
23 the first page and inside the first page is the list of
24 all the proceedings where the various aspects of utility
25 service are actually being considered.

1 So you've got, you know, the transmission
2 proceedings, the energy efficiency proceedings, the RPS,
3 et cetera. And so we've kind of forced the
4 consideration of these individual components to the
5 system to be fragmented.

6 And then with the creation of an ISO that's told
7 to make things reliable, and so to do that on the
8 transmission level.

9 And so the interests are at the larger scale and
10 they're also -- it's also one entity that's hardly in a
11 position to be able to reach into every neighborhood and
12 understand the nuances that apply.

13 MR. SNELLINGS: Gary, if I could also add the --
14 I was thinking, as counties pursue this renewable energy
15 overlay strategy to identify those sweet spot locations
16 in their jurisdiction for future projects, that would
17 drive the discussion with the utilities as well, because
18 that's going to be a real partnership project. And so
19 that's on the horizon. We have to figure out funding,
20 but that's going to be in everybody's future.

21 MR. O'NEILL: Great, thank you. With that,
22 we're going to move on.

23 Oh, do you have one last comment?

24 MR. CLIFF: Yeah, just make one last comment.

25 So, it's interesting from my perspective in listening to

1 this because I think there are pretty significant
2 incentives for renewables and biomass. Of course, at
3 ARB we've got the low carbon fuel standard. There's, in
4 statute, the renewable portfolio standard and then cap
5 and trade, as I discussed earlier.

6 And it sounds like there's, you know, these
7 other barriers to sort of getting those projects
8 underway or actually encouraging, or breaking down some
9 of the barriers that are otherwise discouraging projects
10 to happen.

11 And I guess from our perspective this is kind of
12 a good learning experience. You know, we hear about the
13 digesters that can't be put in for various reasons, or
14 otherwise not being able to get that gas to some useful
15 end point, you know, or other local permitting type
16 challenges.

17 So, I think that's -- it's useful for us from a
18 learning experience, but I did want to note that I think
19 there are a lot of incentives out there, and especially
20 cap and trade, you know, low-carbon fuel standard, and
21 things like that I think will provide pretty significant
22 incentives as we move forward.

23 So there is the ability to monetize, it really
24 is about how do you break down some of the barriers that
25 exist to getting things actually moving on the ground.

1 COMMISSIONER PETERMAN: I just had another point
2 on that, too, because I think you're right that cap and
3 trade, and LCFS do provide these incentives.

4 And it's about also making sure that projects
5 that are small size, as well can participate in those
6 incentives.

7 You know, there are complicated systems and I
8 think you need a team of lawyers, more than you do staff
9 sometimes, oftentimes to go through our processes.

10 And so one of my general concerns is, you know,
11 how do we allow more people to participate in the
12 economic opportunities that we've talked about, which
13 often are on a first come/first served basis, if you
14 will.

15 And there are certain technologies that might be
16 less mature, what have you, but could have a role, but
17 in terms of timing aren't being invested in.

18 But I'm glad, also, you're learning from the
19 panel because I want you all to feel this is productive
20 as well.

21 MR. O'NEILL: I'm going to go ahead and take a
22 step back and get back on the direct benefits questions.

23 I'm going to first focus on the agencies and
24 then we can have the other panel discuss -- start with
25 ARB.

1 When we're talking about the benefits of
2 renewable energy and how they impact your policy
3 decisions, I guess one way to look at it is what would
4 be the outcome if we didn't reach some of our renewable
5 energy goals, or if renewables weren't around what would
6 be the alternative strategy to achieving, for example,
7 the GHG emissions that we're calling for, or for CDFA,
8 and for Cal Fire waste reduction and fire reduction
9 goals?

10 MR. CLIFF: Sure, so in the Cap and Trade
11 Program, one of the ways that it works together with the
12 Renewables Program, and these other types of direct
13 emission reduction measures is it quantifies the total
14 amount of emissions that are allowable.

15 And to the extent that a particular policy tries
16 to require reductions in a given sector, or through a
17 given technology, then that will also help reduce
18 emissions under cap and trade.

19 If the emission benefits of those particular
20 measures aren't achieved, or if demand is greater than
21 we otherwise expected, cap and trade would still overall
22 limit the emissions that could occur.

23 And so, by definition, cap and trade would sort
24 of find the least cost reductions somewhere else in the
25 economy. And that may be just a demand response, people

1 simply use less as a result because there is an
2 incentive to do so.

3 So that's sort of how cap and trade works well
4 with these other policies.

5 I think that the intensity type standards, like
6 the low-carbon fuel standard, the renewable portfolio
7 standard, trying to achieve reductions in a particular
8 area of the economy, where there might otherwise be
9 barriers or that sets us up for the right type of path
10 for this kind of long-term future goal.

11 And so it's necessary to make sure that we also
12 see the benefits of renewables, and that's why we have
13 an RPS, but that we achieve our emissions limit.

14 So, I think that's really the intent of those
15 types of policies and trying to have them work together.

16 MR. HOUSTON: Yeah, I think we try and take a
17 holistic approach to understanding how these policies
18 will affect food production. I mean at the end of the
19 day, you know, we're trying to promote food production
20 in the State, which is really good for the citizens of
21 the State because they all need to eat.

22 You know, we kind of need to find out and make a
23 real push in the past, you know, ten to 15 years,
24 encouraging, you know, better nutrition, more fresh
25 fruits and vegetables, purchasing more products locally,

1 which has greenhouse gas benefits.

2 So to the extent that you can't find a way to
3 monetize and capture the benefits of some of these
4 externalities from agriculture then, you know, the
5 alternative would seem to be a more sort of commanding
6 control, you know, penalistic system which would, you
7 know, probably discourage food production or at least
8 make it less efficient. Combine that with a growing
9 population, and climate change, and you sort of -- you
10 have a tendency to kind of exacerbate the problem
11 because then you're going to start shipping stuff in
12 from South America and China, which has its own sort of
13 attenuate greenhouse gas problems.

14 So, I think we're trying to find a way to
15 incorporate these benefits so that we have, you know,
16 sort of an accurate, holistic picture of the various
17 needs that we have here in society.

18 And I think, you know, energy and food share a
19 lot of similarities, you know, namely they're primarily
20 responsible for our sort of modern industrial age, and
21 they're something that's -- that we need to have
22 consistent quality and we need to rely on.

23 So, I think that's sort of how we try and
24 incorporate some of these benefits in our policy
25 choices.

1 COMMISSIONER PETERMAN: And Jim, if I may, very
2 glad to have Food and Ag here represented, because we
3 don't do enough things of coordination. You're right,
4 the connections between Food and Ag and Energy are
5 enormous.

6 Not to put you on the spot, but do you have any
7 kind of statistics, just to remind us in a sense of the
8 size of the agricultural economy in California, and the
9 food production? You know, we're talking about
10 opportunities, I just want us to have a sense of that
11 magnitude.

12 MR. HOUSTON: Yeah, yeah, 35 billion -- 35.7
13 billion is the size of the agricultural economy in this
14 State and that's farm gate value.

15 And then, you know, the other things to sort of
16 think about are the projections about the need to
17 produce food.

18 And, you know, a really interesting and I guess
19 accurate statistic is that by the year 2050 we, and I
20 don't mean we in California, but we in the world will
21 need to produce as much food in one year to feed the
22 population as we have produced in the entire history of
23 agriculture up until this point.

24 So, you know, that just sort of gives you -- you
25 know, I mean I guess we'll find out in 2050 how accurate

1 that is.

2 But I mean that gives you a scale of the problem
3 that we face with the growing population and as we, you
4 know, advance the quality of life. And so I guess
5 that's a good statistic.

6 COMMISSIONER PETERMAN: So, kind of the extent
7 of the potential environmental externalities expands
8 incrementally --

9 MR. HOUSTON: Yes.

10 COMMISSIONER PETERMAN: -- accordingly, so okay.

11 MR. HOUSTON: Yeah, absolutely. And, you know,
12 there's all sorts of data that we haven't talked yet
13 about, the whole land use planning. But, you know, soil
14 is not something that's easily replicable.

15 So, you know, in terms of the solar PV, and wind
16 placement, and understanding the interaction between
17 prime ag land, et cetera, you know, there's lots of -- I
18 kind of picture like a Ven diagram, you know, and
19 there's lots of little circles on this diagram that are
20 interconnected.

21 MR. O'NEILL: Bill, do you want to add anything?

22 MR. SNYDER: Yeah, I think for us the clear
23 threat to a lot of these landscapes and communities is
24 wildfire. I do think we all recognize that as climate
25 changes there will be other threats in vectors that are

1 going to drive vegetation change and loss. But wildfire
2 certainly has a whole host of indirect effects on
3 health, air quality, the ecosystem, water quality, and
4 all sorts of things.

5 So, you know, the challenge there is real that
6 the magnitude of the problem in terms of the number of
7 acres that have excess biomass on them is significant in
8 California.

9 At a time when we're trying to increase the
10 renewable portfolio standards and looking at biomass
11 being an important part of that, we have run into
12 barriers relative to actually how to monetize some of
13 this at a level that will allow for a reasonable level
14 of treatment.

15 So what we've been forced to do, then, is focus
16 what monetary resources we have in areas immediate to
17 communities to provide for direct community safety. But
18 we really have not been able to address some of the
19 clear protection needs for forested landscapes and other
20 pieces, and certainly coming up with some solution that
21 might monetize the values that those natural landscapes
22 provide, and allow us to do a little more treatment, in
23 a sustainable way, that recognizes the ecological
24 functions out there and protects those is the next big
25 step we need to take.

1 COMMISSIONER PETERMAN: Is that going to be your
2 recommendation at the end, when I come at you for it?

3 MR. SNYDER: Well, certainly. I think, you
4 know, we've really been looking at not only what we can
5 do to prop up the existing woody biomass plants, but
6 also to improve the location of larger, you know, less
7 than 50 megawatts, or so.

8 And then I do think the future in some of this
9 is going to be distributed in small distributed
10 facilities that are more focused on specific locations.
11 And looking at those, you know, in general, to make
12 those work at a fuel price of \$45 to \$50 a ton delivered
13 to the facility, we're looking at a 15 cent or so per
14 megawatt, or kilowatt value. So, it's -- it is a
15 challenge.

16 And I think the technology is there, it's just
17 going to be figuring out how to solve some of the other
18 puzzle pieces.

19 MR. O'NEILL: Do you have anything to add?

20 MR. WEISSMAN: Well, just, you know, back to the
21 original question, I think this is a question of what
22 happens if we don't achieve the renewable energy goals
23 in the near term?

24 I think that it may be very feasible to achieve
25 the Scoping Report's 2020 goals through the Cap and

1 Trade Program without having as much renewable energy as
2 we aspire to.

3 But I think in the long run, for the 2050 goals,
4 that probably is not going to be an option. And you
5 probably are aware there's two recent studies that both
6 kind of hovered around the Lawrence Berkeley Lab that
7 asked what does a realistic build out have to look like
8 by 2050?

9 And talked about needing to electrify everything
10 we possibly can in the transportation grid, use biofuels
11 for the parts you can't electrify, squeeze as much
12 efficiency as you can out of demand, and then take
13 virtually all of the carbon out of electricity
14 production.

15 And, you know, unless we have a very significant
16 ramp up of nuclear power in the State, that's probably
17 going to mean that we have to have a very major reliance
18 on power.

19 So, I think that establishing these goals and
20 working towards them, again regardless of how they might
21 initialize monetize, is going to be of critical import.

22 MR. SNELLINGS: At the local perspective it's
23 that every city and county has a general plan that we're
24 required to adopt in California, and it's actually AB
25 32, SB 375, CEQA, they're all critical aspects of what

1 we must address in our general plans.

2 The general plans call the constitution for
3 development to California and it requires us to adopt
4 goals, policies, and actions that are real. And these
5 are not just, you know, touchy/feely things, these are
6 real things that are the policies of the county.

7 Every ordinance that follows has to be
8 consistent with the policies and goals of the county.
9 The county, itself, has to act as a good citizen and
10 comply with this general plan, you know, and set the
11 example for the community.

12 You know, so the idea of incentivizing solar,
13 you know, we model that as a county and counties do that
14 throughout California.

15 Each county and city is in the process of
16 writing climate action plans.

17 You know, we're dealing with the requirements of
18 greenhouse gas reduction.

19 You know, we have a chart in our general plan
20 and it's a simple table, it just shows a line going up
21 45 degrees and it says this is how greenhouse gases are
22 going to continue to increase with business as usual.
23 And then it kind of shows a 45 degree the other way in
24 about 2010, when our plan was adopted, and showing those
25 greenhouse gases need to go down.

1 How do you do that and continue to have an
2 economy that you're trying to incentivize, encourage,
3 streamline?

4 And so it's through policies, it's through being
5 very clear what the policies are, and we're defining
6 those actions through climate action plan.

7 And then adaptation to climate change, that's
8 another thing on the horizon that we've got to address.

9 And so there's a lot of planning efforts going
10 on at the local level to comply with these very real
11 laws that we must comply with.

12 So, we're trying to be good citizens at local
13 government, and provide that leadership to our citizens
14 and businesses.

15 MR. O'NEILL: Thank you. I'm going to shift
16 gears a little bit and talk about displacement of fossil
17 fuels with renewables, our renewable resources that
18 displace fossil fuel generation being appropriately
19 rewarded.

20 I'm going to go ahead and open this up with
21 Steve, first.

22 MR. CLIFF: Well, to answer these questions, you
23 started going back through all the various initiatives
24 we have in place and you can see how they might differ
25 in this regard.

1 I think starting with the portfolio standard
2 certainly there's some fuel displacement rewarded just
3 by the fact that a certain amount of -- because the RPS
4 program's largely agnostic about the source of the green
5 kilowatt hours, there's certainly a loss of benefit
6 there. There's a lack of rewarding the greatest, the
7 potential for displacing fossil generation just because
8 of the intermittency of solar, and wind, and the need to
9 add back-up resources of various kinds.

10 In terms of renewable, the RAM, the auction
11 process, of course there's been an effort to create
12 buckets with different kind of resources in them, base
13 load resources, peaking resources, non-peaking resources
14 and the implication is that various renewable
15 technologies will fall differentially into those
16 buckets.

17 Well, the results the first time around seem to
18 suggest that there's not a lot of variety to what's
19 being successfully bid in. We have almost all solar
20 across the State in terms of the resources.

21 So, I think there's probably going to have to be
22 some changes there as well.

23 The same thing with the feed-in tariff, there's
24 this -- a fuel bucket approach is going to be a
25 differential of prices, ultimately, I think, for

1 different renewable resources. But that's going to be
2 something that's evolving over time and is going to be
3 largely effected by the way the RAM prices change, since
4 RAM's going to be influencing what happens with the
5 feed-in tariff. So, I think there's more that needs to
6 be done there.

7 And then, quickly, net metering, entirely fuel
8 neutral, but largely solar that's being promoted there,
9 so again you have intermittency. It's not really
10 optimizing what you can do in terms of fossil fuel
11 displacement.

12 And then CSI, of course, is entirely solar, so
13 same answer there.

14 COMMISSIONER PETERMAN: All right, and I'll add
15 that at the conference that Steve mentioned, that he led
16 over the summer, I facilitated a panel on procurement
17 mechanisms. And, indeed, we went through the fact that,
18 both, we have a number of procurement mechanisms in the
19 State and that they all address some of these issues to
20 some extent, but there are a number of benefits that are
21 not addressed.

22 And can you build them into the existing set or
23 are you once again going to add another procurement
24 process.

25 And it's a struggle to figure out how to make

1 something both competitive and open, but also
2 specifically providing for some of those benefits.

3 So, thank you for providing a little background
4 about some of the ones we already have.

5 MR. WEISSMAN: Well, it seems like the big
6 enchilada there is renewable portfolio standard and the
7 California standard is so progressive and forward
8 looking in so many ways that I think that's probably the
9 biggest challenge.

10 MR. O'NEILL: Bill.

11 MR. SNYDER: I guess I could characterize the,
12 you know, the fossil fuel displacement piece relative to
13 woody biomass is very complex. And I think, certainly,
14 we have recognized that we do need to focus more on
15 lifecycle analysis to kind of figure out where we are
16 relative to fossil fuel displacement benefits.

17 I think there are a number of competing pieces
18 that come into play there, one of which is can we
19 sustain the level of woody biomass on the forested
20 landscapes? And probably the answer to that
21 ecologically is no, in the face of changing climate.

22 So as you utilize this, you're probably going to
23 have to make an assumption a certain portion of that
24 won't be re-sequestered in that growing vegetation
25 because the vegetation's just not going to support the

1 same level of biomass or carbon that currently is being
2 sequestered so, certainly, probably some long-term
3 emissions there programmatically.

4 But looking at the other pieces of it in terms
5 of the drivers that are going to result in relatively
6 stochastic emissions, such as wildfire, insect and
7 drought, how to factor all of that into a lifecycle
8 analysis is probably something that has been the golden
9 ring, and probably needs to be given some thought and a
10 lot of workshop thought put into what actually would go
11 into a credible lifecycle analysis to really look at the
12 benefits from a fossil fuel displacement perspective,
13 along with all of the other potential benefits that
14 could be brought to bear by a thoughtful program
15 utilization of woody biomass for energy.

16 MR. SNELLINGS: I'd just mention that one of the
17 other documents we wrote, as far as the model solar
18 energy facility ordinance process, was the Solar Energy
19 Facility Guidance document that has a lot of good
20 information about net metering, feed-in tariff, RAM.

21 And one of the things, I think, that became
22 clear to us is there's still a need for a lot of
23 education.

24 And we have, for example, the PACE program. It
25 kind of crashed and burned a little bit with Freddie and

1 Fannie, and now it's coming back, at least on the
2 commercial side. And so those programs are showing up,
3 again, and the counties and cities are looking to
4 facilitate different funding mechanisms to help
5 reenergize that program.

6 And so there's a lot of -- I just think there's
7 a lot of need for education about whether it's community
8 choice aggregation that's being talked about, that
9 people don't quite understand it and we need to talk
10 about the benefits and whether it fits in an area or
11 not, and how it might benefit a region or not and just
12 continue those discussions.

13 So, education and leadership through this
14 process, I think, is really an important part of the
15 solution.

16 COMMISSIONER PETERMAN: I'm glad you hit on the
17 point of education because you're right, there is a lot
18 of information to consume. And as we're trying to
19 quantify the benefits also making sure that people
20 understand them.

21 You know, we manage 15,000 web pages, if you can
22 imagine that, in terms of information. And so I don't
23 know if people always realize that and you kind of hope
24 that the average consumer will take a look at the
25 website and learn some things, but who's got the time.

1 And so I appreciate the role that the counties can play
2 in that.

3 MR. SNELLINGS: I think it's kind of the train,
4 the trainer model is what I like and see it to be
5 effective, and so have a bunch of messengers throughout
6 California that are launched into this educational
7 arena.

8 MR. HOUSTON: I think for -- I guess in terms of
9 biomass I mean I would say that it's probably not
10 adequately incentivized in terms of fossil fuel
11 displacement.

12 I mean one of the things that I like to think
13 about with respect to biomass is that it's really fossil
14 fuel replacement. That, you know, what we've heard from
15 Cal-ISO is this sort of -- this need for certainty.

16 I mean and the way that, at least today, the way
17 we can get that certainty is, you know, either through
18 nuclear power or through spinning the turbine. And that
19 turbine needs to spin somehow and the most consistent
20 way seems to be to burn something and use the steam to
21 power it.

22 So, to the extent that we can use biomass,
23 either as a biofuel in a car or to burn at a biomass
24 plant, you know, we are displacing a category of fossil
25 fuel that is distinct from other renewable technologies

1 because it can provide base load and because it's
2 dispatchable. So you can store it, and then you can
3 produce extra power when needed.

4 So there is, I think, flexibility for entities
5 like Cal-ISO and for the State's energy security that
6 probably aren't entirely captured by the existing, you
7 know, feed-in tariff and RAM mechanisms.

8 MR. O'NEILL: Heather, first and then we'll --

9 MS. SANDERS: Okay. From the ISO perspective,
10 we don't really have an opinion on whether renewables
11 are being compensated appropriately for displacement.
12 But I thought what I'd share is that it seems to be
13 working because we have 65,000 megawatts of renewables
14 in the queue right now, and 356 projects. So there are
15 46 wind projects, over 12,500 megawatt solar projects,
16 257 projects, 26,000 megawatts.

17 There is actually one battery project, lithium
18 ion battery, it's eight megawatts, 32 megawatt hours.

19 There are four biomass projects for 88 megawatts
20 and five geothermal projects for 651 megawatts. And two
21 landfill projects for 14 megawatts.

22 So, something's working, we're getting a lot of
23 this proposed in the queue. We know that it all won't
24 materialize, but we are seeing a lot of it.

25 And I know that utilities are seeing significant

1 amount of projects for distributed generation as well.
2 So, something's working, we're seeing a lot of it,
3 that's what's putting pressure on our planning
4 processes, as well.

5 To get to the point about incentive and valuing
6 these flexible resources, we're working on reflecting
7 our needs better because we do need to value those
8 resources that have dispatchability and the things I
9 mentioned, the maximum continuous ramping load flowing
10 in regulation capabilities.

11 And the two ways we're doing that is one is to
12 try to define what those needs are in terms of the only
13 capacity procurement mechanism we really have right now
14 through the PUC is resource adequacy in the long-term
15 planning process.

16 But also through a new product offering that
17 we're calling flexible ramping to really help those
18 resources that have those capabilities come into our
19 market and then get awarded based on that.

20 There's also a number of adjustments happening
21 in the regulation market, based on FERQ ruling,
22 including pay-for-performance, which rewards an entity
23 for how much it moves and how it performs.

24 So, we're really working hard to make sure we're
25 sending the right signal to the types of resources we

1 need.

2 COMMISSIONER PETERMAN: Thanks, that was very
3 helpful and that was a very positive portrayal of the
4 ISO queue, I liked that. In a good way, it's a very
5 good way to presenting it that there is a variety, a
6 diversity within the queue. We all talk about the size
7 of the queue, but it's nice to talk about the diversity
8 within the queue as well, so definitely.

9 MS. SANDERS: It is good because it's hard and
10 we always hear about how, you know, it's not working.
11 But something's working, there's a lot of generation in
12 there. So, thank you.

13 MR. O'NEILL: Steve.

14 MR. WEISSMAN: Yeah, I guess from my perspective
15 it's important to break down what sort of benefits there
16 are, which obviously is the point of this workshop. So,
17 from a greenhouse gas emissions perspective I think
18 that, generally speaking, we're realizing the benefits
19 of renewables if we have particular goals in mind, which
20 AB 32 of course says.

21 But there are other benefits, as have been
22 discussed and, you know, are those benefits being
23 realized is important to discuss. But you have to sort
24 of break down each one of those pieces separately
25 because there's probably not a one-size-fits-all policy

1 that would get at the types of benefits that might be
2 otherwise realized.

3 So, for example, the local benefits where you
4 can realize, save sales tax, you know, in a local
5 community, things like that, those are the types of
6 things where a more specific policy to a given region
7 might be really important.

8 But at the same time recognize that sometimes if
9 you put too many incentives on something, you can have
10 adverse outcomes that you wouldn't otherwise expect.
11 And so I think we have to very carefully balance those
12 types of considerations when thinking about how many
13 incentives should be put on a particular type of thing
14 relative to the benefits.

15 COMMISSIONER PETERMAN: And although I believe
16 I've heard probably from most of you, Gary, as you're
17 wrapping up this panel I would ask you to go around and
18 ask everyone their first recommendation, and I also want
19 to make sure we get yours. Because some of you may not
20 know, but Gary is the Agency's lead authority on
21 bioenergy and has been working on this space for a
22 number of years, and looking forward to hearing his
23 first recommendation as well.

24 MR. O'NEILL: We'll go ahead and start with
25 Steve Weissman.

1 COMMISSIONER PETERMAN: He gave us a preview so
2 you can go ahead and just recycle that one.

3 MR. WEISSMAN: Well, yeah, actually, I thought I
4 was going to have a minute to think this through and
5 give you another one but --

6 COMMISSIONER PETERMAN: All right, you can give
7 two. Go ahead, we've got six minutes.

8 MR. WEISSMAN: All right, then I pass and you
9 can come around again.

10 MR. O'NEILL: Okay, we'll move on to Bill.

11 MR. WEISSMAN: Okay.

12 MR. SNYDER: I think our recommendation would be
13 to explore ways to monetize, you know, the woody biomass
14 markets, to capture not only benefits to ratepayers, but
15 also public benefits associated with the utilization of
16 that material for production of energy.

17 MR. SNELLINGS: I've heard in some other circles
18 some discussion about the idea that counties and cities
19 should adopt an energy element, and I would caution that
20 that's not necessary.

21 Just as an example, in Butte County's General
22 Plan we have 92 references to energy and it's spread
23 across circulation, conservation, safety. So, it's much
24 akin to a discussion we've had a lot about
25 sustainability. Should we have a sustainability

1 element? Well, not really, sustainability's spread
2 across all of our elements.

3 And so I would just hope that we don't have to
4 go down a legislative approach to requiring an energy
5 element, it would be unnecessary.

6 COMMISSIONER PETERMAN: I have to say, before we
7 move on to Heather, Tom, I appreciate -- Tim, sorry, I
8 appreciate you offering a recommendation of what not to
9 do.

10 MR. SNELLINGS: Okay.

11 COMMISSIONER PETERMAN: Because that is one of
12 the things that I think we try to focus on in government
13 is avoiding the worst activities, and so that's a nice
14 spin on it, so thank you.

15 MS. SANDERS: For the ISO, it's similar to what
16 I said before is really the focus on flexible capacity
17 needs and so we can integrate as much of these
18 renewables as possible. So, the consideration of what
19 it takes to integrate these both locally and on the
20 system, and the flexible capacity needs.

21 MR. HOUSTON: Yeah, our recommendation actually
22 comes as an outgrowth from the Fed/State Digester, and
23 that's an establishment of a specific procurement
24 mechanism for biogas of 200 megawatts. I think this
25 will provide a great incubation period for the

1 technology and allow it to compete on a level playing
2 field with other like projects. And, you know, as we
3 develop and monetize these benefits I think, you know,
4 maybe you can ease the incubation, but some strong
5 signal now to incentivize these plans.

6 COMMISSIONER PETERMAN: And did you say under
7 200 megawatts?

8 MR. HOUSTON: We wanted a goal of 200 megawatts.

9 COMMISSIONER PETERMAN: Oh, a goal of 200
10 megawatts for the procurement target.

11 MR. HOUSTON: Yeah.

12 COMMISSIONER PETERMAN: Okay, thanks.

13 MR. CLIFF: Yeah, I have two things. The first
14 is, and it was mentioned earlier, is that education is
15 extremely important. A lot of people talk about
16 incentives and think of that as being sort of a check
17 that's handed to you.

18 But I think there's incentives that are more
19 subtle and to the extent that people understand that
20 there are those incentives out there, and that they can
21 think about that, that helps them think about their
22 long-term investment, it's really important to get that
23 word out.

24 The second thing is, you know, I think this is
25 said a lot, but isn't always followed, especially among

1 policy makers, include myself in that, is that we need
2 to give certainty for as long as possible, as soon as
3 possible.

4 And so to the extent that we have a long-term
5 energy plan that really does set us up for our long-term
6 goals, we need to get that plan out there, you know, set
7 up the policies to get to that and do that sort of as
8 quickly as possible so that people can start, you know,
9 taking advantage of those incentives and getting us on
10 track.

11 MR. WEISSMAN: Okay, I guess I got an extra
12 minute, didn't I? So, I guess the thing that I would
13 just probably emphasize is that we didn't get a chance
14 to talk about displacing the transmission and
15 distribution. And if you move through the various
16 programs, I think you'd see that some of them are
17 starting to identify, or at least identify the costs of
18 transmission or distribution upgrades.

19 And in the Rule 21 revision we're seeing a
20 rewarding of things that are not going to impose big
21 interconnection problems because they're being fast-
22 tracked, that that proposal gets approved. That's
23 great.

24 But what we're not seeing, really, so far is any
25 effort to reward monetarily for actually displacing

1 otherwise planned distribution upgrades or transmission
2 upgrades. And so I think finding ways to move in that
3 direction, despite the fact it's going to be a big
4 challenge to really link projects to displacement I
5 think it's an important thing to look for.

6 COMMISSIONER PETERMAN: And Gary. Careful, you
7 might have to actually then do the recommendation after,
8 but --

9 MR. O'NEILL: I'll make it very broad.

10 COMMISSIONER PETERMAN: Okay.

11 MR. O'NEILL: I my perspective, resources and
12 technologies are different and we need to start treating
13 them differently. So, various different types of
14 renewable resources, like solar, wind, biomass there are
15 different technologies to harness those various
16 resources. And different technologies are more
17 appropriate in different regions and that's something
18 that needs to be taken into consideration when we're
19 setting up our policy goals.

20 And this is probably a place where we need to
21 bring the locals more in line or into the room talking
22 about these things, and bring them to the table so that
23 they can weigh in on what their local needs are as far
24 as, you know, do they have too much waste? Do they have
25 too much biomass? Do they have too much whatever? Do

1 they need more solar? Is there local reliability weak?
2 Things like that.

3 And when we're developing our goals bring the
4 locals to the table, bring the utilities to the table
5 and, again, bring Cal-ISO to the table, and also the
6 various agencies that have -- like CDFA, and the
7 Forestry Service so that, you know, everybody can come
8 together and discuss what each regional need is and what
9 the best technology is to harness the resources that are
10 available there.

11 COMMISSIONER PETERMAN: That's great. I thought
12 you might say pay the analysts who work on these
13 complicated issues more money, which I would also be
14 supportive of. And I'll just assume that's your second
15 recommendation. But that was a very good first one,
16 thank you.

17 MR. O'NEILL: All right, thank you.

18 MS. KOROSEC: All right, thank you to our
19 panelists for this morning, it was good discussions.

20 And we will break now for lunch and reconvene at
21 1:30.

22 (Off the record at 12:27 p.m.)

23 (Reconvene at 1:38 p.m.)

24 COMMISSIONER PETERMAN: I don't know if we have
25 an introduction. Well, I think we're going to just

1 confirm some audio/visual things, so just think amongst
2 yourselves and bear with us for a second.

3 I'll use this opportunity to also say, for all
4 of you in this panel, as well as in our six workshops to
5 follow, and I will ask at the end of today's session
6 that we also put up, once again, the list of the
7 workshops and the dates, so everyone can be aware.

8 Oh, pardon? Oh, please turn your nametags
9 around so that I can see them. Thank you.

10 And I'll also take a moment, once again, to
11 publicly thank the IEPR staff, the renewables staff who
12 all worked on this, and for all of you panelists for
13 showing up here today, greatly appreciate it.

14 Well, with that, I'll introduce the panel
15 moderator, Kate Zocchetti, who is in charge of all
16 things renewable. I don't know her official title, now,
17 we talked about it's changed a little bit, but she can
18 introduce herself.

19 MS. ZOCCHETTI: Thank you, Commissioner
20 Peterman, I'm Kate Zocchetti. My working title is
21 Technical Director of the RPS Program here, at the
22 Energy Commission.

23 I'd like to welcome you all and good afternoon,
24 I hope you had a good lunch. And I don't think it's
25 raining anymore, so that's a good thing.

1 I just have a little opening comments because I
2 am all things RPS, so I thought I would kind of put an
3 RPS slant on it to open the discussion.

4 When the RPS program began in 2002, the statute
5 set forth some benefits for California and I'd like to
6 just read those off, which was to increase California's
7 reliance on renewable energy resources, promote stable
8 electricity prices, protect public health, improve
9 environmental quality, stimulate sustainable economic
10 development, create new employment opportunities, and
11 reduce reliance on imported fuels.

12 And now that we have a 33-percent RPS target and
13 we have new legislation, the goals have been expanded,
14 as I think Commissioner Peterman mentioned this morning,
15 that we have nine goals now set forth in the statute.
16 Not unlike the earlier goals, but they have gotten more
17 specific and the statute notes that these are unique
18 benefits for California, that any one of them can be
19 achieved with the RPS.

20 And I noted kind of the differences that I'd
21 like to point out. One is replacing fossil fuel,
22 specifically. Adding new electric generating
23 facilities, reducing the emissions of greenhouse gases
24 associated with electricity generation, creating a
25 diversified and balanced energy generation portfolio,

1 meeting the State's resource adequacy requirements,
2 contributing to a safe and reliable operation of the
3 grid, and implementing the State's transmission and land
4 use planning activities related to the development of
5 eligible renewable energy resources.

6 So I thought that was interesting that the RPS
7 is being called upon to meet even more aggressive and
8 specific benefits.

9 So I think to achieve these benefits for
10 California, I'm really looking forward to what the
11 panelists have to say today, particularly how government
12 can play a role.

13 So, welcome all of you and each panelist will
14 have a few minutes to introduce yourself and have some
15 opening remarks. I'd like to start to my right.

16 MR. JOHNSON: Good afternoon, Aaron Johnson --
17 good afternoon, I'm Aaron Johnson, with PG&E, thank you
18 for having me.

19 I want to compliment the Energy Commission, I
20 thought I had put together the leanest PowerPoint I'd
21 ever done with four slides, and it was reduced to two,
22 so I will focus those two.

23 COMMISSIONER PETERMAN: It's all about
24 streamlining government, here we go.

25 MR. JOHNSON: So, a couple of points I wanted to

1 make as part of this conversation. The first slide, if
2 you would, this is a graphic that depicts the various
3 programs that are in place to support renewables
4 throughout California.

5 You see the more orange-colored programs are
6 more on the customer side, the blue, these are more
7 utility-side scale programs.

8 And along the bottom we have sort of a megawatt
9 access.

10 And these are a variety of programs that are
11 available to PG&E, and many of which are mandated, that
12 allow us to access renewable energy.

13 I bring this up mainly to highlight the issue
14 that there are a lot of programs that have been set up
15 in California to support the RPS, and I think it's
16 really important to recognize we've created a tremendous
17 number of tools to access renewables and to add
18 renewables in California, and we are doing that at a
19 quite unprecedented pace at this point.

20 And I think it's really important to look at
21 this, and look as we talk and have a conversation about
22 costs and benefits to recognize that to the extent that
23 we continue to add specific niche programs, carve-outs,
24 if you will, for specific technologies, there's a danger
25 that we're not drawing on the benefit of, you know,

1 having all of these different resources compete against
2 each other and ultimately get the lowest costs for
3 customers because at the end of the day all of these
4 programs are paid for by our customers and those of
5 other utilities.

6 I think, since we're having a public policy
7 conversation around energy, I wanted to -- the second
8 slide I wanted to introduce is really about local
9 emissions. And this came up from some research that our
10 staff did when we were involved in the 33-percent RPS
11 discussions.

12 And it was quite striking to me, you know,
13 several years ago when we were beginning the 33-percent
14 legislative conversation, is that when you really look
15 at statewide emissions and you can go air district by
16 air district in California and the results are almost
17 exactly the same, what you find is that NOx and
18 particulate matter, which are the two primary local
19 emissions that we're usually talking about, are not
20 really driven in the State by power plants. And it's
21 about one percent of the emissions -- it's about 10
22 percent of the emissions in both categories come from
23 point sources and, of that, about 10 percent of that is
24 power plants.

25 And what you see here is the data on that, that

1 basically -- and this is just ARB data, off the ARB
2 website, that shows you that, you know, local pollution
3 isn't really being driven by power plants.

4 And I think there's a perception in the
5 conversation that this is a huge driver of local
6 pollution that power plants are. They're very
7 noticeable, they're very big, they have big smoke
8 stacks, we understand that, but they're not the primary
9 driver in this conversation.

10 And it's actually interesting to note that there
11 was actually a study that's done annually by the South
12 Coast Air Quality Management District, and they actually
13 roll up all the emissions into cancer-causing levels and
14 then identify the top 280 point sources in their air
15 district.

16 And if you look at that list, there's only one
17 power plant in the top 100, and that is the Catalina
18 Power Plant. And I'm sorry to give Edison statistics,
19 but none of the air quality districts do this study in
20 Northern California.

21 And that's Catalina, and that's primarily
22 because Catalina has the ability to burn oil as a backup
23 fuel because it's out on Catalina Island.

24 And so part of the calculation assumes that they
25 do burn some oil.

1 So, that's the other thing as we start talking
2 about benefits and costs, I think it's really important
3 to recognize that some of the emissions that we're
4 talking about, you know, if this was a GHG graph, which
5 was my other graph, you know, there's a much more -- a
6 much bigger story to tell for the utilities because we
7 have a very considerable share of that pollution in the
8 State. And that, I think, is very justified in pushing
9 the utilities to reduce those emissions.

10 But on the local pollution standard -- or on
11 local pollution emissions, that's not really the driver.

12 The last issue I really wanted to talk about was
13 sort of how we actually do costs and benefits in
14 selection our resources. And I'm actually going to
15 defer to my colleague from Edison, Marc Ulrich, because
16 he had a -- basically, in his two slides he got the
17 graph that I -- we removed from mine which, really, in
18 our process is very similar, that talks about what
19 things do get weighed and not weighed in that.

20 I will just summarize by saying it's
21 predominantly energy things and there aren't a lot of
22 other factors that are weighed.

23 We do weigh those on a non-quantitative basis,
24 so it's more of a qualitative basis. But to be very
25 candid, that's not what's driving right now how we do

1 procurement. It's really about the energy values that
2 you get from these different resources.

3 The one thing that we do, do today, is we sort
4 of have a go, no-go screen from an environmental
5 perspective, and it's mainly around species issues.

6 And, you know, if a particular renewable
7 resource is in an area where our environmental folks and
8 land review folks feel has particular endangered species
9 or something, we will just simply remove a project from
10 consideration. But it's got to be -- that's really the
11 only place where those sorts of factors that are not
12 purely economic get weighed into that process for us.

13 So with that, that concludes my opening comments
14 and I'm happy to answer questions and be a part of the
15 panel. Thank you.

16 MR. THOMAS: I think mine got cut down to one or
17 two slides, as well.

18 COMMISSIONER PETERMAN: Well, we figure, we know
19 that each utility is different, but there are some
20 common threads across the room, so we figure we'll take
21 advantage of that.

22 MR. THOMAS: Yeah. Thank you for having us here
23 today. My name's JC Thomas, with San Diego Gas and
24 Electric.

25 My responsibility's in regulatory and

1 legislative affairs. Part of my job responsibilities
2 include increasing access to renewable power for our
3 customers, specifically solar, and another part is
4 making solar and other renewables sustainable from a
5 rate design or customer stand point.

6 We are committed to reaching our 33-percent RPS
7 by the end of the decade. We're above 20 percent today,
8 wind, solar, biomass, and other sources. And we look at
9 the benefits of reduced greenhouse gases, a diverse
10 energy supply, obviously, the ability to build on the
11 landscape where suitable, where there's the least
12 environmental impact, partnering with the communities
13 where we do look at renewable projects, both large and
14 small.

15 And, of course, safety and reliability are
16 absolutely critical for our projects.

17 Some of the procurement mechanisms that I think
18 we're all familiar with is the standard contract
19 offerings, the RFOs that bring in the larger scale, the
20 RAM, which we're seeing the results of that now, and the
21 soon-to-be feed-in tariff.

22 And then, lastly, the net metering, something
23 that I'm going to talk about in the two slides that I
24 have because that's an important resource of renewable
25 power in our State that we don't believe is quantified

1 from an environmental stand point. We certainly don't
2 recognize it, it's not part of our RPS standard today.

3 We can go to the next slide. If you look at
4 what our customers see in their bill, they don't see any
5 renewable power. They see a pie chart. And we
6 typically don't show it this graphic and this colorful,
7 but they would see their transmission and distribution
8 costs.

9 The other things, like nuclear decommissioning,
10 and public purpose programs, and then you have the
11 electric commodity, which is in the blue.

12 Maybe at some point in the future, as we see
13 more and more customers desire to have 100 percent of
14 their power come from renewable sources, that blue could
15 be shaded entirely green.

16 Our rates on the right-hand side are the effects
17 of AB1X, which is why you see the different pricing and
18 tiers. But, again, you don't see the reflection of
19 renewable energy.

20 And that's part of our transition and what we're
21 trying to advocate for, so that customers can see it
22 more transparent, what it is that they're actually
23 paying for.

24 We can go to the next slide. Some of the
25 proposed solutions that we've been discussing around

1 this issue is fixing a rate structure to get more
2 accurate pricing and promote customer-side renewable
3 energy sources. And also charge customers for the
4 services that utilities provide.

5 If subsidies are needed, we want to make them
6 transparent so that customers know what they're getting
7 and what they're paying for and that if there is a
8 subsidy, it could decline over time.

9 And then lastly, something that is important to
10 us and from our customer's stand point, is that they
11 want greater access to renewable sources.

12 We have a proposal before the PUC, called "Share
13 The Sun," that would allow customers to elect up to 100
14 percent of their energy comes from renewable sources.

15 We hope that's successful and it becomes a pilot
16 for us and, certainly, a model for the State.

17 Thank you.

18 COMMISSIONER PETERMAN: Thank you.

19 MR. RASBERRY: Good afternoon, Tamara Rasberry,
20 and I am the State Agency Affairs Manager for Sempra
21 Energy Utilities, representing SDG&E and Southern
22 California Gas Company.

23 So, my slides were abbreviated, also, so let me
24 just real quick talk about one of the renewable
25 challenges that our companies are working on right now,

1 SDG&E and Southern California Gas Company, and that is
2 biomethane and the biomethane production development
3 within the State of California.

4 And so, as a result of the RPS, and AB 32, and
5 the low-carbon fuel standard, and the demand for in-
6 state renewables, and the availability of the feed
7 stock, and a potential for cap and trade development we
8 see that this is a -- the time is right, now, for
9 developing biogas within the State.

10 To date Sempra, SoCal Gas, and SDG&E have taken
11 on several biomethane projects. One was a onion waste
12 biogas for SGIP qualified fuel cells. It wasn't
13 interconnected, though.

14 We also had biosledge from wastewater plants.
15 We had RD&D to validate SoCal Gas testing methods and
16 prove viability of conditioning technology.

17 And one of the projects that we would like to
18 highlight is the Point Loma Wastewater Treatment
19 Facility, where we condition raw biogas for pipeline
20 injection, and that is being delivered to the City of
21 San Diego.

22 We do now own the conditioning plant, but we are
23 providing the conditioning equipment. And it's my
24 understanding that that is the only project of its kind
25 in the State.

1 But there are challenges to developing these
2 type of projects, large-scale projects. Obviously, this
3 has been mentioned in the previous panel about the
4 permitting challenges. The on-site challenges from air
5 quality permitting, the local permits, the required air,
6 water and land use, a multi-layer permits, the feed
7 stock aggregation, multiple feed stock for approved
8 rates versus groundwater issues, right of ways, multiple
9 dairy owners agreement required. Because at least for
10 dairy you need very large dairies to make the projects
11 economy -- the economy of scale, and engineering has to
12 be specific for that site.

13 And the perceived technology risk, of course, is
14 the concern about the injected gas and that we have the
15 SoCal Gas Rule 30, and PG&E Rule 21 related to gas
16 specifications, specifically on landfill gas.

17 And then the limited demonstration projects that
18 are available to get funding from the financial
19 community.

20 We also see a shortage of incentives and that
21 was discussed at the last panel, also, available for
22 pipeline biomethane injection.

23 We see where the second panel actually made a
24 very good point, I forgot who it was, that the
25 incentives drive the market to development, but we'd

1 like to also see that for biogas.

2 And then, of course, the administration
3 challenges.

4 Next slide, please. And so Sempra has developed
5 initiatives to help push this market to be available in
6 California. We are part of the GTI Study. I think
7 everyone, a lot of people at this table are part of that
8 study. To be released soon.

9 We have supported the regulatory policies, ARB's
10 rules to permit the offset for digesters. We are
11 advocating for the eligibility of RPS permitting that
12 was recently halted by the Energy Commission. We're
13 working on that with the legislation, possible
14 legislation, and also with the Commission. And, also,
15 some PUC definition of biomethane.

16 And we currently have a tariff that we will be
17 proposing soon to the PUC, and this is our biogas
18 conditioning and upgrading tariff. And this is a
19 project where when the cost is less than the MPR of
20 biomethane we would provide a tariff for biogas
21 conditioning services.

22 And this would enable large customers to produce
23 biogas and pipeline quality biomethane from their
24 organic feed stock. This would facilitate on-site
25 generation, natural gas fueling, and pipeline biomethane

1 supplies.

2 SoCal Gas would own and maintain the biogas
3 conditioning service and we would charge the customer a
4 monthly fee, under a long-term contract, for the
5 conditioning service.

6 This, of course, requires the PUC approval and
7 we're enlisting the support of local and statewide
8 agencies.

9 And I'll be available for questions about this
10 proposal and anything else about biomethane. Thank you.

11 MR. ULRICH: Hi, I'm Marc Ulrich from Southern
12 California Edison. We can stay on the title slide for
13 just a second.

14 I do want to add some credibility, it sounds
15 like you got all the utilities here, and we don't always
16 carry a lot of weight.

17 But one of the things that's interesting is we
18 do play lots of roles. We are a renewable generator, we
19 are a conventional generator, we're a grid operator.
20 You could say, at least I'll get back at Aaron on this
21 one.

22 Oh, by the way, Catalina mostly burns diesel and
23 then backup is oil.

24 But Edison has the biggest energy efficiency in
25 the U.S., it has the largest renewable portfolio in the

1 United States, so you could maybe stretch and call us an
2 environmentalist. But we're certainly consumer
3 advocates because half of the \$11 billion that we take
4 in from our customers every year is for procurement, for
5 electricity, the commodity, and that's just pass
6 through. We're not -- our shareholders aren't making
7 any money on the procurement.

8 So my main master, as a procurement guy, is my
9 consumer.

10 And so what we're trying to do here is safe,
11 reliable, affordable is what Edison's latest 10K was,
12 and our mantra. The affordable part is my job.

13 I applaud that we're looking at all the benefits
14 of renewables and making sure that we're not missing
15 anything and my job is to go get those benefits for my
16 customers, at the lowest cost possible, and to defend my
17 customer so that they don't become a new tax base, or a
18 subsidy, or a cross-subsidy platform.

19 So, some of the things that we talked about
20 today or heard today shift to DG, to distributed gen,
21 stay away from large-scale utility and transmission.
22 That's happened, it happened, started about two and a
23 half years ago, three years ago.

24 In 2008, in 2009 we launched a voluntary, small
25 distributed gen feed-in tariff. We had some experience,

1 we're evolving.

2 The Utilities Commission came out with a
3 proposed decision to revamp the crust into a new feed-in
4 tariff.

5 So, we get asked the question is it large-scale
6 utility or is it small-scale, local distributed gen, and
7 the answer is yes. You can't do -- you can't meet the
8 State's goals with one or the other, you've got to do a
9 little bit of both.

10 But one thing I want to make sure is I want to
11 set the record straight, DG is not the panacea. It's
12 the most expensive, the least efficient generation on
13 the entire grid.

14 And so we'll go through some examples that there
15 are benefits in this exercise is one of those things
16 that help us justify more DG. And we're pro, both
17 utility scale and DG.

18 And so it's our collective job to identify the
19 benefits in certain energy policy, it's my job to get
20 those benefits at the lowest cost.

21 We have -- we'll get a slide two, the question
22 for us was how do you do least cost, best fit in your
23 procurement? So, this is kind of explaining it.

24 We have generators tell us what they need to
25 cover their costs and we, Edison always pushes the

1 principle of competitive solicitations. And the reason
2 is if the seller tells me what they need, that's
3 perfect, they're telling me a price at which they can
4 survive. So, I don't need a regulator, I don't need an
5 agency to set the prices for me.

6 Because what ends up happening when you set
7 prices, if an agency sets a price, if they set the price
8 too low, you get zip, nothing shows up and the policy's
9 worthless because nobody can build for what the price
10 is.

11 So what the tendency is, is to make sure that
12 doesn't happen and then you set the price high. And
13 then what my problem is with that is there's some money
14 that I could have used to buy more renewables, or I
15 could just put it back in the customer's pocket.

16 One of the things that we're really concerned
17 about at Edison is affordability. California utilities
18 have the highest rates in the United States. Our
19 industrial customer base, we lose 300 industrial
20 customers every year and we've been doing that for the
21 last two decades.

22 We forecast to lose another 300 customers every
23 year for the next ten years. That's a problem. And so
24 we've got to watch how we -- how we get these benefits.

25 Edison's perfectly fine with giving these

1 benefits and whatnot, we buy into the benefits, but we
2 got to do it in a very cost-effective manner.

3 So the way we do that, when we're allowed to, is
4 we said, seller, tell us what you need, that's the bid
5 price. And all a seller needs to know to be competitive
6 is what their costs are. They don't need to know what
7 adder I'm going to put on for green jobs. They don't
8 need to know what adder I'm going to put on for locale,
9 they just need to know their costs.

10 Because a bidder will charge me the higher of
11 their costs or what they think they can get away with.
12 And if they think that I have to put an adder on
13 something, or this adder has to be X dollars, all that
14 bidder's going to do is take their cost and add a little
15 bit to it because they know they may be uniquely
16 situated that they can extract that from my customers.

17 So we ask the bidders what's your cost? The
18 next thing we do is we add to that cost what is the
19 wires portion of it. And there's a little -- there's a
20 myth out there that says, hey, at the transmission level
21 the customers ultimately pay for the transmission, but
22 at the distribution level the generators pay for all the
23 distribution upgrades.

24 And what really happens is people say, well,
25 that's not fair. In fact, there's a bill proposed that

1 the distribution level equipment starts to get rate-
2 based, like the transmission, to get these even.

3 What really happens is they're all apples and
4 apples because -- are you -- I'm still back on the prior
5 slide. Is that my time check, is that my hook? You
6 turn the slides on me and then I'm done.

7 So, the next thing we add to the bidder's price
8 is the transmission. We have time and delivery, we have
9 the bidder's price, and we have the transmission costs,
10 or the upgrade costs.

11 If they're connecting at the distribution level,
12 that's embedded in their -- the wires costs are embedded
13 in their bid price.

14 If it's at the transmission level, then I add it
15 to their bid price so that I've got gen and wires at the
16 distribution level, and I got gen and wires at the
17 transmission level. It doesn't matter, I'm doing an
18 all-in cost.

19 The next thing we do is we say, okay, that's the
20 cost of what the generation is, let's give it some
21 value. So, there's energy value, there's capacity or RA
22 value. There's other benefits, whether they're
23 ancillary services, or congestion relief if it's in a
24 local area, or a load pocket and then what's left over
25 is a renewable premium.

1 So, one of the things we need to do is be
2 careful about the adders that we're -- all the benefits
3 we're doing, it's good to explore those and build
4 programs so that you get those benefits. So, for
5 example, in the most recent CPUC proposed decision in
6 the feed-in tariffs, we're trying to find strategically
7 located, which is what the State statute says in SB 32.

8 So, we're designing the program so that if
9 you're not near load, you're not eligible. We're not
10 putting an adder in so that we pay a generator more if
11 they're in local areas, and we pay a generator less if
12 they're not in local areas.

13 You know, economics, regulatory economics 101,
14 if you're going to regulate something, you get to pick
15 something. You get to pick quantity or you get to pick
16 price, but you can't pick both.

17 So in cap and trade we picked quantity and let
18 the market do what we want to do. For subsidies we
19 picked price. And we don't know how much we're going to
20 get, but we've decided we're going to give a price break
21 for folks.

22 So, we need to be careful that we try to get
23 these adders and these benefits and then try to make the
24 customers actually transfer that benefit over to the
25 sellers, and that's what the last slide's about.

1 So the last slide is, you know, there's a lot of
2 folks that have been walking the halls in Sacramento,
3 that says, hey, if there's \$20 of deferred value, you
4 ought to write a check and hand that over to the
5 generator.

6 And if we do that, then it's no longer deferred.
7 I'm really, at that point I might as well do the large-
8 scale that requires the transmission.

9 So one of the takeaways is let's explore the
10 adders, let's make sure that the adders aren't
11 prescriptive. Let's make sure that they're not agency-
12 based pricing and that an agency comes up and says the
13 adders going to be \$20 or \$40. I'd rather kind of
14 restrict the program to say, look, we want this benefit,
15 so go structure a procurement program that delivers that
16 benefit. And we can do that, and we can do it cost
17 competitive, and all the extra money that we save, we
18 can use to buy more of that type of technology or that
19 type of benefit, or we can just put that money back in
20 the customer's pocket and, hopefully, not lose another
21 300 industrial customers each year.

22 So, I'll stop.

23 COMMISSIONER PETERMAN: Great, thanks.

24 MR. ULRICH: Thank you.

25 COMMISSIONER PETERMAN: Before we move on, I

1 wanted to make a couple of comments and put some things
2 out there, for particularly our representatives from the
3 utilities to think about, so once we go through all the
4 panelists we can come back and get your response.

5 And if you can go just for a quick second back
6 to Mark's second slide, with the bar graphs, with the
7 costs and benefits?

8 Now, I'll just say as a heads up, we are having
9 a workshop exclusively devoted to cost and retail rates,
10 so because there's so much to cover.

11 So, we're really going to focus on the benefits
12 in this one but, of course, appreciate that they are
13 interconnected.

14 So a threshold question for me, and I raised
15 this earlier in the initial panels, is we heard in panel
16 one about some of the benefits that -- for other
17 renewables, such as fire hazard reduction, that was
18 mentioned by a representative from Cal Fire, for
19 example, of collecting biomass.

20 And so a couple different benefits were
21 identified for different renewables and so moving
22 forward with the assumption that those are actual
23 benefits, although there's still some uncertainty around
24 the size and significance, a key question I have is if
25 we are to quantify and eventually monetize them, do you

1 do that within our traditional procurement programs, the
2 ones we've discussed now, the RPS, or the RAM, or do you
3 establish separate programs to do that?

4 So, that's a threshold question I want to put
5 out there.

6 But I also wanted to list some of the
7 recommendations from different panelists from the last
8 two panels because, fundamentally, these would all be
9 things that would ultimately go into the procurement
10 program or would go into a separate program.

11 And I'll list them and I wanted you all to think
12 about them and just give me your initial thoughts on
13 them. In addition to they don't belong in the
14 procurement program, let's take the position of if they
15 were to be treated in a procurement program, what
16 aspects would be most important to see?

17 So, let me just provide some of those. So, one
18 recommendation mentioned was consider a health adder to
19 account for differences in health impacts.

20 Another one was to more or less consider
21 geography, that different renewables have different
22 benefits and different costs based on geography, so a
23 geographic adder.

24 Another recommendation was explore ways to
25 monetize biomass.

1 Another recommendation was to establish a
2 procurement mechanism for biogas.

3 Another recommendation was to monetarily award
4 the displacement of transmission and distribution.

5 And then a final recommendation was to
6 acknowledge the difference between resources and
7 technologies, and that certain technologies are more
8 appropriate for certain areas.

9 And for the most part I think it seems like the
10 RPS is a bit of a attribute -- an attribute-based
11 approach but, fundamentally, people bidding into the
12 process or resource-based.

13 And so just kind of looking at the, particularly
14 RPS procurement model, since it is the biggest, are
15 there different or better ways in which you could
16 acknowledge the different values, the different
17 technologies. So, some of these technologies do have
18 different impacts on water, on air quality, even if
19 they're using the same resource, such as solar.

20 So, I ask you to give some thought to that and
21 we'll turn back to Andrew. Thanks.

22 MR. MC ALLISTER: Thanks very much. You know,
23 the utilities always go first and then the rest of us go
24 last, and it just seems so oppositional. We ought to
25 like do a, you know, I don't know boy/girl, boy/girl,

1 something like that.

2 COMMISSIONER PETERMAN: We were just saying that
3 up here, I want you to sit maybe next to each other.

4 And I'll give a heads up, too, that we have a
5 fair amount of time for this panel, so once we've gone
6 through everyone's presentations and Kate's asked some
7 questions, I would encourage you and also ask for an
8 opportunity for you all to ask each other questions, and
9 then open it up a little bit to the audience before we
10 go to public comments.

11 MR. MC ALLISTER: Great, thanks.

12 So, it sounds like a lot of really interesting
13 stuff happened at the first panel, as I was not able to
14 go there, I was not able to be here for that.

15 And, Carla, your summary, or Commissioner
16 Peterman, your summary of the -- some of those sort of
17 most interesting comments actually mirror a lot of the
18 issues that I was going to try to get on the table. And
19 not that you've stolen my thunder or anything, but
20 never, never.

21 But, you know, I do think there is a big
22 question -- my name's Andrew McAllister, I'm Managing
23 Director of the California Center for Sustainable
24 Energy. We are -- some of you might know CCSE, we run
25 the CSI program and the SGIP program down in SDG&E's

1 service territory.

2 We run the Electric Vehicle Incentive Program,
3 the CVRP for the Air Resources Board, and we do lots of
4 sort of program support, design, policy work based on
5 that.

6 And I guess the issue of, you know, whether our
7 -- whether the ratemaking -- whether ratemaking is the
8 appropriate place to capture all of these benefits is, I
9 agree, the huge -- it's the big elephant in the middle
10 of the room, in my view.

11 And the pressures on the utilities and the
12 pressures on the solar industry are extremely different
13 and there's a big gap between them right now. And a lot
14 of that has been sort of jimmied open by the rate issues
15 in the rate case environment.

16 But it is a fundamental question of, you know,
17 agency-wise, where do different pieces of the benefit
18 puzzle fit and what kinds of rigor we're going to put to
19 those things, what kind of methodologies we're going to
20 use.

21 You know, health is very different from economic
22 development, and it's very different from home values,
23 and it's very different from rates.

24 And so I think in order to really do this
25 properly you do need a cross-agency collaboration that's

1 explicit, and that's intentional, and that is aimed at
2 monetizing those benefits in some way, the social
3 benefits. Because I think a lot of us around the table
4 believe that the social benefits of solar, generally,
5 are larger than what might be the purely technical,
6 avoiding distribution, capacity-based ancillary
7 services, and commodity benefits that are sort of more
8 easily quantifiable within our rate case setting.

9 And so if we're gonna -- if we're gonna move
10 down the road towards high penetration of solar at all
11 scales, right, not just utility scale, you know, medium
12 scale, or small rooftop. Say, solar, for example, and
13 all the other technologies that have different scales,
14 then we need to figure out this question.

15 The idea that -- well, so there are a lot of
16 studies going on, there's one that we're working with
17 SDG&E, and other stakeholders on, in San Diego. There's
18 a number of studies going on in different service
19 territories across the State on the benefits of
20 distributed generation.

21 And in order to get something done in a
22 reasonable amount of time, with a consultant that's not
23 going to bust your budget, you really sort of are forced
24 down the road to look at a lot of the technical
25 benefits.

1 And, you know, Craig has been working on, a lot
2 of the people around the table have been working on
3 this, in addition to the utilities.

4 So, I guess the concern then is if we end up
5 forced into, for practical reasons, to get a study done
6 that really is only sort of technical in nature, and yet
7 we know there are a lot of these social benefits that
8 are there, then how do we figure out a strategy for
9 giving them a value and then figuring out what sort of
10 agency initiatives, whether it's in this agency or
11 another, can tilt the playing field, or line the playing
12 field in such a way that it acknowledges it and allows
13 the market to use those benefits.

14 So, just in general terms that's kind of the
15 overall message I wanted to give.

16 You know, in retrospect I should have -- I use a
17 slide quite often that is somewhat similar to the one
18 that PG&E showed, where it's got one kilowatt all the
19 way up to 100 megawatts plus, and with sort of small
20 scale on up to large scale, and different programs, and
21 how they fit in there.

22 Well, if you -- if the vertical access, you make
23 sort of the cost and then you put the scale along the
24 bottom axis, you've -- and you map the different
25 programs, you know, net metering over to -- you know,

1 one kilowatt to one megawatt, and then you can put the
2 FIT in there from one kilowatt on up to three megawatts,
3 and you put the RAM, and the utility procurements, and
4 then RFOs along there you end up with a pretty jagged-
5 looking area graph as far as, you know, cost of
6 resource. And, you know, it obviously tilts down as you
7 go to the larger scales.

8 But the programs have different -- they're not
9 aligned and so the transition areas between net metering
10 and RAM, between RAM and RFO, the level of transparency,
11 even, from one -- you know, in each program in each,
12 essentially, procurement mechanism is widely variable.

13 So, I would say continuity, transparency, and
14 reduction of uncertainty, which is the flip side of
15 that, is really needed in order for the marketplace to
16 step in and properly price their services in a way that
17 makes sense.

18 And just the last point there is that in
19 particular with -- let's say that we're talking about
20 the FIT these days, and if the FIT reference price has
21 to do with the RAM outcome, then that's a kind of a
22 difficult thing for the market to square, if the market
23 doesn't actually sort of have full transparency on what
24 the RAM actually look like in practice.

25 So, you know, you can understand that there's

1 some intellectual property issues around, you know,
2 maybe having full transparency with an RFO process, but
3 if you're expecting the FIT to function then you have to
4 give some transparency to that process or it's going to
5 be -- somebody said, previously, it's going to be DOA.

6 So, I think they're designing this plethora of
7 tools that we have to get renewables into the
8 marketplace properly accounted for, properly valued, and
9 that really requires a lot of coordination effort among
10 programs, transparency. And in order to get the overall
11 value up, I think it's an interagency effort that
12 figures out ways, and we can talk about the specifics,
13 but to get the -- to allow the marketplace to monetize
14 across the board all those benefits, and not just within
15 sort of the utility rates, per se.

16 So, I'll stop there and then move forward with
17 questions.

18 COMMISSIONER PETERMAN: Thank you. A point that
19 was made earlier in the day, which you've hit upon,
20 Andrew, is that ratepayer benefits are not necessarily
21 public benefits, or public benefits are not necessarily
22 ratepayer benefits, and I think that is a good point to
23 acknowledge.

24 And what also became clear in the last panel,
25 with a number of the different agencies and local

1 stakeholders, is that just like benefits and costs are
2 not distributed equally, neither is there an equal
3 distribution of agency power or ability to finance. And
4 I think that's, again, a part of the elephant in the
5 room is that not every agency, or stakeholder, or county
6 is able to provide some type of incentive or procurement
7 mechanism.

8 And so the question becomes, then, considering
9 we all have different tools available to us, and we're
10 trying to solve a coordinated problem, who is in the
11 position to do what.

12 And another point that was made was that we can
13 think about uncertainty in three categories, and I'll
14 just say what was shared one more time, because you've
15 touched upon it, Andrew. And in terms of thinking about
16 the benefits or even the costs, the first category of
17 uncertainty is what do we feel confident we know?

18 So there might -- we might have a really good
19 sense of potential for T&D offset, for example, from
20 solar.

21 The second category is what's uncertain and
22 inherently uncertain? That might be that value of
23 national security, for example, that's not quantifiable.

24 And the third is what's currently uncertain, but
25 more analysis we can figure out?

1 And so starting to think about each of these
2 resources from that perspective because, ultimately, we
3 can't monetize what we don't know.

4 And so in that category one, that's where we s
5 tart and think is that possible? And in the category
6 three, potentially there's some more to do. And in
7 category two, maybe, we can't use those -- we can't get
8 a firm number.

9 So, thank you and I'll shut up, now, because I'm
10 not a panelist.

11 And, Nicole, you're on.

12 MR. MC ALLISTER: Sorry, Nicole. So, I'm not
13 Nicole. One other thing, actually, I just wanted to
14 give some props to. Well, we point out that the local
15 jurisdictions are key in all this because it's not just
16 about State agencies, it's also about local
17 jurisdictions.

18 Part of allowing value to matter is actually
19 getting the cost of the installations and all of this
20 stuff down so that we don't need to monetize as much to
21 make a lot more solar go in, or a lot more of, you know,
22 whatever the technology is.

23 And there's a multi-agency effort that's led by
24 the Governor's Office, Wade Crowfoot over there is
25 leading it, but it is looking at permitting for solar.

1 And I think some of the people around the table are on
2 that.

3 And then that was started and it was a good
4 collaborative effort, and then the Department of Energy
5 came in with some resources to help a bunch of more
6 focused regional groups look at it, and those all got
7 folded together and there's now kind of a nice template,
8 I think, to keep looking at different barriers, not just
9 permitting, but interconnection, and some of the other
10 barriers that are going to allow us to get costs down
11 and make, actually, the need to dig maybe as deep, and
12 to lift that huge boulder of figuring out how to
13 monetize some of these secondary benefits a little bit
14 lighter.

15 So, I think those sorts of -- that's a great
16 interagency collaboration that could be kind of a -- you
17 know, a somewhat of a template here to use on this
18 effort.

19 MS. CAPRETZ: Thank you. My name is Nicole
20 Capretz, I'm with the Environmental Health Coalition.
21 We are an environmental justice organization in San
22 Diego, representing low-income communities of color.

23 And I'm also here representing CEJA, which is
24 California Environmental Justice Alliance. And I know
25 Shana, from Communities for a Better Environment was

1 here earlier, we're tag-teaming.

2 So I will say thank you very much for inviting
3 us. My heart is already racing because it is hard to
4 hear some of these loaded terms, like costs, when we're
5 dealing with the communities that we represent.

6 I mean one of the questions I'd posed to the
7 utility right off is what are the costs of the existing
8 fossil fuel infrastructure that no one talks about?

9 Like the diminished social and economic impacts
10 to those communities, the health impacts that just get
11 kind of, I don't know, forgotten and left behind in the
12 dust?

13 So, hearing these very limited, traditional
14 definitions of cost and that they're just about, you
15 know, what's the impact to the ratepayer in their pocket
16 versus the larger societal cost is really, really hard
17 to hear. Especially because, you know, we work in those
18 communities and see the impacts every day.

19 And I think for us the other costs that we have
20 to consider, what are the costs of not considering, in
21 our existing renewable programs, the benefits that these
22 programs could provide?

23 And so, what I just kind of listed in terms of
24 the suite of benefits. We see existing programs not
25 providing, but being sensitive to the fact that some

1 agencies, and methodologies, and tools don't exist, yet,
2 and agencies have different levels of power, but equity
3 in the distribution of benefits. Where are the
4 renewables being installed? Who is getting the new,
5 clean infrastructure?

6 Amory Lovins, from Rocky Mountain Institute, was
7 in San Diego last night. I think most of us who studied
8 environmental issues in college at all, I did way back
9 when, and he was already, you know, considered a guru.

10 And one of his points last night was that energy
11 is typically viewed as a commodity but, really, it's
12 infrastructure. And he's like, and people don't value
13 it that way.

14 But, you know, we do. In our communities we see
15 that who is getting the value of this clean
16 infrastructure or is it going to help those communities
17 be more resilient, especially as climate change impacts
18 continue to arrive.

19 And so I really appreciated that comment and I
20 think that's kind of a threshold question for us is
21 who's benefiting?

22 Also, who's getting the jobs and, you know, some
23 of the other kind of more mainstream environmental
24 benefits that maybe aren't always included in some of
25 these calculations, like the -- what is the

1 environmental harm to the pristine desert areas that,
2 you know, even these clean generation resources are
3 causing? What is the benefits to the lack of new
4 transmission lines?

5 And another area I haven't heard, yet, is we
6 have these competing programs. You know, we're
7 intimately involved in the efficiency sector and there's
8 these super-ambitious, zero net energy building goals.

9 And, guess what, you don't get a zero net energy
10 building without on-site generation.

11 And so, it's this lack of integration of these
12 program metrics and goals that just escape us. And,
13 again, it's kind of an odd reality that there's this
14 huge need to get on-site generation, you know, in
15 existing load areas, on existing buildings, and yet we
16 never talk about it.

17 Instead, the renewable programs are more focused
18 on just build renewable energy for the least cost, best
19 fit, the least cost, best fit, however you -- again, to
20 me, a politically loaded term, but that's kind of the
21 provincial lens that it's viewed in.

22 So in terms of solutions, you know, of course we
23 have solutions. We think there should be -- you know, I
24 think Southern California said, you know, just what
25 benefits do you want, we'll create the program.

1 Okay. We want benefits, we want green-collar
2 job creation, especially in under-employed and
3 unemployed communities.

4 We want a metric or some kind of screening
5 criteria outcome for environmental justice communities
6 that, again, they have been -- they've borne the brunt
7 of the negative impacts of the fossil fuel industry.
8 And I know, again, kind of highlighting what PG&E said,
9 well, you know, electric utilities, are they that much
10 of a problem?

11 But for the communities that live adjacent to
12 the refineries and to the power plants, they also live
13 next to the freeways. You know, they're probably where
14 none of you live, they're not where I live.

15 And, you know, we don't know, it's that
16 diminished, again, economic and social opportunities is
17 real, it's tangible, it's quantifiable, and also with
18 the health impacts.

19 And so we think it's really important that those
20 communities that have kind of suffered the most from the
21 old fossil fuel industry deserve the right to be first
22 in line to get the benefits.

23 Again, what I've already indicated about, you
24 know, the overall lack of integration of demand
25 response, efficiency, conservation, renewable energy

1 and, you know, making sure that renewable energy
2 programs are meeting the long-term energy efficiency
3 strategic plan goals, I just don't see any nexus there.
4 Obviously, there is a nexus, I haven't seen it in the
5 design of renewable energy programs.

6 This is kind of a creative one, but it's the
7 public health benefits. And I think, you know, what --
8 I've read but, you know, but I'm not really familiar
9 with, but CARB and Department of Public Health,
10 apparently, are doing some study trying to quantify,
11 under the Cap and Trade Program, what are the health
12 impacts to programs that reduce carbon emissions.

13 And so I think they're trying to be really
14 creative and innovative in their thinking and saying,
15 look, if we got more clean, green infrastructure in
16 certain communities, if you got them to have a job where
17 they're not going to the refinery every day, they're not
18 going to the shipyard every day, but they're actually
19 installing solar panels what economic impact would that
20 have on that person, and in that community, if they
21 actually see some of the clean infrastructure?

22 And so, again, I'm not -- I don't really know
23 how this is manifesting, but I think it's worth
24 exploring.

25 And this is -- this is the way -- you know, now

1 we're definitely getting outside my comfort zone. But I
2 know, you know, a lot of times we hear in the utility
3 message the community is not -- well, if you want
4 renewables, that's fine, but we got to build more
5 peakers, and we're certainly hearing that in San Diego,
6 with SDG&E.

7 And there's something missing there, again, with
8 the integration of demand response, and storage, and
9 some of the newer technologies, but that doesn't -- one
10 doesn't have to immediately equate with the other. And
11 I think, you know, we'd like to see some more
12 conversation development around there, but I'm
13 definitely not the expert on that.

14 And then another solution we like, we want the
15 Governor's program -- you know, I know some utility
16 members don't want a carve-out, but we do.

17 And I think it's consistent with the other major
18 energy program goals, like energy efficiency, that we
19 want building scale solar programs, and we think that
20 should be a carve-out within the DG umbrella.

21 That, you know, again, if we're ever going to
22 meet these ridiculously ambitious zero net energy goals,
23 we've got to have more programs that focus on getting
24 on-site generation.

25 And then our final solution, which is a bill we

1 have this year, and so we do have AB 1990, that's in the
2 Legislature, that would be focused on getting solar
3 installed in these environmental justice communities,
4 and making sure that our community members are the ones
5 who are doing the work to install the solar panels.

6 So, again, kind of piggy-backing on the idea
7 that CARB and Department of Public Health seem to
8 already get on some intuitive level that, you know,
9 there is a tangible, economic, health and social benefit
10 to these communities that are under-served and
11 disadvantages, that if they can participate meaningfully
12 in a green economy.

13 And that's what I got, thank you.

14 COMMISSIONER PETERMAN: Thank you. Just one or
15 two points because, overall, what I like to accomplish
16 in a renewable strategic plan is that over the last
17 year, in particular, as we've been looking at
18 renewables, and I think as we've all discussed these
19 issues there were certain things that are said and you
20 think, okay, it's being said, but is it true, are we all
21 operating from different assumptions?

22 You know, for example one that I heard a lot,
23 which is one of the reasons for this workshop, was that
24 there are these other benefits to bioenergy, in
25 particular, that are not being realized.

1 So another point I hear often, and Nicole, you
2 were alluding to this and it came up in the panel
3 earlier, was the installation of solar in communities
4 that have been exposed more or have more power plants
5 sited there, and almost the assumption that that solar
6 would displace those plants.

7 And what we heard in the first panel was that
8 that may not be true, that specifically, one, because of
9 local liability issues that you'll have to keep some
10 thermal generation there. But also, I think there were
11 statistics cited that renewables displace about 50
12 percent of the time in-state fossil fuels and 50 percent
13 of the time out-of-state, you know, give or take, and
14 that it really does depend what's on the margin.

15 And so, you know, things like that, you know,
16 that's almost fact, right? And we've got the right
17 group of people in here to help us clarify some of the
18 facts.

19 So, I think that's going to be useful to clarify
20 some assumptions. Just like, for example, the point
21 that Aaron made about where the emissions are coming
22 from.

23 The other point I wanted to raise is that
24 another recommendation that came out, which I think
25 perhaps many of you could agree on, potentially, is the

1 electrification of the transportation sector in terms of
2 both -- as well as the decarbonization of the
3 electricity sector in order to address some of the even
4 larger drivers of air pollution in under-served
5 communities. And, as well, it wouldn't hurt your bottom
6 line, to be honest, utilities, right? So, I figured you
7 could get together on that. So, I just wanted to put a
8 couple of those out there.

9 MR. KELLY: Thank you. I'm Steven Kelly, I'm
10 the Policy Director for the Independent Energy Producers
11 Association, and within that Association we have a full
12 array of renewable developers and non-renewable
13 developers.

14 In the renewable portfolio it's the utility-
15 scale wind, biomass, solar.

16 But also, people are now moving into the smaller
17 to mid-scale ranges, and the smaller DG ranges as market
18 signals are telling people to move into that kind of a
19 sphere and invest money.

20 I'd like to address a couple of things. One, I
21 wanted to start off with just of addressing this issue
22 of monetization in general, and benefits, and then speak
23 a little more specifically about kind of how you
24 approach that.

25 And I actually participated in the PUC's

1 scenario workshop, yesterday, and there's -- I have some
2 comments on that, that I'd like to bring to the table.

3 And then maybe provide you with some -- from a
4 commercial side of things, some key factors that we look
5 at, that are really the factors that drive the
6 investment that result in the development that you all
7 want.

8 Now, first, on monetizing benefits and, you
9 know, this was set up to discuss the quantification of
10 those things we know, and the non-quantification of
11 those things we don't know.

12 And I'm just here to say, and I've been doing
13 this for a long time, been around since '94 doing
14 renewables stuff, and the promise of accuracy and
15 precision in this kind of analysis is a mirage.

16 We're never going to get there. And I use the
17 term "mirage" purposely because it's one of those things
18 that as you walk toward the mirage, it always seems to
19 be receding, and you are never going to achieve reaching
20 that point.

21 We're never going to have precise information.
22 And one of the examples of that, E3 did their, what I
23 thought was a very sophisticated study a couple of years
24 ago, in the carbon world, and before that study hit the
25 street, it was out of date pretty much, because of the

1 declining prices in some of the commodities that they
2 were using. It was a very good study and I applaud
3 their work on that, but it was out of date.

4 You will always be out of date in terms of
5 trying to quantify the benefits of these programs. And
6 as you strive to achieve this goal, I'm just hopeful
7 that we don't delay the implementation of the programs
8 we have in place, in the expectation that we're going to
9 get some perfect answer down the road.

10 Yesterday, at the workshop, there was a lot of
11 discussion of the perfect integrated resource planning,
12 as if we could achieve that. We've been talking about
13 that for 20 years and we never can achieve that.

14 So, I really caution you, as policymakers, to
15 be -- it's not necessarily don't look at the numbers,
16 but don't wait on some of the policy implementation if
17 pending the promise of having some perfect numbers that
18 you don't already have today.

19 I would rather see a standard of decision maker
20 which says, you know, what we have is sufficient or
21 adequate to make reasonable decisions based on the best
22 evidence at the time we make those decisions.

23 That will allow decision makers to move forward
24 in a timely manner to get the infrastructure that needs
25 to be put in place, now, for the future world that

1 people are talking about in 2030, 2015, because that
2 investment has to occur today.

3 And it has to occur based on some assumptions.
4 And yesterday, at the PUC workshop, there was a lot of
5 discussion about, gee, should we do top down or bottom
6 up analysis?

7 And my take away from that was that the people
8 who feel they got harmed in what I call the bottom-up-
9 least-cost-best-fit analysis, we're now saying, well,
10 that doesn't work very well, let's do top down, as if we
11 were going to throw away that whole approach after we
12 spent four or five years working on that, that least
13 cost, best fit technique.

14 It's getting more sophisticated every day, it's
15 getting more useful to the utilities every day. I'm
16 just hesitant to throw it out and do what we've termed
17 top down, now that we're two-thirds of the way across
18 the stream.

19 And I've seen California do that repeatedly over
20 the last 15 years, so I'd just caution you about that.

21 I look at bottom up analysis as essentially the
22 least-cost-best-fit methodology that we've been working
23 on.

24 For five or six years, now, people have been
25 asking the utilities, because of the law, to acquire the

1 least-cost-best-fit resources.

2 We have some arguments about transparency there,
3 we'll continue to have those, but that is in the statute
4 and they've been developing, and we've been developing
5 statewide tools to help get to a better answer in that
6 regard.

7 And that's all well and good, and I hope we
8 continue to work on that.

9 But the other important factor in developing
10 these programs is what I'm going to call, what we
11 usually use, is the top down approach.

12 And the top down approach is something that
13 we've been doing in this State for a long time, it's
14 called the RPS, it's called the CHP program. It's
15 called all the legislation, and all the regulatory
16 rules, like the loading order that have sent signals to
17 the marketplace about what you kind of want as we
18 perfect these things.

19 And they've actually been fairly efficient. So,
20 we have a top down approach, it silos a lot. I have
21 some concerns that we continue to silo the RPS down into
22 finer and finer pieces to meet every technology
23 advocate's desire there, so I have that concern. But
24 we've got that.

25 What's really missing in the decision making

1 process, if anything is missing, is the perspective from
2 the top that what we are doing with renewables is buying
3 insurance. We're not only buying energy capacity, and
4 we're not only buying all of the things that people have
5 been quantifying for 20 years. I mean you can find any
6 study that quantifies the health benefits, quantifies --
7 all of that stuff's been done, up and down, for 15, 20
8 years.

9 What we're really doing is buying some
10 insurance, in addition to all of the benefits that you
11 can quantify.

12 And that requires -- and that is a measure or a
13 signal to the leadership to step up, in a leadership
14 role, with foresight and make some decisions about
15 procurement, for the infrastructure that's needed to
16 ensure against certain outcomes that you don't want to
17 happen, but could happen down the road.

18 And I'll throw out a couple of examples. I had
19 an opportunity to look at an organization, who I'm not
20 very familiar with, which is called Climate Central.
21 And they mapped out, globally I think, but certainly for
22 the U.S., the impact of sea rise around the country.

23 And you can go into their dataset, on their
24 website, and you can put in the amount of feet that you
25 want to see mapped out, and it will show you what the

1 impact is of sea rise at two feet, four feet, up to ten
2 feet, and maybe more.

3 And what you can see is that there is a huge
4 impact in California, let alone the country. And the
5 places that get impacted the most with the sea rise are
6 places that you wouldn't necessarily think of, right out
7 of the bat, for California. Alameda County, Stockton,
8 Orange County, those places are the ones that get hit,
9 first, with global sea rise.

10 So, you know, you can't quantify the impact of
11 that. You're never going to be able to get a handle on
12 that.

13 What you do know, as a policymaker, that the
14 infrastructure to help mitigate that outcome, those
15 decisions have to start getting made, now, to help do
16 that. And you're never going to have a firm answer
17 about the value of that.

18 So, that's just one example that I would point
19 you to, that is non-quantifiable, and it's certainly
20 important in developing the policies that California's
21 been developing over the years, that have resulted in
22 the RPS and the other programs we have.

23 Electric vehicle infrastructure is another one.
24 If we're going to use the RPS resources, particularly
25 the wind, as a fueling source for electric vehicles,

1 which I think we all think is a cool thing to fit
2 together, well that infrastructure, those decisions have
3 got to be made before the cars are there. And that's
4 what we're trying to do.

5 You can't quantify the benefit of that, though,
6 we don't know how many cars are actually going to be
7 there. We don't know how many stations we need right
8 now. But we do know that there's a good initiative and
9 a good reason for moving forward.

10 So, I raise that now because I'm concerned that
11 we're, as a State, just getting mired in data analysis
12 and that leads to policy paralysis, which is something
13 that I'm not in favor of.

14 From a commercial perspective, I just want to
15 point out a couple of things, and I think this will feed
16 off some of the things that were heard earlier this
17 morning and, certainly, some of the things the utilities
18 have talked about.

19 You know, while the State agencies are talking
20 about a lot of cool things they're trying to do, and so
21 forth, the big driver for infrastructure development in
22 California, today, are the procurement decisions made
23 by, primarily, the utilities.

24 That's where the money's going, that's what
25 drives the investment decisions.

1 So, if you want to have any impact, today,
2 that's where it's got to go.

3 And, you know, there was a good discussion this
4 morning about the fire suppression value of renewables.
5 If I'm doing a new biomass facility, I'm going to want a
6 new, 20-year contract with the utility, and I need to
7 know that that is a safe and secure revenue stream.

8 The fact that the fire department or somebody
9 else has got \$100 for me today isn't going to drive my
10 investment, because I'm going to be worried that that
11 money's not there in five years.

12 So, there's a huge de-link there between what
13 those agencies are talking about, all good things, but
14 what the investment community actually needs to spend
15 the money to build stuff. So, I'd just point that out.

16 What we really are looking for is more
17 transparency in what the State or the utilities want,
18 when and where they want it.

19 Those kinds of signals, in advance, are the
20 things that are going to drive development decisions and
21 procurement decisions.

22 And if you come up with a conclusion that you
23 want all the renewables to be built on used lands, not
24 pristine lands, then send that signal out. What you'll
25 probably find is that nobody can built anything because

1 it's very difficult to negotiate with, you know, 50 or
2 100 different farmers in Butte County to try to get the
3 acreage that you want to build your project. But that's
4 something you could do.

5 So, the transparency of what, where and when you
6 want things, and what the utilities are selecting in
7 their bid protocols is a fundamental thing that at least
8 we've been working on, to make more known to developers
9 in advance so they can plan projects to meet those
10 needs.

11 And then, third, as I had indicated, monetizing
12 these benefits, if the -- what I'll call these adder
13 benefits that people have been talking about, that are
14 well talked about, and well discussed, if we can't
15 figure out a way to link those to the primary factor for
16 developing projects, which are the procurement decisions
17 right now, of the utilities, then it's probably not
18 going to be as helpful as you would like.

19 So, I will leave it to that and look forward to
20 Q&A.

21 COMMISSIONER PETERMAN: Thank you very much.
22 And I agree with you, Steven, in particular about
23 avoiding trying to get the numbers perfect.

24 One of the general questions I asked earlier was
25 want to get a sense of overall, in orders of magnitude,

1 the size and significance of some of these benefits.
2 Because, fundamentally, from a public perspective, if
3 they're not changing the overall relative share that we
4 would have from different renewables, ultimately not
5 necessarily something that we have to delve into thus
6 far.

7 And so want to have a sense of business, are we
8 not accounting for something big that otherwise might
9 change how we go about doing overall deployment.

10 And then, also, your point, too, about not
11 necessarily waiting to get the numbers accurate in order
12 to monetize or move forward with policy. Again, that's
13 true. I mean there's nothing that -- we assign prices
14 and dollar amounts to a lot of things that actually
15 don't reflect their -- we don't know their underlying
16 costs or value.

17 We have a dollar price for carbon allowances,
18 and we don't know what the price, the cost of carbon
19 will be ultimately for climate change.

20 And so I think we've got to also be cautious not
21 to require more out of a quantification of benefits,
22 than we do out of a quantification of cost. So, that's
23 just a couple points there.

24 Craig.

25 MR. LEWIS: Great. Thank you, Commissioner

1 Peterman.

2 When I first started to think through this
3 presentation, I thought I want to really look at this
4 from the perspective of maximizing ratepayer value. And
5 when I do that, I come to the very specific conclusions
6 that ratepayers get maximum value by avoiding
7 transmission investments and investments in new fossil
8 backup technologies, peaker plants.

9 And I further thought about it and said what do
10 California ratepayers truly value?

11 Well, you could say that -- I'm a California
12 ratepayer and I definitely value a pristine environment.
13 And one of the things that ruins pristine environment
14 more than almost anything else, is looking at a place
15 that has nothing, except a big transmission line running
16 through it. That is a soiled pristine environment.

17 California ratepayers also value innovation and
18 innovation pays off in a lot of ways. It creates jobs,
19 it creates superior options for customers, it provides
20 lower costs.

21 The analogy for the energy market is the telecom
22 market, because the telecom market is about 30 years
23 ahead of the energy market in terms of transforming
24 itself.

25 And the telecom market got transformed by two

1 things. It got transformed because MCI was able to
2 break the stranglehold that AT&T had on the long-
3 distance market in the United States, and that softened
4 AT&T's ability to defend itself for additional policy
5 innovation, that led to the breakup of the AT&T monopoly
6 across the United States, broke AT&T up into the Baby
7 Bells.

8 And that led to a massive transformation of the
9 telecommunications industry. We want, from 30 years
10 ago, to a scenario where you had to rent your home
11 telephone from AT&T. You could not even own your home
12 telephone, believe it or not. Lots of people in this
13 room aren't old enough to remember that.

14 But fast forward 30 years and we've got a
15 situation where you've got Google Talk, and Skype.
16 You've got three cellular carriers, or four, whatever it
17 is nowadays, multiple cellular carriers to choose from.

18 And if you're under 20 years old, your most
19 common form of communication is probably Facebook.

20 So, we have absolutely transformed the
21 telecommunications landscape. The costs are practically
22 zero, compared to what they were, you know, again
23 depending on how old you are. You used to spend 20, 30
24 cents a minute to call across the United States, today
25 it's free. And you can call across the world for almost

1 free nowadays.

2 So, innovation, California ratepayers definitely
3 value innovation. They also value superior service, and
4 I'll talk a little bit more about that in just a moment.

5 And at the end of the day, ratepayers definitely
6 value cost savings. And cost savings doesn't mean it
7 needs to be cheaper today. Right, and that's what
8 everybody seems to get locked in on is that it has to be
9 cheaper today.

10 No, it has to be cheaper over time, over the
11 lifecycle of the solution that we're talking about.

12 So, if you could, to the next slide. And by the
13 way this slide, I'm going to walk through it a little
14 bit, this really enforces a lot of the concepts that
15 Amory Lovins talks about, and he's been mentioned by
16 Nicole, he was mentioned this morning by Chairman
17 Weisenmiller.

18 And Amory Lovins really has a good view of the
19 world. And, basically, what Chair Weisenmiller said
20 this morning was that Amory has done the analysis for
21 the various scenarios and has basically come to the
22 solution that there's not that much cost difference.

23 But there is a big difference in that there's
24 not that much cost difference TODAY.

25 If you look at it over time and you get some of

1 these new solutions deployed, and you get some scale,
2 the costs come down. That's just how economics work.

3 And so, over time the ratepayer's going to be
4 far better served by going to the future that we
5 actually need to get to.

6 And what this chart -- and, by the way, Amory
7 Lovins is on my board of advisors, so I'm very proud of
8 that fact and he's doing some tremendous work out there.

9 What this chart shows is a little bit of what
10 Commissioner Peterman was hoping for, which is some
11 really good quantification. And this chart has some
12 really specific, easy-to-verify quantification, like
13 today's transmission access charge, which is about 1.2
14 cents per kilowatt hour.

15 In other words, every kilowatt hour that is
16 interconnected to the transmission, by the time it goes
17 off and serves a load it will have a 1.2 cent per
18 kilowatt hour transmission charge associated with it.

19 That's huge. It's a huge percentage of the cost
20 of retail energy.

21 Now, what happens in the business as usual case,
22 if we let the utilities and other folks, who probably
23 want to just keep doing business the way that they've
24 done it for the last hundred years, because it's very
25 profitable for them and the market's working for the

1 utilities.

2 And I don't argue with them for that. Right,
3 anybody would want to just continue to maximize the
4 situation for themselves.

5 so, if we continue on the business as usual
6 case, which is where you have central station generation
7 and you transport that remotely generated energy to
8 where you actually need it, which is where people live
9 and work, you're going to be basically following the
10 gold line. And the gold line is at the top of these
11 screen wedge, it's the business as usual transmission
12 access charge growth rate.

13 Now, we're making some assumptions here in terms
14 of where that transmission access charge is going. But
15 if you consider the fact that this chart is showing it
16 going from 1.2 cents to 2.7 cents over the next 20
17 years, and at the same time you consider the fact that
18 the transmission access charges have increased by more
19 than three times over the last seven years, this is a
20 pretty accurate chart.

21 And it's verified by a number of the municipal
22 utilities throughout the State of California that do the
23 analysis on what those transmission access charges are
24 going to be. They pay the exact same transmission
25 access charges that all of the utilities have to pay

1 when they download -- when they down convert
2 transmission energy into distribution energy.

3 So, essentially, the transmission access
4 charges, alone, are a huge, huge amount of money.

5 The State of California has been screaming about
6 this high-speed rail having a price tag somewhere in the
7 \$100 million range, and it's gone down to the \$70
8 million range.

9 Well, the amount of money that California
10 ratepayers will pay on transmission access charges over
11 the next 20 years, that they could avoid by going to a
12 distributed generation, and intelligent grid solution,
13 where we're balancing energy generation at the local
14 level, the amount of money differential that we're
15 talking about there is \$80 billion.

16 And the reason that we don't hear Californians
17 kicked and screaming about it is there's no transparency
18 in this. Ratepayers have no clue that they're getting
19 jammed, they're going to get jammed for \$80 billion over
20 the next 20 years, if we let folks, you know, the
21 utilities just continue on the business as usual
22 pathway.

23 Now, the other extreme, the blue line, is where
24 we don't invest in any new transmission, we continue to
25 maintain the existing transmission that's out there.

1 And there's a lot of it, there's a lot of transmission
2 out there.

3 Now, if we're generating on the whole -- on the
4 distribution grid, instead of the transmission grid, we
5 don't need to keep buying, the paying for investments in
6 new transmission.

7 We do need to invest in energy storage, demand
8 response, electric vehicles, which are kind of energy
9 storage and demand response combination.

10 And then we need to invest in the systems that
11 allow us to locally balance the supply and demand of
12 energy.

13 The Clean Coalition likes to refer to that as MC
14 squared, which stands for monitoring, communications,
15 and control. We chose MC squared because it's a play on
16 Einstein's famous formula for energy.

17 So, we've got a lot of potential here. There's
18 a boatload of money that can be used to either save
19 ratepayers money, and/or to invest in that distributed
20 generation, plus intelligent grid future, which is
21 really where the California ratepayers are going to get
22 the best value in terms of pristine environments,
23 investing in innovation, investing in cost savings over
24 time, and getting superior service.

25 Next slide, please.

1 COMMISSIONER PETERMAN: How many slides do you
2 have, Craig?

3 MR. LEWIS: Just this is the last one that I was
4 going to --

5 COMMISSIONER PETERMAN: Just checking.

6 MR. LEWIS: Yeah. I have a bunch of extra
7 slides, for people who want more information, but you
8 can present it your own.

9 This slide, basically, is not showing up
10 properly. What's supposed to be showing there is that
11 if you look at the demand curve for energy over the
12 course of a day, it's not this nice, clear -- oh, there
13 we go.

14 So, what this slide is supposed to be showing is
15 that in the course of the day, you know, if you look at
16 one day you see this kind of sinusoidal curve for where
17 demand for energy peaks in a typical day.

18 But what that really smoothed out curve doesn't
19 show is that we actually have a very jagged situation
20 going on in there. And that's, this look is basically
21 down to the one-minute level, versus a 24-hour period.

22 And when you start looking at things at a one-
23 minute level, you realize that having significant levels
24 of compensation going to fossil backup, you know, the
25 traditional peaker plant, is really not an optimum value

1 for California ratepayers. And the reason is that half
2 of the time is that fossil backup is actually
3 exacerbating the problem.

4 So, what this is looking at, frequency
5 regulation, and what you want to be doing when your
6 demand is above that solid, that straight brown line,
7 you want to be basically reducing the amount of energy
8 that's on your system. And when you're below that line,
9 you want to be increasing it.

10 Now, fossil generation can't provide any value
11 to ratepayers in this sub-minute situation because it
12 takes about ten minutes even for natural gas to ramp up
13 and down.

14 Energy storage, demand response are nearly
15 instantaneous. The value provided to ratepayers is
16 significantly higher from getting the frequency
17 regulation and lots of other ancillary services from
18 solutions, intelligent grid solutions, like energy
19 storage and demand response.

20 And with that I'll just move on and I'll just
21 say one more thing, because this ties up with some of
22 the things that Steven said, and Nicole, and others.

23 The solutions really come down to procurement.
24 I agree with Steven when he said we've got to make sure
25 that we're buying the right technologies.

1 We also need to make sure that when we're
2 talking about generation technologies -- so when I'm
3 talking about procurement, I'm not talking about just
4 generation, I'm also talking about energy storage, and
5 demand response, and the systems that balance energy
6 locally.

7 Aside from procurement, we have to solve
8 interconnection. Interconnection is so broken in
9 California, it is not even funny.

10 In fact, if ratepayers knew what was the
11 misappropriation of time and money that is being made on
12 them, because of the way the system is broken, they
13 would be crying.

14 So, what I'd like to bring as an example, with
15 respect to interconnection, is that Sacramento Municipal
16 Utility District, right, has served the energy right
17 here, they did interconnection studies for 100 megawatts
18 of their feed-in tariff program projects. Two guys, two
19 months, they got all those studies done, two guys, two
20 months. That same study, a single study for a typical
21 investor-owned utility in California is two years, a
22 single study. A tremendous bottleneck to the process of
23 procuring new, wholesale distributed generation and
24 we've got to solve that problem.

25 And by the way, Marc, that's what that bill

1 does, the one that you referenced. The bill that Marc
2 referenced, I think it's AB 2350, it basically -- or
3 2390, it basically says if the utilities are planning to
4 upgrade their distribution grid in a particular area,
5 within the next five years, and a wholesale DG project
6 is going to get sited there, and there's some upgrades
7 that need to happen that the utility would have made
8 anyway, within the next five years, the utility pays,
9 which means it's going to be rate based.

10 It is 100 percent fair on the ratepayer and it
11 is a huge solution to making sure that we help overcome
12 this interconnection problem.

13 And then the last thing that I'll put here is
14 that specific solutions, we absolutely need to include
15 locational benefits.

16 The proposed decision for SB 32, the statewide
17 feed-in tariff bill, that Marc mentioned, from the staff
18 decision -- or the staff proposal to the proposed
19 decision, they removed locational benefits.

20 Locational benefits is absolutely a pure market
21 signal so that generators can figure out where to go put
22 those projects. And for whatever reason, the ALJ,
23 that's in charge of the SB 32 decision, they proposed to
24 remove the locational benefits.

25 The locational benefits were worth up to 8 cents

1 a kilowatt hour. A huge market signal that makes sure
2 that we get things right and we don't have distorted
3 markets like you were complaining about.

4 So, we've got to make sure that we get
5 locational benefits properly valued and included in the
6 procurement programs.

7 Thank you.

8 COMMISSIONER PETERMAN: Thank you. Craig,
9 you'll be happy to know that we do have a workshop on
10 interconnection coming up. So, a lot of the topics that
11 you all really can't help but delve into right now, at
12 some point I might say to you we've got an entire day
13 devoted to that. But, yes, point taken.

14 I did want to ask a quick question from one of
15 the utilities, following up on the transmission and
16 distribution point.

17 One of the -- I believe it was Warren who might
18 have raised this point earlier, that although avoided
19 transmission distribution can be a benefit, for example,
20 with solar PV, when talking with -- it's an anticipated
21 benefit but sometimes it doesn't materialize, because
22 sometimes you still need to build, or expect to build
23 that T&D because you're uncertain about how much solar
24 you'll actually have, for example.

25 And I just wanted to get your thoughts or if you

1 could give us some feedback about to what extent you are
2 making decisions in terms of T&D expenditures based on
3 expectations, or even what's already been built around
4 solar or, you know, can you -- is this an area where you
5 actually can control one of the benefits from? And so,
6 welcome your thoughts.

7 MR. ULRICH: Yeah, this is the tough part. We
8 totally agree with Craig with regard to where the TAC
9 charge is going, and all this additional transmission.
10 This transmission, if we can avoid those costs, that's a
11 good thing.

12 And that's why we started, three years ago,
13 focusing on 20 megawatts and below, locally distributed.

14 And so it is a big driver to us, we always
15 include it in the cost whenever we make selections.

16 If I've got two projects that are both \$100, but
17 one comes with \$20 more of transmission, it loses, the
18 one who doesn't wins.

19 So, we use it every day. As Steven said, we're
20 using it every day in our evaluations and trying to
21 minimize these types of expenditures. So, it's a big
22 driver.

23 MR. THOMAS: Yeah, JC Thomas, again, with SDG&E,
24 just a couple of thoughts on that. One, from the things
25 that we're looking at, you know, the more generation of

1 distributed power you have will require a more
2 investment in our distribution system

3 We have in our rate case, I think, around \$57
4 million for Smart Grid, with a package, a plan going
5 forward to continue that investment, to deal with the
6 issues surrounding distributed generation.

7 Also, we've actually made an offering to a
8 customer, as an alternative to providing a distribution
9 line in a high fire-risk area, let's put him on a solar,
10 with self-generation, battery storage.

11 The customer declined. We were actually
12 advocating for it. It was a case where the risk was
13 high, our preference was to have some alternative
14 solutions for them. So, that's another issue that we
15 deal with and that is the sacrifice or the tradeoff that
16 the customer wants, in that case.

17 MR. JOHNSON: I would just add that when you
18 look at the way that utilities do planning for the
19 system there's really one issue that's driving it.
20 Obviously, cost is a big concern, we hear about cost
21 from our customers.

22 But the thing that we really, really hear about
23 is reliability. And at the end of the day, when you
24 look at the electricity grid, it's designed to be highly
25 reliable and it's redundant.

1 And so, you know, there's a couple of factors
2 that play in here. The first is, you know, to the
3 extent that solar would potentially offset distribution
4 investment, our peak load is at six o'clock at night and
5 it's getting later. It's moving back, it was 5:00 ten
6 years ago, it's moving back.

7 Solar isn't helping us there, so the system is
8 sized to meet peak load, so it doesn't particularly help
9 there.

10 The other thing is that distribution planners at
11 utilities, because reliability is so important, there's
12 a very -- you know, the way that it's done is basically
13 on a deterministic basically. Basically, when you're
14 doing resource planning, you're looking at what happens
15 if I lose my biggest resource, can I still meet load?

16 And so it's not a probabilistic process, we're
17 not looking at what's the likelihood that that happens,
18 we're just saying if that happens, can I still keep the
19 lights on?

20 And so when you do that, you start turning off
21 the -- what are considered the biggest contingencies,
22 the biggest thing that if something goes wrong with
23 that, I turn it off.

24 And so when you do that kind of planning, if you
25 look at systems and you put distributed generation on,

1 the first thing a planner does is say, okay, can I still
2 meet load if I turn that off?

3 So, it doesn't necessarily help with a very
4 conservative approach to reliability. And I think it's
5 something that gets missed in this conversation around
6 this, that somehow the system is designed to operate on
7 this razor trigger of optimal efficiency where we can
8 just put in the exact amount of whatever we need in the
9 system. No, it's done on a much more bulk basis and on
10 a much more conservative basis.

11 COMMISSIONER PETERMAN: So then I guess
12 generally it's fair to say that at this point the
13 utilities are not avoiding transmission distribution
14 with the introduction of distributed generation, to
15 date. Would that be correct? Okay.

16 MS. CAPRETZ: And my only follow-up question to
17 the utilities is so how is UCSD 93 percent off the grid
18 successfully? So, like how did they create that micro-
19 grid successfully, if it seems so insurmountable, the
20 opportunity and ability to do that?

21 I mean it just seems to me there are examples
22 that --

23 MR. THOMAS: They're connected to our
24 transmission system, they get transmission system from
25 us. And what they've done on their side, I haven't

1 gotten into great detail of what they're doing with
2 their micro-grid.

3 But those are some of the things that we're
4 exploring, too, both in Borrego Springs, the project
5 that we have there, and then also a development in
6 Mission Valley to look at those very issues.

7 How can you reduce the size of your distribution
8 system, your capacity to serve by meeting the needs with
9 storage, fuel cells, solar, or other techniques.

10 But it's building it from the ground up, not
11 retrofitting an existing development.

12 You know, we have over -- you know, thousands of
13 circuits, distribution circuits throughout California
14 that are already built, the costs are there to meet the
15 reliability needs at 6:00, 8:00 at night when our
16 customers come home. Adding in solar or battery storage
17 could help in some cases, but not in every case.

18 COMMISSIONER PETERMAN: Thank you.

19 MR. THOMAS: Thank you.

20 COMMISSIONER PETERMAN: Because I want to turn
21 to our next panelist, because we want everyone to have a
22 chance to go through. So, that's why we -- this panel
23 goes to 4:30 because we knew there was going to be a lot
24 of great discussion.

25 So, moving along, Lori, thank you for being

1 here.

2 MS. SCHELL: Thank you very much for the
3 invitation to be here. My name is Lori Schell, I'm
4 affiliated with UC Irvine, as well as Empowered Energy,
5 which is actually a Colorado-based, independent energy
6 consulting firm. So, I'm a numbers guy. I've been
7 invited here today because I've spent a lot of time
8 working on kind of benefits quantification in
9 California.

10 So, I'm going to present that a little bit, but
11 also talk a little bit more about kind of the general
12 context that's covered a lot of what we've been talking
13 about today.

14 If I can have the next slide, please? So, this
15 is really just -- you know, in California, and I guess I
16 maybe have the benefit of not being a Californian, it
17 strikes me that there's a lot of maybe conflicting
18 policies.

19 And, you know, you have an RPS that's 33
20 percent, you have a least-cost-best-fit. Are those --
21 can you do both of those? I don't know.

22 But this is based on work that I'm doing with UC
23 Irvine, thanks to some CEC funding, it's called the Grid
24 Project.

25 And the purpose of that is to look at the

1 technical and economic impacts of increasing renewable
2 penetration. So, we have a 33-percent mandate. You
3 know, Jerry Brown has said, well, if you can get 33, why
4 not 40 percent.

5 So, really looking at is that possible and, if
6 it were possible, what would the technical and economic
7 impacts be?

8 And the three graphs here are just kind of
9 showing how, as the penetration of the renewables
10 increases, the operation of the grid gets more chaotic.
11 And I think that's probably pretty widely accepted at
12 this point.

13 The red, to the right, where we're approaching
14 50 percent, is indicating curtailment from wind. So,
15 that's basically resources that are being wasted.

16 You see we have the role of the complementary
17 technologies as we get towards more and more renewable
18 penetration.

19 We've heard about the complementary technologies
20 or, for instance, energy storage, demand response, and
21 electric vehicles could also play an important role in
22 helping to reduce some of that or manage some of that
23 chaos.

24 The next slide, please. So, we've also heard a
25 lot this morning about, you know, the need for

1 additional grid flexibility. And I guess my perspective
2 is with all of the policies that you have, the
3 legislative mandates, how do you meet those, to the
4 extent you can meet them all, at the lowest cost and to
5 take advantage of the greatest amount of benefits?

6 We know we've got intermittent wind and solar,
7 they tend to be the ones that are coming on, first. We
8 need not only the existing technologies, but the future
9 technologies to help balance the intermittency of those
10 technologies.

11 You know, we've got base load generation, we've
12 got fuel cells that could take advantage of the
13 bioenergy, the biogas that we've also heard a lot
14 discussed about this morning.

15 We heard from the woman from the Cal-ISO about
16 the geothermal, I think one percent of her 65,000 was in
17 the queue, geothermal.

18 Dispatchable, if you don't have a complementary
19 or kind of non-generating technologies, like demand
20 response energy storage of many types, of which EV could
21 really be considered a part, you are going to see more
22 peakers.

23 I mean we have to have -- if you're not -- if
24 you don't have those complementary technologies to move
25 the energy around, you do see a lot more peakers, and

1 then that kind of reduces the benefits, on a stand-alone
2 basis, of increased renewable penetration.

3 Solar thermal with storage we've heard, you
4 know, that has some capability for some dispatch.
5 Storage is still relatively costly.

6 The next slide, please. So, these are just two
7 examples and they're pretty small, of kind of the
8 quantification of benefits that Empowered Energy has
9 been involved with over the last about seven years,
10 actually.

11 The top one is actually with respect to fuel
12 cells and this has kind of become to be known as the
13 waterfall chart, the waterfall analysis because of the
14 way it kind of falls down the side there.

15 And somebody asked me, oh, are those two decimal
16 places significant? You know, we've heard you can't
17 quantify to the exactitude.

18 The whole purpose of these was to demonstrate,
19 based on all the underlying assumptions, the benefits in
20 all of these different categories. And it was
21 important, deemed to be important to kind of put them in
22 the different slices because there's a lot of
23 disagreement about where the benefits really lie. If
24 they are benefits, if they are not benefits, can we
25 quantify them, how do we include them?

1 So, the purpose of putting them in all of the
2 different categories was so that if you're in a
3 discussion and somebody says, well, you know, the value
4 of health benefits, this is always a very contentious
5 one. If you don't believe that value of health benefits
6 exist or can be quantified, then you can take that out
7 and see how it affects the kind of cumulative value of
8 any given technology.

9 The fuel cell case here was for 75 percent
10 biogas, digester gas, with 100 percent cogeneration.

11 And the lower right is basically the same type
12 of analysis, but presented a little bit differently.
13 This was done for solar rooftop PV in anticipation of
14 the SB 32, or what we thought that might look like. So,
15 essentially, it takes the market price referent as a
16 starting point and calculates, well, what are the
17 benefits that PV, rooftop PV would provide that aren't
18 already captured in the MPR.

19 Again, both of these are very California
20 specific, trying to rely on as much California analysis
21 as possible so that we don't have to reinvent the wheel.

22 Two real points to make, and so these are real
23 technology specific valuations, where the value is going
24 to depend on what kind of product they provide, peak or
25 base load and, also, it's going to depend somewhat on

1 the timing.

2 Chair Weisenmiller talked about the value of
3 hedging with renewable energy. One point that's
4 important to make about hedging, the purpose of hedging
5 is to reduce the outliers, to reduce the high spikes in
6 energy costs, so the unknowns about CO2 pricing. It
7 doesn't necessarily give you a minimum cost.

8 So, and I think Steven referred to it as the
9 insurance value.

10 So, next slide, please, the last slide that I
11 have. So, we started out with the technology specific
12 kind of benefits analysis because that's where the
13 investment starts. And as we increase the renewable
14 penetration, the need for kind of a simultaneous and
15 systematic analysis to kind of handle and understand how
16 that kind of increasing complications in the grid to be
17 handled becomes more important.

18 Every technology has its own benefits and every
19 technology imposes its own costs on the system, and I
20 think it's important that kind of both sides of that are
21 recognized.

22 And if we look at it all together, to the best
23 that we can, we're never going to be able to completely
24 model it. But looking at the grid-wise valuation, then,
25 captures the interaction of those costs and benefits of

1 each technology.

2 So I think -- you know, I think there is a role
3 in -- you know, if the feed-in tariffs move forward
4 successfully, for technology specific feed-in tariffs,
5 otherwise I think you -- you implicitly choose a
6 technology by saying one size fits all.

7 So, I am in favor of feed-in tariffs that do
8 capture the benefits and that are technology specific,
9 just in part to get the mix of technologies that have
10 different purposes.

11 I think this morning Steve Weismann said, well,
12 if we don't do anything, you know, what are we going to
13 do with the quantifications, what usefulness does it
14 serve if we don't have anything to do with it.

15 I think the concept of what I call, I guess, the
16 greenhouse gas penalty as part of procurement is getting
17 you to -- if that's really how you choose procurement,
18 then that's going to select a different generation than
19 if you don't have that.

20 You could do the same thing with benefits, if
21 you have health benefits or costs associated with
22 different technologies, you could put that in that kind
23 of procurement analysis.

24 That, to me, is a less transparent means of
25 getting to probably the same end, than if you put it

1 more transparently into a feed-in tariff and say, okay,
2 this technology-specific technology has these benefits,
3 we're going to include those benefits as -- perhaps as
4 an adder in a feed-in tariff, and be very transparent as
5 to why those feed-in tariffs are set at what levels they
6 are for specific technologies. Thank you.

7 MS. WISLAND: Okay, last speaker. I'm sorry,
8 I'm going to be not facing you, so I'll talk to my
9 fellow panelists.

10 COMMISSIONER PETERMAN: That is fine. Thank
11 you.

12 MS. WISLAND: Okay. Good afternoon, I'm Laura
13 Wisland, I'm a Senior Energy Analyst with the Union of
14 Concerned Scientists. I appreciate the opportunity to
15 provide some comment today.

16 Most of my comments are going to react to things
17 that I've heard during the morning and afternoon
18 sessions.

19 I just wanted to start off, Kate mentioned that
20 the RPS was passed and it has a whole suite of benefits
21 that we're trying to achieve.

22 And so I thought Warren, this morning, did a
23 really good job of capturing those benefits into four
24 categories. So, we've got the energy system benefits,
25 the potential cost reductions to transmission and

1 distribution, that's geographic specific. We've got the
2 economic benefits, including job creating and also
3 including the hedging value of being less exposed to
4 unpredictable fossil fuel prices.

5 We have the environmental and public health
6 benefits, which I'm mostly focused on, and that's
7 reduction of greenhouse gases. That's not having to
8 extract fossil fuels and not having to transport them.

9 People don't really think that a lot of times,
10 and for gas it might not be a big deal, but for other
11 fuel sources it is.

12 And reducing criteria air pollutants. And then
13 the public policy benefits of being a leader in the
14 country and actually, in California, it's really for the
15 world, for that matter.

16 And ancillary to that, the public policy
17 benefits of us investing in the new generation of these
18 technologies, clean energy innovation, which is not the
19 topic of this panel, but it is related.

20 So, there's lots of good stuff going on here
21 that renewables can provide and that's a great success.
22 But, you know, honestly, I don't know if we're going to
23 be able to capture all of those benefits and optimize
24 them in the RPS policy.

25 And so I'm going to talk about the RPS because

1 that's what I work on most. What I've really been
2 thinking about lately is, you know, which benefits
3 should the RPS specifically focus on?

4 And then once we create that umbrella and then
5 once we create that market for renewables and send that
6 long-term demand signal, then should we create
7 additional policies under that umbrella to deal with
8 some of the equity issues, to deal with some of the
9 specific benefits we may be able to achieve in
10 geographic-specific areas.

11 So, from my perspective and from UCS's
12 perspective, the most important benefit of the RPS is
13 getting new, clean energy generation on the Western
14 Grid, and providing those greenhouse gas benefits, and
15 providing an alternative to fossil fuel generation,
16 that's the most important benefit.

17 And so how do we do that? There's two things
18 that I think are really important. The first thing is
19 focusing on transactions that actually get new energy
20 generation built, and making sure that instead of --
21 making sure that the procurement is not purchasing
22 existing projects that were built through PERPA, or for
23 some other state's program, but actually, really
24 encouraging transactions that get new projects financed
25 and built, and sending a long-term price signal. I mean

1 not a price signal, sending a long-term policy signal
2 about where we're going in the future. That's really
3 important and that's something that we haven't really
4 discussed much today.

5 So, on the long-term contracting, this is
6 actually a really important issue that's being discussed
7 at the PUC and the Energy Commission right now, they're
8 both in the process of developing the rules for the RPS
9 compliance.

10 And the new RPS law really went a long way, I
11 think, in terms of better prioritizing long-term
12 transactions, but there's still some uncertainty about
13 how this is all going to play out, and whether all the
14 utilities are going to be playing by the same rules, and
15 whether they're all going to be equally as incentivized
16 to make good decisions and good -- good project
17 management decisions, and good procurement decisions so
18 that eight years down the road we're actually going to
19 get and achieve the 33-percent RPS. I still think
20 that's something that's really important.

21 In terms of long-term policy certainty, I think
22 we're going to have to make a decision about where we're
23 headed in the next couple years.

24 So, just in preparation for this panel I did
25 some quick, back-of-the-envelope calculations to get a

1 sense of how close we are to the 33 percent RPS.

2 And I just looked at the procurement, the
3 procurement data for the three large IOUs, plus DWP,
4 plus SMUD. I took a look at what's -- you know, what's
5 existing now, what's online now, plus what's been
6 approved by the PUC, plus what's been contracted for,
7 but not approved by the PUC.

8 And with assuming a 33 percent project failure
9 rate, we're about three-quarters of the way there,
10 already, on paper at least.

11 So, that tells me that if we want to keep this
12 market going, and we've created one of the largest
13 renewable energy markets in the country, and we want to
14 achieve all these different benefits that we've been
15 talking about through all the policies that are
16 complementary to the RPS, then we need to start thinking
17 about what happens after 2020.

18 And I think one of the questions for the Energy
19 Commission is what do we do if we can't adequately
20 quantify all of these benefits of renewables? Are we
21 prepared to have these discussions and move forward,
22 even if we're not able to completely accurately quantify
23 all these benefits?

24 And then I just wanted to respond to one of
25 Aaron's slides that he showed this morning, and we've

1 talked a little bit about this, and this is the
2 connection between renewables and transportation.

3 So, Shana mentioned this morning -- so Aaron's
4 slide shows that in-state electricity generation is
5 actually a very small, relative portion of criteria air
6 pollutants and greenhouse gas emissions, which is true.

7 But we also know that the emissions that do
8 occur are highly concentrated and usually in areas of
9 low-income communities.

10 We also know that those communities live near
11 transportation corridors, they're disproportionately
12 exposed to the emissions associated with goods
13 transport.

14 If we can figure out how to electrify most of
15 the vehicle feet, and there's two separate analyses out
16 there, one from E3, one from California Center for
17 Science and Technology, that both say, really, the only
18 way we're going to get to our 2050 emission reduction
19 goals is by electrifying a significant portion of the
20 vehicle fleet.

21 We've got to do that and we have to do that
22 making sure it's a clean energy grid. If we don't, then
23 we're just going to shift that pollution somewhere else.

24 So, you know, the benefits of renewables, in
25 procuring renewables is going to affect more than just

1 that sliver, it's actually going to affect the pollution
2 associated with transportation emissions, hopefully,
3 which is a much, much larger percentage, and has much
4 far-ranging public health benefits.

5 Yeah, and I'll leave it at that for now.

6 COMMISSIONER PETERMAN: Great. Well, thank you.
7 And just the point about electrification, for those who
8 don't follow the Energy Commission's transportation
9 work, we manage AB 118, \$100 million a year fund of
10 alternative fuels, and vehicles, and infrastructure, and
11 do that, the complementary program with the ARB.

12 But, for example, by the end of 2012 we'll have
13 funded -- \$52 million in funding for electric charger
14 vehicles, as well as a few million dollars for PV
15 readiness -- I'm sorry, EV readiness plans.

16 And so, indeed, electrification is something
17 that we're thinking a lot about here.

18 I suggest we take --

19 MS. ZOCCHETTI: Madam Chair, may I interrupt for
20 a moment?

21 COMMISSIONER PETERMAN: Yes.

22 MS. ZOCCHETTI: We do actually have one more
23 panelist on the phone.

24 COMMISSIONER PETERMAN: Oh, apologies.

25 MS. ZOCCHETTI: Oh, no, no problem. So, we have

1 Randy Howard, from LADWP, on the phone as our final
2 panelist.

3 COMMISSIONER PETERMAN: Oh, great. Thank you.

4 MS. ZOCCHETTI: Randy, would you like to give
5 your opening remarks?

6 MR. HOWARD: Yes, thank you, Kate. I wish I
7 could be there, I'm covering for Cindy Montanez, who was
8 unable to, and so you don't see a PowerPoint from me.
9 And it sounds like even if I had provided it, it would
10 be cut up into small pieces.

11 COMMISSIONER PETERMAN: Not yours, Randy. Not
12 yours, don't worry.

13 MR. HOWARD: Not mine. Thank you, Commissioner.

14 And so, maybe it's just as well I'm not in the
15 room it sounds like it would be pretty exciting and I'd
16 be on the edge of my seat because going last I certainly
17 would have a lot of responses to a number of comments
18 that were previously made, and I won't go into that now.

19 I'm going to touch on, really, just two things.
20 One is just kind of an overview that a lot of people
21 don't think maybe we're going quite fast enough from the
22 utility sector but, in reality, we're transforming at
23 kind of record speed when you consider that, you know, a
24 typical renewable project has taken us three to seven
25 years to develop and bring online. A transmission line

1 might be seven to ten. And if we're doing some large-
2 scale storage, like a pump storage, you know, you're
3 talking eight to 12 years for those type of projects to
4 go from concept to final operation.

5 So, we're moving quite quickly and most of us
6 have never operated our systems to these levels,
7 already, of the intermittency, and just trying to
8 address the intermittency effects.

9 When you have some of these systems, like at
10 LADWP, where the difference between our peak in the fall
11 and the spring is about half as much as our peak in the
12 summer, and our off-peak hours of the night are maybe 60
13 percent of our day peaks right now in the spring, and
14 the fall.

15 And so when you add substantial wind, and it's
16 primarily blowing in the evening hours, it's quite
17 difficult to operate your system.

18 And so storage is a critical element of that in
19 the integration. But we are all learning in this
20 process and we're trying to fine tune and optimize as we
21 continue to add additional resources.

22 So I just wanted to highlight that, that it is a
23 very significant transformation. One of the biggest
24 failures that we see in the experience of these multiple
25 mandates that have been brought down, and there still

1 remains quite a lot of regulatory uncertainty.

2 But as each regulation becomes a little more
3 certain to us, we're still finding that these
4 regulations, on a statewide basis, aren't integrated.

5 And so we continue to find the different
6 agencies, as well as the various focus interest groups
7 aren't taking the time to really integrate.

8 We try to do more of that at the utility level,
9 but it's quite a challenge.

10 And so I look forward as the -- what's very
11 apparent in this year's IEPR is trying to do more of
12 that and also consider the costs going forward. So, I
13 do appreciate the efforts of the CEC and the staff
14 there.

15 What I wanted to just touch on because, and the
16 IOUs have been going through this for a while at the
17 CPUC, but the Major of L.A. signed the feed-in tariff
18 program today, the ordinances that delegated the
19 authority to LADWP to move forward with its feed-in
20 tariff. And so we are proposing to do that quite
21 quickly.

22 Some of the objectives of that program are to
23 create a solar power funding mechanism that would
24 augment what was previously the Solar Incentive Program.
25 So, as those funds kind of dry up on the Solar Incentive

1 side, and we continue to see significant demand there,
2 is how do we continue that growth of solar within the
3 distribution service territory?

4 We're also seeking, really, to have a program
5 that will provide a reliable, very cost-effective,
6 dependable program.

7 We are looking in there to encourage the
8 electrical generation from renewables much closer to the
9 load center. So there's been a lot of discussion, it
10 sounds like, on do we carve out particular technologies?

11 In our initial, 10-megawatt demonstration, which
12 we think will be a short phase, it's really to focus on
13 pricing, and I'll get a little bit into that.

14 We don't think we need to carve out technology
15 at this point. We are carving out geography and we're
16 carving out types of customers, because our concerns are
17 how do we approach low income, how do we ensure that
18 parts of our system that are multi-family are able to
19 participate in a feed-in tariff type program going
20 forward.

21 So, we are launching, immediately, with a 10-
22 megawatt demonstration. It will determine customer
23 interest at different size ranges, so we're going to do
24 some small, 30 to 150 kw, some larger at 150 to a 1
25 megawatt. And we're doing it at locations, including a

1 carve-out for our Owens Valley, which is a more rural
2 type system.

3 We hope to gain some price discovery for these
4 different sizes and locations. We want to spent a lot
5 of time working through the customer interaction, the
6 application.

7 We've had, to date, almost eight customer-
8 related workshops. We're going to have several other
9 workshops, now, on the actual application and how
10 participants can apply to participate.

11 We are in this process, for the demonstration,
12 working with the City of Los Angeles building safety
13 with the city's planning and the fire. We want to
14 ensure that it provides the social benefits. We don't
15 want, you know, solar systems installed that would cause
16 great grief to the fire department as to, you know,
17 being able to have access to critical parts of
18 facilities. If there was an emergency or a fire, we
19 want to ensure that it meets the city planning goals.

20 So, we're working jointly with the other city
21 departments to ensure that happens.

22 Upon completion of our 10-megawatt
23 demonstration, we are building a platform to launch into
24 a 75-megawatt and then up to 150-megawatt program.

25 So, the timing for us is we're not going to wait

1 for the installation of all the demonstration projects
2 to start planning the full expansion. We think we're
3 going to learn a lot just in the initial phases of the
4 demonstration project, and then be able to launch
5 quickly into the full process.

6 The pricing for us, we are using a bid type
7 process. We think that's the appropriate way in at
8 least the demonstration.

9 Now, once we complete the demonstration, receive
10 the price signals for the various sizes and locations,
11 we will determine at that point if we want to continue
12 using a method of price discovery. Kind of some folks
13 call it an auction, we call it requests for proposals.
14 That might be one mechanism.

15 Or we will choose pricing based on what we saw
16 in the demonstration and offer those prices out, and
17 then try to fill the quantities that we have going
18 forward.

19 We do expect our solicitations for our 75-
20 megawatt to be open in 2013. All demonstration results
21 and the big projects will be awarded by the end of
22 calendar year 2012.

23 So, we do expect quite a lot of benefit within
24 the city. The City of L.A. is different than other
25 cities. I mean one thing we've tried to get across at

1 the Energy Commission is there needs to be
2 consideration, all utilities are a little different,
3 they come to the table with different resources,
4 different geographies, different types of customer
5 bases.

6 We have, in the City of L.A., 1.4 million
7 meters, about 4 million customers, but we have out of
8 those almost 600,000 of the customer meters are multi-
9 family. So, a lot of them don't own their roof. And
10 then many of those that are in more condominium type
11 complexes, they don't control the roof, themselves. So,
12 it becomes a little more challenging for programs like
13 this, but we're going to try to work through that by
14 carving out specific opportunities and ensure that we
15 understand how it would best fit our customers going
16 forward.

17 With that, I'll stop and then we can get on to
18 other questions and discussion.

19 COMMISSIONER PETERMAN: Thank you, Randy. I'll
20 recommend, since we've been at it for about two hours,
21 since lunch, that we take a five-minute break, stretch
22 our legs.

23 A couple of announcements before that, one, I'll
24 ask staff during that break time to put up the list of
25 future workshops and dates, just so people have a sense

1 of what else we're going to cover.

2 Also, in the spirit of renewables integration, I
3 will ask our panelists during the break to switch up
4 their seats, sit next to someone who you may less as
5 well, or perhaps you know too well, and share a
6 difference of opinion, but then you can team up for the
7 best ideas.

8 And then a third announcement is that while
9 we've been sitting up here solving the world's problems,
10 the Energy Commission family has extended and expanded
11 and, hopefully, it will be a -- I received a press
12 release, while sitting up here, that Andrew McAllister,
13 a panelist, has just been appointed to the California
14 Energy Commission.

15 And so, first of all, congratulations, Andrew.

16 (Applause)

17 COMMISSIONER PETERMAN: He's held numerous
18 positions with the California Center for Sustainable
19 Energy and done all types of great work, which you can
20 find on the website.

21 But for those listening, it means that
22 participating on a panel, here, might just lead you to
23 becoming a Commissioner. So, if that's not enticing
24 enough, I'm sure our Chairman might want to say a few
25 words as well.

1 CHAIRPERSON WEISENMILLER: Certainly, we're very
2 glad to have the appointment today, certainly looking
3 forward to working with Andrew more in the future on the
4 stuff. And, again, a very good appointment and I think
5 we're very happy, and so welcome aboard.

6 COMMISSIONER PETERMAN: So enjoy sitting on that
7 side of the table.

8 MR. MC ALLISTER: Yeah, for a little bit. Thank
9 you very much. I just, not to take up a whole lot of
10 time here, but it's been a little bit bizarre knowing
11 this was happening, and waiting for the press release to
12 come out and sort of like not knowing what people --
13 anyway.

14 But I'm really happy. I think there's a lot of
15 heavy lifting to do. There's a lot of really great
16 work, you all are doing a fabulous job, along with
17 Commissioner Douglas.

18 I'm very humbled by the appointment, for sure,
19 and definitely feel like it's just, you know, a great
20 opportunity for me, personally, obviously, but just
21 there's so much to do in the State I'm really excited to
22 sort of approach it with that public service attitude.

23 And then, also, I need to know where I can buy
24 my Commissioner hat, because I imagine you must know
25 that, so I need to go out and get one really quick. So,

1 thank you very much.

2 COMMISSIONER PETERMAN: You know, Andrew, I
3 found one of my office. We're no longer are able to
4 afford swag, or buy it, so there is no Commissioner hat,
5 but we'll work on it.

6 MR. MC ALLISTER: Fair enough.

7 COMMISSIONER PETERMAN: Yeah, you can buy your
8 own t-shirt for \$29 every July.

9 So, we'll reconvene at 3:40. Thanks.

10 (Off the record at 3:34 p.m.)

11 (Reconvene at 3:50 p.m.)

12 COMMISSIONER PETERMAN: I think we're going to
13 aim to have this be -- have this workshop even end
14 early, so maybe at 4:59 is what I'm shooting for to give
15 us a good track record.

16 You can't hear? Oh, no, we've had a call to
17 have us go until 5:00. I guess someone's getting
18 overtime, 5:01. Sorry about that, court reporter, we'll
19 make you get your overtime.

20 All right, and we've already gotten one card for
21 public comment, so that will be exciting.

22 So, now that we've heard from all the panelists,
23 I'll turn this back over to the Moderator, Kate, for
24 whatever questions she would like to put to the group,
25 and also that she provide opportunity for panelists to

1 ask each other questions.

2 Of course, I'm sure you will all be respectful
3 and mindful of the time, as well. Thanks.

4 MS. ZOCCHETTI: Thank you, Commissioner
5 Peterman.

6 Do you want to put the questions back up or
7 would you like to keep the dates up?

8 COMMISSIONER PETERMAN: You can put the
9 questions back up, I just wanted everyone to see the
10 Energy Tour, Summer 2012 that we're about to engage in,
11 and start getting excited. You can find copies of this
12 online.

13 MS. ZOCCHETTI: Thank you. So, our first
14 question has to do with policies and programs and we've
15 talked a little bit about some Federal, mostly State,
16 and some local programs. So, I think this question can
17 expand on those comments.

18 The question is how do current policies or
19 programs capture benefit values of renewable energy?

20 And there was quite a few of the panelists have
21 mentioned that a lot of the programs, or policies, or
22 both are fragmented, or inconsistent, or not working
23 together. So, personally, I'd like to hear how perhaps
24 better integrating those programs could do a better job
25 of capturing the benefits from renewables.

1 And so, this is kind of a free for all, anyone.
2 I don't want to put anyone on the spot by calling on
3 you, but I would encourage folks to answer the questions
4 that are near and dear to their heart, and we can start
5 with anyone.

6 Yes. And please state your name for the folks
7 listening in.

8 MR. ULRICH: This is Marc Ulrich, at Southern
9 California Edison. I want to say that there is a lot of
10 fragmented kind of policies. And as Aaron showed on his
11 slide, we have procurement programs that are all policy
12 driven, that an individual, one-and-a-half megawatt,
13 solar rooftop, photovoltaic can participate in five
14 different procurement programs.

15 They can do the SPVP, they can do the RAM, they
16 can do CREST, they can do the PURPA QF project, and they
17 can bid on the large solicitations, too.

18 But there isn't -- this isn't bad news. I mean
19 what ends up happening is the seller will,
20 appropriately, seek the highest price of all those
21 programs. There could be three programs that they're
22 economical for, but whichever one's paying me the most,
23 that's the one I'm going to do.

24 Well, that means the difference between what
25 they needed and what we're actually paying them could

1 have been used to buy more renewables, and that's
2 unfortunate, but it's getting fixed.

3 So, the CPUC is working very hard to -- they
4 recognize these overlaps, they recognize the
5 inconsistencies and they're working on it.

6 I'll give you an example. The RAM, which is
7 the auction mechanism for up to 20 megawatts, used to go
8 from a megawatt all the way up to 20, and CREST used to
9 go from zero to one and a half. It's now going to go up
10 to three megawatts, and it's going to stop there, but
11 RAM's also going to start there.

12 So it will be zero to three is going to be for
13 feed-in tariff, I think they're calling it RMA,
14 Renewable Market Adjustment Tariff.

15 And then from 3 megawatts to 20 megawatts will
16 be RAM.

17 So, there are efforts to try to coordinate
18 these. Now, I recognize that I'm talking about very
19 small procurement policies and programs, but it's not
20 all bad news. People recognize that we're moving really
21 fast, we're putting a lot of programs in place and these
22 are stepping on each other or they're not capturing all
23 the benefits in all places.

24 MS. CAPRETZ: Well, my response to that is --

25 MS. ZOCCHETTI: Could you state your name, I'm

1 sorry?

2 MS. CAPRETZ: Oh, sorry. I'm Nicole Capretz,
3 from Environmental Health Coalition.

4 Is that I agree for the larger systems within
5 the small scale, zero to 20, like the three -- or maybe
6 even 1 to 20, there are existing program models that
7 folks can fit into.

8 But the zero to one, which is building scale
9 solar, which is what zero net energy policy is really
10 trying to address, there aren't really existing
11 programs, outside of net metering, or CSI which, as we
12 all know, is expiring soon.

13 So, what do you see is the program model for
14 that?

15 MR. ULRICH: Yeah, so there is a home today and
16 it's called CREST, California Renewable Energy Small
17 Tariff, and it was only eligible up to one and a half
18 megawatts. Most of our projects there, we have 56
19 something projects for 75 megawatts, most of them are
20 less than a megawatt.

21 So they've been surviving. I think PG&E has 74
22 megawatts of this CREST type program, so they're all
23 small, around a megawatt or less.

24 But what we're learning is in the next version
25 of this it will go all the way to three megawatts, but

1 it will go as low as zero or -- or sorry -- zero.

2 There's got to be something, right, we're not paying for
3 nothing.

4 MR. JOHNSON: You're losing money, Marc.

5 MR. ULRICH: Yes. You know, the utilities are
6 very good at buying high and selling low, we do it
7 almost all the time with generation, especially in the
8 QF area.

9 MR. KELLY: You probably (inaudible)

10 MR. ULRICH: Thank you, Steven.

11 So, the new programs will be there, the new
12 program that the Commission just put out a proposed
13 decision will replace the CREST tariff and it's focused
14 on the small stuff.

15 But one of the points I was going to make is as
16 we evolve, we learn about things.

17 For example, in the CREST program we saw a lot
18 of people, it was only eligible for up to one and a half
19 megawatts. We saw somebody take a 20-megawatt project
20 and break it up into 20 one-megawatt projects. That's
21 not the intent. We rejected them, but we need the
22 flexibility to reject them.

23 So, when we get a lot of rules that are
24 micromanaged, we worked really hard to reject that
25 particular seller in the CREST program, and we had to

1 stretch to find something to allow us, because it was a
2 well-defined tariff that gave us almost no flexibility.

3 So, in our procurement programs, in our
4 processes of capturing these benefits we learn. And
5 there's some really good staff at the Commission who
6 learned you launch a program, you see how the program
7 works, you hold a forum with all the stakeholders, you
8 revamp the program, you re-launch the program. You see
9 what people are doing, is it getting what we want? Do
10 we see gaming? Have another stakeholder forum, re-
11 launch.

12 And so we're doing that with SPVP, which is our
13 commercial rooftop. We're doing it with RAM, we're
14 doing it now -- we will do it with the RMAT.

15 So, all of this is evolving over time and I
16 think that's a good thing because we get the objectives
17 of capturing these benefits, but we get them at the most
18 cost effective manner so that we can get more of it.

19 MR. LEWIS: I'd like to jump in here. Craig
20 Lewis, with the Clean Coalition.

21 The Clean Coalition really tries to stay with
22 facts and figures that can be quantified, and there's
23 lots of data out there that we'd love to incorporate,
24 but we know that it's just almost impossible to get it
25 through the policymakers because there's going to be an

1 opposite side to that argument.

2 But the Clean Coalition is very focused on
3 wholesale programs. We think that wholesale is the
4 future, wholesale distributed generation is the future.
5 We've got to get out of the death spiral scenario where
6 the utilities are losing all their load, which happens
7 on retail programs like CSI, once they get into
8 significant percentages of the load.

9 So, to answer the question one, how do the
10 current policies and programs capture the benefit value
11 on the wholesale side?

12 There's really two specific areas where they are
13 captured and the first one is time and delivery. Time
14 and delivery is a really clear place where value is
15 captured and it is either stacked on top or taken off
16 the bottom.

17 In the case of wind, which blows mostly at night
18 in California, you're actually getting a decrease in the
19 PPA rate that somebody's -- that one's going to get
20 because of the TOD adjustment.

21 The other area where there is value that's being
22 captured is in there is some greenhouse gas capture that
23 is in the market price referent, and I don't know how
24 that's going to continue playing out or not because the
25 market price referent is going away, for the most part,

1 as a basis here in California.

2 But the big opportunity for capturing value that
3 is not -- that's completely ignored right now is
4 locational benefit. And locational benefits, as I said
5 before, I mentioned that the SB 32 staff proposal, from
6 the California Public Utilities Commission, has a
7 locational benefits adder that was devised by E3, and it
8 went up to -- it was expected to be as high as eight
9 cents a kilowatt hour, so really significant.

10 And that eight cents a kilowatt hour would have
11 applied where you're sitting right on top of a load,
12 it's where you're in downtown Los Angeles, downtown San
13 Francisco.

14 And, unfortunately, we didn't get that and right
15 now locational benefits are not factored into any of the
16 programs that we're talking about, that we have in
17 California, and that has distorted the market.

18 And I think what Marc just mentioned, with
19 Southern California Edison taking its available capacity
20 under the solar PV program, that was a great program, we
21 loved that program because it was rooftop focused, and
22 it moved that capacity and put it to ground-based
23 focused.

24 Well, we just distorted the marketplace because
25 we didn't give the locational benefits value of those

1 rooftop projects that are sitting right on top of the
2 loads, and we gave all that extra capacity to the
3 ground-based, you know, RAM -- RAM program.

4 So, I think that the fact that we don't have
5 locational benefits is a real disservice to California
6 ratepayers. We're missing real, quantifiable value
7 that's there and we're ignoring it. And because of that
8 we're distorting the way that these programs are
9 working.

10 MR. MC ALLISTER: I guess the Smart Grid --
11 several of these things have been brought up before, but
12 the Smart Grid, and all the data that's going to be
13 flowing around because of that, it already is flowing
14 around but we're still -- everybody's struggling about,
15 you know, what benefit is this information really going
16 to provide?

17 And there's -- maybe this is more on the cost
18 side, than the benefit. It's more of a reduction of
19 cost argument than a generation of benefit argument, but
20 you could sort of say they're similar.

21 But the utilities, I think, are concerned about
22 the high penetration scenarios and indicate that with
23 lots of small scale rooftop DG you're going to, you
24 know, get voltage variations, and all these near-term
25 fluctuations, and then we're going to have problems with

1 our transformers and, you know the tap changes are going
2 to burn out sooner, and all these kind of downsides that
3 generate costs.

4 But there is actually a difference, in a given
5 distribution feeder, where a system goes, if it's nearer
6 to the truck lines, if it's farther from the truck
7 lines, you know, the impacts are different and they flow
8 into the distribution grid in a different way.

9 And so I think there's a pretty strong argument
10 that the conditions are coming up here pretty quickly
11 where you could have a lot more locations down, instead
12 of just at the substation, or a relatively high level in
13 the subtransmission grid, or whatever, down in the
14 distribution grid and actually have -- generate those
15 locational benefits, actual numbers. You know, even if
16 we keep it typical and not talk about sort of the more
17 social benefits and everything, but you could actually
18 generate those numbers.

19 And some of the policies that you were talking
20 about earlier where you say, okay, well, we're going to
21 allow the benefits on a locational level, well you could
22 get pretty granular with that analysis and actually
23 have -- send the price signals down to, you know, the
24 neighborhood, or the little part of the distribution
25 grid depending on how much congestion you're going to

1 generate and what the actual system on the grid is.

2 So, I think those sorts of -- you know, we have
3 the technology, we can build it, right. So, I think as
4 we have this data and we learn how to manipulate it and
5 automate a lot of these stuff, the possibilities are
6 pretty huge to incorporate. To not just accept, you
7 know, the 15 percent, you know, penetration number but
8 actually find out where it could be a lot higher than
9 that and go towards that scenario without a lot of worry
10 about the downside from the reliability perspective.

11 MR. KELLY: Well, I'll just follow up on that,
12 though, because I made the point earlier, tried to make
13 the point earlier that investment is driven by the
14 procurement decisions.

15 So, even if you've got all that information at a
16 quantitative level, at the technical level of the CEC,
17 how do you translate that information into an effective
18 procurement decision?

19 And if it is done under the current protocols,
20 developers don't know what those values are. Developers
21 do not know that, for example, impacts on low-income
22 environmental injustice communities are 60 percent of
23 the value of your bid, as opposed to price, or the
24 opposite of that.

25 We know generally what is used in the

1 consideration of the valuation, but if it's going to
2 really matter from a State policy perspective where you
3 put your stuff, then people have to know in advance, way
4 in advance what -- how much it's going to value in the
5 bid evaluation. And that information is, in my opinion,
6 not publicly available.

7 MR. MC ALLISTER: And if -- it's already not
8 publicly available. So, one question is whether you're
9 talking about a wholesale scenario, or a net-metered
10 type scenario where the customer is making the decision
11 and they need the information versus, you know, a
12 developer and they need the information.

13 But in net metering it's all pretty blurry as it
14 is because it's all mediated by the bill. So, we've
15 struggled -- actually, already on the net-metered
16 scenario we're struggling with similar issues.

17 So, you know, transparent pricing I think would
18 unlock a lot of benefit, if we could figure out how to
19 communicate, like you're saying. I don't have the
20 answer to that.

21 MS. ZOCCHETTI: Could we have -- let's have
22 Laura go next and then Lori.

23 MS. WISLAND: Well, I just wanted to respond to
24 the fragmentation question, so if you want to follow on
25 this thread.

1 MR. LEWIS: I just wanted to -- when you say the
2 clear pricing are you talking about a procurement price
3 on the wholesale side or are you talking about a clarity
4 on the retail price?

5 MR. MC ALLISTER: Yeah, just sort of being able
6 to communicate to the customer, say, on a net-metered
7 scenario what the particular neighborhoods,
8 characteristics are for -- you know, giving them some
9 information so they can at least anticipate what the
10 benefits are going to be when they install. You know,
11 it's a difficult proposition to do, but it is a
12 function -- it is doable if you understand the
13 distribution grid.

14 COMMISSIONER PETERMAN: Well, and I think
15 someone from one of the utilities can speak to the fact
16 about the distribution maps that have been put up to at
17 least talk about -- I'm setting you up here, Marc, go
18 for it.

19 I'll just speak -- I'll finish the points
20 because those on WebEx can't see, he just held up
21 something on his i-Pad for me to look at. But there's
22 distribution maps talking about preferred locations for
23 DG in terms of distribution upgrades. And maybe, Marc,
24 can you speak to that?

25 MR. ULRICH: Yeah. So these are all good

1 points. One of the things that I've heard is more
2 transparency, more transparency, but I've also heard
3 that we should provide adders.

4 So, I believe in more transparency, so one of
5 the things we've done, I think PG&E's done the same, is
6 we have down to the distribution level, you go get
7 Google Earth, we can tell you where there's excess
8 capacity in the distribution grid.

9 What we don't want to do, Craig had mentioned
10 earlier is, you know, the transmission access charge is
11 about two cents these days. Well, he's saying that we
12 should pay eight cents to have somebody locate in the
13 areas that I'm telling people to locate with these, with
14 the Google Map. So, the math doesn't work out for me.

15 What we'd need to do, as utilities, is continue
16 to provide this kind of information to tell people where
17 the value is.

18 But if I have to pay, as a customer, that value
19 to the generator, if the generator doesn't need it, then
20 there's no real benefit for them locating here,
21 financially anymore, either. So, we do this.

22 And in the most recent Commission's decision on
23 the feed-in tariff what they've said is if you don't
24 show up in these areas, they haven't lost the locational
25 benefits as Craig says, they say if you don't show up in

1 these areas, you're not eligible for the feed-in tariff.

2 That's saying that not only is the location
3 important, it is a criteria. If you're not local,
4 you're not eligible. So, that's a much better approach,
5 in our opinion, than just saying we'll allow people to
6 be in the desert to participate in the feed-in tariff,
7 and people local in these areas to also participate.
8 And the people who do local, we'll give you an eight
9 cents more price. That doesn't play well.

10 Our experience, when you do these adders and you
11 start paying the generators, the adders, they start
12 gaming the systems.

13 And so as I've said in the slide, the only thing
14 the generator needs to know is information like where do
15 you want me, when do you want me, what kind of
16 technology, and we provide all that information. And
17 they need to know their costs.

18 Because once you start telling them, hey, if
19 anybody shows up in the green, I'm going to give you
20 another 80 cents. If you show up in the red, I'm going
21 to give you another 40 cents. If you show up in the
22 blue, I'm going to give you another 20 cents. I promise
23 you games will be played, that's what our experience has
24 been in 2008 and '09, when we launched our first fixed-
25 price, MPR-based feed-in tariff.

1 And we revised that to an auction in 2010 and
2 the Commission's adopting that under RAM and it works.

3 Now, I agree we need to see it work at a lower
4 level and so one of the things we did is come up with
5 this hybrid where we say, okay, people like transparency
6 on what the price is, and they like first-come, first-
7 served.

8 So, we've sold to the Commission and they're
9 buying the pricing on the feed-in tariff, we will
10 publish a price every month, and we will take a queue of
11 a lot of people, 300 something sellers, and we'll
12 publish this price.

13 And we'll let the first person, Laura's the
14 first person in the queue, Laura, can you build at this
15 price? And if Laura says yes, she gets a contract,
16 that's it.

17 Nicole, you're second, can you build? She says
18 no, then I go to the third, JC, can you build at this
19 price?

20 And I go through the whole queue and if I get
21 more than 5 megawatts then what that means is there's a
22 lot of people that can build at this price. And so next
23 month the price goes down by two bucks, just
24 automatically. There's no -- there's no involvement of
25 agencies, there's no involvement of anything else, it's

1 simple supply and demand.

2 If I went through the whole queue and I've
3 published that price, and I got no takers, then next
4 month the price automatically goes up by two bucks. And
5 if I get no subscription, again, it goes up by four
6 bucks. So in two months it's gone up by six bucks.

7 This kind of automatic adjustment is the way to
8 get renewables at the most cost-effective manner. It's
9 the right way that we believe you should price feed-in
10 tariffs.

11 It ensures you get the generation because if
12 you're not getting the generation every month the price
13 keeps going up, it keeps climbing, and climbing, and
14 climbing until you get the generation.

15 And if you get over-subscription, then the price
16 keeps going down, and that's good for our customers.
17 This is our solution to try to balance these two
18 competing problems where you're not getting the
19 generation in the right place or you're not getting --
20 you're paying too much for it.

21 So, this turned into a commercial for me, so I'm
22 sorry.

23 MR. LEWIS: And if I could just respond to --

24 COMMISSIONER PETERMAN: Or a bully pulpit, one
25 or the other, but it was good.

1 MR. LEWIS: If I could just respond to a couple
2 of things. One is that the locational benefits value
3 that was calculated for the staff proposal at the CPUC
4 on SB 32 was done by E3.

5 MR. ULRICH: Right.

6 MR. LEWIS: And it was very bold, right, it was
7 eight cents was the maximum kind of anticipated estimate
8 or calculation.

9 The other thing is that I think that Marc and I
10 aren't necessarily that far apart in terms of where an
11 ideal solution could be, and I've had conversations with
12 PG&E and SDG&E, and I think that there's a way to find
13 some good middle ground here.

14 Fundamentally, the biggest issue with the SCE
15 approach that we have, that the Clean Coalition has
16 right now, and that I think makes SB 32, the proposal in
17 SB 32 very unworkable is that we're just talking about
18 such a tiny amount of capacity, program capacity.

19 If we were talking about more of a German style,
20 where we're talking about getting gigawatts, instead of
21 megawatts then -- and we've identified that there's lots
22 of places to bring gigawatts online, that's great, I
23 think you're -- and the bucket sizes are big, that
24 solution works.

25 But when we're talking about tiny bucket sizes,

1 the bucket sizes -- the biggest bucket size under the
2 proposed SB 32 position, proposed decision, is going to
3 be something like 40 megawatts. Right, so you fill up
4 40 megawatts and you've got a two dollar -- a two cent
5 per kilowatt hour reduction, you've just completely shut
6 off your market. And that's just not what we're all
7 here for, we're not here to get 40 megawatts online in
8 Southern California Edison territory, right, we've got
9 to be thinking a lot bigger than that.

10 COMMISSIONER PETERMAN: I'd like to hear if
11 Laura and Nicole have any reactions to the --

12 MS. WISLAND: My comments were about the
13 fragmentation question. I know feed-in tariff pricing
14 is something where passions are high --

15 COMMISSIONER PETERMAN: Well, you should get
16 them in now because otherwise --

17 MS. WISLAND: -- so I've just sort of let it
18 flow.

19 COMMISSIONER PETERMAN: Please, what are your
20 comments on the fragmentation?

21 MS. WISLAND: Yeah, so actually my comments are
22 more questions for the utilities and the other
23 panelists, in terms of thinking about fragmentation and
24 are we missing out on the benefits of clean energy
25 policies because we're not better coordinating with

1 other, you know, programs and policies that are out
2 there?

3 And I really don't know the answer to this. I
4 know some people ask rhetorical questions because they
5 really know the answer, but I don't.

6 You know, if we're thinking about a world where
7 there's going to be a lot more solar on and the peak is
8 going to shift towards more nighttime, how are our
9 energy efficiency and demand response programs
10 anticipating that, and changing in order to play a more
11 helpful role and reduce some of the variability of load,
12 which is a huge amount of intermittency on the system?

13 Is that happening, should that be happening, if
14 so, where is it happening?

15 MR. JOHNSON: To be very candid I don't -- you
16 know, we're beginning to have that conversation. I mean
17 the issue for PG&E that we've looked at is, you know,
18 when we talk about distributed generation and we talk
19 about all these issues, we've really been talking about
20 PV, and everyone's very excited about PV because the
21 prices are just dropping through the floor, and they
22 are.

23 We have over 5,000 megawatts of solar under
24 contract at PG&E. The highest peak we've ever had is
25 around 20,000 megawatts. It's going to significantly

1 reshape what the daily load profile looks like in terms
2 of our need.

3 Now, you know, the thing I think we've started
4 struggling with is as we install Smart Meter, a lot of
5 the conversation is about getting people to shift their
6 usage off of peak. And, you know, we may actually --
7 that peak may be changing.

8 And so to the extent that that technology is
9 there, maybe telling them a different signal than we're
10 telling them today, which is, you know, don't come home
11 and turn on your washer, dryer, your dishwasher, wait
12 until 9:00 o'clock. It may be a different conversation.

13 But, frankly, I think you identify a good issue,
14 which is that there is that fragmentation and we are
15 looking at a lot of those programs in silos.

16 And, you know, if you look at the organizational
17 structure of a typical utility, you know, we have a
18 procurement department and we have a customer
19 department. And, you know, we certainly talk to each
20 other a lot, things like feed-in tariffs and solar bleed
21 across both groups. But that is a challenge and I
22 don't -- you know, I think you've identified an issue
23 and I don't think we have a good answer, yet.

24 MR. THOMAS: Just to add to that, this is JC
25 Thomas, again, SDG&E. One of the things that we are

1 doing is installing battery storage. We have plans this
2 year to put in eight years on our service territory, two
3 large-scale substation level, we're calling it, and then
4 six or smaller distributed to test the technology and
5 see how it works in different environments.

6 Hopefully, they'll be in by the end of this
7 year, and that will be one of the tools that we look to
8 in the future to deal with the issue of having
9 renewables, and shifting to peak later and later at
10 night, especially on the residential side.

11 And it's going to demonstrate that the storage
12 doesn't have to be on site. And solar doesn't have to
13 be on site. It does not have to be at the location
14 you're consuming, if you look at utilities for a hundred
15 years, generation was always somewhere else, it was
16 never right there on site.

17 And, hopefully, some of these tools, the battery
18 storage, and our 'Share the Sun' proposal will help
19 demonstrate that you can have resources elsewhere, and
20 utilize a grid that is dynamic and can deliver energy to
21 our customers when they need it.

22 MS. ZOCCHETTI: Anyone else on this question?

23 MS. CAPRETZ: Oh, well, you know, just to piggy-
24 back on Craig's comments, I totally agree. Because,
25 like I've said over and over again, there's this

1 infrastructure divider, green divide, because nothing in
2 your comments suggested that there would be any kind of
3 value in installing infrastructure in these low-income
4 communities of color. I mean, so it's just not part of
5 your decision making process.

6 And so for me, you know, the only opportunity I
7 see that potentially, you know, happening and what
8 really you have seen in Germany in terms of
9 accessibility and affordability of solar is scale. And
10 then when these programs develop and expand in a manner,
11 such that more and more people can participate, and I
12 feel like with the zero to one megawatt market, that's
13 what we'd need.

14 And, you know, I think the struggle is that
15 we're always pushing against the utilities on that point
16 and that there's always a push to go larger because
17 it's, you know, again, that kind of more simplistic,
18 it's least cost, you know, best fit. It's just -- it's
19 ground, mountain, you know, and it's the boundaries of
20 the urban area or in the desert. And so that's
21 something we're constantly struggling with.

22 And I do, you know, as much as I want to push
23 for all of it now, for some kind of value added now to
24 be in our communities, and I'm still going to push for
25 that. I think, though, long term the answer is scale

1 and we just are hopeful that the utilities -- and that
2 it fits in with Smart Grid, like Andrew's discussion,
3 and the micro grid.

4 You know, UCSD, to me, is something to emulate,
5 something to aspire to, and I really do think that has a
6 future.

7 And so, you know, and final comment is about,
8 you know, we paid for all those Smart Meters, we all
9 paid for that, and we don't see any benefit. Not one
10 member of my community knows about that green button,
11 I've now heard about for the first time that, you know,
12 who -- no one knows how to use their Smart Meter, and no
13 one knows they even have it, and no one's benefiting
14 from it, but they paid for it.

15 So, you know, it's like all the time -- yeah, I
16 just feel like that's -- you have to acknowledge some
17 weaknesses there, and opportunity costs, and pushing
18 that program forward without having this other dynamic
19 model, and the Smart Grid and micro grid model in place.

20 So, anyhow, but I just -- ultimately, the
21 biggest issue for me is that infrastructure divide.

22 MS. WISLAND: I have another fragmentation
23 question, but I'll wait until you respond.

24 MR. JOHNSON: Well, I -- response to the
25 fragmentation, I wanted to address the fragmentation

1 question, as well.

2 MS. CAPRETZ: Okay.

3 MR. KELLY: I wanted to address the scale thing,
4 though, real quickly if I might, since that just came
5 up.

6 I mean this issue of scale is an interesting
7 issue and the German example isn't the greatest example
8 for a sustainable development of a program.

9 Their feed-in tariff was mega scale, turned out
10 to be pretty pricy, they ended up canceling it from --
11 you know, it was created through government fiat,
12 canceled through government fiat, and it had
13 repercussions on solar prices around the world.

14 So, it has caused some problems, the fact that
15 the Europeans were so far out in front at their feed-in
16 tariff, at such prices that they had, at that scale that
17 they were talking about.

18 I would rather see us do a measured development
19 over time to make sure that we avoid the customer
20 whiplash of that kind of scale that occurred there.

21 MS. CAPRETZ: And my only retort to that is, I
22 mean then we're talking a glacial scale, because we
23 already have the Smart Meters in place, and we have
24 these feed-in tariff programs, but they're small and
25 tiny. So, what's the in between then?

1 I totally agree that you take lessons learned
2 from each of the existing programs in Europe and
3 wherever else and, you know, take the best, leave the
4 rest, I'm fine with that.

5 But I still feel like we're making such small
6 incremental progress and that is not fair to the
7 ratepayers.

8 MR. LEWIS: And just to clarify, the German
9 program is going to put on 15 times more solar than
10 California will this year. It's alive and well, so it's
11 driven prices down, that's true, but it going -- it is
12 getting solar deployments well beyond what California
13 has ever dreamed of.

14 MS. SCHELL: I would comment on the original
15 question was what value are we capturing of renewable
16 energy? And I think one of the -- you know, the issues
17 with taking the RAM and putting it into the RMATs, using
18 that for kind of a feed-in tariff is that you're going
19 to get those projects, those renewable projects who can
20 meet that cost threshold. So, it's all really cost-
21 based and there's no value recognition, other than
22 what's built in. And, really, I don't think people are
23 bidding into the RAM or saying, well, I'm going to bid,
24 you know, a price that's going to include the value of
25 any of those renewable benefits.

1 So I think it kind of comes back around to
2 you're going to get the least cost technologies, and
3 that's good for least cost purposes.

4 But for managing the grid and all of the
5 diversity of generation that we need, you may still --
6 you know, if there's a policy decision that you need to
7 have diversity of generation types, then I don't think
8 that the RAM, kind of translated into the feed-in
9 tariff, is going to be very effective at all, actually,
10 for that purpose.

11 MR. ULRICH: I'll take that one.

12 MS. ZOCCHETTI: Okay.

13 MR. ULRICH: So, the good news, today, our
14 renewable portfolio is extremely diverse. I heard the
15 biomass guys talk about they didn't have any
16 opportunity. Edison has over 40 biomass contracts
17 today. We have over 40 biomass contracts.

18 Half of our renewable portfolio is biomass and
19 geothermal. So, we have lots of room to add solar PV,
20 we have lots of room to add more wind, and biomethane,
21 and other things, there's plenty of room.

22 So, the RAM stuff is really talking about
23 working at the margins. So, don't look at RAM and say,
24 well, hey, it's mostly produced PV, or it's produced
25 hydro, or a few other small things and, therefore, it's

1 not giving us a balanced portfolio.

2 For two decades we've had the largest portfolio
3 of renewable resources in the United States and for two
4 decades that portfolio's been very diverse, wind, solar,
5 solar thermal, solar PV, biomass and geothermal. So,
6 there's lots -- I think people are looking at the new
7 programs as the incremental programs and figuring that
8 that has to have a carve-out for this technology, a
9 carve-out for that technology, and you're not looking at
10 all the stuff that's already been done in the portfolio
11 to date.

12 COMMISSIONER PETERMAN: Marc, ask you a quick
13 question. You mentioned that biomass is, what did you
14 say, 40 percent, or half of your portfolio?

15 MR. ULRICH: Forty something, over 40 contracts.

16 COMMISSIONER PETERMAN: Oh, 40 something
17 contracts. So what does that equate, though, into share
18 of energy and share of megawatts?

19 MR. ULRICH: So, the share of the renewable
20 energy, it's around six to eight percent of our
21 renewable portfolio.

22 The megawatts, it's roughly about 14 percent or
23 15 percent.

24 COMMISSIONER PETERMAN: Because I agree that you
25 do see every technology represented in the RPS, but

1 diversity, one can have different -- it's a
2 representation or is it -- you know, what does
3 representation really mean?

4 So, I think it's not -- I would not say it's as
5 diverse as one would argue might be needed for a diverse
6 portfolio. I mean it still is predominantly dominated
7 by wind and PV, I would say the RPS.

8 MR. ULRICH: Well, our portfolio's -- half of
9 it's geothermal and biomass.

10 COMMISSIONER PETERMAN: Okay.

11 MR. ULRICH: So, it's dominated by geothermal
12 and biomass and then solar PV's the fastest growing
13 piece of it, but it's still the smallest piece of it.

14 COMMISSIONER PETERMAN: I stand corrected. What
15 about yours, Aaron?

16 MR. JOHNSON: Yeah, it's very similar. I mean
17 our foundation, when we started the RPS, we were around
18 11 percent and it was pretty much geothermal, biomass,
19 and small hydro, with a touch of wind.

20 So, what's grown over the last, you know, eight,
21 nine years of the program has predominantly been wind.
22 So, you know, biomass and geothermal have big, and then
23 small hydro, frankly, have big pieces of our portfolio.
24 They're, frankly, not growing, particularly --

25 COMMISSIONER PETERMAN: They're legacy pieces,

1 yeah.

2 MR. JOHNSON: -- so they will decrease over time
3 and solar will be the big growth area, and wind, for us
4 over time.

5 Just to address the biomass issue, though, I
6 mean I think one of the challenges is, you know, we were
7 talking about the subsidies earlier and I think the
8 challenge with something like biomass is you have to
9 decide what do you want to pay for through electricity?

10 Because what we've seen from a lot of the
11 biomass producers is they're struggling with fuel costs
12 today, and fuel costs are going up significantly.

13 And so, you know, a question we would ask of
14 PG&E is, okay, so if forests need to get cleared, we
15 need that to happen, and if that's going to translate
16 into fuel costs for biomass and they're going to go up
17 considerably, should PG&E customers pay, be paying to
18 clear forests and basically paying more than they could
19 for other generation? You know, we can get other
20 technologies cheaper today, should we be paying for that
21 public good, which is forest clearing, which is
22 definitely something we as a society need to do.

23 But the question is should that be done by PG&E
24 ratepayers by paying extra for biomass, or is there some
25 other mechanism by which that should be done?

1 COMMISSIONER PETERMAN: That's fair enough. I
2 think one of the challenges is finding what the right
3 efficient procurement is because it would be also
4 inefficient to, if you can meet two objectives with one
5 activity, for an incremental higher price, which might
6 be cheaper than doing them each, individually.

7 And I think it comes down to systematically
8 who's able to -- we talked a little bit about the
9 ability to actually do that calculation and figure out
10 the optimal mix of who pays and when but, yeah, a very
11 valid point.

12 MR. KELLY: Well, if I could just follow on
13 that, this is Steven Kelley, with IEP. As kind of a
14 market watcher, anyway, most of the geothermal and
15 biomass are the existing resources, which were the old
16 QF resources. There have been very little procured in
17 the RPS-related RFOs over the last four or five cycles,
18 or whatever it was.

19 When I think of geothermal and biomass, I don't
20 think of technology, per se, but I do think of product
21 which it's kind of based on. And I come to the
22 conclusion that very little base load renewables are
23 actually getting procured. A lot of the other types are
24 getting procured.

25 At the same time they're increasing concerns

1 related about intermittency.

2 So what has always puzzled me is why there isn't
3 a balance against the rising intermittency by the
4 procurement of the more base-loaded units. And I don't
5 see that happening and it's always puzzled me.

6 MR. ULRICH: So one of the problems we've had,
7 for four years the utilities have been trying to get an
8 integration adder that we could use in our valuation
9 process, so we can look at intermittency of
10 photovoltaics, or wind, and then say, hey, it's the
11 geothermal, or the biomass, or the solar thermal that's
12 more stable, so let's at \$5 a megawatt hour to the cost
13 of the intermittence.

14 And to date the Utilities Commission has
15 forbidden us from using that integration adder. And so
16 we -- and the reason I use these inflammatory words,
17 like "forbidden," the reason they said you can't use the
18 integration adder is because while we know there
19 probably is one, we don't know what the costs are, so
20 we're not going to allow the utilities to come up with
21 that adder on their own.

22 And I think that's unfortunate because we could
23 be providing value or at least incorporating more of the
24 costs into the least-cost, best-fit, if we were allowed
25 to do so.

1 MR. JOHNSON: But even if you look at
2 conventional generation, we're not buying a lot of base
3 load generation there, either. And so I certainly hear,
4 you know, utilities raise -- we raised the concern about
5 the intermittency of the resources. However, procuring
6 a bunch of additional base load resources is also
7 potentially a problem because what we really need are
8 flexible resources that can ramp up and down really
9 quick, and turn on and turn off and, generally, these
10 resources haven't had those characteristics, either.

11 COMMISSIONER PETERMAN: And I think that was a
12 good point that Heather made, from the ISO, in one of
13 the earlier panels about thinking about dispatchability.
14 And oftentimes I think base load, and not that nuance.

15 And also, to Marc's point, similarly in the RPS,
16 in terms of cost containment or what you can consider in
17 terms of cost containment is generation cost. It's not
18 necessarily the integration costs or the transmission.

19 And so, again, getting at ultimately what's the
20 total totality of cost drivers.

21 I suggest we take -- we do something a little
22 bit different, now, and we'll come back to all the
23 panelists at the end of final comments. But we've got
24 one member of the public who wants to either ask a
25 question or make a comment, and then I'd say we open it

1 up for about ten minutes to the audience, to see if they
2 have questions for the panelists. Is that okay with
3 you, Moderator?

4 Oh. Oh, and first, most importantly, our
5 Chairman, it's open to him to make questions and
6 comments as he wishes, so go ahead.

7 And after that we'll hear John Larrea, with the
8 California League of Food Processors.

9 CHAIRPERSON WEISENMILLER: Yeah, I was going to
10 say, actually, geothermal can be very dispatchable once
11 you get into the characteristics. I know at one point I
12 tried to negotiate a dispatchable contract with geysers,
13 with PG&E, and we couldn't get there.

14 But we could negotiate what was a very
15 dispatchable contract with Crockett, which is a gas-
16 fired unit, with PG&E.

17 And part of the difference was that with
18 Crockett, as a gas unit the capital costs are relatively
19 low. So, we could basically go to the banks and say
20 even if the project's never operated, the capacity
21 payment would cover the debt.

22 On the other hand, the geothermal is so, you
23 know, capital intensive that you can't possibly
24 structure a deal that way, or at least in that -- in
25 negotiations.

1 You know, what PG&E and I both found was that
2 the loss of revenues to the geysers, relative to the
3 value of dispatchability, you just couldn't make it
4 work.

5 So, again, but having said that, I was very
6 surprised because before Unical told me, I would assume
7 the geysers could not really be that flexible, but it
8 can. Anyway, geothermal can be very flexible if you can
9 actually structure the deal, but I don't think you can
10 given the cost structure.

11 COMMISSIONER PETERMAN: I think one thing that
12 you sort of touched on, and a lot of people touched on
13 here is that I think we're sort of making an assumption
14 that the investment community is this static institution
15 that we have to continuously adapt to.

16 And I think one of the things to generally think
17 about is how can we get the investment community
18 thinking differently in terms of what they're willing to
19 invest in, over what time horizons?

20 Because, ultimately, that's got to be an area
21 which is going to be flexible as well, and we are
22 dealing with new generation and it's not going to be the
23 same investment patterns as previously.

24 John Larrea? Please come up.

25 MR. LARREA: Well, thank you. I don't have so

1 much of a question, I just wanted to make a public
2 comment, so it won't -- it will be very brief.

3 I'm John Larrea, with the California League of
4 Food Processors. And I just want to let you all know
5 that I haven't been in the deep end of the renewables
6 pool here, so this is -- I've learned quite a bit here
7 today and I plan to attend a lot of these in order to
8 know more, because I know it's going to affect our
9 industry.

10 One of the things I'd like to say is that, you
11 know, I miss the ISO being here. I think they would
12 have been involved in this conversation, too, especially
13 when you're talking about the scales, and about the need
14 to expand the renewables. I know that they have a good
15 position on that.

16 And I would urge you to -- you know, they were
17 subtly cautious about how to expand this and how to move
18 forward, and we are in complete agreement with them,
19 because reliability is one of our biggest issues.

20 And the issue is really important to us because
21 our reliability needs occur right at the height of the
22 season, in the middle of the summer, because this is
23 when our season begins. And it starts about the middle
24 of June and ends about the end of August, and sometimes
25 into September. And we cannot afford to go down for any

1 more than, say, a maximum of six hours, otherwise we
2 lose tens of thousands of tons of vegetables that are
3 going to rot in the field because of the way that we
4 operate our efficient systems. And they are very
5 efficient, but they have to keep operating at a steady
6 pace.

7 So, as we look to incorporate renewables, we
8 begin to -- you know, it give me some pause when we
9 started to talk about the idea of displacing fossil
10 fuels.

11 Now, we're not against that, we do utilize some
12 renewables. And in fact, I would invite all of the
13 Commissioners, including the new one, we are going to
14 start up our process pretty soon, if you'd like to take
15 a tour of one of our facilities when they're operating,
16 we can show you the types of renewables that we have
17 incorporated into our systems, and that they are working
18 to help us to become more efficient and to reduce our
19 emissions.

20 So, I'll be contacting you again, if you'd like,
21 it's a very interesting tour if you've never been
22 through one.

23 Secondly, it's just a kind of a personal
24 comment, and that is when you're talking about fossil
25 fuels, please, if you're going to talk about the

1 benefits and looking at the public benefits of renewable
2 energy, and renewables here in California, please do not
3 ignore what's happening in the natural gas markets.

4 They have changed significantly since we put AB
5 32 through and since we've been pursuing renewables, and
6 they've changed even more in the last two years.

7 These markets out there, now, I don't know
8 whether California's going to be pursuing this, but I do
9 know that the other states out there are investing a lot
10 of time and energy into determining how best to develop
11 the infrastructure associated with this natural gas that
12 we have.

13 I can give you one example. I used to work for
14 the Williams Companies back, up until 2007, and they had
15 a pipeline running through here, the Pacific Connector,
16 which was going to be an LNG port in Jordan Cove, that
17 was going to deliver -- and PG&E should know about --
18 that was going to deliver LNG up through here and into
19 California, and we had a number of those, too.

20 Since that's changed around, the LNG is no
21 longer there, but the Pacific Connector, even though
22 Williams has backed out, I believe, has now changed
23 direction. Now, they are looking at making it an export
24 because of the amount of natural gas and the price of
25 natural gas in Asia and in China.

1 So, you know, there's a lot of changes that can
2 go on. We're not saying that renewables are anything
3 bad. In fact, we are looking at them, too, we're
4 looking at biogas, we're looking at biogeneration. In
5 fact, we've got a couple of our members who are actually
6 involved in the latest one.

7 But you need to take into consideration
8 industry, and how it's going to affect us, too. And if
9 there's a way to incorporate both, without affecting our
10 particular markets, and to keep us productive as you
11 can, at the least cost that you can, I would urge you to
12 again review the benefits associated with renewables,
13 but also take into effect, you know, how can you
14 companion up with fossil fuels without, especially,
15 natural gas, because that's going to be the -- as far as
16 we can see, it is the transition fuel that you need to
17 be able to get to the type of energy efficient world
18 that you want, and we just can't do it all in one swoop.
19 Thank you.

20 COMMISSIONER PETERMAN: Thank you. And I'll
21 say, I don't know if you were here in the morning, but
22 we did have an ISO member on both the panels, and there
23 was also some research presented by UC Berkeley and
24 talked about looking forward in 2030, what the mix of
25 renewable generation and gas is.

1 And for the most part it's still a significant
2 amount of gas providing integration and firming support
3 for renewables.

4 But one of the questions we also talked about
5 earlier was, okay, if you look at firming as an
6 attribute which can be met by a number of any storage
7 devices, whether that's storage of natural gas, or
8 batteries, et cetera, what are some of our flexible
9 options.

10 But I also appreciate your point about different
11 industries have different reliability needs.

12 And I think a challenge I imagine the ISO
13 struggles is how do you, acknowledging that different
14 parties have different reliability needs, because I
15 could probably go without my power for six hours, to be
16 honest, I don't keep much in the fridge. You now, so
17 it's like how do we accommodate someone, like myself,
18 that would be willing to use less, but make sure that
19 someone, like yourself, has more.

20 Any other questions?

21 CHAIRPERSON WEISENMILLER: I was also going to
22 encourage, in terms of food processing, obviously, in
23 the eighties CHP was the major thing in food processing.

24 Crockett is cane sugar, or sugar. Certainly,
25 Gilroy was garlic and basic American food.

1 So, you're talking about, in the PG&E service
2 territory, their really large projects were all food
3 processing.

4 COMMISSIONER PETERMAN: Yeah. Anyone in the
5 audience or on the phone who would like to ask a
6 question or make a comment?

7 Mr. V. John White.

8 MR. WHITE: Thank you, Madam Chair, Mr. Chair,
9 John White from the Center for Energy Efficiency
10 Renewable Technologies.

11 This is a very important discussion that you've
12 been having today and we've been following it. There's
13 been a few other things going on.

14 But I think that we have a long way to go in a
15 couple of areas. One, that I would really commend and
16 it's something you and I have spoken about, to the
17 Commission to use your authority to gather and collect
18 data that would help elucidate the question about value,
19 particularly for DG.

20 There's sort of a black box associated with
21 customer load profiles, and things of that nature, that
22 are not readily available to the public. This is data
23 you all can ask for, and receive, and hold confidential.

24 Dr. Schell, here, has done some of this work
25 already in a number of respects, it's very valuable, and

1 publicly vetted in a number of technologies.

2 And the importance of this is because what we're
3 hearing and what we're now understanding is that there
4 is differences in the value that each of the renewable
5 technologies provides.

6 And as we go further over the divide from fossil
7 fuel and nuclear to a different kind of future, with
8 more renewable penetration of all kinds, those renewable
9 resources need to do more work than simply being pretty,
10 and green, and showing up.

11 Okay, and so we need -- and the fact that we
12 have an unbalanced portfolio in terms of recent
13 solicitations, particularly in 2011, is a sign that what
14 we've really got going on is least cost, least cost, not
15 least-cost, best-fit.

16 Okay. And I appreciate Marc's point about the
17 Commission not wanting to let there be an adder, but
18 maybe it's a qualitative adder to start with. You know,
19 what we know is that there's different value that the
20 technologies have.

21 What we need is a disciplined way of going about
22 that. Now, our friends at the PUC have absolutely
23 refused to do that. They like the RAM because they
24 don't have to do any work.

25 And yet the RAM, and they've got an idea in

1 their head that all we're thinking about is types of
2 products, but we've got types of technology.

3 So, base load as available. Peak isn't the
4 right way to think about this. It's bio -- in the case
5 of distributor resources, bioenergy, PV, maybe some
6 geothermal, maybe some small wind. What we're getting
7 is all PV. We're getting all PV in the RAM and it's
8 this new one that we're going to see, and we're going to
9 get all PV, we've had all PV so far.

10 So, that gets to the other problem in addition
11 to the need for valuation and I must say, Andrew
12 McAllister's appointment is welcome news in this regard
13 because he and I have talked about this. So, I extend
14 my congratulations to him, I think he can help you with
15 this assignment.

16 The other thing we need to do is recognize the
17 siloing that we have going on in our policies and within
18 the utilities.

19 So we have resource adequacy, which is about
20 mostly buying existing capacity and what we pay for it.

21 And we have long-term procurement, which I think
22 is mostly about buying new gas.

23 And we have renewables. Now, we have the
24 flexible capacity.

25 And so, what I think we need to start doing as

1 we move forward is to integrate these programs so that
2 utilities cannot just have a procurement manager whose
3 job is only to buy kilowatt hours, at the least cost,
4 but a procurement plan that actually is helping meet the
5 resource adequacy.

6 So, you look at resources that can do resource
7 adequacy, and RPS, and greenhouse gas, which would give
8 you -- you know, again, it might need to be qualitative
9 at the beginning, but I think this Commission can play a
10 significant role in helping sort that out.

11 And I think getting the agencies to talk to each
12 other about how to combine. And in our comments at the
13 ISO, we suggested that one of the problems with flexible
14 capacity is that we need a new product, and said we've
15 got too many people self-scheduling.

16 And so maybe one of the conditions for the
17 resource adequacy proceeding is that if you're going to
18 be a resource adequate resource, you've got to not self-
19 schedule, so you get a deeper stack.

20 So, there's the different technical and policy
21 things.

22 I think we all, collectively, want the same
23 goals. I know the utilities are focused on costs for a
24 good reason.

25 But I think this debate that you're having

1 today, and the good conversation that's been had all
2 day, gives us a sense of needing to move forward in a
3 somewhat different fashion than we have in the past. We
4 learned from that experience, but I think this
5 Commission can play a role at pulling this together.

6 I think you can also work with your sister
7 agency, the Air Resources Board, to get at, say, the
8 value of biomethane, which has seemingly alluded the
9 PUC, they don't understand it, they don't care about it,
10 they don't think it's their job. And, yet, this is a
11 very important environmental goal for us in the State.

12 Similarly, different renewable technologies,
13 solar thermal, geothermal have value that isn't
14 reflected, necessarily, in the way the bids are going.

15 So, I think we have much work to do, we have a
16 wonderful body of experience and terrific portfolios to
17 build on.

18 As we move forward, I just think we need to
19 adjust a little bit and think about what we're doing in
20 a more holistic way.

21 And I thank you for the opportunity for me to
22 have a few words.

23 COMMISSIONER PETERMAN: Thank you.

24 CHAIRPERSON WEISENMILLER: Do any of the
25 utilities want to comment on the mixture of what the

1 results agreement has been?

2 MR. ULRICH: Yeah, I would. V. John, I have a
3 ton of respect for, but I wouldn't use one solicitation
4 as, oh, my gosh, everything's going to be PV forever,
5 for a couple of reasons.

6 One is PV has lost a lot of demand in Europe
7 because of the solar coasters going on, and so they're
8 seeking to get rid of excess panels in California, so
9 we're getting very competitive PV bids. But don't
10 forget there is a best fit part of least-cost best fit,
11 and we are keeping our eye on the ball. We are not
12 going to load ourselves with just a PV portfolio.

13 Particularly, because one of the things we're
14 pushing at the CAISO is that the integration costs ought
15 to be allocated to folks who are causing the integration
16 problems. Ultimately, load will pay for it. But what I
17 don't want to happen is Aaron, over at PG&E, build an
18 entire portfolio of just photovoltaics and then my
19 customers in Southern California Edison get to pay 40
20 percent of all the integration costs.

21 So, we keep track of what the balance is of the
22 renewable portfolio, as we're doing things.

23 I'm already -- the way the CAISO has changed the
24 deliverability and resource adequacy has already made me
25 rethink the value of solar photovoltaics because a

1 generator before, when they put in an interconnection
2 request, they could have confidence they could provide
3 three attributes. And we're buying, essentially, three
4 attributes, energy, capacity, and then a global green
5 attribute, which has a lot of different benefits to it.

6 But a generator used to be able to have
7 confidence they could provide all three.

8 In this new, queue cluster process that the
9 CAISO has done, they know they can provide energy, they
10 know they can provide the green attribute, but resource
11 adequacy, now, is in question.

12 And so if resource -- if a seller can't provide
13 resource adequacy, one of the reasons I spend more money
14 for solar PV, even though prices have tanked for solar
15 PV, it's still, at the end of the day, more expensive
16 than wind and any other -- almost any other renewable
17 technology.

18 But the reason I pay to do PV is because I give
19 it these TOD factors, which anticipate a lot of high
20 value during the peak period.

21 Our planning folks, and we've been working with
22 them, have already come to me and say, hey, Marc, slow
23 down. We think that the TOD factors, if we reran them
24 today, and what we pay today is three times the contract
25 price during the summer on peak.

1 They said if we reran that today, based on the
2 build out, it would not be anywhere near three times.
3 And if it's not three times, PV's not going to win
4 anymore.

5 So, I wouldn't use the most -- latest results as
6 a bell weather that something's broke, we got to fix it.
7 What I would do is we do a lot of outreach. We are
8 missing in the RAM some good biomass bids.

9 I don't want to go after a specific technology,
10 I'd rather go after a characteristic and let any
11 technology that has that characteristic compete for that
12 characteristic.

13 It's sort of like saying, look, we want storage,
14 and that's right we do. But we don't necessarily need
15 battery storage, we need storage, and let all kind of
16 storage things compete against that.

17 But what kind of storage? Is it, you know,
18 storage for frequency, is it storage for peak shaving?
19 That's -- you define the characteristics and then we let
20 all of the technologies compete over that
21 characteristic.

22 And so the Commission has said they -- and maybe
23 you don't agree, they've broken it up into peaking, off-
24 peak, and then as available or base load. That's their
25 attempt to make sure there's a home for each of the

1 types of characteristics.

2 So, in my opinion, I hope that the biomass folks
3 avail themselves of their opportunity to bid in the RAM
4 and provide contracts -- get contracts under RAM. But,
5 as of today, they're not using that avenue.

6 MR. LEWIS: If I could just add on to Marc's
7 comments, and playing off of John's, too, I think it's
8 really important to realize that the biopower industry
9 is highly fragmented within itself.

10 And I thought when the gentleman was speaking
11 from the Food Processing Trade group, that he was going
12 to be talking about the need to provide some
13 opportunities for biogas generation. That is really a
14 tremendous opportunity for food processing, and ag, food
15 and ag processors.

16 That market segment of biopower's completely
17 different than the biomass sector that Marc and Aaron
18 have been talking about.

19 And the cost structures for the biogas folks are
20 far higher than the biomass people, because the biogas
21 technologies have not been deployed with any kind of
22 scale at all in California or, frankly, anywhere in the
23 United States. But, really, in California it's almost
24 zero.

25 So, at the start of a technology, when you want

1 to get that technology going, you have to provide some
2 additional incentives. There's just no way that a new
3 technology can come in, from day one, and be cost-
4 competitive with a technology that's been around for a
5 hundred years.

6 So, it's really important that we do see that
7 there's a fragmented market here. I think part of the
8 goal of this session today was to find out how do we get
9 opportunities for biogas, and biopower, generically.

10 But what we really need to focus on is how do we
11 get opportunities for biogas, and that would be food and
12 ag operators that can take that waste stream, that's
13 right there on site, and generate electricity, and
14 deliver that to the grid.

15 COMMISSIONER PETERMAN: And we're going to hear
16 a response from John, and then after that if there's any
17 more public comment, then after that we're going to go
18 around, starting with Aaron, since he was with his mike,
19 for final comments from the panel, because we're at ten
20 to 5:00.

21 And I'd ask in your final comments to please
22 offer your first recommendation that we should consider,
23 as well as any other takeaway you want to leave this
24 group with, and that leaves you a minute, give or take,
25 per person.

1 So, John, you're up next.

2 MR. LARREA: I just wanted to say biogas is one
3 of the things that we are considering quite a bit.
4 We've looked at it and we've just come to the conclusion
5 that, yes, you can set up some biogas digesters in the
6 various areas. Dairies are probably the best for that,
7 in terms of that, but they're always small and it takes
8 a lot to clean up the gas to make it saleable for that.

9 But for us, we actually came up with an idea of
10 a central biogas unit, where you have a very large
11 facility that can then -- because we are so centrally
12 located within the valley areas, we can take this mass
13 into them and receive credits. Even though we can't
14 actually use the gas, others can use the gas, it would
15 displace it.

16 But we've gotten absolutely no traction on this,
17 not from the ARB, nor from the Legislature. You know,
18 and we've been trying to work with them because we do
19 have these kinds of issues and we can contribute, but we
20 need some help out there to get people to consider some
21 different ideas.

22 You know, a large biogas generator, one that
23 will take it from five, six, seven different facilities
24 that can truck it in, and bring it to them, would
25 probably work better for us than a tiny one, you know, a

1 hundred of them on various places because we only
2 operate partially in the year, we only operate four
3 months out of the year. So, it really doesn't make any
4 economic sense for us to put one on site.

5 COMMISSIONER PETERMAN: John, you should follow
6 up after this with Tamara, because SoCal Gas is doing
7 some interesting work in this area.

8 Anyone else want to offer any public comments,
9 either in the room or on the phone?

10 Going once, going twice, going back to Kate.

11 MS. ZOCCHETTI: Did you want to go around the
12 room -- the table, I'm sorry, yes, not the room.

13 MR. JOHNSON: Final comment. My final comment
14 is if you listen to a public policy debate about
15 renewables or the energy sector in this State, you would
16 think things were really, really broken. And I think
17 it's important to step back and think about the progress
18 that we've made and that we're making.

19 We've gone from 14 percent, to 16, to 19 percent
20 renewable. That's not fast enough for some people, but
21 that's tremendous progress in a decades, if not century-
22 old business.

23 And we're making great strides, we've put a lot
24 of programs in place, and that was one of the elements
25 on my slide, the first slide I put up.

1 And I think the key takeaway for me is recognize
2 the progress we're making. Policy has been moving much
3 faster in the State than implementation. We need some
4 time to implement all the many, many policies, the many
5 programs, the many solicitations that have been put in
6 place, give them an opportunity to work. They are
7 actually working.

8 MR. THOMAS: Okay, and I'll be brief. One of
9 the things and it struck me is something that Nicole had
10 said earlier about infrastructure in certain
11 communities. And I think one of the things that we need
12 to look at is not so much what are we building from a
13 renewable stand point, but what are we replacing, what
14 are we displacing.

15 For example, DWR contracts that are coming
16 offline, are we replacing those with renewables, and we
17 previously had natural gas?

18 In our case, in San Diego, we were able to
19 retire a 50-year-old power plant as a result of a
20 transmission line dedicated to renewables. And we had
21 some peakers in there, but we took down a 50-year-old
22 power plant that was using once-through cooling. And we
23 did it with the help of the Environmental Health
24 Coalition, and many others in San Diego.

25 I also want to make sure, I guess some closing

1 points, we are supporting more customer choice. Those
2 that want to be 100 percent renewable, they don't have
3 to be 33 percent, so we're trying to unlock the door to
4 that for those that want that as a choice.

5 Improving transparency for our customers, and
6 rate, the rate design and then, of course, like I said,
7 let's take a look at what we're replacing from a fleet
8 stand point.

9 I'm sure all utilities have replaced some power
10 plants or replaced some power plants over the last
11 decade.

12 MS. CAPRETZ: I'm Nicole Capretz, Environmental
13 Health Coalition. Yeah, I'm just a broken record and
14 I'm all about equity. And in terms of diversity,
15 diversity of benefits and making sure that everybody
16 gets lifted up by this new, you know, transition to a
17 green economy.

18 And then the loading order, I just really can't
19 stress enough how I feel we're not implementing the
20 loading order in a meaningful way, and partly it's
21 because of the division between all the programs within
22 the utilities. But I think it's internal and external,
23 it's not just the utilities fault, I feel like there's
24 still a lot of work to do on that front.

25 MS. WISLAND: Laura Wisland, UCS, I have a

1 couple points. I never got to ask my fragmentation
2 about -- and so this is something we can all take home
3 with us.

4 But one of the questions I have is as we're
5 thinking through revamping the distribution grid for
6 more solar, and more DG, are we also layering on top of
7 that thinking through revamping the distribution grid
8 for electric vehicles?

9 I know there's two different proceedings and we
10 should make sure that as we think through upgrades that
11 they work for both, or if they don't work for both, we
12 fully understand why.

13 In terms of what the Energy Commission should be
14 thinking about, you know, I think we should -- we should
15 think about whether we're prepared to move forward on
16 additional clean energy policies, when we're ready,
17 without being able to fully quantify all the benefits,
18 because I think that we've moved pretty far, and in a
19 really positive and good direction without having to do
20 that.

21 And so, while I'm not saying that we need to go
22 and get another RPS bill next year, I think we can't
23 wait too long before we start thinking about what it
24 looks like, because we all know it takes a while.

25 And then, finally, I just wanted to respond to

1 the gentleman that works with the Food Processor
2 Association. I just have to say, I don't believe that
3 natural gas is a bridge fuel. You know, I really think
4 that if we decide to spend the money on the
5 infrastructure to extract these additional resources
6 from the ground, which I'd hazard to say are way more
7 expensive than building a renewable energy facility,
8 that we are making a choice to put that money there,
9 instead of here.

10 And that if we build those facilities and we
11 build those additional gas plants, we are going to have
12 sun costs for at least the next 40 years. So, just got
13 to say that.

14 MR. MC ALLISTER: Yeah, the hedge value of
15 diversifying hasn't gone away, so I would second that.
16 Just because natural gas prices are cheap now, doesn't
17 mean they're going to be cheap at any particular point
18 in the future.

19 And, in fact, if you, you know, make an
20 investment, you take the risk into account. And if you
21 don't do that, then you're going to end up in a problem.
22 Say, you know, maybe there's a bubble happening, who
23 knows.

24 And we haven't actually talked much about
25 natural gas, but we probably should have. You know, a

1 lot of the discussion here's been about electricity,
2 because electricity's a particularly difficult
3 commodity. And, you know, the fact that it's no easily
4 storable and all that, and the reliability needs are so
5 high, makes it particularly unique.

6 But, you know, we could have a lot of these
7 discussions about the ancillary benefits around natural
8 gas, too. And particularly, you know, I noticed the
9 PG&E presentation said that the various emissions from
10 power plants weren't that important.

11 But actually, you know, natural gas is probably
12 one of the big area sources of certain emissions
13 throughout the State.

14 And so I think it's not quite so simple if you
15 look at energy more broadly.

16 So, I guess I would just say, again, electricity
17 is somewhat of a difficult commodity, but we have lots
18 of technology that allows us to manage that commodity
19 much more tightly.

20 And if we're making long-term planning decisions
21 then, certainly, implementation shouldn't be expected to
22 be in lock-step with policy. But the investments that
23 are going to be made, that are being made now, and that
24 are going to be made very nearby in the future are going
25 to be with us for a long time, and so we have to make

1 sure they kill several birds -- bad analogy, kill
2 several birds with one stone.

3 So, we kind of have to have the near term and
4 the long term in mind, wasn't talking about wind energy,
5 by the way.

6 COMMISSIONER PETERMAN: We don't permit that,
7 just solar thermals.

8 MR. MC ALLISTER: Right, sorry. So, I guess the
9 overarching point with, you know, keeping on the theme
10 of the day, which is the benefits of renewables, you
11 know, I think we know the technical sort of distribution
12 system part of it.

13 You know, a lot of the studies, there are a
14 number of people, E3 and others have done studies,
15 there's more in progress. Those are kind of --
16 certainly, there are methodological decisions to make in
17 those studies, but they are basically data-based and you
18 crunch them out, right. And you can defend your
19 methodology or go for a different methodology, but you
20 can get numbers there.

21 So, a lot of the ancillary, the other benefits,
22 even the non-technical, or the social, the health, all
23 these other benefits we've been talking about, even the
24 fire stuff, you know, quantifying those is difficult and
25 may be very difficult.

1 We know that those benefits are non-zero, so if
2 we move forward with them being non-zero, then we know
3 we're about as wrong as we're going to get.

4 So I think to build on V. John White's point,
5 you know, we -- I sympathize with some of the discussion
6 today where, you know, it's a hole we could just travel
7 down and travel down and never get to the bottom of.

8 But at the other -- we could limit the amount of
9 effort and still come up with a better number than what
10 we've got. And I think that's important if we have the
11 -- if the policy environment continues where we're
12 actually going to need -- you know, we want more
13 renewables at all scales, for diversity's sake.

14 In just a more philosophical discussion, I think
15 a lot of the -- you know, often, and I see why this is
16 the case, and if I were in their shoes, I might do the
17 same thing. But often the utility perspective is, you
18 know, we've got it under control, we have these
19 processes, we have all these programs, leave it to us
20 and we'll procure under a rational set of criteria, and
21 we'll know the cost, and it's as efficient as the
22 system's going to get.

23 And I guess I just have to challenge that and
24 say, you know, when we let a market work and, granted,
25 with the investor-owned utilities we have a monopoly

1 situation, and so there's a reason for that, for public
2 policy purposes.

3 But we also have a lot of expertise out there
4 that could be making -- if we succeeded in using the
5 sort of -- if we succeeded in having a more distributed
6 sort of decision making on what kind of generation goes
7 in where, based on information that was more public, I
8 don't think we could have, actually, a lot of better
9 outcomes and that would be good for the utility and good
10 for the marketplace.

11 And so I think there's a lot -- there's a lot of
12 richness here that we're not going to get to today, but
13 I just think we're all on the same boat, and we all
14 ought to be working together on these problems. So,
15 thank you.

16 MR. RASBERRY: Thank you. Tamara Rasberry,
17 again, from Sempra Utilities -- Sempra Energy Utilities,
18 and I'm glad that four and a half hours after I
19 mentioned it, at the very end of the discussion biogas
20 was finally discussed, and natural gas. So, thank you,
21 sir, from Food Processing, and making sure that that
22 was -- that issue didn't go unnoticed.

23 And I did want to point out, too -- well, I just
24 wanted to say for the record that as the largest natural
25 gas distributor in the country that SoCal Gas does

1 believe, obviously, in the power of natural gas, and as
2 a bridge fuel, also.

3 And it has an initiative program we've been
4 developing and pursuing over the last couple of years to
5 promote and encourage, and reclassify gas as a clean
6 energy. And I use that term very broadly and I'll just
7 leave it at that.

8 So, and I also wanted to show the slide that I
9 could not present because of my two-slide limit, was
10 a -- and this is for you, Craig, to show the economy --
11 the economics behind biomethane, and you need very large
12 sources to bring the cost down. This goes to Steve's
13 point, also earlier, that the utility investment drives
14 the market and that's a message that you've always said,
15 that you need market certainty in order to develop and
16 to market.

17 And so for dairies, you know, you need 80,000
18 cows to make the biomethane economic, and we only have
19 five dairies in SoCal Gas territory that has more than
20 8,000 cows.

21 And for wastewater treatment plants you need,
22 you know, like 10,000 SCFMs to meet the biomethane price
23 to make it economic.

24 So, the challenge then is, you know, like I
25 said, regulatory certainty and investment in the market,

1 but we do want to see biomethane developed here in
2 California.

3 So, I will ask you to please pick up my
4 presentation outside, with my missing slides and talk to
5 me later, thank you.

6 COMMISSIONER PETERMAN: Tamara, I want to ask
7 you, since you feel like it wasn't discussed as much,
8 why do you want to see it developed?

9 Because you've talked about what the programs
10 are, but in terms of the focus on environmental
11 benefits, and so I just wanted to make sure that we got
12 those out.

13 I know one that I've heard, possibly, is dealing
14 with landfills, and methane emissions, but I wanted to
15 make sure we got your point on the record about what the
16 additional environmental benefits of the resource you
17 feel are not being accounted for?

18 MR. RASBERRY: Well, the alternative is to
19 flare, and so we just see that instead of flaring it,
20 using that resource to create electricity, instead of
21 just flaring it because you can't inject it, is the
22 benefit.

23 I mean, I'm not a -- I'm really not the policy
24 person, so I don't know what the -- you know, what the
25 value is of displacing flare, rather than injecting it

1 into the -- into the pipeline, but I do have --

2 COMMISSIONER PETERMAN: There's the
3 representative from ARB, who was on panel one, I think
4 spoke to how ARB and the Cap and Trade Program does
5 provide some incentive for consideration of that for the
6 reduction in greenhouse gases from the switch, to the
7 flare, to the injection. But I wanted to make sure we
8 got that point on the record.

9 MR. RASBERRY: Yeah, we did talk to ARB about
10 this when we did our advice letter a couple of years
11 ago, but there are no government incentives for
12 injectable pipeline. Most of that's on site, but not
13 for being injected into the pipeline.

14 And so one of our points that we've raised in
15 front of the PUC is that one economical renewable
16 natural gas injection project has an annual emissions
17 reductions of 56,250 metric tons of CO2 equivalent based
18 on 411 tons per day of landfill diverted food waste that
19 is anaerobically digested, and this is the equivalent of
20 approximately 11,000 passenger vehicles off the road.

21 So, we just say that the resource is abundant
22 and available, and we want to be able to use it. Thank
23 you.

24 COMMISSIONER PETERMAN: Thank you. Steven?

25 MR. KELLY: Yeah, this is Steven Kelly with the

1 Independent Energy Producers Association, and I guess
2 I'd just like to finish with one concern and then one
3 observation reiterated again.

4 And I want to make clear that while I'm not
5 opposed, and I actually am enthused about good research,
6 I do -- I am concerned that we are entering an era where
7 we are facing kind of policy paralysis through analysis
8 and that we be careful to avoid that kind of outcome
9 over the next four or five years, as we sort out some of
10 these issues.

11 And then, secondly, I just reiterate that from a
12 commercial perspective how important regulatory
13 certainty and procurement transparency is to -- are
14 critical to making the investment dollars follow policy
15 directives.

16 If that linkage is not there, then we'll be back
17 in ten years talking about these policy initiatives
18 again, because people will not have made the
19 investments.

20 COMMISSIONER PETERMAN: Thank you.

21 MR. LEWIS: So --

22 COMMISSIONER PETERMAN: Your summary point and
23 recommendation.

24 MR. LEWIS: Oh, sorry, I thought you were
25 talking to Steven.

1 So, yes, I've got four points, scale,
2 transparency, interconnection, locational benefits. If
3 we get those four things right, we will have a beautiful
4 situation here in California and beautiful future for
5 California ratepayers.

6 Scale, it was -- I think Aaron was the one who
7 said we've gone from 14 percent to 20 percent RPS in ten
8 years. That's less than one percent a year. Now, some
9 people may be happy with that, I'm not. I'm not
10 satisfied with that.

11 Steven said, let's have a market that grows, you
12 know, kind of at this moderate pace, not do the German
13 thing. I would say the Germans got it right. And
14 California's got to lead the way in the United States
15 and we can only control, the people in this room can
16 only really influence what happens in California.

17 In California, we need to make it a big market,
18 we need it to scale, we need that scale to drive down
19 the pricing, and then other markets will open up and the
20 business will move across the country.

21 In terms of the German situation, the German --
22 I forgot to mention this earlier, German rooftop solar
23 is priced, today, between 7 cents and 11 cents per
24 kilowatt hour.

25 California hasn't even dreamed of doing that out

1 in the middle of the desert. And the reasons that the
2 Germans can do rooftop solar, commercial rooftop solar
3 at between 7 and 11 cents once you adjust for tax
4 benefits, and you adjust for solar quality here, is
5 because of scale. And so we've got to scale wholesale
6 distributed generation, which is the way the Germans do
7 even their rooftop solar.

8 It comes down, interconnects directly to the
9 grid, 100 percent of that energy is delivered to the
10 utility.

11 Transparency, my example here is
12 interconnection. I didn't complete what I was talking
13 about with the Sacramento Municipal Utility District --

14 COMMISSIONER PETERMAN: We're wrapping up,
15 though.

16 MR. LEWIS: Yeah, I'm wrapping up.

17 COMMISSIONER PETERMAN: Okay.

18 MR. LEWIS: Two guys, two months, they did 100
19 megawatts worth of projects. A hundred megawatts in
20 Sacramento, Sacramento's territory is equivalent to 2.5
21 gigawatts across the State of California.

22 Okay, they did that, two guys, two months. They
23 did all the interconnection studies for 2.5 gigawatts
24 equivalent on distribution grids across the State of
25 California.

1 Okay, we can do a lot better than what we've
2 done so far to date.

3 Locational benefits, it is the key driver to
4 making sure that we have the proper price signals going
5 out to the marketplace, so that what Steven was talking
6 about, developers can make sure that the projects are
7 going to the right place, and that they're getting
8 compensated for putting those projects in the right
9 place, based on the value that they're providing to
10 ratepayers.

11 MR. JOHNSON: For the record, that was 14 to 19
12 percent in the last two years, with 18 projects under
13 construction for 3,000 megawatts.

14 COMMISSIONER PETERMAN: Duly noted, on the
15 record. Moving on, next?

16 MS. SCHELL: Yes, Lori Schell, UC Irvine and
17 Empowered Energy. I think the takeaway is that we need
18 a diverse portfolio.

19 Marc mentioned the ability, the integration
20 ability and kind of the issues surrounding the
21 quantification of that.

22 I think my recommendation would be that we focus
23 on a handful of characteristics, be they integration, be
24 they the ability to avoid criteria pollutants, or
25 greenhouse gases, or health benefits. I think health

1 benefits could be one of the answers for some of the
2 environmental justice issues. But focus on a handful of
3 the characteristics that the policymakers value, that we
4 deem valuable to the State.

5 And try to quantify them, if not in absolute
6 terms, at least in relative terms we can take every type
7 of generation -- generation technology and say, well, it
8 has more or less ability to do X or Y and that could, I
9 think, be part of the procurement planning process.

10 And I think it's important to note that the
11 characteristics that we value, over time are going to
12 change. We've seen that with solar, changing the peak,
13 and changing the value of solar.

14 We live in a dynamic world and I think we need
15 to keep ahead of it and recognize what we value, and try
16 and quantify that, if only in relative terms to reflect
17 what we're trying to accomplish policy-wise.

18 MR. ULRICH: I'll try to be quick. I would
19 agree that I think we're on track. It does sound like
20 everything's broken, but I think there's a lot of
21 success in multiple areas.

22 And I want to not slow things down, I think the
23 pressure of moving, and thinking, and creating new ideas
24 and new programs should continue. That pressure's good,
25 it keeps us honest. But I do want to be careful we

1 don't turn into the German solar coaster.

2 I also want to be careful that we see the price
3 tag of what we're doing. Our 2002 RPS law and the
4 revamp last year, the real costs of that are yet to be
5 seen.

6 The transmission costs that Craig talked about,
7 is it going to hit rates in the next three years?

8 A lot of the movement that Aaron talked about,
9 moving from 14 percent to 19 percent, all of that's
10 going to start hitting rates on May 22nd, when we talk
11 about retail rates and cost issues.

12 I do not want to under-estimate the impact of
13 the policies that have already been in place, but we
14 haven't really seen the full price tag, yet.

15 So, let's be cautious, let's not have a whip saw
16 of people who are behind renewables, let's get all these
17 great benefits and then they pull back when they see the
18 price, and then they're back in and they're back out.
19 That's what Germany did and I don't want to do that in
20 California.

21 MS. ZOCCHETTI: Thank you, and do we have Randy
22 Howard on the line? It doesn't look like it.

23 COMMISSIONER PETERMAN: Kate, any final
24 comments?

25 MS. ZOCCHETTI: No, other than just to thank

1 everyone for coming in, to remind everyone that written
2 comments are due a week from today, on the 19th. And to
3 the points, and the questions, and the details that we
4 didn't get to, please make sure to -- if those are
5 important to you, to address those in your written
6 comments.

7 COMMISSIONER PETERMAN: Thank you very much,
8 this was a great first workshop. I learned a lot, a lot
9 of food for thought. I think we could continue
10 discussing these issues late into the evening, but save
11 your energy for our next workshops.

12 We have, actually, the next renewable strategic
13 plan workshop is on May 10th, "Identifying Priority
14 Geographic Areas for Renewable Development."

15 And then on April 30th, we have an IEPR workshop
16 on "Climate Change Adaptation," is that the right
17 general frame, here, if you're interested in that, as
18 well, because we still have some other IEPR workshops
19 happening in tangent.

20 But looking forward to seeing it next time.
21 Any final words, Chairman?

22 CHAIRPERSON WEISENMILLER: Yeah, again, I'd like
23 to thank everyone for their participation, encourage
24 people to file written comments.

25 And, also, the climate change, we really want to

1 look at the implications of climate change for the
2 energy system. So, certainly encourage everyone to
3 listen and participate in that. We expect, obviously,
4 higher loads. You know, certainly affecting our hydro
5 might be affecting our vulnerability of our transmission
6 system from forest fires.

7 I mean there's a -- there was a snapshot of that
8 in the Governor's Climate Change Workshop, in December,
9 and the results were pretty staggering.

10 So, again, certainly encourage everyone to
11 participate in that.

12 COMMISSIONER PETERMAN: And also, thank you
13 again to all of our moderators and our staff. Have a
14 good evening, everyone.

15 (Adjourned at 5:13 p.m.)

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