

CALIFORNIA ENERGY COMMISSION
JOINT IEPR/SITING COMMITTEE WORKSHOP

In the Matter of:)
) Docket No. 08-GHG-0II-1
Requirements Relating to) 09-IEP-1P
Greenhouse Gas Emission)
Impacts of Power Plants)
Preparation of the 2009)
Integrated Energy Policy)
Report (2009 EIPR))

COMMITTEE WORKSHOP ON THE FRAMEWORK FOR
EVALUATING GREENHOUSE GAS IMPLICATIONS OF NATURAL
GAS-FIRED POWER PLANTS IN CALIFORNIA

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

TUESDAY, JUNE 23, 2009

9:00 A.M.

Reported by:
Barbara Little
Contract Number:

COMMISSIONERS PRESENT

Jeffrey D. Byron, Commissioner

James D. Boyd, Vice Chair

Karen Douglas, Chairman

ADVISORS PRESENT

Laurie Ten Hope

Kelly Birkenshaw

Diana Schwyzer

STAFF PRESENT

Suzanne Korosec, IEPR Lead

Dale Edwards, Transmission Corridor Designation Unit

Mike Jaske, Senior Policy Analyst

ALSO PRESENT

Steven McClary, MRW & Associates

David Hawkins, California Independent System Operator

Nancy Ryan, California Public Utilities Commission

Kevin Kennedy, California Air Resources Board

Noah Long, Natural Resources Defense Council

Matt Barmack, Calpine Corporation

Mark Minick, Southern California Edison

Scott Galati, Pacific Gas and Electric

Antonio Alvarez, Pacific Gas and Electric

Robert Anderson, San Diego Gas and Electric

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Jan Smutny-Jones

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P R O C E E D I N G S

JUNE 23, 2009 9:00 a.m.

MS. KOROSEC: Let's go ahead and get started.

Welcome to the Workshop on Greenhouse Gas Implications of Natural Gas Power Plants in California. This is a Joint Workshop by the Energy Commission's Integrated Energy Policy Report Committee and its Siting Committee. First, I need to cover a few housekeeping items. Restrooms are out in the atrium through the double doors and to your left, there is a snack room on the second floor at the top of the stairs, under the white awning, and if there is an emergency and we need to evacuate the building, please follow the staff to the park, kitty-corner to the building, Roosevelt Park, and wait there until we are told it is safe to return.

Today's workshop is being broadcast through our WebEx Conferencing System. Parties should be aware that we are recording the workshop. We will make the recording available on our website almost immediately after the workshop and it will be replaced by the transcript once that becomes available, which is about two weeks from today. For speakers and commenters today, please make sure to speak very closely into the microphones so that the people on WebEx can hear you very clearly.

We will have presentations and a panel discussion

1 this morning, followed by a public comment period this
2 afternoon, during which we will take comments first from
3 parties in the room, and next we will open up the WebEx
4 lines to get comments from those listening in. We do ask
5 that parties in the room fill out a blue card, they are in
6 the foyer out in the lobby -- excuse me, they are on the
7 table out in the foyer -- and you can give those to me
8 during the day and I will make sure those are given to the
9 Commissioners. It is also helpful if you can remember to
10 give the Court Reporter a business card when you are done
11 speaking, so we can make sure your name is spelled
12 correctly in the transcript.

13 This workshop is being held as a part of the 2009
14 Integrated Energy Policy Report, or IEPR Proceeding. We
15 are required by statute to prepare an IEPR every two
16 years; it evaluates and assesses energy supply, demand,
17 and other trends in California's energy markets, and it
18 also makes policy recommendations to help us state our
19 goals for reliability, affordability and environmentally
20 benign energy supplies.

21 And on that note, the topic of today's workshop is
22 a report prepared for the Energy Commission by MRW &
23 Associates entitled *Framework for Evaluating Greenhouse*
24 *Gas Implications of Natural Gas-Fired Power Plants in*
25 *California.*

1 The Energy Commission Siting Committee opened an
2 informational proceeding in October of 2008 to get input
3 from stakeholders on how to satisfy the Energy
4 Commission's responsibilities under the California
5 Environmental Quality Act to assess the greenhouse gas
6 impacts of proposed new power plants. The Committee held
7 workshops in October and November of 2008, and
8 subsequently released the report in March of this year
9 that summarized participants' comments and outlined the
10 committee's perspective on the issue, and made some
11 recommendations to the IEPR Committee for further analytic
12 work by CEC staff. So the report we are discussing today
13 is one of the products of that analytic work. It explores
14 the question of how much, what type, and where in
15 California natural gas-fired generation may be needed
16 given our need to reduce GHG emissions, to expand
17 renewables, and to continue protecting California's
18 environment. So with that very brief introduction, I will
19 turn it over to the Commissioners for opening comments.

20 COMMISSIONER BYRON: Thank you, Ms. Korosec. Good
21 morning, everyone. I am Jeff Byron and I chair the
22 Commission's Integrated Energy Policy Report Committee, as
23 well as the Siting Committee; however, allow me to
24 introduce my fellow Commissioners who are here with me
25 this morning. To my right is the Chairman of our

1 Commission, Karen Douglas, who is also on the Siting
2 Committee with me, and to my left is Vice Chair Boyd, who
3 is my co-conspirator on the Integrated Energy Policy
4 Report Committee. All the way to the left is his Advisor,
5 Kelly Birkenshaw, and all the way to the right is Chairman
6 Douglas' Advisor, Diana Manetta (Schwyzer), and my Advisor
7 is in between, Laurie Ten Hope.

8 Just a few comments to start with. As a result of
9 the passage of AB 32 -- is that almost three years ago now
10 -- we have some responsibilities. Of course, the Air
11 Resources Board was granted most of that responsibility,
12 but until they get the regulations in place, it is
13 incumbent upon this Commission and other organizations to
14 begin to take action, and we have been doing that, we have
15 been doing it for a while. We have got to address
16 greenhouse gas reduction now as we begin to undertake the
17 28 or so siting cases that are before this Commission. I
18 am told by my colleagues that this Commission really had a
19 lot to do, if you will, with making recommendations early
20 on about reducing greenhouse gases and, as you know, we
21 have opened up an order instituting information last year
22 in addressing this subject.

23 Today's discussion is framed around the contractor
24 report by MRW, the entitled *Framework for Evaluating*
25 *Greenhouse Gas Implications of Natural Gas-Fired Power*

1 *Plants in California.* I am very impressed with the
2 collection of speakers that we have got, having read
3 through the questions. I am very keen that we are going
4 to get some interesting discussion and hopefully some
5 resolution around some of these key issues. In a
6 nutshell, I would characterize what we are doing today as
7 trying to answer the question, how can we build any fossil
8 generation under the provisions of AB 32? Now, greenhouse
9 gas reduction is difficult, I wish there were a knob that
10 we could turn, and turn it down, but that is not the case.
11 We have got to look at this in the context of the greater
12 picture; the electric system is a complicated matter in
13 the state and, of course, California is not an island.
14 But we are going to discuss that in more detail today.
15 And, of course, if it worries you to do this, then it
16 would not be very controversial, I guess we would not even
17 be here at all this morning. But if we want to solve it,
18 I note that we need to work together and I really
19 appreciate the involvement and the cooperation of all the
20 parties that I see here today. And we are fortunate to
21 have Commissioner Boyd and Chair Douglas, who understand
22 these issues a lot better than I do, certainly the legal
23 nuanced issues. And I am very eager to hear from them, as
24 well. I think I will just end with that. And I welcome
25 the input from industry, fellow regulators that are here

1 today, and the environmental interests that are
2 represented in the audience. Madam Chair, any comments?

3 CHAIRMAN DOUGLAS: A few. I will keep it brief.
4 Thank you very much. I think this is a very important
5 proceeding, one of the most important analyses the
6 Commission has done in the last, say, year or so, and it
7 has gotten us to a watershed moment in our siting process
8 where, when we look at power plant siting cases, we are
9 now explicitly, I think -- we are now providing or looking
10 for a more thorough and greater analytical framework to
11 use in analyzing greenhouse gas implications to power
12 plants. I think doing so, especially given passage of AB
13 32 and recent evolutions in CEQA law, is very important,
14 and it is also important to recognize that the electricity
15 sector is unique in its own way and has certain
16 characteristics that are very important to consider as a
17 system, as well as looking at the emissions from
18 individual smoke stacks that we will be considering
19 permitting. So the framework that we have before us is a
20 way of taking the system-wide view and asking ourselves
21 specifically not only how much might this plant emit, but
22 what do the characteristics and attributes of this plant
23 say to us about how it will be used in California and
24 whether it will serve a role as potentially advancing and
25 even making possible the transition towards a lower carbon

1 energy system, or whether it will be, as I think the fear
2 is of many of the community groups and concerned citizens
3 who participate in some of our study proceedings, an
4 impediment to that transition. So we have needed, I
5 think, for some time a framework for addressing head on
6 this question, and the report that we have before us that
7 we are analyzing, and also hearing public review on today,
8 is a first step at creating that framework. I look
9 forward to both seeing the presentation of the report and,
10 of course, hearing from all the speakers we have here, but
11 also hearing from public comment because this is the sort
12 of thing that you do not always expect to get perfectly
13 right on the first try, and we very much look forward to
14 hearing what public commenters have to say today, as well.
15 So with that, thank you, and welcome to the Energy
16 Commission.

17 COMMISSIONER BYRON: Vice Chair Boyd, thank you
18 for altering your schedule to be able to be here today.

19 COMMISSIONER BOYD: Oh, I love doing the IEPR.
20 This is my fourth year over the seven and a half years I
21 have been here. In any event, thank you for the
22 opportunity. Thanks to everybody for being here. I
23 think, as you have all discovered, there is nothing we do
24 in the energy field, if not practically everywhere now
25 days, but certainly our discipline is let's not touch

1 buyer were it does not touch global climate change,
2 greenhouse gas emissions, etc. I guess the production and
3 use of energy worldwide was identified as the major
4 contributor to the issue of climate change, and major
5 contributor through the production of greenhouse gas
6 emissions, CO₂, the major culprit, but all the CO₂
7 equivalent, as we call them, emissions. As Commissioner
8 Byron said, California has been at it and this agency has
9 been at it for a long time. I guess this agency did the
10 first inventory that, contrary to what the world situation
11 was, i.e., the production of electricity, either using
12 coal or fuel oils of various kinds, was the number one
13 culprit. California, CEC in its inventory, discovered it
14 was the motor vehicle, and electricity production became
15 number 2, thus we are still concerned. So the CEC has a
16 long history of dealing with global climate change, far
17 more than the seven and a half years I have been here. It
18 did a lot of pioneering work before legislation began to
19 impact the automobile, and finally the passage of AB 32,
20 which set the locust of attention on the subject, as
21 Commissioner Byron indicated at the Air Resources Board,
22 with us all working collaboratively on the various
23 components, and we, working with our energy partners at
24 the PUC with the ARB on the electricity sector, and that
25 is what we are here to talk about today. And to this

1 moment, still, the CEC is active in the climate change
2 area. All the climate research that more or less has led
3 the Climate Action Team, and what have you, has been
4 guided by, if not run by, the Energy Commission and we
5 still are in that position. We still chair the Climate
6 Action Team Research Sub-Group. So all of the agencies
7 represented here are woven into the fabric of dealing with
8 the subject of climate change and, as I have said in other
9 forums, everything we do fits under the umbrella or in the
10 tent of Climate Change -- all the policy drivers we have
11 all individually dealt with now are collected under this
12 one subject because this is a huge system that we have to
13 deal with. So I look forward to the subject today and
14 hearing everybody's input on the subject because it is one
15 of the difficult areas for we in California to challenge,
16 which we Californians are willing to challenge, even in
17 spite of our momentary financial situation in this day --
18 and I do say "momentary" with a very hopeful expectation
19 that it is just that. So thank you for the opportunity
20 and I do look forward to what I am going to learn here
21 today.

22 COMMISSIONER BYRON: Thank you.

23 MR. EDWARDS: Well, I will kick this off to get
24 this thing rolling. First of all, good morning
25 Commissioners and to everyone who is participating here

1 with us today. My name is Dale Edwards. I am one of the
2 staff persons who helped put this workshop together. And
3 I want to thank all of you for participating in the
4 workshop. We are fortunate to have a well prepared and
5 well received consulting report from MRW & Associates
6 titled *Framework for Evaluating Greenhouse Gas*
7 *Implications of Natural Gas-Fired Power Plants in*
8 *California*. The report provides information on how the
9 Energy Commission may proceed in the near term. Quoting
10 from the report, "to make the appropriate judgments about
11 a plant's ability to support the integration of renewable
12 resources, or otherwise provide important system
13 benefits." And our goals for today's workshop are to hear
14 from representatives of the Air Resources Board, Public
15 Utilities Commission, and the Independent System Operator,
16 about their current activities related to greenhouse gases
17 and the Electric Generation System, and to go through a
18 set of questions with a panel of experts focused on the
19 MRW's framework report.

20 By the end of this workshop, we hope to enhance
21 our knowledge about how the Energy Commission can best
22 play its part in reducing greenhouse gas emissions in the
23 Electric Generation System that serves California.

24 Just a quick note about written comments following
25 this workshop on the report itself, there is a going to be

1 a slide at the very end of this presentation, or at the
2 end of the day, and the due date for those comments is
3 unfortunately quite short, it is June 30th, so I am giving
4 you a heads up about that now. All the information about
5 where the comments go and all that will come up on the
6 slide later, or it can be available if you need to leave
7 early.

8 I would like to now introduce Mike Jaske, our
9 Senior Policy Analyst here at the Energy Commission. He
10 is going to provide an overview of the Commission's
11 Greenhouse Gas Order Instituting Informational Proceeding
12 and the resulting Siting Committee Guidance Report that
13 was issued in March 2009, and then we will go on from
14 there. Thank you.

15 DR. JASKE: Good morning. I am Mike Jaske, a
16 member of the Energy Commission staff and I am going to
17 play two roles here today, giving some very brief opening
18 remarks right now, and then moderating the panel later
19 this morning.

20 As has been indicated last fall, the Commission
21 opened an OII on the question of how to consider GHG
22 emissions in power plant applications that come before us.
23 Various perspectives were raised in that proceeding,
24 ranging from do not do anything at all, and wait for ARB's
25 cap and trade proposals to emerge, and treat all power

1 plants alike, new and old; on the other end of the
2 spectrum, treat every power plant coming before the
3 Commission as having significant emissions and mitigate
4 those emissions in its own manner; somewhere in the
5 middle, try to examine the expected consequences of each
6 one of the power plants through some sort of system
7 modeling, and on the basis of those modeling results,
8 proceed to impose some kind of mitigation. Of course, the
9 conclusions out of the committee's report was adopted in
10 March, are basically two-fold, to say that we must treat
11 GHG emissions as part of the CEQA analysis of power
12 plants, and that has, in fact, been happening in the form
13 of testimony in a number of siting cases that started in
14 June, this very month that we are still in. How that will
15 play out during the course of any of those particular
16 siting cases remains to be seen. And the second key
17 conclusion from the Committee's Guidance Report was that
18 power plants should be considered as part of the system.
19 They are not to be examined on a stand-alone basis, but as
20 a component of a large machine that is delivering
21 electricity from many power plants, many locations, to end
22 users.

23 So what are the implications of this system
24 perspective when we are thinking about emissions from a
25 new power plant? There are a variety of those. If it is

1 more efficient, then at least some, or a considerable
2 number of the existing power plants, the ones likely to be
3 generating power, in the absence of that plant, then logic
4 says it is going to be dispatched more frequently, and
5 that it will be displacing generation from those less
6 efficient plants. That displacement could result in a
7 reduction in aggregate GHG emissions, and so such a
8 fortuitous outcome, you know, would presumably be
9 recognized in its treatment in that licensing process.

10 Not all power plants are equal, of course. They
11 have specialized roles, they have different technologies,
12 they have different locations, so a [indiscernible) power
13 plant is going to run much less than a base load power
14 plant, its emissions of all sorts will be less, including
15 GHG gasses. Some amount of power plant capacity with
16 flexible characteristics appears to be necessary as a
17 compliment to the pursuit of intermittent renewables, so
18 one could imagine that some combination of fossil
19 additions and renewable additions collectively is lower
20 GHG emissions than what would otherwise have been built in
21 its place. Could those intermittents be developed to the
22 level, to the degree, without complimentary fossil? That
23 is a key question and we are hoping that analyses that the
24 California ISO is undertaking and Mr. Hawkins, who will
25 speak later this morning, can shed some light on the

1 nature of ramping, inking and decking turn-off, efficient
2 turn-on from a cold condition, and other such flexible
3 characteristics that seem to be complimentary to the
4 intermittents.

5 Storage technologies may be able to play some role
6 and avoid the necessity for a fossil plant ramping up and
7 down a lot, but that may be limited both in the near term
8 based on the infancy of those technologies, but also on
9 the sort of dimensions of the cycle with which those
10 plants can operate, perhaps on a daily basis they can
11 operate in that manner, but weekly, monthly or annual
12 fluctuations clearly only pondage (phonetic) hydro seems
13 to be able to satisfy that kind of role. And then, of
14 course, there is the necessity for dispatchable capacity
15 located in load pockets that serves local reliability
16 purposes.

17 So some or all of these points I have made have
18 been tackled in the report MRW has prepared, and I think
19 they have done a pretty good job of aligning up all of the
20 various preferred policy consequences of the last number
21 of years that the agencies have collectively been
22 pursuing. They have brought things together to a state
23 which has identified roles, and so Chapter 7 of that
24 report and its focus on a number of roles is a key
25 dimension of the questions that we are hoping the panel

1 will shed some light on later this morning.

2 As was said a moment ago, the Siting Committee's
3 Guidance Report used logic to reach its conclusions, it
4 made some recommendations for pursuing follow-up analytic
5 work. The MRW Report is just one area of those four
6 recommendations, there are other activities underway by
7 the staff, and those will show themselves later this
8 summer, perhaps in further IEPR workshops, or in IEPR
9 itself. And with that, I think I am complete. Are there
10 any questions from the committee?

11 COMMISSIONER BYRON: Thank you.

12 MS. KOROSEC: There is a gentleman named Dale that
13 --

14 COMMISSIONER BYRON: So we have a question from
15 WebEx.

16 MS. KOROSEC: Dale, you had your hand up on the
17 WebEx. If you have a question, go ahead and ask it now.
18 Your line is open. Okay.

19 MR. EDWARDS: Our next speaker is Steve McClary
20 from MRW & Associates, who will present an overview of the
21 draft framework itself.

22 MR. McCLARY: Thank you, Dale. Good morning,
23 Commissioner Byron, Chair Douglas, Vice Chair Boyd, it is
24 good to be here this morning. My name is Steve McClary.
25 I am a principal with MRW & Associates, the authoring

1 consulting firm here. Also with me today, I want to
2 acknowledge some of the rest of the team at MRW. My
3 colleague and a familiar face at the Energy Commission,
4 Bob Weisenmiller is here, as is Heather Mehta, who has
5 played a key role in making this report actually happen,
6 and Briana Kobor, who is much of the work underlying the
7 report.

8 I think Mike and Dale have outlined where this
9 report fits in the efforts that the Commission is
10 undertaking to incorporate the implications of Greenhouse
11 Gas Policy into siting proceedings. It is a difficult
12 question and I would say that what we have tried to do
13 here is provide an overview of where the issue stands as
14 far as getting a grasp on the greenhouse gas emissions
15 from the electricity sector and the different ways in
16 which natural gas-fired plants that come before you, in
17 particular, fit into looking at that framework, and then
18 we try to propose at least the beginning of a specific set
19 of ways to think about plants as they come before you in
20 siting proceedings. That, obviously, is going to evolve
21 as siting cases move forward, but this is, I think, the
22 first step, and it should rightly be regarded as such.
23 What the report is not is a new set of modeling analyses,
24 per se, that I think Mike has referred to as the kind of
25 work that might need ultimately to be done; it is more

1 pointing in the direction of how those kinds of analyses
2 ought to be performed.

3 As has already been mentioned, and the reason that
4 this is not an easy kind of a problem, the power grid is
5 complicated. And in California, it is maybe more
6 complicated than just about anyplace else in the country
7 or the world because of our mix of resources, our reliance
8 on imports, the geographic scope, and the policy drivers
9 that we impose on that system here in California. A key
10 part, of course, is renewable resources and the push to do
11 those, the hard fact is that, many of those renewable
12 resources are intermittent in nature, and how we
13 accommodate that in the electricity system is a key
14 element of imposing that policy, which is part and parcel
15 of reducing greenhouse gas emissions from the electricity
16 sector. And that is why we are trying to help the process
17 here of how you think about how natural gas-fired plants
18 play a role in that policy and moving forward.

19 What I will be talking about today are, first, and
20 I do not want to go into too much detail on the
21 background, but to run through some of where we are, what
22 the legislative and policy initiatives that have led us to
23 this place are, how the generation mix that we have is
24 reflected in that and will be. We looked more closely at
25 the implications of a 33 percent renewable portfolio

1 standard scenario because that does appear to be the
2 direction we are headed as a key element of our greenhouse
3 gas reduction strategy in this state. We also do an
4 overview of what we know and how we can quantify
5 greenhouse gas emissions from the electric sector. There
6 is a lot of policy interest here, but we are still at a
7 stage of really understanding the ways in which greenhouse
8 gas emissions result from generating electricity and the
9 possible outcomes of different mixes of the electricity in
10 the system. And to that end, we have tried to take a
11 preliminary look at what the greenhouse gas emission
12 implications of several policy driven futures, stemming
13 largely from work performed for the 2007 IEPR here at the
14 Commission, what some of the implications of that would
15 be, and from that identify what kinds of roles gas-fired
16 generation play in those futures, or in the kind of policy
17 direction we are taking, why they are important, why you
18 would need them, and what the emissions implications are
19 of those plants and those policy futures. All of this, of
20 course, takes place against the backdrop of California's
21 energy policy, which is evolving. Here at the Commission,
22 of course, it is the IEPR, which we are part of here
23 today, and the updates that occur in the off-years between
24 IEPRs that set the policy framework that goes to the other
25 agencies in the state.

1 Overall, the Energy Action Plan that is a joint
2 effort of the PUC and the Energy Commission, establishes
3 an overall framework here for how we look at resources
4 that are added and how we meet our electricity needs, and
5 sets a priority. And one thing that I want to emphasize
6 there is that the first element in the loading order under
7 state policy is, in fact, energy efficiency, not
8 generation. That is really step 1 every time we look at
9 this. Now, this report in this effort is necessarily
10 focused on how you deal with supply resources that come to
11 this Commission and how they fold that into siting. I do
12 not mean for that to imply that that means that the energy
13 efficiency goal is overlooked or unimportant; in fact, it
14 underlies every scenario that we look at. And in the
15 broader energy policy context, this is certainly an
16 element that would be looked at for perhaps increased
17 reliance as part of a greenhouse gas or an overall
18 environmental scenario, policy would be taken here. So
19 while we do refer to the energy efficiency element in
20 meeting electricity needs here, the focus of this report
21 is on resources.

22 Into all of this, we have now the ARB role in
23 meeting the goals set in AB 32, and that is again -- it
24 has been evolving, there is a lead being taken by that
25 agency, but the Commission certainly continues to play a

1 vital role in that and, in fact, laid a lot of the
2 groundwork for what the ARB is doing. The ARB Scoping
3 Plan has set certain goals and intents for how they want
4 to move forward on greenhouse gas reduction. Specific
5 goals are also laid out there, but often they are laid out
6 in a manner that is somewhat different from the way this
7 Commission approaches electricity planning, or policy, and
8 that will be one of the challenges going forward, to
9 harmonize those and get them in sync in working together.

10 One other point on that, and I think Mike touched
11 on this, as well, is there is a timing issue in that some
12 of what the ARB is doing will be laid in place over the
13 next few years and may in fact address some of the
14 implications of specific plants, a cap and trade system,
15 for example, might drive decisions made by developers who
16 bring plants to this Commission. But this Commission has
17 to decide siting cases now, as that framework is being
18 developed, and much of this work is focused on how the
19 Commission can address those issues in the context of
20 siting cases that are coming before them today. I think
21 the number I heard was 28 cases actively before. There is
22 not any realistic prospect of putting those on hold,
23 waiting for a broader system to be imposed.

24 So where are we now? Well, the generation mix in
25 California, as I said, is diverse, and of course, in any

1 electricity system, demand varies constantly through the
2 day, during the seasons, response to weather, response to
3 economic conditions, and sometimes response to events on
4 the system itself, for example, transmission lines go
5 down, that obviously has an effect on how the system can
6 operate. One thing looking forward is California has
7 today, in many respects, a system that has quite a bit of
8 fluctuation on the supply side because of the hydro system
9 that we have, we have quite a reliance on that. Looking
10 forward, that is certainly only going to increase,
11 although in the future that will be due more to
12 introduction of renewable resources that are intermittent
13 in nature and have different variations, different
14 patterns of variation than hydro does. But I think as we
15 are looking, going forward, and accommodating these
16 intermittent resources, it is worth remembering that
17 California has accommodated intermittent resources for a
18 very long time and has maintained a very reliable electric
19 system in doing that. Here, we are looking primarily at
20 system-wide impacts, as Mike mentioned, we are trying to
21 get a handle on what the system-wide impacts of new plants
22 being introduced is. Of course, you have the intersection
23 of what are the system-wide impacts of a specific case
24 being brought to the Commission, and this obviously is in
25 many ways driven largely by the impacts of introducing new

1 renewable resources into that system.

2 This is perhaps the obligatory pie chart on what
3 California's system looks like, always based on the Energy
4 Commission's data because it is always the clearest and
5 best available, I think. The things to look at here, or
6 to remain aware of, are that the intermittency issue, you
7 could see that roughly speaking, in terms of energy
8 generation, hydro generation in this state is comparable
9 to nuclear generation, very round numbers. Both are very
10 significant resources and very different in their
11 characteristics. A lot of the difference in the
12 characteristics of those two resources is balanced out by
13 a large reliance on natural gas-fired generation, which
14 moves back and forth. The out-of-state element of
15 generation that we rely on in California also includes
16 large hydro, but also includes a fair amount of coal. And
17 for that reason, the out-of-state generation that we use
18 here is actually disproportionately contributing to
19 greenhouse gas emissions that result from use of
20 electricity in California. Thirty-three percent RPS, this
21 is one of the policy overlays resulting from AB 32 and I
22 do not actually need to reiterate what I have said here,
23 it is going to require accommodation of a greater degree
24 of renewables than we have now. Load following and
25 regulation capacity are kinds of resources that are

1 necessary to let intermittent resources come on to the
2 system. All of this has to be done in a way that
3 maintains reliability at this point, and in many respects
4 we look to the ISO in doing their integration renewable
5 study, their integration of renewable resources work,
6 which is directed at maintenance of reliability which is,
7 of course, their primary charge in operating the system.
8 Going forward beyond 2020 and 2030, looking beyond the 33
9 percent goal, this is going to be even greater, and
10 frankly very difficult to quantify at this point. We are
11 trying to point a direction in doing that, but things like
12 electrification of the transportation system, new
13 electricity storage technologies, perhaps new transmission
14 technologies that allow resources to move more readily
15 across bigger distances, will have large effects on how we
16 can manage this system, and modeling those at this point
17 is probably an unrealistic prospect, however, allowing
18 ourselves to be able to account for them and accommodate
19 them as they come forward will be important.

20 Historic greenhouse gas emissions. Much of the
21 framework and the targets that are set for reducing
22 greenhouse gas refers to, say, 1990 levels, or levels set
23 for a specific sector such as the electricity system,
24 which poses the problem of actually getting a good
25 realistic handle on greenhouse gas emissions from those

1 sectors and how they are evolving, and how they change.
2 That is actually not well settled yet, it is being
3 attacked, and it is being addressed. There are two
4 primary sources that we used in the report here and looked
5 to; the Energy Commission has looked at this issue for
6 quite some time and has laid the groundwork, I would say,
7 for looking at greenhouse gas emissions resulting from
8 electricity production for many years. There is something
9 of either a passing of the baton or bringing a new partner
10 into that with the ARB coming in. I think the roles are
11 still being worked out, but clearly ARB is now taking more
12 of a lead, although I think they lean heavily on work done
13 here, and so looking forward I think that will probably be
14 where we look for the primary source of information on
15 this, but we are not quite there yet. This poses its own
16 set of difficulties for evaluating the impact of different
17 policies going forward on the electricity system and on
18 specific siting cases because we do not always have data
19 that we can pin down well enough to know what the results
20 of our decisions will be. And it varies. It varies a
21 lot. From the Energy Commission work that has been done,
22 it is clear that greenhouse gas emissions fluctuate from
23 year to year for a lot of reasons and, in particular, the
24 imports account for quite a bit of it and there are two
25 categories here, unspecified and specified imports, so

1 between those two categories, the red and the purple if
2 they are showing up well on WebEx, or seem to be showing
3 up here, that is about half the total greenhouse gas
4 emissions that result from it. Even within the state, you
5 see a lot of variation. Most of that would be due to
6 variations in load, in demand from year to year, and in
7 hydro production from year to year, and drought years when
8 you have less hydro, you generate more from natural gas,
9 hence you get more greenhouse gas emissions. You also
10 have some effect if the nuclear plants are down for an
11 extended period of time. That can have an impact on the
12 overall natural gas make-up power, if you will. That is
13 less of an effect, partly because -- and tends to be less
14 of one now -- partly because outages and refueling outages
15 have been shortened over time, you know, the plants are
16 operating more of the time, and we have not had extended
17 outages, except that we have had steam generator
18 replacements which are planned for, but that does also
19 impact. So operation of nuclear and hydro plants does
20 effect the greenhouse gas emissions.

21 This is reiterating what I just presaged here.
22 One other issue we do have, in particular on electricity
23 imported from out of the state, we have not had a good set
24 of consistent protocols for determining how much is coming
25 from which source, and how much greenhouse gas emissions

1 are resulting from those sources on out-of-state
2 resources. We have a much better handle for in-state.
3 This is again something that we will be improving over the
4 next few years since we are not the only state getting a
5 handle on greenhouse gas emission reduction.

6 So what we did after looking at where things stand
7 and what the state of the data was, was to look at how the
8 different policy futures, the different alternatives for
9 moving the electric system forward, that are under
10 examination here, might affect that. There again, as I
11 said, we relied primarily on existing work and, in fact,
12 throughout the report, we relied on good work that has
13 been done here, the ARB, the PUC, the ISO, and elsewhere.
14 Here, we were looking because of the timing and what is
15 going where we are in the evolution. We have the
16 scenarios worked that it was done as a part of the 2007
17 IEPR here. Simultaneously with that, a lot of work was
18 being done on the implications of shutting down or
19 changing operation of different plants as part of looking
20 at the impact of what is your cooling regulation. So that
21 was sort of a parallel source of information on resource
22 use in greenhouse gas emission that we could use, and at
23 the same time, now, the ISO is also looking at this issue
24 closely. They have taken a pretty comprehensive look at
25 the 20 percent RPS standard and are in the midst of

1 putting together and looking closely at the implications
2 of a 33 percent RPS standard, and we will hear more about
3 that ongoing work later today.

4 What we looked at here were scenarios that stem
5 from work that was done in the scenarios report. What we
6 have called the "frozen policy case" was -- this was one
7 of the cases that was identified in the report as Case 1B
8 there, and I think it is noting, you know, "frozen
9 policy," "business as usual," they are often terms that
10 are bandied about for what happens, what is the policy if
11 we do not change things dramatically from where we are.
12 So one thing that strikes one about the frozen policy case
13 in California is that the frozen policy case has a very
14 aggressive energy efficiency element in it called "ready."
15 It assumes that we will be pushing hard on energy
16 efficiency. So I think what you would call "business as
17 usual," or "frozen policy case" in California might strike
18 regulators in other states as pretty far in the direction
19 of pushing efficiency and conservation and demand
20 response.

21 We then tried to look at it more qualitatively,
22 tried to start with a quantitative look at an increased
23 renewables generation scenario in the scenarios report,
24 this was described as Case 4A. At that time, we did not
25 have a 33 percent RPS standard set in place. As it

1 happens, that more aggressive renewables or increased
2 renewables scenario comes close to looking like a
3 potential 33 percent by 2020 RPS case, and can give you
4 some insights into it. Now, it is obviously not precise,
5 but it is actually surprisingly close in many ways to
6 identifying a 33 percent kind of scenario. We also looked
7 at some variations on that to see what the potential
8 impacts of a couple of other policy choices would be. One
9 was to look at an increased renewables development with
10 acceleration of retiring older plants, and another was to
11 look at an increased renewable scenario that would also
12 incorporate increased distributed generation resources
13 being put in place, both CHP combined heat and power and
14 renewable distributing generation. And what we found here
15 was interesting. Again, I want to say -- preliminary. I
16 think what we are trying to say is that these are the
17 kinds of directions that these policy futures lead you,
18 but that more detailed analysis is certainly merited and
19 would be part of this Commission's work on an ongoing
20 basis. But looking at that frozen policy, even without
21 major new initiatives beyond the kind of new initiatives
22 that are already in place, it looks like greenhouse gas
23 emissions would -- you are holding them in place in large
24 part through 2020. In that scenario, the new gas-fired
25 generation that is assumed to be brought online, it is

1 used primarily for peaking purposes and for quick response
2 for spinning reserve, non-spinning reserve regulation, it
3 is does not include a lot of new gas-fired generation
4 built primarily for economic purposes, for example. The
5 more aggressive kinds of cases that are consistent with
6 the increased renewables scenario looked at in 2007 can
7 reduce greenhouse gas emissions from the electricity
8 sector on the order of 20 percent. And, again, this is
9 not the final answer, but they do address and start
10 pushing us in the direction of actual reductions in GHG
11 emissions from the sector. At our first look, it did not
12 appear that adding accelerated retirements of older
13 plants, or increasing distributed generation -- it
14 actually had a relatively modest impact on that. You had
15 much the same level of reduction in greenhouse gas
16 emissions as in the, if you will, the base increased
17 renewable case. All of this is very -- it is based on
18 existing work, it is not new modeling, it is not new
19 production simulation work, and it gives an idea of what
20 directions would be promising, but there is clearly
21 substantial additional work that is needed to really
22 address and accommodate some key factors. And three of
23 them that I have noted here. Local Reliability. A lot of
24 plants are needed in specific areas because specific areas
25 have transmission limitations, they have local resource

1 requirements that make it necessary to locate generation
2 there, unless you can build new transmission resources
3 that meet the same reliability goals. This is the bread
4 and butter, I would say, of the ISO in many ways and is
5 one of the primary reasons why their role in looking at
6 renewable integration is so key. Renewable integration is
7 obviously driving a lot of what will happen going forward
8 in the greenhouse gas emissions and the need for natural
9 gas plants. What kind of renewables? What will their
10 supply characteristics be? And what do we need to do to
11 accommodate them? And, in fact, there are some
12 initiatives being undertaken, or some work being done,
13 that could have a substantial effect on this and, again,
14 we may hear from David Hawkins on some of those issues.
15 An example would be wind generation does fluctuate, it
16 fluctuates daily and it fluctuates through the season.
17 One way to address that is to have lots of back-up, or
18 have enough back-up gas-fired generation to accommodate
19 those swings. Another way is to understand better how it
20 is going to fluctuate, forecast it better than we do now.
21 And there may, in fact, be a significant promise in better
22 forecasting methods that can be implemented that will
23 allow us to accommodate that intermittent resource more
24 readily. Some of the kind of thing that needs to be
25 looked at going forward. Transmission issues, I think we

1 have already seen and will continue to see that building
2 new transmission to accommodate renewable generation, or
3 to improve reliability, will continue to be an issue and a
4 contentious one, a very difficult one. Those who have
5 watched, for example, the sunrise proceeding over the past
6 couple of years know it is not an easy road to do, but,
7 again, it is key to what kind of plants we need to build,
8 and where we will build them.

9 As I mentioned early on, in the long run, the
10 Scoping Plan that the ARB has put forth will result in
11 specific regulations which may well guide either the
12 presentation of cases to this Commission or how they are
13 evaluated. But that is not going to happen right now and,
14 in the short run, the focus here has to be looking at gas-
15 fired generation that is brought forward to this
16 Commission, and how you balance all of these issues. You
17 have grid operational needs, you have reliability, you are
18 trying to integrate renewable integration, or renewable
19 resources into the system, and allow that to happen, which
20 may require construction of some gas-fired plants. And
21 all of that needs to happen in cases that are happening
22 this month, they are coming forward. The staff has to
23 testify and Commissioners have to make decisions.

24 So when you are looking at a gas-fired plant, this
25 is where we start to put forward a framework for how you

1 can look at them, how you can think about specific plants
2 and what roles they play. A key one that has been
3 highlighted again and again is to support renewable
4 generation being brought into the system, whether that is
5 wind, solar, or perhaps others. Another role that gas-
6 fired plants can play on this system is to meet local
7 capacity requirements, and I touched on that, as well.
8 Grid operations support the role of the plant there, it
9 can be somewhat different from local capacity requirements
10 if we need to have specific types of ancillary services,
11 for example, on the system in order to maintain reliable
12 operation and gas-fired plants in some cases can provide
13 those kinds of ancillary services most economically.

14 The last two categories here are a bit more of the
15 traditional ways that we have thought of why gas-fired
16 plants might or might not make sense, one is extreme high
17 demand, or system emergencies. This would be what you
18 would think of as peaker plants, which traditionally in
19 the past were gas turbines that did not operate very much
20 at all, but when you wanted extra capacity for one of
21 these reasons, it was there. They had bad heat rates,
22 they were expensive to run when you ran them, but they
23 were relatively cheap to build. And then the final is,
24 for lack of a better term, General Energy Support. Mike
25 touched on this, as well. The fact is that a lot of our

1 generation comes from natural gas if you build a new
2 natural gas plant that is more efficient and generates
3 less greenhouse gas for each kilowatt hour that it
4 produces, you do get some reduction in greenhouse gas
5 emissions from that. Now, the trick is going to be to
6 understand how much reduction you are getting, the
7 modeling comes in with truly understanding whether you are
8 truly displacing other gas-fired generation, or perhaps
9 coal-fired generation. And you also do not -- I think,
10 going forward, and this is a longer-term question -- you
11 need to look at whether building plants now is
12 forestalling or precluding policy actions that you might
13 want to take five years, or 10 years down the line, so
14 that you are not kind of walking yourself into an energy
15 future that you did not really intend to lock yourself
16 into today. How you quantify that and look at it in a
17 specific siting case will be difficult to do and
18 quantifying it is very difficult to do, but I think it is
19 a key issue.

20 So this is where we are going to need to be going.
21 We are going to need to be understanding the local
22 liability restraints, the impact of transmission,
23 development, transmission choke points, if you will, on
24 the need for new construction, the increased need for
25 ancillary services of various kinds that includes a

1 combination of renewables, but also may well include other
2 kinds of operational needs. Looking in a siting case,
3 what you have to look at is what kind of gas plant is
4 being proposed against these kinds of needs, whether it is
5 a combined cycle, large scale plant, whether it is a
6 peaker plant, perhaps internal combustion gas-fired plant
7 for peaking purposes, or intermediate loads, location,
8 location, location, of course, matters crucially on these,
9 and I know that is an issue in several of the siting cases
10 before you right now, and then which of those roles that
11 we talked about previously this gas plant actually meets.
12 And I want to distinguish a bit between that role and the
13 type because one thing we have come across is that there
14 is a tendency, particularly for those of us who have been
15 around this business for a while, to look at a plant and
16 say, "Oh, that's a peaker." Well, a gas-fired combustion
17 turbine is a different animal today than it was 10 or 20
18 years ago, and it may not be just a peaker. And so to
19 look at the role and distinguish that from the type of
20 plant, the actual technology, is important.

21 So we tried to reach some conclusions on this, if
22 nothing else, to show why it matters to start doing such a
23 framework. And I think this is kind of the key to it.
24 Net from the system greenhouse gas emissions will decline
25 if you build -- even building new gas-fired plants, if you

1 do it for these kinds of reasons and keeping them in mind,
2 a key one is going to be, if we are setting a 33 percent
3 renewable goal and we need to build some gas plants to do
4 that, then they will decline. If that 33 percent goal
5 really reduces net GHG emissions, and I see no reason to
6 believe that it will not, then building some gas-fired
7 generation that then allows that to happen is a key
8 element of meeting that greenhouse gas emission reduction
9 strategy. Improving overall system efficiency, they will
10 decline if that really happens. This is a tougher one
11 that leads more in the direction of doing a system
12 modeling effort in the siting case, which is a problematic
13 kind of direction to go, but may be something that needs
14 to be done for certain kinds of plants, and then really
15 serving low growth capacity needs more efficiently than
16 the existing fleet. Well, that is really another way of
17 saying improving the overall system of efficiency. And
18 that is really where we have gone in starting this effort,
19 but I would emphasize, it is a start. As Mike said, there
20 are several other pieces of this puzzle being put together
21 right now here at the Commission and I expect that, over
22 the next few months, application of some of this framework
23 and the work being done by the staff in specific siting
24 cases on this issue will be instructive, let's put it that
25 way, we will be learning something over the next few

1 months. If there are any questions, I will be glad to
2 take them.

3 COMMISSIONER BYRON: Yes, please. Questions or
4 comments? Thanks, Steve.

5 VICE CHAIRMAN BOYD: I thought the report was very
6 well done, very informative. As you said, it is a
7 beginning, so to speak, and it is a good beginning for us,
8 and it is a long path. I appreciate you repeating in your
9 verbal presentation, as well as in the report, that
10 efficiency, indeed, is job 1, and we have to keep
11 reminding ourselves. But it is just a piece of the whole
12 puzzle.

13 You, in your presentation, referenced the role of
14 hydro and our dependence on hydro quite a number of times,
15 and you even said that would be greater in the future, yet
16 from where I sit all these years in California climate
17 change issues, the biggest problem for California probably
18 is water and the impacts of climate change on our water
19 supply. Precipitation, the water supply system is
20 plumbed, as is the hydro system to a certain type pattern,
21 snows and big reservoir, everything I have seen in the
22 last several years is that is destined to change, I mean,
23 it is changing now. What we have done in the past with
24 more, what we might do in the future of changing that. So
25 I worry a lot about hydro being depended on as much in the

1 future, at least the large hydro system we have, so I do
2 not know if you have given much thought to that. I will
3 let you mull that over for a moment while I move on to
4 intermittents, 1) appreciate you driving that point home
5 because, certainly, we and a lot of folks I see in the
6 audience talk about that a lot of late, and we have
7 difficulty, and I think we have identified the need to
8 educate the public on the fact that, when you say
9 renewables are our future, a big chunk of those renewables
10 are intermittent and are dependent on back-up and what
11 have you, and you hit the nail on the head there, that is
12 a big issue that we are addressing, and need to address
13 more. But when you talk about renewables, the report, and
14 you, and most people talk mostly about wind and solar.
15 They are sexy. They are what the focus is on. They are
16 allegedly the cleanest when you think about climate
17 change, you know, the sun is free, and the wind is free.
18 However, the environmental footprint of the facilities has
19 turned out to be quite an issue for us, avian mortality
20 with wind, besides just the footprint of wind farms.
21 Commissioner Byron and I spent the day in the desert
22 yesterday in a siting case for one solar facility and
23 looking at one of our older California solar facilities,
24 and there are significant footprint problems in the eyes
25 of lots of people with regard to siting those. So as

1 great as they are, getting all we want is going to be
2 problematic, and they are intermittent. But there are
3 other renewables like geothermal and biomass, which I do
4 not hear enough talk about. Geothermal, I think we, as a
5 state, are pushing pretty hard and, you know, the resource
6 is fairly well identified and hopefully will be exploited
7 and developed. Biomass, to me, is an area that we just
8 have not exploited enough, and both geothermal and biomass
9 are base load resources, they are not intermittent, and so
10 it is just a comment and I think maybe we are missing a
11 bet by not thinking about them more. Yes, there are
12 emissions associated with biomass because you are burning
13 something, but the footprint of the facilities and the
14 fuel that you use actually -- the footprint is not that
15 great and the fuel that you use often -- getting rid of it
16 -- solves other environmental problems, so just a comment
17 on that point. And lastly, you did comment we cannot wait
18 for the AB 32 work, and the ARB's work, and as we site
19 facilities. And you are right, I mean, we have a huge
20 caseload, we are moving forward doing the best we can, and
21 yet there is kind of a hiccup in the system, a little
22 pause going on right now, you flirted with it, you
23 mentioned once-through cooling. There is air quality
24 offset issue that is hitting us more and more in the
25 state, most notorious is the South Coast Air Basin and its

1 so-called priority reserve, but I know from my experience,
2 the San Joaquin Valley is going to -- is becoming worse
3 than L.A., etc. etc., in terms of the problems it has air
4 quality-wise. So we have an intersection, if not a
5 collision, all kinds of policy issues right now.
6 Implementing AB 32 and what we are talking about here
7 today, these other issues, air quality offsets, priority
8 reserves, once-through cooling, RCHP policy, you mentioned
9 repeatedly our need to retire older inefficient
10 facilities. Maybe we do have an opportunity now to
11 wrestle with looking at a greater piece of this system in
12 the context, as I had said before, of everything that is
13 in this great tent that AB 32, i.e., climate change, has
14 created. So possibly, if we can comprehend the magnitude
15 of this problem I described, we have a chance to create
16 some kind of synergistic and complimentary, supplementary
17 solutions to this that involves a lot of what you are
18 talking about today. So it is not just getting people to
19 recognize the intermittence of some renewables and the gas
20 back-up that we know we need, but it is all these other
21 things, as well. Now, with that problem, do you have some
22 simple solutions for us?

23 MR. McCLARY: Well, I might respond a little bit.
24 On the hydro issue, if I said that I thought we would be
25 relying more on hydro in the future, I misspoke there. I

1 was actually intending to point to the fact that we rely
2 on a resource that has a fair amount of intermittency in
3 it today and we know how to do it, we will be relying on
4 more intermittent resources. But, in fact, I think you
5 are right, that the hydro that we have today, there is
6 some serious question as to its availability and, in fact,
7 it may be more unpredictable and more intermittent in
8 future years than it has been. And we certainly have had
9 our ups and downs as a state in the past as it has varied.
10 So I think, going forward, yeah, that is a very -- a real
11 issue, how climate change may affect the hydro system we
12 have in place, not to mention the water wars that are not
13 the electric side, I mean, that is another whole issue.
14 On other renewable resources, I think you are right, that
15 that tends to get overlooked. It certainly was not a
16 major focus for us in that there is not so much given or
17 regarded as reasons why you need to look at the impact of
18 gas-fired plants. Geothermal has typically had a minor
19 greenhouse gas emission impact, I believe, but not
20 anything on the scale of a fossil fuel plant. Biomass
21 plants, you know, honestly, we did think about that one
22 and biomass plants, I think, are going to be something
23 that are almost necessarily going to be looked at on a
24 case by case basis because the operation and the fuel
25 source is absolutely key to what you can think about in

1 terms of the greenhouse gas emissions associated with it,
2 and certainly you will find that there are some biomass
3 developers or operators who look at the resource that they
4 are burning and generating some carbon dioxide as a
5 resource that otherwise might well have generated a
6 methane, for example, so that they would argue they are
7 providing a net reduction in greenhouse gas emissions
8 through operation of the plant. How you can address that
9 on any kind of a generic basis is pretty tough, I mean, it
10 is going to be very dependent on fuel source, how much you
11 can rely on that, and how they are going to operate. And
12 it provides, actually, probably a fair amount of
13 potential, but it is not one that we tackled in any
14 generic way in this first look. Once-through cooling,
15 South Coast, the priority reserve issue, a lot of these
16 issues, yeah, there is a lot -- "intersection" is a good
17 way of putting it as opposed to "collision," maybe, but,
18 yes. It has always been the case, but we do have
19 overlapping and intersecting policy directions and
20 regulation going on, it is a reality of life in our state.
21 In some ways, you are in the front here, you are in the
22 front line because you have people who need decisions on
23 plants now, so you have got to kind of ride out some of
24 those waves as you go.

25 VICE CHAIRMAN BOYD: Thanks. And I did not mean

1 in any way to criticize your work, I was just trying to
2 add to the pile that you have identified a big piece of
3 that basis, and your comment about reality and us having
4 to face reality are painfully true, and I will not go too
5 far lest I get in political trouble about the ability of
6 this agency and its sister agencies to face reality vis a
7 vis some other institutions in this city, but we will let
8 it go at that. Thanks.

9 CHAIRMAN DOUGLAS: A quick question. If I could
10 draw your attention to your final slide where you conclude
11 with the point that net GHG emissions will decline with
12 new gas powered generation, and provided that regeneration
13 helps us reach RPS and improves overall system efficiency
14 and helps us meet load growth and capacity needs with
15 greater efficiency. I think that is a point well taken
16 and it can be backed up by much of the work that this
17 Commission has done over time. You also said, but did not
18 put down in a bullet, that this assumes that we are
19 improving the fossil component of our electricity system
20 without locking ourselves into a system that is perhaps
21 more fossil than we desire for meeting our state's RPS and
22 climate goals, or even that falls short of helping us
23 achieve those RPS and climate goals at the pace that ARB
24 and other state entities are looking at us to achieve. I
25 think I heard you say that answering that question

1 quantitatively is very challenging, and I agree with you,
2 but I wonder if you could provide us your thoughts with
3 qualitatively what factors might be considered in
4 addressing that question?

5 MR. McCLARY: Well, I think part of the reason it
6 is hard to do it qualitatively is that it is kind of a
7 temporal question, you know, that you are looking at
8 approving a plant today, but you are also looking at what
9 the implications of that on decisions that you or your
10 successors will make five or 10 years from now, and they
11 will be doing the same. So it may be that the important
12 element to come out of that is some kind of, wow, what
13 would be the right term for it? A look back or a true-up
14 process that says, "Okay, looking back at the decisions
15 that have been made with the goal of improving our
16 greenhouse gas emissions, how did they fit in to do that?
17 Have we done enough? Have we done too much? It is almost
18 a question that you are posing to the Commission five
19 years from now, or 10 years from now, in recommending that
20 you actually be paying attention to what is happening
21 during that intermediate time with this specifically in
22 mind, so that five or 10 years from now, when you or your
23 successors are asked that question, they have a basis for
24 saying, "Yeah, you know, we actually have decided that, at
25 this point, we have..." you know, this is just off the

1 cuff, "...we have enough of these kinds of gas-fired
2 peakers. And even though we had reasons for approving the
3 ones that we have done over the last few years, we met
4 that goal." Now, the problem is in sort of setting a
5 numeric or a quantitative goal today for that is difficult
6 in a context where you do not really know the nature of,
7 say, the renewable resources that come in, where demand
8 will go over that five or 10 year period, and so you have
9 to constantly be adjusting it. That is one of the
10 advantages to the two-year system here, is that it kind of
11 imposes, in every couple of years, re-looking at the
12 system. But this is just another element of that two-year
13 look that I think will be an important one, and it is
14 needed to be the same kind of focus as in the past.

15 CHAIRMAN DOUGLAS: Thank you. That is helpful.

16 COMMISSIONER BYRON: Mr. McClary, one maybe
17 comment/question. It is a good report. And I think we
18 have asked you to do the impossible, but I will be
19 critical of it in one way, and I hope others will provide
20 some critical review, as well, and then ask you a
21 question. And that is this notion, well, just to read
22 from the report, "Because energy efficiency reduces energy
23 demand and/or slows future growth in demand, fewer power
24 plants should be needed, and overall GHG emissions should
25 be reduced." That -- it is a nuance that changed -- it

1 will be reduced -- it will be more efficient. When we put
2 out our procurement numbers for the Public Utilities
3 Commission and the IOUs, it includes our energy efficiency
4 goals, and our goals for renewables. The POU's have shown
5 tremendous progress in this regard. We had a workshop
6 last week and I think we fully anticipate -- I will be
7 stronger -- we expect them to do better than they are
8 currently doing, and they are moving in that direction.
9 So a system nuance issue that we are starting with all of
10 our energy efficiency and renewables in place, and we will
11 be reducing greenhouse gases. Now, the question is, and
12 the impossible task we have given to you, seems as though
13 the default is natural gas. Well, I come with a
14 generation background, I like to generate electrons, and
15 natural gas seems to be the best choice. But there are
16 alternatives and I would like you to maybe just address
17 those to some extent. We have seen some interesting
18 proposals of late for thermal storage, for large closed
19 system pumped hydro storage, there are other more exotic
20 forms of storage. Aren't these possibilities that could
21 be breakthroughs that could change everything? And maybe
22 related to that, you know, there are other countries --
23 Denmark, Ireland -- how are they addressing this? Is it
24 all with natural gas? Please.

25 MR. McCLARY: Well, to address your first point,

1 it should be -- I will confess to probably having a bit of
2 that caveatish consultant vocabulary going on here, so,
3 yeah, it is quite clear that reducing demand -- as I said,
4 it is the first step, and, yeah, you are not generating
5 any greenhouse gas when you are reducing demand. I mean,
6 that is the way to go. I suppose you could come up with
7 scenarios where whatever measures you were taking to
8 reduce demand might increase it, but I am not coming up
9 with any and I am not going to lay them out in the report.
10 So, no, I think that is a given and I think it is a
11 cornerstone of the policy here. So other sources, other
12 kinds of generation --

13 COMMISSIONER BYRON: Other than the default.

14 MR. McCLARY: Other than the default of natural
15 gas. Well, it is good question because, in my experience,
16 we have this interesting division and, particularly in
17 this country where we look to the policy goals, but we
18 want them to be the ones that prima facie are economic,
19 and so we end up doing things like arguing over feed-in
20 tariffs that, in many countries and societies, they just
21 do it. They say, "Yeah, okay, it's \$.60 a kilowatt-hour,
22 so we wanted to do it, so we did it." And we tend not to
23 take that approach so readily in this country. Natural
24 gas generation has fallen into the category of the most
25 obviously sort of readily available economic thing to do

1 for a long time, and continues to -- it really in a lot of
2 ways still does feel that -- it has gotten more volatile,
3 no question about it, gas prices have gone up and they
4 have gone down in ways that were not anticipated when many
5 of the current fleets were built. As far as the other
6 things, though, things like thermal storage, which you
7 mentioned, or technologies that we have not really put in
8 place, or, for that matter, transmission technologies that
9 could significantly affect the way the transmission system
10 works and make a lot of the transmission issues that we
11 face now more easy to deal with. Yeah, I mean, I think
12 those all need to be accounted for, and that is part of
13 this whole issue of why the every two-year look at what is
14 going on is so critical to this, is because you can look
15 at it and say, well -- if we were to set, for example, a
16 numeric goal today and say, "We think that X megawatts of
17 gas-fired generation is required," we will be required to
18 implement a greenhouse gas reduction strategy over the
19 next 10 years, and five years from now we had not looked
20 back at it and said, "Oh, well, there is a thermal storage
21 technology that has really come into play and is filling
22 many of those roles, we do not really need to do that."
23 This Commission should do that. I mean, they should look
24 at it and say, "We'll revise that, we'll re-think that,"
25 because of those new technologies. You have -- this is

1 partly where I think this Commission has an interesting
2 role because you have your siting role, but in some of
3 these technologies, you are not siting them, I mean, you
4 set thermal plants, but you have another aspect of your
5 operation as a Commission that does encourage technology
6 development and gives you an insight, I think, into what
7 is going on in technology development that might not be
8 typical of a regulatory agency. And I think that is
9 valuable, and is a valuable part of the bi-annual look.

10 COMMISSIONER BYRON: Thank you. I think we should
11 move on, I understand, and hopefully we will be dissecting
12 the report more as the morning and afternoon progresses.
13 We have three more important presentations to get to this
14 morning. And thank you very much.

15 MR. McCLARY: Thank you.

16 MR. EDWARDS: So next we have David Hawkins with
17 California ISO on the status of renewable integration
18 studies.

19 MR. HAWKINS: Thank you. Good morning,
20 Commissioners. Thank you. I am Dave Hawkins from
21 California ISO. I am the Lead Renewables Power Engineer.
22 It is my pleasure to address some of these issues with you
23 this morning. Let me say, first of all, compliments to
24 the MRW group and the report that you have done, I thought
25 it was very well balanced, provided a great understanding

1 of the complexity of the issue, and it was interesting to
2 read and interesting to think about all the implications
3 of it. So my compliments.

4 Let me also respond to one of the last comments
5 that you all made, which is that, when you think about 33
6 percent renewables, that means 67 percent is coming from
7 other generation resources and so, even though I am the
8 champion, as you may know, at the ISO for energy storage,
9 energy storage is probably going to address more the
10 peaker facilities because it is a limited storage
11 resource, so it is going to attack that particular part
12 that says we need some peak resources, you know, between
13 2:00 and 6:00 in the afternoon, or 5:00 and 7:00 in the
14 evening, to meet those things. So it is not going to
15 create any new energy, basically it does some shifting of
16 energy, which, again, I will just champion, then, as to
17 why you make sure you have enough other generation
18 resources basically to fill up the energy storage
19 facilities. So I just wanted to answer that one; I was
20 thinking about it.

21 As we are thinking about the Grid going forward,
22 my role is to give you just a brief update as to where we
23 are at and what we are doing at the ISO in terms of
24 studying some of the technologies and what we are going to
25 do for implementing these things. We have had a lot of

1 work in place, as you know, for the last several years
2 looking at 20 percent renewables, and we have launched,
3 now, into our work on 33 percent renewables, started our
4 stakeholder process looking at building new models and so
5 forth, looking at 33 percent, and then looking at also the
6 issues of the greenhouse gas reductions and what happens
7 with the once-through cooling plants coming off line and
8 what technologies and other things that are coming
9 available. Also, we of course have done a lot of work
10 with our market systems and looking at, you know, all the
11 different initiatives that are coming on. Our major
12 focus, of course, has been on what transmission do we need
13 to build to get all the renewables interconnected and not
14 just transmission for the renewables, but basically Grid
15 updates to move the power, and other generation connected
16 that is in the cue, what operational issues do we have,
17 and then finally, what are the market issues, if any, and
18 barriers that have to be addressed in taking up all the
19 large amounts of intermittent resources in energy storage
20 and demand response. And there certainly are barriers
21 that have to be addressed to handle the large amounts of
22 intermittent resources in any storage and demand response.
23 There certainly are some barriers there. The one thing
24 that we have really discovered is that we have one huge
25 advantage in that our market systems are based upon a

1 five-minute economic re-dispatch and, as you think about
2 limited energy storage systems, it gives us unique ways of
3 handling devices and looking at what is in the bucket for
4 the next five minutes and how we could be managing it,
5 whether it is a fully charged up, or half charged, and so
6 forth, and certainly as we have looked at the New York ISO
7 model for handling energy storage, we think that has some
8 really interesting advantages over utilities where
9 everything is block hourly loaded. So there are some
10 interesting things looking at -- this is just a quick list
11 of all the market enhancements that are going on, a lot of
12 work on trying to improve our ancillary services markets
13 and products and things that are going to be needed for
14 the integration renewables. As we said, we have already
15 done -- a lot of our work has been focused on 20 percent
16 and, you know, again, studying the fleet and looking at
17 what the current generation fleet is capable of doing, and
18 what is going to happen when we look at these large
19 clusters of renewables like the wind coming on in
20 Tehachapi, and the large amounts of solar and geo-thermal
21 that is being proposed. So we have done a lot of work on
22 new tools, strategies, production costing modeling
23 programs, and things that try to provide a more realistic
24 view of how all these resources are going to be
25 dispatched. But we feel that, certainly, 20 percent is

1 achievable and we are looking at hitting those numbers by
2 2012. Just another observation is that our energy being
3 delivered this year is down by about five percent compared
4 to previous years, so if the renewables stay operating at
5 this current level, we are certainly going to make
6 progress on our RPS goal because the energy is going down,
7 so the denominator is going in the right direction, so we
8 are achieving, I guess, demand response in a way we had
9 not quite expected to.

10 The other issue that we looked at a lot is, of
11 course, as we are looking out at 2015, 2015 may even pose
12 more of a challenge for us than 2020, and the reason is
13 that, if the wind generation installations get way out
14 ahead of some of the solar that we are counting on, then
15 we may have much more intermittency problems to deal with
16 in ramping. When we get to 33 percent renewables, we are
17 expecting to see a more balanced portfolio of a lot more
18 solar and, with that, then you will see better
19 transmission loading, you will see generation that is
20 peaking up during the day, as well as some of the wind
21 generation that comes out at night, so I think the whole
22 portfolio by 33 percent may look pretty good, or a lot
23 better than what it would in 2015. So as we think about
24 our transition period, 2015 is probably the one that we
25 also are concentrating on a lot of the individual studies

1 to make sure that we have got the right things. We are
2 also looking at work with Bonneville on how to look at
3 wide area management and better dynamic scheduling of
4 resources, how can we change scheduling paradigms for
5 imports, and be able to do that inter-hour scheduling vs.
6 just block hourly scheduling. So, again, new rules, new
7 concepts, and also going back to WCC and challenging some
8 of their definitions of what different resources are
9 supposed to do. For example, they are spending reserve
10 definition calls for only generators can do it, and we
11 think in the future energy storage and demand response
12 programs can also hit those things. If they are
13 configured right and they have the right kind of frequency
14 response, and relays, and stuff like that, so there are
15 ways that we think the rules can be changed.

16 Looking ahead, again, we are looking at how to
17 maximize the fleet flexibility. Another comment is, of
18 course, we also worry about the reduction of hydro and
19 what climate changes on that. One advantage is that, at
20 least from the DOE reports, is that if we ramp up the
21 amount of renewables, it also decreases the amount of
22 water consumption in the west, and so not only do we
23 reduce greenhouse gas, but we also reduce some of the
24 water. So there hopefully will be water available for
25 some of the biomass and other resources that we may need

1 it for in the future. So anyway, all of these are a work
2 that is in progress. A lot of work is going on in the
3 ready process, trying to leverage the new tools and so
4 forth for state-of-the-art reliability and better
5 transforming our transmission planning functions. So,
6 anyway, a lot of individual work on those and some Smart
7 Grid development work at the same time.

8 I know we are looking forward, then, as I
9 mentioned, we think 33 percent will be an interesting
10 study as we are going to work on that, and looking to see
11 how all of that plays out with our rules. We are also
12 doing a lot of work with, as I mentioned, production
13 costing programs. One of the -- I think I have a slide
14 for looking at high solar scenarios and high wind
15 scenarios, high import scenarios, and then the result, of
16 course, will be something in between as to what is the
17 actual resources that we are going to have. We all know
18 that 33 percent is really kind of a game changer, where
19 what we are expecting is a lot more distributed resources,
20 whether it is a rooftop solar, other types of renewables,
21 certainly they are going to be spread throughout the
22 state; again, the advantage of the biomass, biogas is that
23 it is very widely disbursed because you do not carry the
24 fuels very far, and so we look forward to, you know,
25 anything we can to help promote that. And so what we are

1 looking at is a future where we probably have less in the
2 way of large clusters like Tehachapi, and more dispersed
3 generation which will mean things that we are trying to do
4 with Smart Grid, and have visibility throughout the
5 interconnection will be a critical part of building that
6 information infrastructure.

7 We are looking at also new energy storage
8 facilities, progress is hopefully going to be made on
9 looking at compressed air energy storage, which would give
10 us five to six to seven hours worth of energy. The one
11 thing that we are proposing is to really concentrate on
12 where that would be, so it is like all real estate --
13 location, location, location. If you put compressed air
14 or large energy storage in a place that would, for
15 example, give the transmission dispatchers the ability to
16 mitigate transmission loading problems on path 15, path
17 26, so that you had injection points in that midway
18 Vincent area, that may be the best location. We still
19 need energy storage potentially at -- also at the wind
20 farms, or places where we can then make better utilization
21 of the existing transmission by loading it up when there
22 is excess generation available. So there are a variety of
23 scenarios as to how I think energy storage is going to
24 play out, and then also getting demand response coupled up
25 with some of the availability of renewable generation.

1 Lots of challenges to get the right amount of
2 transmission built, looking at also not just in
3 California, but renewable clusters also throughout the
4 whole region, and then trying to get the regional
5 transmission plans together, and finally looking at the
6 existing transmission of what we can do in terms of
7 improving the overall voltage and stability limits on
8 those ties. One of the key things we have been looking
9 at, of course, with our reports, is looking at ramping
10 issues, load following, how much additional regulation we
11 need, and what are the operating reserves, how are we
12 going to handle the over-generation problems, and one of
13 the areas that we are becoming aware of is that, if you
14 have a power plant that is probably the location somewhere
15 near some of the where the renewables are, and it is out
16 in the bubble for being shut down, you are going to see a
17 lot more cycling of some of these thermal power plants as
18 the renewable resources ramp up or ramp down; and the
19 result of that appears to be a lot more thermal stresses
20 on the generator itself, not just the turbine part, but
21 the actual generator windings, and as the windings start
22 being thermally stressed, we have some fairly ugly
23 pictures of the short circuits on the windings, and so
24 forth. So we could expect to see a little bit more
25 breakage or forced outages on some of the thermal plants

1 in the future for those that are going to be cycled a lot
2 harder and have not been used to that kind of stress.
3 Lots of operational tools we have been building, and we
4 have got new forecasting programs coming on, new
5 visualization tools for the dispatchers, and those are
6 finally going into production late this fall, so we have
7 got a real chance to really test out how the operators
8 like them.

9 And finally, one of the major things we have going
10 on underway now is a CEC funded project we are doing with
11 KEMA, looking at how to look at energy storage and
12 actually build a model of all the generators, and we have
13 picked out four significant days, one in each season of
14 winter, spring, summer, fall, and plus one additional day
15 where we add a major generator trip. And, again, what we
16 are looking at is we are setting up a 24-hour dispatch of
17 all those resources plus the imports, and then verifying
18 what the overall response of the fleet is to each of those
19 kinds of events, and these are ones where we have
20 significant amount of wind ramping up or ramping down, and
21 large changes in the system, and then looking at the
22 development of new dispatch algorithms that will take
23 advantage of both what the energy storage could do and how
24 we move with that. So that is kind of a brief summary of
25 what we are trying to do. A lot of work in progress and I

1 would be glad to answer any questions.

2 VICE CHAIRMAN BOYD: Mr. Hawkins, thank you. The
3 input of the Independent System Operator with regard to
4 reliability is extremely important. Thank you very much
5 for being here. I believe you are going to continue later
6 on in our panel?

7 MR. HAWKINS: Yes.

8 VICE CHAIRMAN BOYD: Thank you very much.

9 MR. EDWARDS: Our next speaker is Nancy Ryan from
10 the California Public Utilities Commission. She is going
11 to talk to us a little bit about greenhouse gases relative
12 to the procurement process.

13 COMMISSIONER BYRON: Ms. Ryan, it is good to see
14 you. I think we have been seeing you about every week.
15 It is always nice if it is on a Monday, which means there
16 is maybe a chance to see you twice this week.

17 DR. RYAN: I will be here twice this week, but not
18 in this building, tomorrow. However, I am looking forward
19 to a double-header next week. Okay, I will speak very
20 briefly about the role or how we consider greenhouse gas
21 emissions in the PUC's procurement process that oversees
22 for the investor owned utilities. So GHG is an important
23 consideration in the procurement process and the
24 Commission has been moving in this direction over at least
25 the last five years to provide both explicit consideration

1 of both greenhouse gas emissions and opportunities to
2 avoid emissions, the flip side of that in long-term
3 procurement. As I am sure you are aware, the current
4 procurement framework arose from the ashes of the
5 restructuring experiment and has been evolving over the
6 last several years and has become progressively more
7 sophisticated and dealt with as it deals with the greater
8 range of environmental and other issues. Since at least
9 2004, key commissioners and staff have recognized that the
10 procurement process provides an opportunity to exercise
11 oversight over greenhouse gas emissions from the load
12 serving entities that we regulate and also as a vehicle to
13 enforce the loading wear which is the foundation of our
14 energy policy framework in California.

15 So today I will mainly focus on the current
16 iteration of the long-term procurement process, and then I
17 will also touch briefly on some changes that we have in
18 the works for the next go-round. Okay, so this diagram,
19 or this pair of diagrams, offers a very simplified
20 schematic of the two intertwined processes that we pursue
21 at the Commission, resource adequacy and long-term
22 procurement. And I will not go through them in detail,
23 but I just want to call your attention to a few elements
24 of them. So, of course, resource adequacy really has
25 essentially a short-term focus, it has got -- there is a

1 year ahead showing, and then month ahead showings for both
2 system and local resource adequacies, so in other words
3 the load serving entities have to demonstrate that they
4 have adequate resources to meet both their system and
5 local RA obligations, so that is essentially a short-term
6 program. Then, the procurement planning process is really
7 focused both on long-term resource adequacy -- do we build
8 the right plants in the right places, or deploy the other
9 appropriate resources to assure reliability, but also to
10 meet our environmental objectives and to do so at least
11 cost to consumers. So we are balancing all those
12 different considerations in the long-term procurement
13 planning process. Within -- and you will see and perhaps
14 find it gratifying that both of these charts on the far
15 left-hand side of the beginning is the CEC forecast, and
16 that is the point of departure for both these exercises.
17 You will also see that there is a significant role,
18 particularly resource adequacy, for the ISO. I know
19 Commissioner Byron likes this to be an acronym-free zone,
20 and I will use some here, but I do note that there is a
21 complete key at the bottom of this chart. In any event,
22 the California Independent System Operator performs its
23 Local Capacity Requirement Study, which provides a basis
24 for identifying needs for plant or other resources within
25 load pockets, and I will return to that topic, that is a

1 key issue that feeds -- it is sort of particularly salient
2 in the short-term resource adequacy program, but also is
3 increasingly important within the long-term procurement
4 program. The other thing that I want to point out here is
5 just that there are two important boxes in this bottom
6 part of the chart where there are decision points at the
7 PUC, the third box, CPUC approves long-term procurement
8 plans and authorizes new resources, so this is really the
9 stage where we say, "Okay, LSE, okay Load Serving Entity,
10 does your plan that you have proposed to us comply with
11 the loading wear? Have you in fact maximized energy
12 efficiency and renewable resources before coming to -- and
13 demand response, which I want to come back and talk about
14 more before coming to us to authorize additional fossil
15 procurement. So that is the check for the overall
16 approach. Then the IOUs go out, the investor owned
17 utilities go out and conduct RFOs, they get bids from
18 generators and others, and they come back to the
19 Commission and seek approval of individual contracts or
20 arrangements for utility-owned generation, and that is an
21 opportunity for the Commission to again say, "Okay, are
22 the specific resources that you are bringing to us
23 consistent with the plan that we approved earlier?" And,
24 again, with regard to resource adequacy, as well as the
25 various environmental components that we are pursuing,

1 including greenhouse gas emissions reduction. So that is
2 the overall framework, and that will not change over time;
3 what we are doing is making it more sophisticated in the
4 next iteration in order to more effectively address the
5 greenhouse gas implications of the procurement decisions
6 that the utilities make.

7 This is really just a verbal explanation of what I
8 just showed on the last slide, and I will not dwell on it,
9 except to point out that, in the second major bullet that
10 is labeled "RFO Process," that is Request for Offers, Mr.
11 Byron, the second sub-bullet is an example of the kind of
12 direction that the Commission has been giving to utilities
13 and that I expect to see more of in the future, where we
14 are really building on what comes out of the resource
15 adequacy process, as well as the sort of tweaks to the
16 loading order over time, and really give them specific
17 direction about the types of resources that we would like
18 them to include in their mix. And note that the second
19 one of those bullets, flexible resources with shaping and
20 ramping capabilities, well, that could be peakers, but it
21 could also be demand response. So a key element of how we
22 approach this procurement process is really to tell the
23 utilities, these are the characteristics that we want, not
24 the specific resources. And let me say a little bit more
25 about why we do that and why we think that is so

1 important. So, again, the third consideration in long-
2 term procurement, beyond reliability and environmental
3 performance is, of course, a least cost approach, securing
4 these resources at least cost to consumers. Although the
5 state has, you know, backed away from the restructured
6 framework of the electricity market, or the degree of
7 reliance on markets that was once envisioned, the
8 Commission still very much relies on competition to the
9 maximum extent to secure these cost resources for
10 customers on the generation side, or for substitutes to
11 generation like demand response, and we have a competition
12 first policy where we expect the utilities to go out and
13 exhaust their options to secure resources from independent
14 generators that really, only in cases where there are
15 compelling circumstances would they come forward with
16 utility owned generation, and that was demonstrated
17 dramatically last year when the Commission turned down
18 PG&E's request for the utility-owned Tesla generation and
19 instead directed PG&E to work with Calpine to develop the
20 Russell City project. So in any event, we rely on
21 competition as much as possible and, for this reason,
22 again, we really avoid overly proscriptive requirements
23 and focus instead on characteristics that must be
24 satisfied, including characteristics that would be
25 necessary to incorporate larger amounts of renewable

1 resources, and so that final bullet there, I think, is
2 particularly relevant. We want the utilities to have as
3 many options as possible when they do their RFOs to be
4 able to secure the best possible deal for their customers.

5 Okay, so I told you that we were improving the
6 long-term procurement planning process and the current
7 iteration, and what this slide describes is a staff
8 proposal that is currently being, I would say, polished up
9 by the staff at the Commission, and will soon be presented
10 to the Commissioners in a proposed decision. This current
11 cycle of the long-term procurement planning process is
12 focused more on the approach that we are pursuing and how
13 to make that approach more consistent with the
14 requirements of AB 32. And so what you see us doing here
15 is moving in the direction of using more of a scenario
16 analysis approach. These are 10-year plans, and so there
17 will be changes that will occur over those 10 years,
18 beyond our control, and so we have asked the utilities to
19 use a standardized set of scenarios that encompass a range
20 of possible futures that could be expected during that
21 period. All of those scenarios, however, have to comply
22 with AB 32 in the emissions performance standard, so that
23 means higher levels of renewables and higher levels of
24 energy efficiency. But the idea is for them to come
25 forward with portfolios for their own systems that are

1 optimal portfolios under those scenarios that reflect this
2 balancing of reliability and cost, while meeting our
3 environmental objectives. And the Commission will be able
4 to point to -- select from among these standardized
5 responses of the utilities, will be able to select its
6 preferred portfolio. And these portfolios will then be
7 the basis, again, those will be the approved plans that
8 will be the basis for the utilities to go out and do their
9 procurement. All right, I am going to pass over this --
10 actually, one point I just want to reiterate is that,
11 again, there is this linkage between the resource adequacy
12 program and the long-term procurement program, and the
13 second bullet is, again, I think consistent with the basic
14 point made in the MRW report, that there is a role for
15 fossil resources going forward, even in a world with 33
16 percent renewables. But, if I could, I would in real time
17 add another bullet to that, again, just stressing the
18 important role that dynamic pricing and dynamic response
19 can play. I really -- these are under-utilized resources
20 in California and, with the investment that we are making
21 in advanced metering infrastructure, and the enormous
22 investment that the California ISO has put into developing
23 its MRTU markets, we are really going to be well-situated
24 to make much better use of these resources. I think also
25 that the technology is rapidly -- much of it is here or is

1 coming our way soon to enable customers to really take
2 advantage of the flexibility that we have. And I know
3 that there is enthusiasm for demand response at this
4 Commission, as well as at the ISO, and I really hope to
5 see us tap that resource further.

6 Finally, on the MRW Consultant report, you know,
7 in general this report is, I think, consistent with the
8 outlook that our staff have about the role of fossil
9 resources going forward. The projections that were
10 described this morning are consistent with, perhaps
11 because they are based upon, those that we developed
12 jointly between our two commissions last year to support
13 the joint decision on strategies to implement AB 32, a
14 frozen policy case with essentially flat-lined emissions
15 from the sector and an aggressive case with the 33 percent
16 RPS and the significant increase in energy efficiency that
17 results in very large reductions in greenhouse gases. The
18 PUC is clearly committed to implementing these policies,
19 in particular, for the load serving energies that are
20 under our jurisdiction and is, I think, working steadily
21 in both areas to enhance the programs that are under our
22 jurisdiction, which leads me to my final point, that it
23 sounds like we -- our staff, at least, this is not
24 something our Commission has taken a vote on -- but our
25 staff, at least, are very much on the same page that this

1 commission is on in terms of favoring what I think is
2 referred to as the "net greenhouse gas reductions
3 approach," in other words, a system-wide approach to
4 looking at new infrastructure in terms of what are the
5 greenhouse gas -- in terms of assessing the greenhouse gas
6 emissions attributable to new infrastructure, so
7 essentially to ask, how does the addition of this
8 infrastructure, or how can the addition of this
9 infrastructure help us meet the programmatic goals that we
10 are already pursuing via loading order and specific
11 policies like our energy efficiency targets, and the 33
12 percent RPS, which I would expect to be enacted most
13 likely this year. So with that, I will close. I am happy
14 to take your questions.

15 VICE CHAIRMAN BOYD: Thank you, Nancy. What is
16 going through my mind may not even fit this discussion,
17 but as you heard in the dialogue with Steve during the
18 presentation of the initial consultant, my concern about
19 the intersection, to adopt that word, or the collision of
20 so many different kinds of issues and problems we
21 collectively face today, not only in just trying to
22 implement things that we plan to head for, such as climate
23 change, and what have you, but in reckoning with the once-
24 through cooling, which we did have some advance notice was
25 coming to the prior reserve issue, which kind of hit us

1 very shortly, and merging that with all the other mutual
2 policies we have of energy storage, transmission
3 distribution system improvements, distributed generation,
4 can the long-term procurement process accommodate two --
5 does it facilitate dealing with -- does it have the
6 ability to flash red lights for us when we need to deal
7 with some of these issues promptly and in a timely manner?

8 DR. RYAN: Well, let me answer a slightly
9 different question and then we will move back to --

10 COMMISSIONER BYRON: Dr. Ryan, you are at the
11 Energy Commission, not the PUC.

12 DR. RYAN: That is right, you are not my boss,
13 cannot get away with this when I am on my home turf. You
14 know, the reason I was going to sort of circle around to
15 answering your question is 1) because I like to think out
16 loud, but 2) because -- and I have to think about it --
17 but, I mean, the long term procurement process is geared
18 to, you know, it is our umbrella process to bring together
19 all these different policy objectives and, you know, it is
20 the case that there are more and more and more what was a
21 challenging problem has become an extremely challenging
22 problem, and by "problem," I mean like a logic puzzle to
23 solve, in that sense. So that is the place where we think
24 that we have to put all these pieces together and look at
25 them. Now, to me, the red light that could come on in

1 that process is that we cannot -- and I am not saying that
2 we have learned this yet, we do not know how well this
3 process will work because we are throwing more problems at
4 it in this cycle than we ever have before, but the red
5 light that I think this process is geared to generate is
6 one that says, you know, does not compute. You know,
7 basically we cannot do all of these things. There is no
8 solution that optimizes everything that we are trying to
9 optimize. I am not saying that is going to be the
10 outcome, but that is what my sense is of what it is geared
11 to tell us. I understood your question -- perhaps I
12 misunderstood your question, but how I interpreted it was
13 that you were asking, you know, will it tell us if these
14 things are coming or if they are problems, and my sense is
15 that we already -- that we already know that, and that the
16 long-term procurement process does not tell us that. You
17 know, the generators are telling us that. The ISO is
18 telling us that. So you tell me, is that a satisfactory
19 answer? Or did I leave part of your question unanswered?

20 VICE CHAIR BOYD: No, I think you got to it and I
21 realized as you were answering it, yeah, we know some of
22 these things are coming. My concern is that, when we
23 start being with them in long-term procurement, do we have
24 enough head room? Do we have enough time to deal with
25 them as we identify them and inject them into the arena of

1 decision-making and policy recommendations we all have to
2 make? I am still looking for the platform, the perfect
3 platform to assist us all in this process, having survived
4 the energy crisis on a day to day basis, and watching us
5 morph into what is the long-term procurement program a
6 long time ago, is it the platform that is going to carry
7 us through all these new crises?

8 DR. RYAN: Well, I think the one thing that we --
9 the question that we have to ask ourselves at the
10 Commission is, it is in fact the case that the long-term
11 procurement process takes a long time, and I think that is
12 perhaps more responsive to your question which is, does it
13 move so slowly that, by the time it spits out an answer
14 about what to do, it is not the answer to the question
15 that we have to answer anymore. And I think that that is
16 a fair question and one that we are kind of grappling with
17 right now. And I think what is required at our end is to,
18 you know, inject a dynamic elements into this process to
19 make it -- and I think the scenario-based approach helps
20 with that because it provides sort of a record and a basis
21 to change direction as outcomes unfold before us.

22 VICE CHAIR BOYD: Thank you.

23 CHAIRMAN DOUGLAS: Nancy, I thought that I did not
24 have a question, and then as I sat here and listened to
25 Commission Boyd ask his, I realized that I do, and it also

1 really comes to what you see as the role of long-term
2 procurement process and how the type of analysis that we
3 are embarking on here feeds into that. For context, I
4 would say -- I think I want to start out by saying that,
5 first of all, the MRW report is a very valuable first step
6 for us in thinking about roles and attributes of different
7 kinds of gas generation, and how they feed into the
8 system, and how they help shape the system. I do not
9 think the question is fully answered with the finding of
10 that net benefit, no matter how marginal to the system as
11 a whole means that we are going in the right direction,
12 although, as I said before, I do agree that net benefit is
13 present in, I would say, if not all cases, 99.99 percent
14 of the cases that we would look at. Beyond net benefit, I
15 think we do have to look at the question of how the system
16 itself is, in fact, evolving and whether it is moving --
17 whether the natural gas generation that we are feeding
18 into the system is helping that evolution in the direction
19 of meeting our policy needs. And so we are thinking about
20 additional work to -- from the ISO, certainly, to help us
21 solidify the analysis and some load constrained areas, and
22 really identify -- at the very least, let's make sure we
23 get this much built in this time frame in order to meet
24 some of our reliability needs. We have got the issue of
25 large combined cycles proposed, outside of load centers,

1 without some of the shaping and firming capacity that some
2 generation does have, and so what is the need for that?
3 Five thousand of those plants would be way too many; a
4 couple might very well fit in the system that we are
5 thinking about. So those are some of the questions I
6 think CEQA does require us to start looking at. And my
7 question to you is whether the long-term procurement
8 process -- you were looking at some of those questions in
9 the same way and how you see the two processes potentially
10 fitting together.

11 DR. RYAN: Well, first a disclaimer, I mean, I am
12 not an attorney and I am not going to opine at all on
13 CEQA, although I understand that CEQA obviously, in recent
14 evolution in CEQA law, requires one to -- requires these
15 questions to be considered at some level. You know, the
16 long-term procurement process is, again, really geared
17 towards enforcing a loading order, and the loading order
18 policies are really the principal policies that CARB is
19 relying on to secure greenhouse gas reductions out at the
20 sector. I mean, the RPS, the solar initiative, the CHP
21 initiative, and the energy efficiency programs, alone,
22 will result in significant reductions if fully
23 implemented, and even if not, even if the full goals are
24 not realized by 2020, they will still significantly reduce
25 reductions. And so, you know, that is the sense in which

1 I think -- given that that is really the backbone of long-
2 term procurement, is enforcing those policies and that
3 then the sort of residual fossil procurement that is
4 permitted for investor-owned utilities, and that is
5 important to know because it is not the entire industry,
6 but the residual fossil procurement that is permitted for
7 investor-owned utilities is going to be developed
8 essentially, you know, in the service of meeting a loading
9 order, a program that will result in significant
10 greenhouse gas reductions. You know, it is not really --
11 I think the benefit that comes from the MRW and the kind
12 of direction that it provides on the role of gas is more
13 to -- and also what comes out of the ISO's studies of load
14 pockets -- provides sufficient information for the long-
15 term procurement plan to provide direction to the
16 utilities about what types of resources they need to
17 acquire in order to meet their local reliability
18 requirements and integrate intermittent resources. So I
19 understand the concern about, well, what if this
20 Commission permits plants that do not fit the MRW criteria
21 and, if they fully operate it, if they got a contract and
22 they went into operation, would it bust our cap? But at
23 least as far as the investor-owned segment of the industry
24 is concerned and, of course, that is the largest part, by
25 far, I do not really see that happening because

1 essentially those resources are crowded out, will be
2 crowded out over time by the enforcement of the loading
3 order policies.

4 COMMISSIONER BYRON: Dr. Ryan, thank you. I made
5 a mistake earlier, I thought it was Monday when I was
6 walking in, but it is Tuesday.

7 DR. RYAN: I fell for it.

8 COMMISSIONER BYRON: But I was also taken by one
9 of your points, later points in your presentation about
10 the staff position with regards to GHG reduction, and the
11 Commission has not taken, I believe you said, any direct
12 action. But speaking on behalf of your bosses, they have,
13 and they really have been outspoken, I think, in the
14 adoption of the loading order and the energy action plan.

15 DR. RYAN: Oh, on that, yes. No, I just meant on
16 the specific question of how to deal with greenhouse gas
17 considerations in the siting process. Yes, they
18 emphatically support the loading order.

19 COMMISSIONER BYRON: Absolutely. And having
20 talked to all of them, I think we know where they are on
21 this position.

22 DR. RYAN: Well, I mean, one other point that I
23 would make at the risk of raising a somewhat challenging
24 subject is just, our commission faced a similar question
25 to the one that you are grappling with in the application

1 of San Diego Gas & Electric's application for the Sunrise
2 power link. And a similar question was raised in the CEQA
3 process there of, you know, whether that line should be
4 looked at as part of a systematic upgrade of the
5 transmission system to achieve the 33 percent RPS, or if
6 that line, you know, a restriction should be placed on the
7 use of that line to assure that that line, itself, was GHG
8 neutral, or better. And that was really one of the
9 essential differences between the two alternate decisions
10 of Commissioner Peevey and Commissioner Grueneich, and of
11 course the Commission voted 4 to 1 for Commissioner
12 Peevey's decision, which effectively endorsed a system-
13 wide perspective. So that is one place where the PUC has
14 spoken on CEQA and GHG that I believe is consistent with
15 the direction that I hear you are headed.

16 COMMISSIONER BYRON: Good. Thank you.

17 DR. RYAN: Thank you.

18 COMMISSIONER BYRON: Good addition.

19 MR. EDWARDS: And our final speaker of the morning
20 is Kevin Kennedy from the California Air Resources Board.
21 He is going to talk to us about how greenhouse gasses are
22 considered by the ARB in the electric generation system.
23 I want to make one point about the two last slide sets for
24 the two last speakers, they are going to be posted on our
25 Internet website later today for those that came in this

1 morning, so we did not have time to do that previously.

2 COMMISSIONER BYRON: Good. Dr. Kennedy, I would
3 like to welcome you, as well. I think this is the first
4 time we have had you back at the Commission before this --
5 at least before this committee, since you joined the Air
6 Resources Board. And I note that there are few people
7 that are as dedicated to reducing greenhouse gases as you
8 are. I think we lost you at the Commission partially
9 because you wanted to work on this issue, in particular.
10 But I am glad that the State Government did not lose you.

11 VICE CHAIRMAN BOYD: And we train you while Larry
12 sits at the staff table, still.

13 DR. KENNEDY: That is right. I figured that since
14 I do not have a presentation that would interest you, I
15 would take the liberty of making myself comfortable and
16 sitting at the table. Thank you, Commissioner Byron,
17 Chairman Douglas, Commissioner Boyd. I am glad to be
18 here, back in familiar surroundings, talking about an
19 issue that I do care about very deeply. As you know, AB
20 32 set off very ambitious goals for California, and it set
21 off very ambitious timelines for ARB and our sister
22 agencies. We have been keeping on those timelines, having
23 adopted and making sure our reporting is on time, having
24 established a 1990 baseline in 2007 that gives us the
25 target for 2020. Last year, we adopted the Scoping Plan

1 that lays out the roadmap for how we can get to the 2020
2 targets, and in keeping with the battle with that, of
3 course, this morning, that roadmap shows a very
4 complicated intersection. And the challenge that you all
5 are undertaking here and that we are taking on at the ARB
6 is how to help the state navigate through that
7 intersection without it turning into a major collision.
8 And I am extremely glad for the work that is going on here
9 at the Commission and elsewhere in the state to deal with
10 these issues. As you all know, one element of the Scoping
11 Plan that we adopted is the cap and trade program that
12 would include the electricity sector and overall which
13 cover 85 percent of the emissions in California. While
14 also being debated at the federal level as to the Waxman-
15 Markey Bill, and they expect to vote on that in the House
16 most likely on Friday by the current work that I have, it
17 also has a federal cap and trade program; if that is in
18 place by the end of the year, there is a good chance that
19 it would include a moratorium that would keep California
20 from implementing its cap and trade program, initially.
21 But either path leads us to a cap and trade program
22 covering California's electricity sector by 2012. And so
23 part of the answer that you guys are looking for does lay
24 in the fact that the Commissions from the electricity
25 sector would be covered by cap and trades starting in

1 2012. As has been noted before, that does not necessarily
2 help you with decisions in the next few years and, as you
3 also have been grappling with, in I think the discussion
4 today, I find that I will be reprising a lot of the points
5 that have already been made. Relying on the cap and trade
6 programs is only really a partial answer for how to deal
7 with these issues in the context of the electricity
8 sector. The decisions that are being made and that you
9 are wrestling with in the IEPR, in the context of the
10 renewable energy transmission initiative is how do we do
11 the right planning for getting the electricity
12 infrastructure built in the next few years, that are going
13 to help us reach the lowest cost emission reductions
14 between gas and greenhouse gas perspective in California,
15 going forward. The infrastructure you are dealing with is
16 extremely long-lived. The decisions that are made over
17 the next three to five years will have implications not
18 just for the 2020 emissions target, but for how well we
19 continue to get emission reductions as we move towards the
20 80 percent reductions we need by 2050. So simply relying
21 on cap and trade to answer the questions is not adequate,
22 it is with a systems approach that you guys are talking
23 about in order to understand the full implications for
24 what will be going on in the system, but going on into the
25 future is going to be extremely important. And it is also

1 extremely important, as has been noted, that California
2 has a loading order for air resources, and ARB has very
3 strongly raised that we see the energy efficiency goals as
4 being extremely aggressive, that those are going to take
5 some innovative approaches to getting the sort of
6 efficiency gains that we are talking about. The two
7 commissions have a very good start in working towards
8 meeting those goals. We think that there is a lot of work
9 that can and still needs to be done on those. The
10 reductions we get from those efficiency goals for meeting
11 those will, in fact, reduce the amount of infrastructure
12 that needs to be built in order to keep the electricity
13 system operating efficiently going forward. So we do
14 think that is extremely important. We have also had a lot
15 of discussion today about the renewables goals, about the
16 CHP goals, all of these are pieces of the puzzle overall.

17 As we look at all of this, we do recognize at ARB
18 that natural gas power plants are going to play a
19 continuing role in the electricity system going forward
20 for a lot of the reasons that have already been discussed
21 in some detail this morning, and I will not go into sort
22 of -- I will not rehash those, I think there has already
23 been a lot of sufficient discussion around those. One of
24 the things I think is important to note is, when we got to
25 the electricity crisis at the start of this decade, the

1 Governor and Legislature recognized that there was a
2 missing element in terms of the need for a stronger, more
3 clearly stated energy policy for the state, and gave this
4 Commission the responsibility of the Integrated Energy
5 Police Report to essentially provide that energy policy
6 voice going forward. The issues that you are talking
7 about today, that you are taking very seriously through
8 the siting proceeding, through the IEPR, is doing the
9 hard work that needs to be done. One of the things that I
10 think is going to be extremely important is to
11 increasingly move the IEPR from being simply a policy
12 document, and I say that without meaning to denigrate what
13 it is in any way, it is an extremely important document
14 and has been throughout its existence this decade, to move
15 it increasingly towards a planning document. And that is
16 what I hear you talking about today and I think that is
17 going to be extremely important, how do you turn what are
18 a very complicated set of policy decisions related to the
19 integration of renewables, related to how energy
20 efficiency goals and meeting those goals, interacts with
21 the decisions that are needed for the infrastructure
22 development, how that interacts with the cap and trade
23 program going forward. All of those things need to be
24 worked through and we need to be moving from what the
25 policy needs to be to how do we implement that policy, to

1 turn this into a planning document going forward. The
2 discussion today and the hard work that underlies it, I
3 think, is an extremely important step. And so I want to
4 sort of provide the support and encouragement of the ARB.
5 We think that these are issues that we do need to navigate
6 if we are going to avoid collisions with the various
7 policies that we are talking about and actually keep the
8 electricity system and the electricity sector moving
9 forward and working in the way it needs to be as we
10 achieve the sometimes competing, but generally consistent
11 policy goals that the state has set. So thank you for
12 inviting me, and if you have any questions, I will be
13 happy to answer them.

14 VICE CHAIRMAN BOYD: Certainly brief, wasn't he?
15 Commissioner Byron?

16 COMMISSIONER BYRON: Well trained.

17 VICE CHAIRMAN BOYD: Thank you, Kevin. Appreciate
18 your comment, particularly since you are a former IEPR
19 program manager yourself, you have seen the process, you
20 probably did share some of our frustration, and it is a
21 really good document, we need to get more people to pay
22 attention to it, and I think your point about making it a
23 planning document, as well, is something we recognize, so
24 I think it is a good point. We appreciate that and just
25 continue to look forward to working with you folks and

1 you, in particular, but the ARB staff on this subject.

2 COMMISSIONER BYRON: Dr. Kennedy, the simple
3 question -- I guess the short question is, doesn't cap and
4 trade take care of everything? I mean, the notion of a
5 power plant that might be permitted by this agency that
6 would last up to 40 years with any greenhouse gases,
7 anything that is done in any sector, doesn't cap and trade
8 eventually take care of it?

9 DR. KENNEDY: In some ways, the simple answer to
10 that is, yes, it does. But I think that what you are
11 seeing in the work that MRW has done, and other work that
12 has been done around this issue, is the interaction of all
13 of the different approaches that you can get to get
14 reductions, understanding what infrastructure you are
15 putting in place, and how that either enables or gets in
16 the way of long-term emission reductions is going to be
17 extremely important. The cap and trade system provides an
18 extremely important price signal that will help steer the
19 infrastructure investment in the right direction, but at
20 ARB we do not believe the cap and trade system is the
21 answer to the entire problem. That is why, when we
22 adopting the Scoping Plan, what we included as an
23 underlying piece, was the cap and trade system that is an
24 incredibly important part of the plan, but we also said we
25 need to be moving forward with specific policies, we need

1 to be moving forward on energy efficiency, on renewables,
2 low carbon fuel standards, capacity regulations, etc., all
3 of these pieces help steer the investment, it helps steer
4 the direction that the infrastructure will be going in
5 ways that we think complement the cap and trade program.
6 The market interaction provides a lot of the direction
7 that is needed, but it is not sufficient by itself.

8 COMMISSIONER BYRON: The MRW Report, I do not know
9 if you have had a chance to read it to tell, but it
10 suggests that extensive modeling is going to be necessary
11 to understand precisely how the net greenhouse gas
12 emissions of the system would change under various
13 futures. Do we need to go forward and do that kind of
14 modeling? Does this Commission need to conduct the kind
15 of analysis necessary to determine whether a specific
16 power plant should be built?

17 DR. KENNEDY: I do not want to sort of proscribe
18 for the Energy Commission what the final answer to --

19 COMMISSIONER BYRON: To support the ARB.

20 MR. KENNEDY: That is right. But I do think the
21 understanding of the implications of the sort of policy
22 decisions that you are making around individual siting
23 cases, and sort of the broader policy push that will
24 underlie those decisions is something that needs to be
25 done in the context of understanding how the system is

1 going to play out going forward. So, precisely what you
2 need to do and where to do, to answer that question
3 correctly, I cannot tell you, but simply relying on future
4 cap and trade system to drive the answer, I think, would
5 be shortsighted in taking on in some manner sort of the
6 difficult policy work and technical work that needs to
7 underlie those policy decisions, I think, is an important
8 piece of the sort of decisions you will be making.

9 COMMISSIONER BYRON: Okay. Dr. Kennedy, thank you
10 very much for being here. It is good to have you back.

11 DR. KENNEDY: Thank you.

12 MR. EDWARDS: Commissioners, I wanted to ask if it
13 would be a good time to take about a 10-minute break
14 before we start the panel.

15 COMMISSIONER BYRON: There seems to be a
16 consensus. Ten-minute break. So we will re-start at
17 11:30.

18 [Off the record at 11:20 a.m.]

19 [Back on the record at 11:30 a.m.]

20 DR. JASKE:: Okay, my name is Mike Jaske with
21 Energy Commission staff, and I am going to moderate the
22 panel. Let me first introduce the panel. I will start
23 over here to my left and work my way around. So Bud Beebe
24 with SMUD, taking the place of Mr. Bartholomy, not here
25 today; Antonio Alvarez with PG&E; Scott Galati, PG&E,

1 Robert Anderson with San Diego Gas and Electric, David
2 Hawkins with the ISO, Mark Minick with Southern California
3 Edison, Noah Long with NRDC, Nancy Ryan with the PUC, and
4 Mr. Barmack, representing IEP today.

5 MR. BARMACK: Representing Calpine.

6 DR. JASKE:: Oh, representing Calpine, okay. So
7 if you would -- if you have not yet -- turn your nameplate
8 toward the Committee so they can keep track of you. What
9 I propose to do today is work through question by
10 question, and since it is now a quarter to 12, I am
11 expecting we are probably not going to get all the way
12 through the questions before we will want to take our
13 lunch break, so wherever we are, we will resume after
14 lunch. I have identified people who, just from my own
15 whim, I think are a good lead-off for answering the
16 questions, so I am going to call on a particular person or
17 two to give the first answer and then, you know, to the
18 extent others want to chime in, we will let that happen to
19 some extent. Clearly not everyone can speak about every
20 one of the 10 questions and there certainly are the
21 comment opportunities that Dale Edwards mentioned earlier.
22 So you panelists who have a burning desire to add to
23 something that you do not get a chance to voice orally can
24 do so in writing.

25 So let's start off with -- oh, and for the benefit

1 of our WebEx folks, there is sort of a stylized version of
2 the questions, more like a bullet list of topics that will
3 show up on the screen, but will actually be focusing on
4 the questions, so those of you who have access to the
5 materials on the Energy Commission IEPR website can see
6 the questions, themselves.

7 So the first question focuses on Chapter 7 of the
8 MRW Report, identifies five roles that power plants may
9 play, and so the first question I am really going to --
10 the 1A part I am going to focus on, Dave Hawkins and Mr.
11 Beebe, as representative of System Operators. So, first
12 you, Mr. Hawkins, do you think that these are the roles
13 for gas-fired power plants?

14 MR. HAWKINS: Yes. The list is very
15 comprehensive. You know, my slides for this particular
16 area --I added some pieces to it -- but certainly the
17 intermittent resources are one of the big things that we
18 need, is the ability to start up units and shut down
19 units, having gas-fired units that are able to ramp at
20 much faster rates than some of the older combined cycle
21 plants. So ideally, of course, we look at hydro systems
22 as a big help, so having ramp rates of 30 megawatts a
23 minute, and we have got -- some of the units are extremely
24 helpful, the two megawatt a minute unit does not help very
25 much if we are going to do this. So I think units that

1 are really pushing up to higher ramp rates would be a
2 great help for the intermittents. For local capacity, I
3 think we could do something with -- some of the energy
4 storage could potentially fit into that, as well as gas-
5 fired plants. We provide some voltage support. But the
6 overall grid operation support, the thing that was missing
7 for me a little bit was also the ability to handle
8 transmission congestion relief and the ability to, as we
9 have client overloads or transmission client overloads in
10 a particular area because maybe one ramped up more than we
11 expected, and therefore we could not move our units down
12 fast enough in those areas, having more units in the right
13 location that we could either move quickly to new settings
14 would really help a lot with the grid operation support,
15 plus on the voltage thing. In terms of the emergency
16 piece, you know, again our thinking is that units that you
17 can get online fairly quickly and 10-minute response time
18 would be more ideal than a two-hour response, but at least
19 a two-hour response allows you to deal with low forecast
20 errors and major things that you just missed on where the
21 wind is either walking away, or solar is walking away, and
22 so those are some of the issues. Also, if we are thinking
23 about DC transmission like into San Francisco, and you
24 wanted to do black start, one of the things that you are
25 going to have to have is an AC synchronizing signal at the

1 far end of that DC link. So if we happen to do a black
2 start into that particular area, we need to have a plant
3 that you can get up on line that is synchronizable, and
4 then you can get the DC lines going again into those
5 areas. In terms of general energy support, again, as I
6 mentioned earlier, with the fact that renewables account
7 for 33 percent, you still have to add 67 percent coming
8 from other things which should be combined cycle, very
9 efficient plants, plus hydro, plus nuclear, plus the
10 biomass and other types of geothermal resources that are
11 much more of a kind of a base load capability. So you
12 certainly need to fill in all of the energy pieces, you
13 know, to make sure that they are there. So, in general,
14 yes, we agree with those characterizations in the report.

15 DR. JASKE:: Mr. Beebe, does SMUD have anything
16 different to offer?

17 MR. BEEBE: Well, no, not so much different. I
18 think that David did a good job of doing a summary of the
19 plethora of information that you really have to consider.
20 Having two different descriptions of local capacity
21 requirements and grid op support, those are necessary and
22 important distinctions, however, there is so much
23 interplay between the two that you really need to be
24 especially careful that you do not like smudge one going
25 into the other. I think that, from SMUD's perspective, we

1 have had some interesting recent play through the REDDY
2 (phonetic) process that shows sometimes that statewide
3 goals and statewide policy are often considered in such a
4 broad perspective that the local piece does not always
5 come through and, of course, with local support and even
6 grid ops, you have got to consider it all because it all
7 has to work, it is just like meeting demand, it all has to
8 work and it has to work at the time that it is needed. So
9 extra care there. The other one I had noticed is that,
10 you know, sometimes when we do these analyses, you have to
11 make certain assumptions about issues, and one is the fast
12 start-up capability to two hours or less. I would keep a
13 real spongy thumb on that one because sometimes you have
14 to do it faster than that, and sometimes you really have a
15 great deal more leeway than the two hours. Our schedulers
16 work with us each day, they know what they have got on the
17 board, and they are comfortable with what they have got.

18 For
19 long-term planning, you have got to start to think in
20 broader terms and that leads us, really, probably to this
21 item that the role of gas-fired plants, I think, are
22 adequately described here, however, as we look really
23 going down the line, there is a base line assumption that
24 gas is somehow an essential capacity back-up for
25 renewables, and this understanding really has to change

1 with time as we begin to understand a great deal more
2 about the renewables that we are actually adding to the
3 system. You hear it in other parts of the nation that
4 renewables are too expensive because you have to add
5 fossil fuel to back-up the renewable and it essentially
6 doubles or triples the cost of the renewable, and that is
7 a specious assumption, it really does not hold. As Steven
8 McClary showed, we have been dealing with the problems or
9 issues of having a great renewable resource in hydro in
10 California for a number of years, but it really is an
11 intermittent when you think of it as a seasonal supply, so
12 as you learn more about the actual renewables that are in
13 place, and what their actual capabilities are, I think
14 that we need to get beyond this understanding that gas is
15 just or is always a necessary back-up for every renewable.
16 Thanks.

17 DR. JASKE:: Let's move to 1b and see if there are
18 other roles not described in Chapter 7, and maybe start
19 with the traditional resource planner, Mr. Anderson. Do
20 you have anything to offer?

21 MR. ANDERSON: Is this one on? No? Okay. Good
22 morning, Rob Anderson with SDG&E. In reviewing the list,
23 we thought it to be a very complete list. Might there be
24 other things that could get at it? Yes, I do not find
25 them as being so big that this list is lacking in any way.

1 Part of my reaction was kind of the same thing on the fast
2 start capability. We are really looking for our system
3 right now as more the 10-minute start, the resource that
4 we could put on an off line a couple times a day if we
5 needed to. Something mentioned earlier this morning, we
6 are a bit worried about what that is going to do to
7 overall maintenance cost in the long run, but overall I
8 think it is a pretty good list and it gets us close
9 enough.

10 DR. JASKE:: Mark, anything to add?

11 MR. MINICK: Yeah, I am a resource planner, not a
12 transmission planner, but I have some knowledge about
13 transmission planning. And generators, in general, add
14 stability to the grid by inertia, providing it inertia.
15 DC photovoltaic cells do not provide that inertia and, in
16 some cases, GLIM (phonetic) does not provide as much
17 inertia as we would like. So having generators on your
18 grid, especially in the Southern California, does allow
19 you to have enough inertia to basically stabilize the grid
20 and import, so we are going to have to solve that if we do
21 not have resources like this.

22 DR. JASKE:: That is a good point.

23 MR. MINICK: The other point is we are not
24 studying planning reserve margins and what these planning
25 reserve margins might change to under a new intermittent

1 world. Many of us, including Antonio and I, think that
2 the reserve margins should probably be higher. We are not
3 sure exactly how much higher because we are still trying
4 to figure out what the future might look like, but if we
5 have to have one, or two, or three percent more planning
6 reserves, this is basically cheap capacity insurance. And
7 so peakers in some cases are the way to add capacity for
8 California because we peak for a few hours a year.
9 Southern California probably has 50 hours where we need
10 3,000 megawatts. That is not a lot of hours, less than
11 one percent of the year. So you are going to build a
12 resource that is very cheap and you can use it for those
13 particular instances.

14 DR. JASKE:: PG&E, you want to add to that?

15 COMMISSIONER BYRON: Excuse me, the peakers do not
16 necessarily add that kind of electrical stiffness you are
17 talking about, either.

18 MR. MINICK: Oh, stability? No. They do not have
19 as much inertia as a bigger combined cycle plant does, but
20 they do allow some inertia and, again, I am not a
21 transmission expert, so I cannot say what the proportion
22 is, but it is much better than the DC photovoltaic cell
23 that has got an inverter on it, and/or in some cases one
24 that is so -- they are not adding much inertia to the
25 system at all.

1 COMMISSIONER BYRON: The concentrate -- solar has
2 nice big slow turbines that add inertia.

3 MR. MINICK: Yes, solar thermal is an inertia, but
4 it is probably going to be outside the basin, so I am
5 looking at how do I get enough inertia in the basin to
6 allow imports and exports, and it is quite complicated.

7 COMMISSIONER BYRON: Thank you.

8 MR. ALVAREZ: In addition to the higher potential
9 planning reserve margin that Mark mentioned, perhaps not a
10 new role, but one that increases the need would be the
11 need to replace retrofit existing steam units that are
12 currently providing some of the integration for
13 intermittent resources, so as we look forward, I think,
14 that needs to be part of the role or definition of the
15 role for new natural gas fire generation.

16 DR. JASKE:: Is that a separate role or just a
17 stealing of the amount of a role?

18 MR. ALVAREZ: I struggle with that and I think it
19 is primarily a scaling of the role because I think it fits
20 into one of the five categories that you have, Mike.

21 DR. JASKE:: Okay, other thoughts from panel
22 members about whether there are roles that are missing?
23 Okay, let's go to question 1C. Maybe, Mr. Barmack, could
24 you offer some thoughts about whether standardized
25 definitions should be offered, potentially as these are

1 applied in licensing cases, power plant developers are
2 going to have to deal with them, so...

3 MR. BARMACK: Well, let me answer that question a
4 little indirectly. I guess I was a little frustrated by
5 this part of the report. I thought there could be a
6 clearer distinction between plant attributes, which I view
7 as sort of physical things, and certain wholesale products
8 that may or may not exist now. So should there be
9 standardized definitions of plant attributes? I would
10 argue that, at least for generators in the ISO, there
11 already is, and those are the kinds of things that are in
12 the Master File that the ISO uses to run its markets. Do
13 we have all the products that we need now to accomplish
14 all these procurement goals that we set out for ourselves?
15 I am not sure. But the generic comment is a clearer
16 distinction between the plant attributes and wholesale
17 products.

18 DR. JASKE:: Okay. Other thoughts along those
19 lines?

20 MR. HAWKINS: Let me make a comment on that. That
21 is a good point. There is somewhat of a disconnect in
22 that what we are claiming that we really need is a lot of
23 ramp rate capability, even if there is no market for ramp
24 rate, for example. And we do not have a market for
25 rolling support, so there are pieces of the market that

1 are inconsistent, or missing as we think about the
2 integration of renewables going forward, and then do you
3 pay for fast regulation? And, if so, how do you measure
4 fast regulation? And what is the added value to what
5 plants could provide and how thin would that market be?
6 So just the fact that there might be a market piece that
7 is missing, it may be still such a small piece, or so
8 thin, it may not make sense at this point to create it as
9 a separate market.

10 DR. JASKE:: Isn't it feasible for the ISO to
11 contract for that if it should be found necessary, but not
12 at a scale that the market would really work?

13 MR. HAWKINS: Well, yeah, it sort of goes at the
14 whole issue about black start. Do you have an open market
15 for black start? You certainly could and never know. You
16 certainly would have contracts in place that could go for
17 several years to justify the additional capital costs
18 required by a flight operator to provide capital for black
19 start capability that was embedded in the old RMR
20 contracts, and paid for separately, or paid for as part of
21 those contracts. As those contracts have gone away, then
22 the question is, will you substitute any future for those
23 kind of contracting issues. So good questions. To be
24 determined.

25 DR. JASKE:: Just a follow-up. Is the 33 percent

1 report that ISO is going to deliver going to address these
2 market product issues?

3 MR. HAWKINS: Well, yeah. We certainly would
4 include some of the market issues. How comprehensive that
5 discussion is, I would say, is still to be determined.
6 But I certainly think that is an issue and you have to
7 see, you know, what kinds of renewables and what is
8 missing in terms of the ancillary services, or ramp rates,
9 or other types of things, so all of those are certainly
10 open questions at this point.

11 COMMISSIONER BYRON: Dr. Jaske, before you leave
12 this one, it dawned on me that there might be something
13 more here. As Commissioner Boyd indicated yesterday on
14 siting visit, we decided to escape dinner and spend some
15 time heading out towards Kramer Junction to see settings,
16 and indeed how that plant is operating, and I found it
17 interesting that, of course, there are some natural gas-
18 firing that goes on there, but they were actually
19 throttling that back, their solar, in order to maintain --
20 it was a good day for the sun -- and in order to maintain
21 their load constant, and they plan to go continuously
22 until 11:00, and I was intrigued that there are different
23 ways you can operate, at least the concentrate in solar,
24 to get these kinds of -- take some of the intermittency
25 out of it. They were actually throttling back slightly.

1 It was a very high solar flex day. And I was just
2 wondering if there are some definitional opportunities
3 here as we think about these renewables, and defining the
4 kind of attributes we are looking for, at least with
5 regard to the concentrating solar. I do not know if that
6 applies to the other renewables, as well. So I think
7 there is something more in this question that could be
8 explored.

9 MR. BEEBE: Yeah, very definitely. Bud Beebe with
10 SMUD. I took this question 1C to be really appropriate
11 more to the ISO, certainly SMUD as a balancing authority
12 and as a load serving entity. We are looking at much
13 broader understanding of how the renewables pieces fit
14 together in a much more integrated fashion and, if that
15 means you have to redefine them for a formal process,
16 please do so. We are doing so in-house, not so formally
17 since we are a smaller organization we can deal with this
18 more fluidly, but definitely you have to consider these
19 things not as static, but as a changeable thing. Also,
20 DR. JASKE:, if I could, I saw question 1B as being
21 separate than 1A, 1A was -- I answered just from the
22 balancing authority perspective. And I would like to add
23 to 1B that there are some additional roles for natural gas
24 that we see, and I just wanted to mention, certainly, one
25 of them is the potential for compressed air energy

1 storage. This is a storage type that is out there, but it
2 really only makes sense from a standpoint of being a
3 portion of a braden (phonetic) cycle that requires a heat
4 piece to be added to the end of it, and that heat piece
5 has always been understood to be natural gas. So to the
6 extent that natural gas would be the fuel of choice for a
7 compressed air energy storage, you ought to consider that.
8 Also, there is other storage media out there, of course,
9 that could feed into the natural gas piece, and we should
10 not forget those. I also think that this is an
11 appropriate time to perhaps mention that, in California,
12 we tend not to think of the carbon capture sequestration
13 as a huge piece. We somehow see that to the coal pieces
14 to the east, and I think that is not very smart as a
15 state. There should be a consideration of natural gas and
16 its conjunctive use with carbon capture and sequestration.
17 Certainly the California company of clean energy systems
18 and other fuel, oxi-fuel, Tech People, Jupiter-Ox, and
19 other people, they have got technology out there that is
20 at least as advanced as some of the renewables that we are
21 considering and pushing into the market at this point, so
22 they could well be a significant increase in natural gas
23 efficiency due to these oxi-fuel technologies, and also
24 the storage piece here in California is something that I
25 think is a state policy issue that requires a much bigger

1 airing than it has had in the past. So that would be my
2 adjunct to 1B. So thank you.

3 DR. JASKE:: Other thoughts about additional
4 roles?

5 MR. BARMACK: I just wanted to pick up on one
6 thing David said. You know, I really appreciate the role
7 the ISO has done on this, David. But I just wanted to
8 sound a note of caution, as well. I mean, if we do not
9 know exactly how the physical requirements necessary to
10 integrate renewables and realize, you know, GHG goals, if
11 we do not know exactly how those are going to be split up
12 and what the boundaries are, you know, maybe we want to be
13 somewhat cautious about proscribing that a certain client
14 is, you know, for this and not for this, because I think
15 this policy area and market design is still very much in
16 flux.

17 DR. JASKE:: I am going to ask that the panel
18 think about that very point in terms of us eventually
19 getting to question 9 after lunch because question 9
20 raises the whole issue of the physical attributes of the
21 plant vs. the contractual or market setting in which it
22 operates. And that is a challenge for the licensing
23 process, to think of the hardware in front of it vs. how
24 that hardware might get used over a very lengthy period of
25 time. Let's go to 1D. Any thoughts about the relative

1 importance of the five roles? Dr. Ryan, any thoughts from
2 your perspective, the PUC's perspective?

3 DR. RYAN: You know, I think they are all
4 important in different ways. I do not really think that
5 it is possible to rank them.

6 COMMISSIONER BYRON: I think it is a trick
7 question.

8 DR. RYAN: Seems like it.

9 DR. JASKE:: Here is a volunteer.

10 MR. MINICK: Well, let's try to summarize all
11 these roles, okay? Because I have been in this business
12 for 35 years. I think maintaining a reliable grid
13 operation is number 1 -- and not because you are sitting
14 next to me, okay? I was always taught keep my customers'
15 lights on, okay? So I think that is kind of number 1.
16 Number 2 might be minimizing the cost because I was always
17 told to take care of your customers' costs and they will
18 take care of you, or something like that. So maybe that
19 is number 2. So first let's keep the lights on and let's
20 try to minimize the costs. But we are here talking about
21 RPS and renewable portfolio centers and lowering
22 emissions. I think we have to try to do that, but I think
23 not at the expense of the first two. Some people seem to
24 want to deviate from the second one. And to me, that is
25 very important because I think we want to reduce

1 greenhouse gasses, but I think we want to do it cost-
2 effectively.

3 DR. JASKE:: Good. Other thoughts along those
4 lines?

5 MR. HAWKINS: Well, I think I would like to pick
6 up also on the fact that what we need to do is to find the
7 characteristics that we need for grid reliability and not
8 the specific characteristics of a particular power plant,
9 so that, you know, the challenge always comes back to us,
10 just tell us what you need in order to keep the system
11 reliable, and meet the goals that you have got to do, and
12 we will figure out whether it is an ADC plant, or it is a
13 storage plant, or it is a demand-response program, or
14 whatever. So I think the challenge back to us is to be as
15 clear as we can as to what we need to make all these work
16 from a grid reliability perspective and not being
17 proscriptive about specific plants and what they have to
18 do. So then they can say, "Well, we provide Column A and
19 Column B and it is free from Column C," and whatever.

20 COMMISSIONER BYRON: Unless, of course, it is a
21 location consideration, as you mentioned earlier like
22 transmission congestion, then specific plants comes into
23 it.

24 MR. HAWKINS: Yes. That is a good point, thank
25 you.

1 MR. LONG: Well, if I might add to that, and this
2 is no longer NRDC, I think when we are thinking of
3 specific ones of these attributes, then we need to
4 consider -- and I think this actually relates to question
5 2, whether in a specific case it is a natural gas plant
6 that we need, or some other either transmission upgrade,
7 or something else can fit that function. And I think that
8 really gets to the point that David was making, which is
9 to say that we look at each of these functions separately
10 and then think about whether it is a plant or something
11 else.

12 COMMISSIONER BYRON: Well, I just --

13 VICE CHAIRMAN BOYD: Well, if I can jump in here -
14 - I have been waiting, listening carefully to the
15 discussion of all the components of question 1, and your
16 reference to question 9 even extends my thoughts, or maybe
17 it is a concern. And the concern I have sitting here as a
18 Commission who engages with others and lots of siting and
19 Commissioner Byron and I are the electricity committee,
20 etc., etc., but what goes through my mind, has
21 historically, is when we are talking about gas, okay, gas
22 efficiency is important, I am on the Natural Gas Committee
23 and that has always been a passion of mine, efficient use
24 of natural gas, so you talk about simple cycle and
25 combined cycle, and we talk a lot about peakers,

1 historically, but now I am hearing more fast start, cramp
2 rates, and the new term, "intermittent support," and I do
3 not know whether intermittent support goes with the gold
4 old theoretical of the past, combining cycle base load
5 plant, and I understand there is a lot of combined cycle
6 systems that can ramp up faster now than they could just a
7 few years ago when I got into this business, and I also
8 know that simple cycles, you know, not as efficient as
9 combined cycle, etc. So we sit here as Commissioners
10 trying to make decisions about the siting of a plant and
11 its need to meet all these needs and I go through -- well,
12 why am I seeing these monster, you know, well, in excess
13 of 500 megawatt peakers when, you know, during electricity
14 crises, you have got 100 megawatt peakers and you were
15 doing good, etc. etc. So I do not know if this is a
16 question, or a statement of the dilemma we face of size,
17 location, type of technology, just -- and the fuel has not
18 been introduced, the multiple fuels, the next question, we
19 will get there, but just worrying about natural gas. I do
20 not know if you can put all these factors together. You
21 know, is a peaker in the traditional sense also that
22 intermittent support that we are talking about now for the
23 renewable system, or is ramping up a little bit more a
24 base load combined cycle plant the way you take care of
25 the intermittent valley that you can predict is going to

1 show up at the end of the day when the sun goes down, or
2 you may or may not anticipate the wind quite as well, etc.
3 etc. I do not know if that is a question, or a statement
4 of frustration of what it is we have to deal with as you
5 answer these questions, but it is just the tip of the
6 iceberg, as I see it. I do not know if there is a
7 response there, or just add it to the pile of issues that
8 you are going to kick around here.

9 MR. HAWKINS: I think your point is well taken.
10 The complexity of all these resources has certainly grown,
11 and I think from five, six, seven years ago, the type of
12 combined cycle plants, we are very fairly narrow in terms
13 of their capability. And as the market is now recognizing
14 that they need to be able to start up faster, they need to
15 have greater flexibility, you are starting to see the
16 plant designs that have different characteristics, or more
17 flexibility with the sacrifice, a little bit, of their
18 heat rates, but certainly much faster start-up
19 capabilities in order to capture some of the value. So it
20 is evolving. And I think what we are seeing now is, as
21 you look out to the 33 percent, it is really quite a
22 different world, and therefore trying to make sure that
23 the plant designs and the characteristics then go along
24 with that changing world is really the challenge, and it
25 is a big challenge and I think, as part of this

1 Commission's work on the IEPR, it is recognizing that as a
2 big key piece.

3 DR. JASKE:: Mr. Galati.

4 MR. GALATI: Sharing the frustrations on siting
5 cases with some of the similar questions, I just kind of
6 want to provide a better overview. I think that it is
7 fair and, personally, required for you to ask and the
8 applicant to answer in a particular siting case why they
9 chose their particular technology and what project
10 objectives were they trying to achieve. I also think it
11 is appropriate for you to ask, and staff often does, and
12 there does not seem to be a lot of discussion and
13 evidentiary hearings about it because there tends to be
14 some agreement in this particular area, which is why were
15 other technologies rejected as either not meeting those
16 project objectives, or not reducing impacts. So I think
17 that in the context of an individual siting case, you may
18 not get the broader vision that probably you are
19 interested in, but I do not think you can get it in an
20 individual siting case. I think that maybe the
21 appropriate place to get it would be either in the long-
22 term procurement plan for us, for investor-owned
23 utilities, or in your IEPR work. So I think that, not
24 trying to add to your workload, but I am saying that I
25 think the individual siting case is just not built to

1 maybe answer the larger planning questions for you, but I
2 do think it is absolutely appropriate for you to ask the
3 applicant, and to require the applicant to explain why
4 this technology vs. that technology.

5 VICE CHAIRMAN BOYD: Well, that is a good point,
6 however, absent the solution you laid out, then the siting
7 case is all we have got until the IEPR grows into it, or
8 the procurement program grows, as we discussed earlier
9 today. So, yeah, I guess anybody who has me on a siting
10 case with a peaker in excess of 500 megawatts that is a
11 simple cycle, be prepared to answer why.

12 MR. GALATI: And I think that when we get to the
13 further questions, I think I certainly have some opinions
14 on how I think you can use the work that you have done now
15 in a siting case for purposes of greenhouse gas emissions.

16 DR. JASKE:: Mr. Minick?

17 MR. MINICK: Mr. Boyd, you asked what is a peaker
18 and what is, I guess, a base load, and what is an
19 intermediate and, for us planners, we have always had some
20 general definitions of what we call these particular
21 resources. But peaker typically is something that runs
22 at, let's say, 10 or 15 percent capacity factor or less,
23 the intermediate, then, picks up and runs to something
24 like 60 or 65, and a base load runs above that. It is not
25 difficult to take the technology that you are looking at

1 and sticking it in your production simulation model and
2 looking at a number of years to see how it runs. In most
3 cases, right now we are running wind as a deterministic
4 factor, not a stochastic factor; we are just trying to
5 figure out how to run wind as stochastic factors. And
6 under the higher levels of renewables, both wind and solar
7 that we have looked at in some of our cases that we have
8 run, peakers still remain peakers. They never come in to
9 base load resources -- mostly because it is their heat
10 rate. We are looking at LNS 100ths of a 9,000 heat rate.
11 Well, when you stick in an H-Frame combined cycle plant,
12 it is very efficient and it runs pretty well. In the long
13 term, as you get more and more renewables, you will see
14 some of these close to base load resources drop into the
15 intermediate stage, but we never see them go down to
16 peakers. We see peakers sort of remain peakers, and the
17 intermediates are remaining intermediates.

18 DR. JASKE:: Okay, let us move on to Question 2
19 which, in its essence is, all this focus on natural gas,
20 are there other fuels like biogas that we need to think
21 about in the same kind of manner? Who wants to take a
22 crack at that?

23 MR. BEEBE: Bud Beebe with SMUD. I will
24 specifically mention that we see a great future for being
25 able to gasify biomass and separate out the methane from

1 that and inject it into a natural gas pipeline, and then
2 use that natural gas or biomass gas contract in your
3 natural gas-fired -- your otherwise natural gas-fired
4 power plant. So that is -- it is a great opportunity to
5 be able to use existing infrastructure to significantly
6 amplify the role of the biomass renewable energy,
7 utilizing our natural gas plants, so that characteristic
8 needs to certainly be -- again could be considered in an
9 IEPR context. The other one that I will mention here is
10 that -- and it may be too soon to be considered
11 specifically, but you ought to put it on your horizon, and
12 that is the role that the change in transportation fuels
13 will ultimately go into stationary resources, as well.
14 People in this room have probably all seen the algae as
15 super fuel of the future, it fuels our transportation, it
16 fuels lots of -- even our pigs, right? So I think that
17 you have to begin to look at the confluence of a changed
18 transportation fuel's infrastructure and potential
19 opportunities in the stationary electricity generation
20 sector to build on one other to be able to get to our end
21 goal.

22 DR. JASKE:: So let me go back to your first
23 point, maybe it is even applicable to your second, a
24 biogas, a biofuel plant, you know, injecting its product
25 into a pipeline, which then helps provide gas to all sorts

1 of applications, not just power plants, necessarily; that
2 separates the biomass from the generation the Energy
3 Commission is never even going to see that biofuel plant,
4 probably, in its licensing process. Some other agency
5 will deal with that path, if you will, of what would
6 otherwise
7 -- or what might be a combustion-type biomass plant. So
8 any thought about the multiplicity of jurisdictions?

9 MR. BEEBE: Of jurisdictional issues there?

10 DR. JASKE:: Yeah.

11 MR. BEEBE: Well, we deal with imported
12 electricity. I think we could deal with imported biogas.
13 I do not know why not. Is that -- and since California is
14 a great agricultural area, why don't we consider exporting
15 some biogas, as well? I mean, that is another thing that
16 I guess we will get to later, and that is that we maybe
17 still consider California moving to all these renewables
18 in isolation, and that clearly is going to change as the
19 federal picture on renewables and greenhouse gas changes.

20 MR. ANDERSON: If I could add to that -- Bob
21 Anderson here. We actually are doing some things looking
22 at that on the gas side of our house also because -- I
23 think what we are all talking about is, we are going to
24 get a lot of renewable power that is must take whenever it
25 shows up, and we are having to find the flexible resource

1 to match it, and is there a way to take the renewable
2 resource and turn it into the flexible one. And right
3 now, the real drive is take the biomass, biogas, convert
4 it right there, stick it into a power plant, base load it,
5 which may be adding more to our problems than really
6 helping. So, as the gas company, we are looking at other
7 things we can do to step up to even clean up the gas, to
8 get it in the gas system, so we can take what are now
9 viewed as the natural gas of the dirtier power plants,
10 doing a load falling, and turning it into a clean
11 renewable plant and doing the load fall.

12 MR. LONG: If I can just add to that a little bit.
13 I would really like to support what both of you just said,
14 but I think the point of this report was really to look at
15 sort of describing all the wonderful things that gas
16 plants can do, just to support the kind of infrastructure
17 that we are all working towards. And a really different
18 report would be necessary to say, well, what are all the
19 things that all kinds of other plants can do to support
20 that infrastructure? And certainly, you know, as I said
21 before, some of those attributes can be met by other kinds
22 of -- first of all, other kinds of fuels, which make gas
23 plants even more wonderful to the extent that they are
24 wonderful here, but also by other kinds of plants. And
25 part of that, I think, you know, is not just by other

1 kinds of plants, but by using the kinds of plants we have
2 already, and sometimes the renewable plants -- I mean,
3 biogas is a great example, but even intermittent ones
4 that, if we can figure out, like somebody mentioned
5 earlier, studying wind, so if we understand it better, we
6 might be able to use it in a way that does not create as
7 much intermittency problems as it does today. So I think
8 the answer to number 2 is, yes, there are, and which ones
9 there are, further analysis will have to show, I think.

10 DR. JASKE:: Do you have any thoughts on the point
11 that Mr. Galati raised and maybe even an extension of it?
12 And that is, of course, in any individual siting case you
13 are dealing with what you deal with as you see it has all
14 its specifics, but, from the planning perspective and
15 trying to understand energy infrastructure, or is there a
16 role or something that deals with biofuel plants and
17 giving guidance to other jurisdictions and their
18 consideration of GHG from those kind of plants, because we
19 are dealing with this jurisdictional separation issue.

20 MR. LONG: Well, I mean, I guess, I mean, it
21 sounds like there is plenty on the table already, but,
22 yeah, I do not see why the Energy Commission is certainly
23 a wonderful place to start doing that kind of work. I do
24 not know that it is the same as doing siting
25 considerations, I think it is somewhat different.

1 DR. JASKE:: But siting for somebody else, though.

2 MR. LONG: Right, right.

3 VICE CHAIRMAN BOYD: Well, before you get off
4 that, Bud has brought up two things that I noted down. I
5 mean, he kind of initiated the bio-methane discussion and
6 this agency actually is probably not as well -- too well
7 known, but pretty deep into the issue of biopower, be it
8 biofuel or biomass use, etc., biomethane is a big
9 component of it. From our perspective, when the RPS was
10 changed to give credits for using biomethane, the
11 utilities suddenly were a lot more interested in helping
12 stimulate it, and that was great, and I think we need a
13 lot more of it and we have got lots of agriculture in the
14 state, there is a lot of methane out there that you can
15 capture and put to good use. So there is a lot of
16 activity going on and I would like to see even more, so
17 when you focus more attention on it, I think it is to the
18 better. The other issue Bud brought up was carbon capture
19 and storage and, actually, this agency and then more
20 recently joined with the PUC in an interest in carbon
21 capture and storage. We are running one of the seven
22 regional projects in the nation on carbon capture and
23 storage. Yes, the national emphasis is on coal;
24 California's emphasis is not on coal, other than we know
25 some of you import coal, and so we would like to see CCS

1 work better, you know, coal by wire is a concern. But CCS
2 as it relates to natural gas is an issue we have talked
3 about and we are actually talking to some of you about a
4 research project involving gas plants in California, and
5 capture, and potential sequestration just because we know
6 someday AB 32, you know, we will get down the list and we
7 will get to it, so we might as well start with it. But it
8 has been a touch track for California because there is so
9 much emphasis on the coal component. And when I met with
10 DOE recently on this subject that is all they wanted to
11 talk about was coal. And I said, well, I do not want to
12 talk about coal, we do not talk about coal that -- in any
13 event, we struggle with that, but it is a major component,
14 and it has been in our IEPR and probably gets repeated
15 again. But it does have a significant role in
16 California's long-term future.

17 MR. GALATI: Commissioner Boyd, I worked on a
18 project where we were looking at a biogas and that project
19 ultimately did not go forward for other reasons. But one
20 of the things that we were struggling with from an
21 environmental perspective is clear signals from the
22 Commission would be helpful, for example, what I see tends
23 to happen is, whatever the lowest impact is, let's say
24 PM10 from natural gas, if you could go through this
25 complex and use biogas, and the PM10 were to be slightly

1 higher -- not much, but slightly higher -- there is at
2 least a concern on the part of applicants that we are
3 bringing something to the Energy Commission, although
4 novel and new, has a trade-off that needs to be made. And
5 you have heard me use that word over and over and over
6 again, and any clear signals from the Energy Commission
7 that such trade-offs could be made, or would be made, I
8 think that would help stimulate -- just like with solar,
9 with wind, there are trade-offs in the environmental
10 perspective. We cannot meet every environmental goal with
11 every technology. There are some that need to be done.
12 And I could tell you that I did work on a biogas project
13 where the emissions profile did not look like what the
14 Commission staff or Commission was used to seeing, and in
15 some cases the emissions were higher, and in some cases
16 they were lower. I think it is a perfectly good project,
17 I think we could mitigate all of its impacts, offset
18 appropriately, meet all the public health standards, would
19 have ultimately been sited. But I can tell you that, in
20 the development community, there is concern with bringing
21 the Commission things like that.

22 VICE CHAIRMAN BOYD: Yeah, and I appreciate that.
23 And you have brought up a word -- you said it -- "trade-
24 offs" that sends chills through the spines of lots of
25 folks, and I am sorry Kevin left because the Air Quality

1 community, of which I was a member for 20 years, is quite
2 concerned about the use of the term "trade-off," and any
3 trade-off from among any air pollutant, and that is a
4 dilemma that they are all going to have to wrestle with
5 right now. You bring up some really good points, we have
6 had the discussion internally about, "Wow, look at the
7 incredible amounts of CO₂ equivalent reduction we can get
8 for a little trade-off with something else." We are not
9 there yet and the ARB is going to have to go through that
10 with us, which is why most of the onset power plant ideas
11 using farm generated biomethane have died, because they
12 cannot -- we cannot find the technology in terms of on-
13 site generation, short of a fuel cell, which is
14 prohibitively expensive, that meets the air quality test
15 of the local district in the San Joaquin Valley where most
16 of this material is, which is why we are pushing like
17 crazy the idea, okay, inject it into -- make it biomethane
18 and inject it into the backbone gas system. But not
19 everybody is close enough to the backbone gas system to
20 take advantage of that, so we do have a potential that we
21 are not realizing right now. We keep plugging away at it.

22 COMMISSIONER BYRON: And there is a cost issue
23 associated with that, as well.

24 VICE CHAIRMAN BOYD: Indeed. And farmers are into
25 farming or getting a check, not into figuring out how to

1 run a power plant, or etc. etc. on-site. We have got some
2 people who are beginning to aggregate this and make above-
3 ground, not a lagoon-type, dairy digesters, and what have
4 you, and we are hoping the economic stimulus program will
5 help some of them along to demonstrate some of the
6 European technologies they have been using for years, and
7 we cannot seem to get started here. But that will help us
8 over the long haul.

9 DR. JASKE: That is a good point, Commissioner. I
10 want to make sure I grasp something Mr. Anderson said
11 about ways to make renewable fuels into the flexible fuel,
12 so I just wanted to make sure I grasped that. Would the
13 example be using it for essentially storage -- compressed
14 air storage? Or hydro or something?

15 MR. ANDERSON: No. We are thinking --

16 DR. JASKE: I am sorry -- pump storage.

17 MR. ANDERSON: More it getting injected into the
18 gas system. And one of the things that we actually
19 struggle with is, is we are trying to meet an RPS goal
20 that is measured in kilowatt hours, and so right now our
21 incentive would be to have that person do the biogas, turn
22 it into electricity, and we buy the electricity. If
23 instead they convert it into biogas and stick it in a
24 pipeline system, is there a way we could then get agreed
25 to, okay, we are going to make an assumption that, then,

1 all that gas goes through a particular power plant, and
2 that way we could convert, in essence, a cubic foot of gas
3 into so many kilowatt hours, and therefore it would count
4 as much to our RPS, meaning our RPS goal.

5 VICE

6 CHAIRMAN BOYD: I thought we were already there.

7 MR. ANDERSON: Pardon me?

8 VICE CHAIRMAN BOYD: I thought we were already
9 there, but maybe not.

10 MR. BEEBE: Yeah, we are there. We want to make
11 sure that state policy understands the full potential of
12 this.

13 MR. JASKE: I observe, it is 12:30. What is your
14 pleasure?

15 VICE CHAIRMAN BOYD: Well, don't look at me. I
16 kept you away from dinner, even, last night.

17 COMMISSIONER BYRON: Yes, I still have not had
18 dinner.

19 VICE CHAIRMAN BOYD: I call beer food, so beer and
20 peanuts on the flight to L.A. last night.

21 COMMISSIONER BYRON: Dr. Jaske, we are going to
22 come back. Maybe this is a good time to break and then we
23 will resume promptly at 1:30, and that gives every --

24 DR. JASKE: 1:30 by that clock.

25 COMMISSIONER BYRON: Yes. And that gives

1 everybody an hour, a full hour. Thank you. I hope all of
2 our panel will be back.

3 MR. LONG: I think -- I will not be back, but I
4 will be able to submit written comments. Thanks very much
5 for having me here today.

6 COMMISSIONER BYRON: Thank you.

7 [Off the record at 12:25 p.m.]

8 [Back on the record at 1:30 p.m.]

9 DR. JASKE: Okay, my name is Mike Jaske. I am
10 with the Energy Commission staff and we are going to
11 resume with our panel, with question 3. So question 3
12 addresses the summary of the scenario study in the MRW
13 Report and asks whether the high renewables, high
14 efficiency, high both of them, both in and out of
15 California, is sort of the likely range to cover resource
16 development. Any of our panelists care to speak to that
17 study? Mr. Minick?

18 MR. MINICK: It was a good start. The things I
19 see missing are electrification and Edison, as we informed
20 you, is looking seriously at electrification and how it
21 might impact our load in the future. And on some cases we
22 see rather significant amounts of electrification, both of
23 not only just cars, plug-in hybrids, but of the grid
24 regarding rails and ports, and things like that. So, I do
25 not think they have captured electrification well in here.

1 Secondly, it appears they are stating quite a high
2 capacity factor for wind and I would like to see that
3 developed first, if we are talking about 32 percent right
4 now, but if they are not capturing enough energy from
5 where there is more wind, more solar, [indiscernible]
6 targets. So I do not think it is quite robust enough to
7 capture some of the extremes.

8 MR. JASKE: Other thoughts?

9 MR. HAWKINS: Yeah. I just wanted to echo the
10 capacity factor issue with wind. The number of sites
11 running for the last five years are still averaging about
12 22 percent of the wind [inaudible] and it does include,
13 obviously, older units which drag down the capacity
14 factors, and there are some months that are really, you
15 know, higher numbers, but overall the average is still
16 about 22 percent. So the new stuff is really going to
17 have to be really outrageously performing in order to hit
18 those kinds of capacity factors.

19 COMMISSIONER BYRON: Well, so, Mr. Hawkins, what
20 are you seeing as the marginal capacity factor for new
21 wind? Is it -- as new generation gets added, do you have
22 a sense of the ISO as to what that --

23 MR. HAWKINS: Well, it depends on, of course, the
24 location. But the ones that we have seen, there are some
25 that get into the 30-32 percent as we have looked like at

1 Solano, and so forth. The thing that probably drags the
2 average down at this point is the Altamont, which is shut
3 down for a significant portion of the year, and also has
4 the older technology. But, so in terms -- (indiscernible)
5 is still there and that tends to drive the averages down.

6 MR. JASKE: So the PUC just released a major
7 report on 33 percent renewables. Do you have any sense of
8 the assumptions that were used in that analysis?

9 DR. RYAN: I do not have any sense of the
10 assumptions on the capacity factors, but I was going to
11 make another remark that tiers off of that report, and
12 that is that, I think with the caveat that Mr. Minick
13 suggested, I think these futures bracket up the range
14 appropriately, but you might want to inject some more
15 richness into the cases that you can set up within that
16 range, and what we did in that 33 percent report was to
17 look at a variety of scenarios that would meet a 33
18 percent RPS, but with different combinations of renewable
19 resources. And my understanding is that those scenarios
20 are also scenarios that will be considered in our long-
21 term procurement process, but the reason that I think they
22 are relevant for this discussion here is just that they
23 are consisting of different mixes of resources and are,
24 therefore, going to have different implications for the
25 complimentary resources needed to integrate them into the

1 grid.

2 MR. JASKE: So I believe there is actually an IEPR
3 workshop next Monday on this very subject, so the
4 committee can get a fuller dose of the information about
5 that.

6 DR. RYAN: I will be returning, too, to speak at
7 that workshop.

8 MR. MINICK: I think I am here, then, also.

9 COMMISSIONER BYRON: I will thank you ahead of
10 time.

11 MR. JASKE: So that sounds like actually an answer
12 to question 4, that there needs to be more variation
13 around the basic themes of high renewables and high
14 efficiencies. Are there other sentiments along those
15 lines that people want to express?

16 MR. ALVAREZ: Yes. I do have a couple of
17 additional comments. I believe the scenarios assume up to
18 25 percent of RPS, but if you would like to -- in order to
19 bracket, you know, the need, you probably want to extend
20 it to the 33 percent, and reflect in addition to that the
21 work that will be done by California and ISO in terms of
22 defining what is the integration requirement, and how does
23 that impact the planning reserve margins, and so on. So I
24 think those need to be part of the overall range of need.

25 MR. JASKE: Okay. Other thoughts on futures that

1 are worth investigating?

2 MR. ANDERSON: This may not be the most popular
3 response, but I have seen now three or four of these
4 studies. I have been involved in a couple myself, and
5 they all tend to generally trend the same way. We are not
6 seeing that one study has given us much different answer
7 than the other. They might have different mixes of wind,
8 different mixes of different resources, but generally -- I
9 think we generally know where we are going. And from my
10 view, doing more of these with slightly different input
11 assumptions does not add a lot of value to the discussion.
12 It is really around the integration issues. And where can
13 we begin to learn that, yes, we can handle up to X wind,
14 and then maybe we need to put a bias for different kind of
15 resources. So, in my view, if we are really going to
16 spend our time doing more modeling, it is going to be more
17 on the very detailed short-term integration issues, and
18 not another 10-year study, or whatever, of just if we
19 happen to go to a different mix, will be get more or less
20 GHG.

21 COMMISSIONER BYRON: And I would note, too --
22 thank you, Mr. Anderson, for that comment -- I would note,
23 too, having gone to a renewables integration conference,
24 an international conference in the EU, they are moving
25 forward in this area in a substantial way, also groping

1 with some of the same questions that we are, and maybe
2 there are other studies or research that has been done in
3 the EU, or of what the EU has done, but that is not
4 reflected here. I think there is lots we can always learn
5 outside our own state, certainly countries like Ireland
6 and Denmark are integrating a lot more renewables, and
7 wind renewables, and we are talking about here at this
8 point. And I do not see us learning much from what they
9 have done.

10 MR. JASKE: Clarification, Mr. Anderson. When you
11 said short-term, did you mean short time interval?

12 MR. ANDERSON: Yeah.

13 MR. JASKE: Okay, thank you. Okay, why don't we
14 turn to question 5, and one of the key takeaways, in fact,
15 the very last slide that Mr. McClary presented, you know,
16 identified these three futures in which net GHG emissions
17 would climb. Are there comments panelists would care to
18 make about this interpretation?

19 MR. GALATI: I am going to keep my remarks related
20 to in the context of processing an individual siting case.
21 In reading the report, I actually think that the report
22 might be getting a little bit of an under-sell. I
23 actually think it is probably -- it is probably a really
24 good report and I think that, as opposed to being a good
25 start, I think it might be pretty close to finished for

1 purposes of a siting case. So I am going to try to
2 capture why I think that in response to this question. In
3 the siting case, the Energy Commission is going to really
4 basically try to make two findings, right? They make the
5 finding that you comply with laws, ordinances,
6 regulations, and standards, what we call LORS. And I
7 think that you could easily grapple with does a particular
8 siting case impede, comply with some policies or
9 standards. I think that is one analysis that is
10 appropriate that you do, but that you keep that out of the
11 second part of the analysis, which is, does the project
12 result in any impacts, either cumulative, or direct
13 impacts. So on the LORS Analysis, the LORS that currently
14 exist would be things like the loading order, and things
15 of that nature, things like AB 32 and an established
16 program. So I think that modeling would not be necessary
17 from my perspective to determine whether or not you can
18 make those findings. I think you can make those findings
19 by substantially relying on other agencies that also make
20 those findings, as we heard from the PUC in the case of an
21 investor-owned utility, that the PUC makes the findings
22 that projects that ultimately get the contract are
23 approved in the LTPP, those projects are consistent with
24 the loading order. And I think maybe you can rely on
25 that. And we can talk more about the LORS issue. I want

1 to get to the next one which is from a CEQA perspective.
2 I think -- and maybe someone on the panel can correct me
3 here -- I cannot envision a power plant before the Energy
4 Commission that would not fit into the roles identified in
5 the report, and I think that, while we cannot quantify how
6 much GHG net benefit there is, I think the report
7 concludes that there would be a net GHG benefit, and I do
8 not think for purposes of CEQA it is necessary for you to
9 quantify if you are going downward, or if there is no
10 significant impact. So in the cumulative section, it is -
11 - is there an impact that is cumulatively considerable. I
12 think the report bore out that natural gas-fired power
13 plant in front of the Energy Commission is very likely to
14 meet those roles, and if it meets those roles, every one
15 of those roles, I think, results in a net reduction. So
16 from my perspective, what I would not like to have to do,
17 and I do not think it would add very much value, is to try
18 to model how much of a benefit in a particular siting
19 case. So I would propose that you could rely on this
20 report and integrate it into the analysis that your staff
21 does on cumulative impacts for GHG, and that this report
22 provides a really good basis for concluding a project that
23 is consistent with the loading order. And one way you
24 could find that is the project either has a contract, or
25 is likely to have a contract for the investor-owned

1 utilities. We do know, and I think it is well understood
2 that there is no merchant generation in the state anymore,
3 so I think that there is a way for you to help rely on
4 what the CPUC has done and to rely on this report to
5 fulfill both of those findings. So with that in mind, I
6 do not think that additional modeling is necessary. It
7 would be informative and it may be -- in another forum, it
8 may be important for you to know exactly how much
9 reductions we are getting, but I think for CEQA, I do not
10 think we need to quantify it.

11 COMMISSIONER BYRON: Are you sure, Mr. Galati,
12 there are no merchant plants in the state anymore?

13 MR. GALATI: Not one that will operate. I do not
14 believe that somebody would come to you at the Energy
15 Commission now, even if they were to propose a merchant
16 plant, and you were to permit it, that they would be able
17 to finance it, build it, and operate it. I do not know
18 how they would do so. And I would defer to my colleague
19 at Calpine, but I do not know how anybody could do that
20 today.

21 COMMISSIONER BYRON: So I may be wrong, but I
22 thought there are still merchant plants operating in the
23 state. And we do, indeed, have at least one application
24 before us that is without a power first agreement.

25 MR. GALATI: Yeah and, again, I do think that --

1 and I am not saying that there are not merchant power
2 plants operating in the state, what I am talking about is
3 anybody coming to you now with an application, or somebody
4 before you right now. I do not see how anyone is going to
5 be able to finance a project and actually build it and
6 operate it without a contract. So some people wait until
7 they have a contract before they come to you, and some
8 people may choose not to wait until they have a contract
9 before they come get a permit. But I think it has been
10 borne out by how many projects you have licensed that did
11 not get built because they do not have a contract.

12 DR. RYAN: I generally am in agreement with your
13 assessment of the market, I mean, there are other people
14 here who are more qualified to speak to that, particularly
15 the gentleman sitting at my right, so I will let him do
16 that, but I want to go back to the other remark that you
17 made about modeling and really reinforce that point, I
18 mean, particularly based on, again, the experience that we
19 had at the Public Utilities Commission and the Sunrise
20 Power Link case where an effort was made in the modeling
21 there to try to quantify the greenhouse gas impacts
22 attributable to that transmission line. I just think that
23 what you are trying to measure when you are talking about
24 an individual power plant, or an individual transmission
25 line, within the context of the entire western grid, what

1 you are trying to measure is so swamped by all the other
2 sources of variation within the region, and is so driven
3 by the other assumptions that you make, that I really
4 think it is a complete exercise in futility. And I would
5 definitely discourage you from going down that road on
6 individual siting cases. It is a different story when you
7 do modeling at the system level, you know, as we did
8 jointly last year and as we will ask the utilities to do
9 in the context of the long-term procurement plan where you
10 say, you know, "What is the cumulative effect of this
11 overall investment program that we are asking you to
12 undertake?" That is a meaningful exercise, but looking at
13 individual plants and transmission lines, I think, you
14 learn nothing that you can have any confidence in.

15 MR. JASKE: So you are distinguishing between
16 modeling for planning purposes and modeling for individual
17 power plants --

18 DR. RYAN: Yeah, for siting purposes, yes.

19 MR. JASKE: Mr. Barmack?

20 MR. BARMACK: Yeah. No, I agree with Scott's
21 characterization. I mean, nothing is getting built
22 without a contract. There are existing plants that do not
23 have contracts.

24 COMMISSIONER BYRON: Mr. Barmack, would you mind
25 pulling the microphone a little closer to you, that way we

1 can hear you.

2 MR. BARMACK: Yeah, sure. Can you hear me now?

3 COMMISSIONER BYRON: Pull it a little closer.

4 Thanks.

5 MR. BARMACK: I was just agreeing with what Scott
6 said, that I am not aware of any merchant plants that are
7 being built now. But there are existing plants without
8 contracts and, just picking up on something Julie said,
9 you know, I am concerned that sort of this modeling that
10 might take place in the siting process would slow down a
11 process that is already pretty slow. And I realize each
12 plant is kind of idiosyncratic, but I would just point to
13 the example of our Russell City plant. I mean, that was
14 procured originally through PG&E in its 2004 long-term RFO
15 and, you know, knock on wood, we hope it will come on line
16 in 2012. So, you know, I could easily see this sort of
17 more modeling in the siting process, delaying that by, I
18 don't know, a year.

19 COMMISSIONER BYRON: Well, I was not here in 2004,
20 but the implication is that that is all the permitting
21 process for --

22 MR. BARMACK: No, it is not obvious -- it is not
23 all the permitting process, but we do not -- we are not
24 looking for new delays.

25 MR. JASKE: Mr. Minick.

1 MR. MINICK: Like Robert said, and I agree with my
2 U.C. friend over here now, modeling for the sake of an
3 individual unit probably has no value whatsoever. I have
4 been modeling for 25 years at Edison and it is almost
5 logical and easy to say that if you are adding a new plant
6 that has a better heat rate than any of -- than some of,
7 or all of the existing plants, it is going to lower GHG
8 emissions, it always does. But the effects are so small
9 for individual plants, especially if they are small, that
10 you will be lost in the minutia of all the numbers that
11 your model is going to spit out and they spit out billions
12 of numbers. So I agree with you that, looking at system
13 changes over time are much more valuable than looking at
14 individual units. The other thing you have to remember
15 is, for we long-term planners, is we cannot forecast the
16 future that well. I have been trying to do it for 25
17 years. In 1984, I used to forecast oil at \$100 a barrel,
18 but you did not get there until a few years ago, correct?
19 My forecast was totally wrong, okay? We cannot forecast
20 the future that well, so when you are looking at this
21 modeling, you are going to have to take a look at
22 different scenarios and say, okay, is there any major
23 change to these scenarios because we simply cannot
24 forecast 10, 20 and 30 years out there.

25 DR. RYAN: Well, I mean, the last thing I would

1 add is, the one circumstance I can envision in which at
2 least the last two of MRW's findings would not hold is, if
3 we do have unrestrained load growth, you know, then if you
4 make the system -- if the system is becoming more
5 efficient over time, it does not matter if the system is
6 also becoming bigger. And the point of that is just that
7 we have to keep our eyes on the right ball, and the right
8 ball is actually energy efficiency targets, as well as the
9 RPS.

10 MR. JASKE: Well, I want to jump in here and ask
11 Mr. Minick's perspective on electrification coming in here
12 because, depending on how one reads the question, net GHG
13 emissions may well decline as transportation and fuels, or
14 industrial fuels are replaced by electrification. That is
15 -- the dimension of this that we suspect is coming,
16 perhaps we are even fairly sure it is coming to some
17 degree, and the degree and the pace are very unknown.

18 MR. MINICK: I agree.

19 MR. JASKE: Okay --

20 MR. BEEBE: Bud Beebe from SMUD. I will note that
21 I think one of the things that we really were
22 understanding here, but maybe I will just try and say it
23 out loud, is that studies and documents like an IEPR are
24 temporal to a context extent, and things can change over
25 time. An individual siting procedure is done in a

1 particular time, and once the decision is reached -- a
2 power plant can happen or not -- but you can make that
3 decision, I think, quite comfortably within a well
4 constructed policy document like a well constructed IEPR
5 because the IEPR should recognize that power plants have
6 life time, sometimes very long, other times maybe not so
7 long. But the planning process has to understand the
8 lifetime of projects, as well as all the other
9 characterizations that go into place, but the siting
10 process itself is a significant one-time only sort of a
11 piece that happens, that causes other things to happen.
12 Rapping this all up, I am saying that I have a comfortable
13 feel, I believe SMUD has a very comfortable feel, that the
14 life-time of natural gas installations for an existing
15 brown field, or an existing site, is such that, for the
16 time span of interest up through 2050, for instance, you
17 could comfortably pay off a capital asset that is a
18 natural gas generation asset within that time, much
19 shorter than that time. So we should not worry too much
20 about adding capital assets to the existing ability to
21 service load as long as the greenhouse gas piece and the
22 emissions piece locally do not get out of hand, and are in
23 keeping with the general document. But your document is
24 going to get re-done and re-done and re-done, and you need
25 to be able to develop a changing view as you go further

1 down the line. At some point, natural gas that produces
2 greenhouse gas emissions, as a new source, will no longer
3 be an acceptable thing to do. But that is pretty far in
4 the future. The question you need to think about is, can
5 I say now that a natural gas-fired power plant in an
6 existing brown field, it can go away, and there should not
7 be any whiners by 2050. But at some point in the future,
8 your policy document has to recognize that you cannot add
9 any more of those. We are not at that point here -- not
10 anywhere close. So I think we can all take comfort in
11 that.

12 MR. JASKE: Okay, let's move to question 6. And
13 perhaps it is an opportunity for Dr. Ryan to elaborate on
14 her remarks this morning about the various roles that gas
15 plants can play, and to say how it is that the PUC's
16 procurement process weeds itself to an assurance that
17 generating resources with those qualities actually gets
18 contracted for and developed?

19 DR. RYAN: So in my remarks this morning, I talked
20 about two intertwined processes that we pursue at the
21 Commission, the resource adequacy process, and then the
22 long-term procurement planning process. And I indicated
23 that, in the resource adequacy process, though, the focus
24 of it is short-term resource adequacy, month ahead and
25 year ahead showings. It is also the venue in which we

1 identify load pockets which require where either resources
2 are required specifically in the load pocket to assure
3 local resource adequacy or areas that are candidates for
4 new transmission or, arguably, in my ideal world, areas
5 which would be a focus of developing demand-side
6 resources. So out of that process which is a
7 collaborative process with the Energy Commission and the
8 ISO, comes information about these local resource adequacy
9 needs. You know, we are in the midst of working, again,
10 with the Energy Commission and the California ISO to
11 address additional needs, constraints, resulting from the
12 once-through cooling issue, as well as the priority
13 reserve issues, so those are other examples of localized
14 constraints that need to be addressed in utilities plans.
15 So turning now to the long-term procurement process that
16 is a bi-annual process in which the utilities develop ten-
17 year plans. We start with -- it essentially a top-down
18 process that begins with a determination of a system-wide
19 need, or the net short there, so we take into account what
20 is already in place at the system level, what do we
21 anticipate getting in terms of added energy efficiency and
22 renewables, CHP demands our management over that 10-year
23 planning horizon, and then that tells us what the residual
24 system need is. We also factor in the information about
25 local resource adequacy and other localized restraints.

1 And that is really the basis, those provide the elements
2 of the plan, or the problems, so to speak, that the
3 Utilities are then asked to solve as they develop their
4 plans and their proposed portfolios, as those are really
5 their preferred approach or approaches to addressing -- to
6 solving that problem with feeding your system-wide need,
7 while also addressing all the various localized
8 constraints, so that is what the plan is. So when they
9 come forward with their plans, the Commissions will, at
10 that stage, just say, okay, is this plan for each utility
11 -- have they checked off all the boxes? Have they
12 addressed all the considerations that need to be addressed
13 here? If the plan is approved by the Commission, then it
14 provides the basis for the Utilities to go out and conduct
15 their RFOs and find resources to fill in all those various
16 gaps, whether that is combined cycle for system need, or
17 some sort of localized solution in a low pocket, or an
18 area affected by a once-through cooling retirement. So it
19 is really -- then they are going to come back with the
20 individual applications in the case of new generation or a
21 new long-term contracts, they are going to come back with
22 the individual applications for those resources, and that
23 is the stage at which the Commission then asks the
24 question, "Is this consistent with the plan that we
25 approved some time ago?" I mean, it is also an

1 opportunity for the Commission to say, "Has something
2 changed since we approved the plan that we now have to
3 take into account?" And Commissioner Boyd, that, to some
4 extent I think goes to your question of this morning
5 about, you know, are we always sort of fighting the last
6 war, or can we keep abreast of developments. So that is
7 the process by which we work out how do they put the right
8 resources in place to meet both their system needs and the
9 localized needs and -- and this is critically important --
10 and that what they are, you know, the new fossil resources
11 that they are acquiring are only as much as they
12 absolutely need, that they have maximized the loading
13 order resources first; this is really the framework in
14 which to do that.

15 MR. JASKE: I think, if I am remembering
16 correctly, it was the fall of '07 that the ISO released
17 its 20 percent renewable integration report and has not
18 yet finished its 33 percent, so in that -- I am
19 speculating that it is yet for the PUC to tackle. Maybe
20 it will happen in this next LTPP cycle, the need for
21 flexible operating characteristics or perhaps the amount,
22 the magnitudes of them needed. But that is going to be
23 one of the next developments of the LTPP process.

24 DR. RYAN: Right. Dave, do you want to comment on
25 the timing and then I will say a little bit more about

1 what we intend to do with it?

2 MR. HAWKINS: Yeah, we are really just getting
3 underway with the 33 percent detailed study now with all
4 the scenarios. The issue for us, of course, is there a
5 common set of resources, types of resources that we are
6 going to need, about whether it is high solar, high wind,
7 whichever the scenario is, and, if so, then it is easy to
8 come back and say, "Yes, we need some degree." The
9 problem has not been qualitative, but we certainly have
10 pretty good ideas qualitatively what there should be in
11 the resource adequacy mix, it has been the quantitative in
12 how much to do you need, do you need 1,000 megawatts of
13 acres or 500 megawatts of acres. That is what we are
14 trying to answer with those questions, by the end of the
15 year.

16 DR. RYAN: Yeah and one thing that makes that hard
17 to answer is, of course, we do not know when these various
18 types of renewable resources will actually shovel off
19 because of challenges and siting, financing, so on and so
20 forth, so that changes, exactly when and how we would
21 expect that change is exactly when and how the Utilities
22 will want to put resources on their system to accommodate
23 those renewable resources. Oh, I was going to say
24 something about just what we plan to do with this
25 information, so that the 33 percent RPS report that the

1 Commission's energy division released a couple weeks ago
2 is a preliminary -- is labeled a preliminary report, which
3 is kind of an indirect way of saying it is a draft, but it
4 is also kind of an interim product and what we envision is
5 that there will be a final report that may include some
6 changes to what we have already released. But more
7 importantly that that final report will incorporate the
8 findings from the ISO's 33 percent integration study so
9 that the updated estimates of the cost of doing
10 integration and information about the types of resources,
11 or what is new or different about what resources we would
12 use would be included in that report, as well. And it is
13 also important to note -- and I think I may have said this
14 already, but the 33 percent RPS report is basically an
15 offshoot of this cycle of the long-term procurement
16 planning process, the modeling work, and so on, is also
17 under pending long-term procurement, and so therefore, by
18 extension, that is kind of the vehicle for inclusion of
19 the ISO's work on 33 percent integration.

20 COMMISSIONER BYRON: If I may, and Ms. Ryan, I
21 asked you this last week, your report is based on the
22 entire state, not just on the three IOU's, correct?

23 DR. RYAN: The report is based on the entire
24 state, but the long-term procurement planning process will
25 not be for the entire state. It will peel off the

1 Utilities' systems.

2 COMMISSIONER BYRON: Okay, likewise, the ISO -- is
3 yours for all service territories? Or just your service
4 territory?

5 MR. HAWKINS: Ours would be just our service
6 territory.

7 COMMISSIONER BYRON: How do you bring them
8 together?

9 DR. RYAN: Well, I think the IOU service
10 territories add up to the ISO service territory, more or
11 less.

12 MR. MINICK: [Inaudible]

13 COMMISSIONER BYRON: Say that again, please, Mr.
14 Minick.

15 MR. MINICK: Oh, I think the IOUs are about 85
16 percent of the total state requirements. It is not -- we
17 have done some studies both in the statewide basis and on
18 a [inaudible] basis. We are helping the ISO and we are
19 working with them on the ISO's integration study because
20 we have capabilities that we are making available to them.
21 And, as you said, the LTPP will come out with some
22 recommendations. In the past, the LTPP told us in the
23 last LTPP that they will buy up to 1,700 or 1,800
24 megawatts of resources. We had a solicitation, we got
25 people to look at it, we did our own internal evaluation,

1 we came up with about 1,700 and 1,800 megawatts, most of
2 them peakers, with combined cycle and [inaudible], so we
3 did our homework. We figured out what would best fit our
4 resource needs in the long-term and we awarded bids that
5 we thought would meet the kind of operations we would
6 anticipate by 2020. I mean, we go out in 2020 when we do
7 our analysis.

8 DR. RYAN: But I was talking -- and a good
9 example, and this may not be the most recent solicitation
10 -- maybe it was the round before, but one of the projects
11 that PG&E brought to the Commission was a plant in
12 Humboldt using reciprocating engines.

13 MR. MINICK: PG&E -- I am Edison.

14 DR. RYAN: Oh, you are Edison, sorry. Okay, PG&E.
15 All right, but this is a good example because this was a
16 local reliability project and, I mean, and at this stage,
17 I think it is correct that we did not really provide
18 direction in the long-term procurement proceeding about
19 local reliability requirements, but that they had been
20 already surfaced in the resource adequacy proceeding. So
21 when PG&E came to us with the results of their RFO, they
22 said one of the things we are buying is this plan at
23 Humboldt with the restocks (phonetics) because it deals
24 with our local RA issue and this is a particularly
25 appropriate technology for the needs in this area, and you

1 all can elaborate on that. And that is an example of why,
2 I think, we want to be careful not to be too proscriptive;
3 we would not want to just say, "Well, you know, build this
4 kind of plant," but it is more like, "These are the local
5 reliability problems that you have to solve. Come give us
6 the best, and most creative, and most cost-effective
7 solutions to that, that also fits within our environmental
8 criteria."

9 MR. ANDERSON: If I could add one thing that I
10 think is important on the process we go through, and Nancy
11 described it well, is the fact that we do go through it
12 almost on an every two-year basis. So we are not going
13 out, we are not setting one plan and saying, "Here is our
14 plan for the next 20 years. We are going to go do this."
15 We weigh out a plan, we determine what we need to do, we
16 get authority to do it, and for the most part, we are
17 adding new resources that are less than 10 percent of our
18 peak load, and maybe eight, something like that. We
19 execute on that, and then two years later, we say, okay,
20 what has changed? Do we need to move a little bit more
21 one way, or the other way, do we need a little bit more of
22 that kind of thing? So I think it is not a plan that we
23 go and execute, but it is a plan that we continually
24 update and move through. And I think that is the very
25 important element of what we are doing.

1 MR. JASKE: Perhaps we should ask Mr. Beebe how a
2 smaller integrated utility tackles these same challenges.

3 MR. BEEBE: With the publicly owned utilities, we
4 certainly do satisfy state policy and mandates for the
5 state of California. I think we have demonstrated that
6 adequately and we are doing a good job, for instance, with
7 the RPS. SMUD is arguably at 20 percent renewables at
8 this point and that fulfills a Board goal, a Board
9 requirement upon us. But, of course, it is also
10 reflective of state policy and we certainly abide also by
11 SB 1368 and the process put together at the CEC. So we do
12 it differently. It is not quite such a stepwise process
13 where you go from the load serving entity to the PUC in a
14 totally separate adjudication. We do not involve the
15 Board in our final decisions until we are pretty far down
16 the line, of course. But we can, because we are smaller,
17 we can be more adaptive and really, because of the nature
18 of locally owned, publicly owned utilities, we need that
19 kind of flexibility. We have very local requirements that
20 have to be maintained and we are in a very good position
21 to be able to do that, both for the rates piece, as well
22 as for all of the other pieces that need to be put
23 together. So, yes, we do long-term planning, yes, we are
24 interested in greenhouse gas, we are interested in state
25 policies and maintaining state policies as they are

1 reflected in our local jurisdiction, so hopefully that
2 does it.

3 MR. JASKE: So why don't we turn to question 7,
4 and start again with Dr. Ryan. You have given us some
5 sort of big picture about how the LTPP, then RFO process
6 works, so how are GHG emissions themselves factored into
7 either the planning or the RFO process?

8 DR. RYAN: Let me say with kind of a few quick
9 words about sort of history, then turn to the future. So
10 the idea of a GHG adder was something that the Commission
11 introduced about five years ago, where when utilities'
12 bids were being evaluated, bids from fossil plants would
13 be adjusted for evaluation purposes to -- and I think the
14 price was \$8.00 a ton based on projected GHG emissions to
15 basically create a bogey relative to other resources.
16 Obviously, all plants have to comply with any contracts,
17 or new plants have to comply with the emissions
18 performance standard. So those are the policies that we
19 already have in place, you know, in addition to is this
20 plan compliant with the loading order. Going forward, I
21 see us being more explicit on the GHG content of plant.
22 And so I actually think that you will see in the next
23 round of the long-term procurement proceeding that we will
24 actually be looking at the emissions associated with
25 overall portfolios, and looking to see what is the trend,

1 how are the bundles of resources that the utilities are
2 proposing and these various portfolios they put forward --
3 how do they perform in terms of the overall greenhouse gas
4 emissions on their systems? But I do not see, again, sort
5 of singling out greenhouse gas emissions from individual
6 assets or measures. It is really -- the approach that we
7 pursue is a portfolio approach and how do we move the
8 portfolio in the right direction.

9 MR. JASKE: Any of the IOUs care to speak to how -
10 - or to what extent at all GHG factors into RFO bid
11 evaluations?

12 MR. ANDERSON: Sure. And I think the key issue is
13 the portfolio approach. When we do it, we will take our
14 portfolio -- we will take the various bids, we will add
15 each one of those to our portfolio, and then we will look
16 at the total GHG of the portfolio and we do not go back to
17 that particular resource to see what it is because there
18 may be cases where, on a pound per megawatt hour basis,
19 someone that generates a little more GHG may actually fit
20 better with the portfolio and help us lower the total
21 portfolio, so we do look at it strictly on a portfolio
22 basis, not on a plant by plant basis.

23 COMMISSIONER BYRON: Dr. Jaske, unless you are
24 going somewhere, I would be curious to hear from the
25 developers' perspective if you are considering GHGs in

1 your activities?

2 MR. BARMACK: Sure. I will give you an answer
3 that is partially from a developer's perspective and, you
4 know, I also spent some time at PG&E, so I have sort of
5 been on both sides of our hybrid market.

6 COMMISSIONER BYRON: Well, they have two
7 individuals here to speak from --

8 MR. BARMACK: Okay. But, in general, new projects
9 now are being developed through bidding in the utility
10 RFOs, and generally what the utilities are procuring are
11 tolling agreements and so what we are selling is, you
12 know, the right for the utility to do whatever it wants
13 with our machine, within limits, and incur all the costs,
14 including emissions costs. So indirectly, GHG costs are a
15 consideration for us if we can sell, you know, the utility
16 -- a machine with a lower heat rate that is cleaner, we
17 should be able to get more money for that, but it is
18 generally the utility that is assuming the risk of GHG
19 costs, even with our machines once they are -- if they are
20 under contract to a utility, they are generally bearing
21 the emissions costs. So I do not know if that addresses
22 your question.

23 COMMISSIONER BYRON: Thank you.

24 MR. BARMACK: Sure.

25 MR. JASKE: For some reason that strikes me as at

1 odds with first deliverer, a GHG regulation perspective.
2 So as an owner of a bunch of generators that are under
3 tolling agreements with various LSEs, how is it that you
4 can reconcile the impending regulations from ARB that are
5 on you as the owner of the generator, whereas you are
6 describing the control over that plant being in the hands
7 of whoever you have a tolling agreement with?

8 MR. BARMACK: Well, I mean, obviously that issue
9 has huge financial implications and it is a very important
10 contracting issue, but it is addressed in contracts.

11 MR. BEEBE: As we -- as SMUD has brought out in
12 other forums at the ARB and at the Joint Commissions, when
13 they were considering greenhouse gas under AB 32, the
14 truth is that the consumer -- the point at which the
15 responsibilities of greenhouse gas for futures, the need
16 to keep costs low, the ability to understand the impact to
17 local infrastructure, these all come together at the LDC
18 level, and that is why it is so important in the AB 32,
19 and perhaps at the federal level, as well, to understand
20 that consumer protection can happen most -- or best -- at
21 the LDC level if the allowance allocation pieces value the
22 total piece that the LDC plays in developing our
23 generation and energy infrastructure, then we are all far
24 ahead. If you put the allowance allocation piece far
25 downstream at the consumer of the electricity, they often

1 have very little impact on the ability to understand what
2 kind of generation is going to be coming on. So what Matt
3 said is actually very correct. The utilities are still
4 the place at which the action happens, and that is why we
5 have to recognize that and assume that responsibility as a
6 part of our every day responsibilities -- and we do, in
7 our planning.

8 MR. JASKE: I think we are moving into question 8
9 here, so -- are there other things the IOUs want to say in
10 terms of how they are taking GHG into account in the RFO
11 design, and then the bid selection process?

12 MR. MINICK: Well, it is quiet, I will say
13 something. I am actually not involved with our
14 solicitation process, I am in long-term planning on the
15 procurement side of the business. But I do know that we
16 include an adder, in essence, over the solicitations. In
17 the long-term side of planning, we always look for GHG
18 emissions and that is our objective, is to meet all the
19 state goals and objectives, loading order in emissions,
20 the best and cheapest way possible. So we do take a look
21 at total emissions. Pricing them in the long-term
22 planning is not really something that we do. We have run
23 studies to take a look at potential price gaps in the
24 future, like \$23 or \$40 or \$50, and see how it changes our
25 dispatch, and how much it might change emissions. But,

1 again, I do not deal with the procurement side of it.

2 MR. ALVAREZ: Let me add from a PG&E side from my
3 experience also as a planner. We did in the last long
4 term plan include as a metric the portfolio emissions for
5 different plans under different scenarios, and I expect
6 that will be the case in the next long-term plan cycle.
7 And we expect solicitations, as Mark said, we do have --
8 we include an adder for CO₂ and that adder generally
9 reflects Commission direction, either prior decisions, or
10 the CO₂ adder that comes out of the market price reference,
11 you know, was it adopted recently in 2008?

12 DR. RYAN: And the only thing that I would add to
13 that is the observation that what is today an adder, which
14 is just used for bid evaluation purposes will, in the not
15 too distant future, be a real cost once there is a state
16 regional or federal greenhouse gas market in existence.
17 And then, I think, instead of the Commission -- the
18 Commission will be looking when it evaluates portfolios'
19 resource plans not just at, well, how does this proposed
20 plan perform on an environmental basis, but then it really
21 becomes a dimension of cost. And if we have a utility
22 that, for whatever reason, is assigning up contracts with
23 some new merchant plant, let's say, that is permitted by
24 this agency, that is generating lots of greenhouse gas
25 emissions, well, that is a financial risk or just an added

1 cost that they are bringing on to their customers, and so
2 we have one more angle to look at it. And I would expect
3 the Commission to do that.

4 MR. JASKE: Anything more anyone wants to add on
5 question 8? Okay, then let's move to question 9. At
6 least part of question 9 is dealing with the issue of a
7 power plant in front of the Energy Commission has certain
8 technical characteristics, you know, engineering aspects
9 that are not -- once they are known, they are not really
10 under question, but the roles identified in the MRW
11 Report, you know, sort of move in the direction of
12 identifying how it is going to operate, which of course
13 brings to bear the contractual side of whatever
14 arrangement there is between that power plant and the load
15 serving entity to which it is selling powers. So there
16 are a number of points here that have to do with how can
17 one understand the role from knowing the engineering
18 facts, as opposed to the contractual elements that ride on
19 top of that. So, Mr. Galati, do you have some thoughts on
20 this set of questions?

21 MR. GALATI: Yes. Going back to what I said
22 earlier, I think that it might be difficult for the Energy
23 Commission in an individual siting case to decide exactly
24 how a plant is going to operate, and then to ensure that
25 that plant operates exactly like that for the life of the

1 plant. But with all bad news, try to follow it with some
2 goods new, is you do know that a project that either has a
3 contract with an IOU, or will have a contract with an IOU,
4 has at least been subject to at least two reviews at the
5 Public Utility Commission that is consistent with the
6 long-term plan. So the long-term plan identified that
7 whatever the net short position was that was consistent
8 with the loading order, and the rest of the policies
9 described by Ms. Ryan earlier today, and then when a
10 particular contract comes back to the Public Utilities
11 Commission, there is also going to be that finding. So
12 from that perspective, I think that I really cannot think
13 of a role that is identified in the report that I could
14 not take one of our projects, either a PPA or an
15 individual project that would not fit that role. So I
16 think, once again, rather than trying to show that the
17 plant is going to play a particular role, I think the
18 report actually shows no need to do that. And I would
19 like to hear from anyone else on the panel who believes
20 there are roles that the plant would not be fulfilling, a
21 new gas-fired plant that would be large enough to come to
22 the Energy Commission, which those are the plants that we
23 care about in siting, wouldn't be fulfilling one or more
24 of the roles identified in the report. I cannot think of
25 a case where that would not be the case. So to put

1 evidence that we are fulfilling those roles, we certainly
2 can, but I am just not sure that that is that meaningful
3 to you. I think what we would probably do, we would love
4 to see this report finalized, or the IEPR finalized,
5 taking into account the long-term procurement plan process
6 that Dr. Ryan described, so that it would provide a basis
7 for you to rely on to then say that this plant is
8 consistent with the loading order, and it is the loading
9 order that is the fundamental basis behind all the
10 assumptions that get us to a net benefit.

11 MR. JASKE: So is another way of saying what you
12 just said that the Energy Commission can rely upon the PUC
13 LTPP and procurement process to, in aggregate, bring the
14 right amount of capacity forward? Because they will not
15 issue contracts, or they will not approve contracts for
16 more than approximately the right amount of capacity and
17 associated energy because they are, as Dr. Ryan said
18 several times, taking all the loading order preferences
19 into account in authorizing the amount of remaining fossil
20 capacity that each IOU is allowed to pursue?

21 MR. GALATI: Yeah. I agree with that statement
22 and I think that is consistent both with CEQA law and LORS
23 findings. It is common for the Energy Commission to rely
24 on another agency to implement the laws that it
25 implements, and it is also common from a CEQA perspective

1 for an agency to be able to rely on something within the
2 discretion of an agency, another agency. It is okay to
3 rely on an agency that they will do their job. And I
4 think that -- we advocated for a system-wide study, we
5 think this report is a great system-wide study, and we
6 think it bore out what we all intuitively thought.

7 MR. JASKE: Mr. Barmack.

8 MR. BARMACK: I just wanted to comment on what I
9 think Scott said. I am a little bit concerned that
10 forcing a developer to come with the CPUC approved
11 contract in hand to this commission for a siting
12 application might create problems in the utility
13 procurement process. I think there is sort of a chicken
14 and egg problem, and if you require people to have
15 contracts before they get sited, you might not have very
16 competitive procurement.

17 DR. RYAN: I am not sure Scott was advocating for
18 that. Were you?

19 MR. GALATI: Let me talk long enough and I promise
20 you that I will absolutely confuse everybody in the room.
21 No, that is not what I was advocating.

22 MR. BARMACK: Okay.

23 MR. GALATI: What I was advocating, though, is
24 that if you happen to have a contract, certainly the
25 Energy Commission could rely on that at this point. I am

1 also advocating that I do not think there would be an
2 independent power producer building a project without a
3 contract, and so the Energy Commission can rely on that
4 project will not operate. And it is the operational
5 emissions we care about. There are no emissions from
6 getting a license. It is the operational emissions and
7 that the Energy Commission, based on how procurement works
8 today, it results in the same thing -- you would have a
9 contract before you emitted greenhouse gas emissions.

10 DR. RYAN: I mean, that is the crux of the matter
11 is that I do not think you will see these plants
12 operating, plants that are sited here operating if they
13 do not ultimately get a long-term contract. Sometimes
14 they get a contract while they are still in the process
15 here; sometimes they are already permitted and they get a
16 contract; I mean, the stories vary, but I think that it
17 would be highly unusual to see an instance where something
18 was contracted here and operated on a merchant basis. The
19 other thing I really want to emphasize is that the
20 importance of really thinking through the potential market
21 power applications of any change in the siting process,
22 that in particular any change that limits the number of
23 plants that get sited. So, for example, if we were -- and
24 I do not hear anybody advocating for this -- but if
25 somebody came forward and did say, "Oh, well, I think you

1 should not even be able to go to the CEC to seek a permit
2 until you have got a contract from an IOU," well, that is
3 a perfect situation for a hold-up, a confiscatory re-
4 opener. So, I mean, that is not something we would want
5 to set up and you have also heard me stress that, in terms
6 of particularly local resource adequacy where you really
7 do have to be mindful of market power, we would like to
8 see the Utilities have as many viable options as possible
9 so that their customers do not get held up in those cases.
10 So we need to balance and we need to factor those
11 considerations and think them through very carefully.

12 MS. TEN HOPE: Can I ask a question? Much of the
13 discussion is focusing on how the LTPP process embeds the
14 loading order, energy efficiency was first, and then power
15 plants. I would like to hear some of the panelists
16 discuss how that is incorporated in the POU's, you know, go
17 through the LTPP process, they have the two levels of
18 review at the PUC that Scott was referring to, so the
19 assurances that the policy goals are incorporated is a
20 different process.

21 MR. BEEBE: Ms. Ten Hope, I hope this responds.
22 We have the long-term planning process ourselves and we
23 have several -- I think that is the right term --
24 departments within SMUD that are responsible for
25 fulfilling different parts of that plan, and it all comes

1 together, both at our Management and at the Board level.
2 And I think that is the right way to say it, we have
3 departments working on different parts of it. The plan
4 itself goes long-term in front of a specific acquisition,
5 whether it is a power purchase agreement, or a power plant
6 that we might decide to build ourselves, or any other
7 crazy idea, and then those all come together under
8 Management groups that make decisions, again, with full
9 understanding and accountability to the Board that we are
10 operating within state policies, within the Board's own
11 policies, as they have said, and state law, of course.
12 And then it goes to the Board. So I think that the
13 parallel process, while the lines of communication are
14 shorter, and not at arm's length, are fulfilled adequately
15 and with full understanding of the intent of how this all
16 works together, long-term planning, individual parts of a
17 publicly owned utility operating as they need to operate,
18 coming together in the pyramid of Management responsible
19 to the Board, and then Board consideration, and a fully
20 separate, but admittedly shorter communication path
21 understanding of individual acts of acquisition decisions.
22 So would that do it, do you think? Or was I missing
23 something there? That is our process.

24 MS. TEN HOPE: And that would be SMUD's process.

25 MR. BEEBE: Yes.

1 MS. TEN HOPE: It may or may not be duplicated
2 across the board.

3 MR. BEEBE: It may or may not be. Would you like
4 to have everyone else come forward?

5 MS. TEN HOPE: I do not think there is anyone else
6 that I --

7 MR. BEEBE: I think Scott is here, and Norm was
8 here earlier.

9 MR. GALATI: I will, just to make sure that it
10 does not look like, or appear that I threw our POU
11 brothers under the bus, because that was the intention,
12 but I can give you, Ms. Ten Hope, some real concrete way
13 to handle GHG emissions in a publicly owned utility
14 project, and that is what was done with the Canyon power
15 project. The preliminary staff assessment was out and the
16 FSA, I think, will be out in a month or so. But in that
17 case, there were very specific questions that staff asked
18 about why did you choose this technology, and what was
19 this technology for, and how does it fit into your
20 portfolio. And so those were answered and, for those
21 cases where there is not an LTPP, maybe it is appropriate
22 to ask some follow-up inquiry to find out how it does fit
23 into the overall portfolio plan. But I certainly think
24 that it would be more difficult for an independent power
25 producer who is going to deliver power under a power

1 purchase agreement to be able to answer the questions on
2 behalf of the investor-owned utility. That is why I would
3 suggest in that case you look to the PUC. But in the case
4 of a publicly owned utility, usually the people who are
5 the applicants are the people who can answer those
6 questions for you.

7 MR. BEEBE: I would generally agree with that. I
8 would note that the lumpiness factor in generation
9 acquisitions is always an issue, but the smaller the
10 utility, the more lumpy things get. So that is often
11 where very local considerations are very very important.

12 MR. JASKE: Okay, I think that probably brings us
13 to question 10, which is our last one, and it sort of
14 observes that the MRW Report says the power plants should
15 be looked at, you know, as part of a system, not stand-
16 alone facilities, and then poses some other settings where
17 the question is asked, is that same system perspective
18 being observed. So, Mr. Hawkins, that question asks about
19 the ISO's interconnection process. Is there a parallel
20 between how you examine a power plant in an inter-
21 connection request process, as a stand-alone, or through
22 its influence on the whole system?

23 MR. HAWKINS: Well, our current process is
24 basically looking at stand alone process with the
25 exception of some of the clustering that we are doing, so

1 we look at cluster studies and so forth for the plants.
2 Generally, we are looking at individual interconnection
3 issues, transmission upgrading issues per plant. There
4 are transmission studies that are done, or overall system
5 studies that are done, but it is looking at the impact of
6 individual plants.

7 MR. JASKE: Okay, and so would it be correct to
8 say that, because what you are doing there is looking at
9 sizing of the interconnection and its --

10 MR. HAWKINS: Impact on the transmission.

11 MR. JASKE: -- impact on the first point of
12 interconnection, that that is a focus that lends itself to
13 the stand-alone analysis, and a more generalized power
14 flow studies would be the setting, or you would look at
15 the generation coming down that pipe, and how it might or
16 might not affect the rest of the system.

17 MR. HAWKINS: That is correct.

18 MR. JASKE: Let the record show that he nodded,
19 apparently affirmatively. I think I know the answer to
20 this, but, Dr. Ryan, from the PUC perspective? Question
21 B?

22 DR. RYAN: I have to tell you, I do not actually
23 understand what is being asked in this question.

24 MR. BEEBE: Question B is a fully integrated
25 question, so you have to understand it in its totality.

1 DR. RYAN: We need an 18-month proceeding in order
2 to do that. Are you just asking, do we aggregate up
3 individual projects to get --

4 COMMISSIONER BYRON: Ms. Ryan, would you use your
5 microphone?

6 DR. RYAN: Thank you. Dr. Jaske, could you please
7 explain what you are getting at with this question?

8 DR. JASKE: Am I supposed to paraphrase this
9 question for you? I think this question means, when you
10 are establishing the net short situation of the utilities
11 and authorizing some portion of that to the IOUs, are you
12 then asking them to bring forward a portfolio of projects
13 that satisfy that, or conform to that authority?

14 DR. RYAN: Okay. I think what we really do is, I
15 mean, what we are going to be doing this time around, at
16 least, I think, is saying, bring us a whole portfolio that
17 meets your entire load, net of reductions from energy
18 efficiency and demand response, and then come and tell us
19 what you are going to use to fill in the net short. So I
20 think it is kind of a two-part answer.

21 MR. ANDERSON: Do you want me to give it a try?

22 DR. RYAN: Please.

23 MR. ANDERSON: I would say what comes out of the
24 long-term plans is the net short, which is really a
25 megawatt requirement, and a definition of the

1 characteristics that we want to have with those megawatts.
2 So it is not project specific, but it is more, yeah, like
3 San Diego, you are authorized to go and get 500 or 600
4 megawatts, and based on what you showed us that is in your
5 plan, we agree you need quick start peaking resources.
6 Okay, so it is kind of megawatt and what those megawatts
7 should look like. For another utility it might be you
8 need 2,000 megawatts, and based on what you have told us,
9 it is 1,000 megawatts of combined cycle and some peaking.
10 You know, it might be a mix of stuff. But I would say
11 normally the LTPP comes out with a quantity, and then what
12 should that look like. But it is not, "Bring us an exact
13 project that looks like this." We let the market then
14 solve that for us.

15 DR. JASKE: Mr. Minick.

16 MR. MINICK: And I will take that one step
17 further, Bob, to say that sometimes being that specific is
18 not beneficial to our procurement people. I will give you
19 a hypothetical. If we say we need 500 megawatts of
20 peaking resources, but we think it needs to quick start
21 and black start, and we are only going to use it for a few
22 short hours based on what we think the economics are, but
23 somebody brings us a project that is much cheaper for
24 energy, we might be able to take somewhat more of an
25 intermediate resource and it still might be a better

1 choice, and we take it to the PUC and say, "Look, based on
2 market conditions right now and prices, they bid this to
3 us, this is the best resource, fill this application." So
4 I would prefer not to have it so specific that I need an
5 exact megawatt of an exact type and an exact location,
6 which just destroys the market.

7 DR. JASKE: So you have come to the judgment that
8 this thing that fell out of the sky looked so good from
9 the perspective of how it fits into the whole system -- or
10 into your package of resources?

11 MR. MINICK: Yeah. Remember, we start with
12 justifying our need. We first go and say we have done all
13 the energy efficiency that we can reasonably do in a
14 reasonable length of time, we are meeting our RPS
15 requirements, Reasonable Portfolio Standard requirements,
16 we have met every other requirement for regulatory
17 purposes, and now we have this end result that something
18 is missing. How do we best fill this? I would love to
19 say, personally, that, hey, there is a solar plant out
20 here that is dispatchable, it has the statutory, it has
21 this, it has that, and it is cheap. Or, I have this
22 window that I have to fill, and now my job is to go out to
23 the market and say, "How can I best fill this to meet my
24 customers' needs for grid reliability and cost, and
25 meeting all the other objectives?"

1 MR. JASKE: To what extent would that process be
2 improved by better advance signaling about what that
3 package of needs are? Is RFO itself sufficient to provide
4 that signal? Or, you know, is there some packaging of the
5 LTPP results that would prospectively encourage developers
6 to be putting their thinking caps on and putting projects
7 together that do, in fact, have all those -- or more of
8 them than they would otherwise get through the RFO alone?

9 DR. RYAN: Well, but remember, I mean, the LTPP
10 has been proceeded by ongoing resource adequacy process
11 and so, you know, it is not a secret where the load
12 pockets are. It is not a secret where the once-through
13 cooling plants are, the ones that are, you know, the most
14 likely candidates for retirement? And so there are -- we
15 see developers all the time at the PUC coming by and
16 saying, "Have I got a project for you!" Or, actually, not
17 for me, but -- "Have I got a project for PG&E -- or Edison
18 -- that we would love them to buy, that is going to solve
19 all their problems." And so they are out there thinking
20 about ways to solve the problems and, you know, the LTPP
21 process provides some direction, but the point I am trying
22 to make here is that we try not to be anymore proscriptive
23 than we have to be in providing that direction, and then
24 that gets incorporated in the RFOs, and then the Utilities
25 are going to see what they get and they are going to think

1 -- so the developers are thinking creatively about what
2 they have to offer, and the utilities, you know, we expect
3 to think creatively about what they can do with it.

4 MR. MINICK: I think the developers that follow
5 the LTPP kind of know what is going on in our territory.
6 They know, you know, the ISO says I need 8,000 megawatts
7 locally and I have got 10, so with three retires, I am
8 going to need a thousand. I mean, that information is
9 there. And we say in our LTPP, "I am going to need some
10 black start, and I am going to need some ramp," and the
11 ISO is going to say, "We need so many megawatts of ramp,"
12 so if they put all the pieces together from the ISO
13 studies and some of the CPUC's studies, and our studies,
14 they are going to get a pretty good idea what is needed
15 out there.

16 MR. ANDERSON: I was going to say, I mean, any
17 developer, I think, that is surprised by a utility's RFO
18 is not a developer who is going to be in business very
19 long. I mean, Calpine is here, there are a couple of
20 other developers over here, I mean, they are at the ISO
21 every day, they are at your hearings every day, 33 percent
22 renewables is not a surprise. I mean, developers are out
23 feeling for the market and I think they have got a pretty
24 good feel for what the utilities --

25 MR. BARMACK: I will make a transparent plea for

1 something that I feel is -- yeah, some more explicit
2 pricing of some of these requirements so, you know, if
3 there is a real requirement for ramp, for example, well,
4 then maybe we will have energy prices that reflect that
5 constraint, or we will have ancillary services that serve
6 that constraint, or we will roll some ramp requirement
7 into a capacity market. But more explicit pricing
8 certainly would help.

9 MR. JASKE: One last question. So -- oh, I am
10 sorry.

11 MR. ALVAREZ: I do have -- I always thought the
12 ISOs include at the time of a long-term plan, and this
13 time particularly very important to get their input as
14 part of their integration work, the operating
15 characteristics and the amounts of resources that are
16 needed, to integrate different amounts and mixes of
17 renewable generation; so that information, I expect, will
18 be available to pretty much everyone. So it will be
19 available to developers and it will be very informative.

20 MR. JASKE: And just to circle that wagon, did I
21 hear you say you are expecting that study by the end of
22 this calendar year?

23 MR. HAWKINS: That is my current understanding of
24 the project plans. There always will be ongoing further
25 analysis and there will be more studies to be done in the

1 spring of next year, and some of the operational impacts,
2 but I think at least the project team's current plan is to
3 produce some type of a report by the end of this year.

4 MR. JASKE: Okay. So one last question probably
5 for you, Dr. Ryan. When the PUC is examining a particular
6 contract before it, what is it looking for? How does it
7 go about that?

8 DR. RYAN: I think we look at two main things.
9 The first question we ask is, is this contract consistent
10 with the plan? Did you go do what we told you to go do?
11 Did you bring us what we asked for? That is the first
12 part. And then the second part is, I guess, "Is that
13 still what we want?" Hopefully we ask that question
14 first, but, you know, has something happened that has
15 changed the needs? Has there suddenly been a dramatic
16 recession of the load growth that was not anticipated, do
17 we really need another power plant? Or something like
18 that. You know, I am being a little flip because it is
19 the end of a long workshop, but that is an opportunity to
20 reassess where things stand. And the last thing I would
21 say is that, I mean, we also look at do we think you got
22 the best deal and our staff knows what else was bid, and
23 is in a position in a position to make their own
24 assessment of whether they think this was the best choice
25 in terms of not just cost, but other performance aspects.

1 And, of course, there is also an important bid evaluator
2 who is doing the same thing. So that is how we do it.

3 MR. JASKE: Okay, concluding observations anyone
4 wants to make? Okay. I believe that brings us to the end
5 of our panel and I think next on our agenda is public
6 comment.

7 VICE CHAIRMAN BOYD: How about some concluding
8 comments from up here first?

9 MR. JASKE: Oh, I guess I did not ask that.
10 Questions from the --

11 COMMISSIONER BYRON: Go right ahead, Commissioner.

12 VICE CHAIRMAN BOYD: I am struggling. When I look
13 at the context of this hearing and greenhouse gasses and
14 gas plants, and the report, I am feeling pretty good about
15 the discussion today. But when I reflect on all the
16 discussions we have had about how everything is connected,
17 and how do we get input into decision-making process that
18 takes into account all these other things going on around
19 us, and how do we take into account things that are not
20 law or regulation, but have been suggested, let's say,
21 many times by the energy agencies as good energy policy,
22 but they are not quite in law? How do we get this taken
23 into account? Which gets all the way back to my earlier
24 question about the role of the LTPP and the dialogue we
25 had there, and actually just a few moments ago, Nancy, in

1 your answer where you said, "Did you bring us what we
2 asked for?" That suddenly -- the light bulb went on a
3 little bit in terms of a real key there for us is what you
4 ask for, and you are guided by the loading order which may
5 or may not be -- well, it is not stale, but it may need
6 some freshening in terms of other things have happened
7 that may affect the way it is written up now, or may need
8 to be added to the list. Maybe that is a way for there to
9 be mutual agreement as to what it is you ask for. And I
10 was listening to Bud trying to describe his process there,
11 and I interpreted it maybe wrong, but you were struggling
12 to, gee, we do not have an LTPP, but we have got this
13 process. I think you have got the better process, quite
14 frankly, in terms of simplicity -- a Board responding to
15 the community, you are smaller and what have you, but you
16 can get the policy down there pretty quick if the Board
17 reflects the community and tells you to do it, and you do
18 it, and it probably incorporates all the things that are
19 in law, and all the things that are in policy that your
20 people debate, that these might be good ideas that should
21 be embraced. I think, of course, there can be POU
22 exceptions to your approach to that, and we will not go
23 there. But then, you know, in the investor-owned utility
24 community where they have to reckon with the PUC and pay
25 some attention to policy that we talk about here, but do

1 not have as many teeth to enforce, and no offense meant,
2 but in this capitalistic society your Board of Directors
3 has many motivations. You want to be good citizens, you
4 want to reflect what is going on, but we need to make a
5 profit for the stockholders, and so on and so forth. So
6 it suddenly became key to me that what the PUC asks for is
7 very critical, and I guess we have to pay a lot of
8 attention to what it is you ask for and agree -- and
9 debate and try to agree on that you are asking for things
10 that there is fairly universal feeling needed to be asked
11 for because we talked about all these other things today -
12 - once-through cooling, that is a just a regulatory thing
13 that will have to be -- that is easy to put a handle on
14 and everybody can translate that to something. The air
15 quality issue in the South Coast is a little more mushy
16 and harder to deal with in terms of how to deal with it
17 because people are not going to admit, "I can't build this
18 plant yet because I don't know whether I'm going to get
19 offsets or not. So should I jump in with an RFO or not?"
20 And then there are the other things, you know, we talk
21 about a lot, well, T&D improvements could maybe offset
22 generation, and, oh, gee, energy storage -- is that a T&D
23 thing? Or is that a generation substitute thing? And we
24 say storage may be good and, oh, we want to get rid of all
25 those old inefficient plants somehow or another. Is the

1 profit incentive enough to make sure that decision gets
2 made? Or can we marry it with the once-through cooling,
3 etc. etc. I am just showing you the size of the puzzle
4 that we sit here and look at from up here. And I am sure
5 the PUC does somewhat the same sometimes, but I trust our
6 motivations are pretty much -- pretty similar. Anyway, I
7 am just saying with respect to what we talked about today
8 in this hearing notice, I think we have done a good job in
9 dealing with greenhouse gasses and the role of gas. But
10 when we put it in the context of everything else, it is
11 still a difficult thing, and maybe we have stumbled over a
12 few things that will help us work with our sister agencies
13 in guiding what it is that gets asked for, in the first
14 place, to meet the various goals and objectives. So that
15 is not really a question, unless anybody wants to respond
16 to it. It is just kind of I got a lot and I turned over a
17 lot of mental rocks at the same time, and there are
18 problems under them, as usual.

19 DR. RYAN: Commissioner Boyd, may I make one --

20 VICE CHAIRMAN BOYD: Please, please.

21 DR. RYAN: You know, I have been kind of
22 struggling for the right analogy to describe our agencies'
23 prospective roles in this context and I think maybe I have
24 stumbled on one that at least makes sense to my adult
25 brain, let's see what you think. But when you talk about

1 sort of when I said, "Did you bring us what we asked for,"
2 in a sense, I mean, it is important to remember the point
3 I have been stressing all day long which is that, you
4 know, we really look at the fossil procurement as a
5 residual, you know, how do you comply with it -- have you
6 gone as far as you can on energy efficiency, have you gone
7 as far as you can on RPS, on CHP, and so on and so forth.
8 And if we do, indeed, march down those paths, as we have
9 stated as a matter of policy, and increasingly as a matter
10 of law in California, you know, then for fossil plants, it
11 is really like a game of musical chairs. There are going
12 to be more and more chairs going away. You all, as the
13 permitting agency, do not make chairs; what you do is sort
14 of invite people to the party by giving permits and I
15 guess the view that I have been trying to express today is
16 that, as long as we keep the chairs going away, it does
17 not really matter how many permits you give out because
18 there are only so many chairs they can sit in; if they are
19 left standing up, they do not get to emit. So whether
20 there are 10 extra permits, or 10 permitted plants that
21 never get a contract, or 50 permitted plants that never
22 get a contract, it does not make any difference in terms
23 of the overall emissions because the overall emissions are
24 determined by the number of chairs that are still out
25 there.

1 VICE CHAIRMAN BOYD: That is a good point, except
2 the agencies are probably incapable of permitting 10 extra
3 chairs.

4 DR. RYAN: So I understand that also, entirely,
5 but in any event that is kind of how I sort of integrate
6 the whole picture.

7 MR. BEEBE: And if you do get a project sited, you
8 can sit there forever.

9 DR. RYAN: No, your chair might go away.

10 MR. BEEBE: The chair can go away even if you are
11 sitting on it, yeah. And people going forward need to
12 have good clear understanding of what state policy is in
13 regards to that. I mean, you see, rather unbelievable to
14 us, but you see people on the East Coast just now
15 beginning to permit coal plants and to build coal plants,
16 and we hope they are doing that with the full
17 understanding of the fact that it should be a very
18 temporal situation in the world we live in.

19 COMMISSIONER BYRON: Well, Dr. Jaske, I think we
20 have exhausted this panel and I would like to thank you
21 all very much for being here for the entire day and
22 providing input. It is a subject that we will need to
23 revisit some more. I think we have got some public
24 comments to follow and that will be the finish. But I
25 would like to thank you and excuse you. I hope you will

1 stay for the last few minutes. I do not require blue
2 cards. I think the staff does it so we get a sense of how
3 many folks are here to comment, but I always open it up to
4 everyone that wishes to comment. I have one blue card
5 from a gentleman from the Indiana Energy Producers -- no,
6 I am just kidding, it is Mr. Jan Smutny-Jones from the IND
7 Energy Producers.

8 MR. SMUTNY-JONES: Rushed in from Gary, Indiana.
9 But I do not plan on singing Music Man, which is good for
10 all of you. Thank you very much. I am Jan Smutny-Jones.
11 I am the Executive Director of the California Independent
12 Energy Producers who have been around since about -- not
13 me, personally, but our organization has been around since
14 1982, and have been deeply involved in a lot of these
15 issues and we are actually early supporters of these from
16 an industry perspective, of AB 32, because we represent
17 basically 80 percent of the renewables here in California,
18 as well as a large portion of the gas load with the
19 expectation that natural gas, of course, was going to be
20 one of the tools used to have the state address its global
21 climate change goals. And so we are in general agreement
22 with what we have seen in the report. But I wanted to
23 kind of speak today on a couple of things to sort of set
24 how we are looking at this in the longer term and I assume
25 we will be interacting with the Commission maybe at

1 greater length on this. And the first one of these is
2 sort of to recognize the realities of our resource mix in
3 California, and I do not think this is generally
4 understood by most folks, but the fact of the matter is
5 that we are precluded legally from building any new
6 nuclear power plants, and so that is not in our future.
7 By way of SB 1368, a few years ago, we are largely
8 precluded from purchasing any new coal resources until, of
9 course, they meet the standard that is based on a combined
10 cycle turbine. There does not appear to be a significant
11 amount of large hydro available to the state, either in
12 state or out of state, which pretty much leaves us to
13 energy efficiency, which I do not think anybody is really
14 disputing here, but from a generation perspective, it is
15 renewable and it is gas, and the state does have a 20
16 percent renewables standard, which we have supported in
17 the past. We have not been able, as a state, to move off
18 of the dial, we are at 11 percent now, we were at 11
19 percent six years ago, and --

20 COMMISSIONER BYRON: Actually, we are making a lot
21 of progress earlier, Mr. Smutny-Jones, that the economic
22 downturn will likely significantly improve the numbers.

23 MR. SMUTNY-JONES: If we can count on tanking the
24 economy permanently, we have solved lots of problems. But
25 I will let you deliver that message to the Governor. We

1 will be right behind you, Commissioner, do not worry about
2 it. At any rate, you know, we are faced with what we are
3 faced with here. Obviously, the state does have a loading
4 order which I think people generally recognize. But over
5 the last couple of years, we have been deeply troubled by
6 the natural gas suddenly now turning into the new coal.
7 And that is certainly something that has caused us a great
8 deal of concern. Our view of this is that the competitive
9 process here in California has done a lot to clean the
10 system up, that in fact the competitive process, which is
11 generally driven by efficiency in lowering the heat rate,
12 basically commercialized the combined cycle generation
13 that you see today, and has really driven technology in
14 the gas world and elsewhere. So we view the competitive
15 process as being an integral part of all this, and so we
16 need to be very careful as we move forward in terms of
17 determining how all of this fits into our climate change
18 analysis, and needs analysis, and all these other things,
19 and how it affects basically the competitive process. I
20 do not think we want to be determining winners and losers
21 ahead of that schedule by way of a regulatory process, so
22 we are deeply trouble by that. Obviously, and there was a
23 discussion here earlier today on the role of once-through
24 cooling, which this has been a topic of this Commission
25 for 15 years, at least, in terms of retiring a set of

1 plants that are out there. And if, in fact, the
2 competitive pressure is put on plants, they begin to
3 retire, get backed out, and there is plenty of data that
4 shows that that is actually how the system operates. We
5 obviously run into this priority reserve problem where
6 people seem to believe that we can just automatically
7 back-fill this with renewable resources on land that we
8 cannot develop, and transmission lines that have not been
9 built. So this is a very real problem and a problem of
10 public expectation, again, in terms of what our resource
11 mixes are. So I think it is very clear that natural gas
12 is obviously needed to back out, a significant amount of
13 that out-of-state coal that is out there today, it
14 basically is necessary to integrate, and I think reports
15 suggest that, suggest intermittent resources. Obviously,
16 it is required to provide for local reliability
17 requirements, which I think are very clear. And, as I
18 said earlier, I think as we build newer more efficient gas
19 plants, they back out older less efficient gas plants and
20 that is all for the good. So in kind of summing this all
21 up, I think we are obviously -- we think the report is
22 generally a pretty good cut at the role of natural gas and
23 its impact on climate change. We have generally supported
24 the Commission's observation that we ought to be looking
25 at the impact of the new gas plant and siting on the

1 overall system, and I just want to leave you with the
2 final thing, that there is a significant number -- I
3 represent all 45 companies and they, you know, they are
4 competitors, they would like to knife each other, and the
5 reality is that they want to build here in California, and
6 we just need a set -- I think people believe that, as
7 California adopted climate change goals, what that meant
8 was that they were going to build new renewables and they
9 were going to basically use gas to back out less efficient
10 not only traditional fossil generation, but coal, as well.
11 And so I think it is very important for this state to
12 continue to send that signal that we are actually looking
13 for people to invest private capital in terms of building
14 the infrastructure here. Thank you.

15 COMMISSIONER BYRON: Thank you very much. Thanks
16 for your comments. Is there anyone else that would like
17 to comment in general terms, or in response to any of the
18 discussion from the earlier panel? Do we solicit WebEx?
19 Maybe we should go back to that here. You have to raise
20 your hand. Commissioner Boyd, would you like to make any
21 comments?

22 VICE CHAIRMAN BOYD: I am through, thank you.

23 COMMISSIONER BYRON: Well, I will be very brief.
24 I am encouraged from this workshop and the comments that
25 we received today, that we may indeed have the right

1 analysis in front of us and it may serve the purpose for
2 which it is intended. I am a little bit concerned,
3 though, that we did not have some of the parties here that
4 I think could have provided some of the additional, let's
5 say, countervailing argument or points. I think from the
6 order instituting information that we conducted a couple
7 of workshops earlier, we know there are some who argue
8 that there is a threshold of zero for GHG, and that all
9 new power plants are subject to this kind of threshold and
10 analysis. Clearly, we need to balance the law that we
11 have before us in terms of AB 32, with the laws of
12 physics. I appreciate very much the work done by the
13 contractor, the staff, and all those that are here today.
14 I do not think we are done with this subject. We will
15 begin to investigate it on individual power plant siting
16 cases probably in the not too distant future. But I
17 think, for today, this was a very successful workshop. I
18 would like to thank you. And we are adjourned.

19 (Whereupon, at 3:10 p.m., the workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, TAHSHA SANBRAILO, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Joint Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of July, 2009.

Barbara little