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BEFORE THE  
ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA

In the matter of,	)	
	)	Docket No. 15-IEPR-06
	)	
2015 Integrated Energy Policy	)	
<u>Report (IEPR)</u>	)	

**LEAD COMMISSION WORKSHOP ON  
RENEWABLE PROGRESS, CHALLENGES, AND OPPORTUNITIES**

CALIFORNIA ENERGY COMMISSION  
FIRST FLOOR, ART ROSENFELD HEARING ROOM  
1516 NINTH STREET  
SACRAMENTO, CALIFORNIA

MONDAY, MAY 11, 2015

10:00 A.M.

Reported By:  
Kent Odell

**CALIFORNIA REPORTING, LLC**  
52 Longwood Drive, San Rafael, California 94901 (415) 457-4417

## APPEARANCES

### Commissioners

Chair Robert Weisenmiller, Lead Commissioner for Electricity and Natural Gas

Andrew McAllister, Lead Commissioner 2015 IEPR

Karen Douglas, Lead Commissioner for Siting, Desert Renewable Energy Conservation Plan, and Compliance and Enforcement

David Hochschild, Lead Commissioner for Renewables

### CEC Staff Present

Suzanne Korosec, Deputy Director, Renewable Energy Division

Heather Raitt, Manager, Integrated Energy Policy Report (IEPR)

Angela Gould, Lead, RPS Verification and Compliance Unit

Kevin Barker, Chief of Staff to Chair Weisenmiller

### Presenters/Panel Members Present

Keith Casey, Vice President, Market and Infrastructure Development, California Independent System Operator

Scott Murtishaw, Energy Advisor to President Picker, California Public Utilities Commission

Dennis Peters, California Independent System Operator

Laura Wisland, Union of Concerned Scientists

Manal Yamout, Advanced Microgrid Solutions

Steven Kelly, Independent Energy Producers Association

Graham Beatty, Poseidon Water

Christen Blum, Pacific Gas & Electric

Jennifer Kelly, PacifiCorp

APPEARANCES (CONT.)

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52 Longwood Drive, San Rafael, California 94901 (415) 457-4417

Presenters/Panel Members Present (Cont.)

John Dennis, Director of Power System Planning and Development, Los Angeles Department of Water and Power

Tim Tutt, Government Affairs Representative, Sacramento Municipal Utility District

Tanya DeRivi, Director of Government Affairs, Southern California Public Power Authority

Scott Tomashefsky, Regulatory Affairs Manager, Northern California Power Authority

Tony Andreoni, Director of Regulatory Affairs, California Municipal Utilities Association

Chari Worster, ORA

Claire Halbrook, Pacific Gas & Electric Company

Daniel Kim, Westland Solar Park

Nancy Rader, California Wind Energy Association

Peter Miller, National Resources Defense Council

Rachel Gold, Large Scale Solar Association

Obadiah Bartholomy, Sacramento Municipal Utility District

Also Present

Ray Tingle, Sierra Club

Jan Reed

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

2 MAY 11, 2015

10:00 A.M.

3 MS. RAITT: Welcome to today's IEPR Commissioner  
4 Workshop on Renewable Progress, Challenges, and  
5 Opportunities.

6 I'm Heather Raitt, the Program Manager for the  
7 IEPR.

8 I'll begin by going over the usual housekeeping  
9 items. Restrooms are in the atrium. A snack room is on  
10 the second floor, at the top of the stairs.

11 If there's an emergency and we need to evacuate  
12 the building, please follow staff to Roosevelt Park,  
13 which is across the street, diagonal to the building.

14 Today's workshop is being broadcast through our  
15 WebEx conferencing system and parties should be aware  
16 that you're being recorded.

17 We'll post the audio recording on the Energy  
18 Commission's website in a few days, and a written  
19 transcript in about a month.

20 We have a full agenda today and I'd like to ask  
21 the speakers to please limit your presentations to the  
22 time allotted. This will help make sure that we can get  
23 through all the material and that all the speakers have  
24 the time they need.

25 At the end of the discussion of 50 percent



1 renewables target, and at the end of the day there will  
2 be an opportunity for public comments. We're asking  
3 parties to limit their comments to three minutes so that  
4 the maximum number of participants have an opportunity  
5 to speak.

6 We'll take comments first from those in the  
7 room, followed by people participating on WebEx and,  
8 finally, from those who are phone-in-only.

9 For those in the room who would like to make  
10 comments, please fill out a blue card and give it to me.  
11 When it's your turn to speak, please come to the center  
12 podium and speak in the microphone. It's also helpful  
13 to give the court reporter your business card.

14 For WebEx participants, you can use the chat  
15 function to tell our WebEx coordinator that you'd like  
16 to make a comment during the public comment period, and  
17 we'll either relay your comment or open the line at the  
18 appropriate time.

19 For phone-in-only participants, we'll open your  
20 lines after hearing from the in-person and WebEx  
21 participants.

22 If you haven't already, please sign in at the  
23 entrance to the hearing room. Materials for this  
24 meeting are available on the website and hardcopies are  
25 on the table at the entrance.

1           Written comments on today's topics are due May  
2 26. The workshop notice explains the process for  
3 submitting comments.

4           And with that, I'll turn it over to the  
5 Commissioners for opening remarks.

6           COMMISSIONER MC ALLISTER: Well, great. Thank  
7 you, Heather.

8           My name is Andrew McAllister. I'm the Lead  
9 Commissioner on this IEPR this year, also over energy  
10 efficiency here, at the Commission.

11          And we have a great agenda. I want to thank  
12 staff and everybody for all their input on it. It's  
13 going to be a really action-packed day.

14          I see some familiar faces in the audience and I  
15 know you're going to contribute lots of substance to  
16 this, both today and in your comments.

17          In general, the word to describe renewables  
18 these days is kind of wow. So much going on, so much  
19 innovation, so much economic feasibility improvement.  
20 And just opening up all sorts of potentials for helping  
21 us get to our long-term goals on carbon intensity and,  
22 yeah, our overall energy goals, both in the energy grid  
23 and just be across that into the transportation sector,  
24 and across our economy, really.

25          So, really transformative, potentially, and I

1 think we're seeing that in actuality.

2 I want to thank our -- everybody here, up at the  
3 dais, and just introduce everybody. At least give  
4 them -- they'll each have an opportunity to speak. But  
5 just thank the ISO, Keith Casey is here with us, and  
6 Scott Murtishaw, from the PUC.

7 So, I want to thank our sister agencies for  
8 coming and really helping us unpack this complex and  
9 very interesting topic.

10 Commissioner Hochschild, who is the lead on  
11 renewables, and Commissioner Douglas whose also very  
12 interested in this, and has been working, doing  
13 incredible work on the DRECP, as many of you know.

14 So, all of us are going to be very interested in  
15 the conversation here as it unfolds today, and beyond,  
16 as we put together the IEPR document, itself.

17 So, just raising it up to 50,000 feet or so, the  
18 context here, obviously, is our three big goals that the  
19 Governor announced earlier this year, 50 percent of our  
20 electricity sources from renewables, half of the  
21 petroleum used for transportation, cars and trucks, and  
22 doubling the impact of our energy efficiency efforts.

23 And those three goals really are kind of the  
24 triumvirate of goals that we have, that are all  
25 necessary. Maybe the holy trinity, maybe we should call

1 it, that are all necessary. Three legs of the stool,  
2 pick your metaphor, I guess, but they're all necessary  
3 to get us to where we need to go. And renewables is  
4 really critical to that.

5 So, as we move forward, I would just ask  
6 everyone to think integration. That's obviously going  
7 to be one of the, if not the major themes today, how can  
8 we really scale up and make sure that those electrons  
9 behave themselves, and get to where they need to go.

10 You know, as far as I know, the laws of physics  
11 still apply, so that hasn't been innovative. We pretty  
12 much know what those little guys are going to do, and  
13 they're pretty predictable, and they have been, and  
14 that's unlikely to change.

15 So, we just want to make sure that the grid can  
16 operate reliably well and provide the level of service  
17 that we're used to, as we scale up and look for the best  
18 opportunities, and deploy them in the most economic  
19 fashion.

20 So, I want to thank all of our panelists sort of  
21 preemptively, and really great set of minds on this  
22 topic today, and looking forward to everyone's comments  
23 going forth.

24 And I think I will pass it to Commissioner  
25 Hochschild, for his opening comments, if you have any.

1 Great.

2 COMMISSIONER HOCHSCHILD: Thank you,  
3 Commissioner McAllister. So, just at a high level, I  
4 think it's worth noting there's nothing about the  
5 challenge of getting to 50 percent renewables that's  
6 outside the realm of a solvable problem.

7 What we're doing is achievable. It's complex,  
8 but it's achievable. And a lot of people said we  
9 couldn't get to 20 percent, or 33 percent. And we're,  
10 you know, at 25 percent now, and fully contracted to get  
11 to 33 percent.

12 And our challenge is how to keep this progress  
13 moving forward, as friction-free as possible.

14 Many of you kind of heard my manifesto on  
15 renewables before, but just to reiterate, the goal of  
16 what we're doing, in my view, is more than just carbon  
17 reduction. It's also to incubate the clean energy  
18 economy of the future and create that market certainty  
19 that helps grown the industry.

20 And we're seeing this, obviously, with electric  
21 cars, and solar, and wind, and so many other  
22 technologies that have their birthplace in California,  
23 and have been spreading rapidly around the country and  
24 the world. And so, I think there's a lot we can all  
25 feel proud of. And it's important that we just keep

1 going and keep the collaboration, as well, which I think  
2 has been excellent between all the agencies.

3 So with that, I'll turn it over to my colleague,  
4 Commissioner Douglas.

5 COMMISSIONER DOUGLAS: Hi, good morning,  
6 everyone, welcome to the Energy Commission. And thank  
7 you to Commissioner McAllister and the staff team for  
8 organizing this workshop.

9 I'll just make a couple brief comments. You  
10 know, we are at the early stages, still, of what is  
11 going to be a very significant, very major  
12 transformation of our energy sector, and electricity  
13 sector.

14 And we have already achieved levels of renewable  
15 energy in a timeframe that would have seemed almost  
16 unbelievable even five, six, seven years ago. So, we  
17 are building on a record of tremendous success. We're  
18 seeing continued innovations, continued changes,  
19 continued surprises and huge, you know, yes, challenges,  
20 but huge opportunities looking forward.

21 And so I think my interest, as I listen to this,  
22 and all that we have teed up for us to hear about, and  
23 consider, and public comment today is a couple things.  
24 It's to get this perspective on challenges and  
25 opportunities, as they're being teed up for us at this

1 moment, in this workshop. And also, to reflect on how  
2 we move forward, take advantage of these opportunities,  
3 while also realizing that the really amazing visions in  
4 front of us are something that we need to build towards.

5           You know, we don't have the magic wand to make  
6 everything happen at once, so what is the strategy, how  
7 do we move forward to achieve this reality in a way that  
8 makes sense, and keeps the lights on and, you know,  
9 continues to focus on reliability, and speed of  
10 transformation, and getting to these big and incredible  
11 opportunities.

12           So, really interesting. I'm looking forward to  
13 hearing from everyone today.

14           COMMISSIONER MC ALLISTER: Great, thank you very  
15 much.

16           I wanted to point out that Chair Weisenmiller  
17 hopes to be here later, but had a conflict at the  
18 beginning here. But we'll hope to have his presence in  
19 a little bit, later this morning.

20           Next, I want to go to Keith Casey, VP at the  
21 California ISO.

22           MR. CASEY: Thank you, Commissioner McAllister.  
23 First off, thank you for including the ISO up here at  
24 the dais. Appreciate the opportunity. And it's a very  
25 interesting agenda and I look forward to the

1 presentations on this.

2           You know, when you look at the Governor's goals  
3 for 2030, we really are set to really lead the world on  
4 renewable energy and carbon reduction strategies.

5           And that's pretty exciting. And it also comes  
6 with a lot of responsibility because we have an  
7 opportunity to really show the world how to do this the  
8 right way, rather than be a poster child for how not to  
9 do it.

10           And as we address the challenges and think about  
11 the strategies for how we achieve these very aggressive,  
12 but very doable goals, we should be thinking about how  
13 can we do this in the most reliable, cost-effective  
14 manner to the benefit of all the ratepayers here in  
15 California.

16           And when I think of that, I think of two key  
17 themes that I think needs to be part of that strategy.  
18 One is the value of regionalism. You know, when you  
19 look at climate changes, in general, and strategies for  
20 dealing with them, it goes beyond California, obviously.  
21 And I really feel that we are at a juncture where we  
22 really need to be thinking about how we can achieve our  
23 policies, taking advantage of the diversity that's out  
24 there, across the west. Both in terms of the renewable  
25 resources, as well as the integration resources that are



1 out there. And I think there's untapped potential there  
2 that we really need to get after.

3           The other theme is when you talk about the three  
4 50s, the 50 percent renewable, 50 percent reduction in  
5 petroleum, doubling energy efficiency, again the target  
6 here is bringing down greenhouse gases. And we need to  
7 think about how those goals, in each of those sectors  
8 interact with each other. Because I think there's a lot  
9 of potential to tap carbon reduction strategies in other  
10 sectors, like transportation, to actually leverage that  
11 to help with the integration challenges we have in the  
12 electricity sector.

13           But doing that really requires taking a more  
14 holistic approach to these policy initiatives, and  
15 understanding the interactions, and adapting as we go  
16 along. Because we're going to learn as we go along.  
17 And we don't want to be locking in overly-prescriptive  
18 policies that in the end turn out not to be the best  
19 solution. We have to take things in incrementally, and  
20 learn as we go along.

21           So, those are just a couple of themes I'll throw  
22 out there. And, like I said, I really appreciate the  
23 opportunity to be here, and look forward to the  
24 presentations and discussions.

25           COMMISSIONER MC ALLISTER: Thanks a lot, Keith.

1           And finally, last but not least, Scott  
2 Murtishaw, who's in President Picker's Office, over at  
3 the California Public Utilities Commission. Thanks for  
4 being here, as well.

5           MR. MURTISHAW: All right. And thank you, and  
6 to everyone else at the Energy Commission for inviting  
7 us to participate.

8           Part of the theme of today's workshop is not  
9 just challenges, but progress that we've made towards  
10 meeting the 33 percent RPS target so far.

11          And people who followed the investor-owned  
12 utilities' data know that to get to 33 percent, it has  
13 really not been that painful. Any predictions of  
14 doomsday, and lack of reliability, or loss of  
15 reliability have just not come to pass.

16          We have San Diego Gas & Electric already having  
17 38 percent renewables under contract by 2020. And  
18 they're saying they're at 33 percent this year. The  
19 other utilities are well on their way to 33 percent by  
20 2020. And, in fact, if you acknowledge that they can  
21 bank any excess RPS credits, or RECs prior to 2020,  
22 they're really there today.

23          So, getting to 33 was relatively easy. Fifty  
24 percent, though, from the modeling that we've seen, does  
25 represent a sort of step change in the challenges of

1 integrating those renewables, and the possible costs,  
2 and potentially threats to reliability.

3 Keith Casey mentioned the fact that regionalism  
4 is a valuable on electric grids, and the introduction of  
5 the energy imbalance market is a step in the right  
6 direction. And other balancing authorities have  
7 expressed interest in joining, as well.

8 I think further efforts to expand coordination  
9 between balancing authorities, or even integrating  
10 balancing authorities would greatly simplify the  
11 challenges in front of us.

12 There was also a very recently released study,  
13 from Lawrence Berkeley Lab, about strategies for  
14 preserving the value of renewables. And it looked  
15 separately at wind and solar.

16 And what it found overall is that two things  
17 really stand out in terms of preserving the value of  
18 solar, in particular. Storage, of course, and we all  
19 know that storage technologies are beginning to take off  
20 under PUC-driven programs, like the Self-Generation  
21 Incentive Program, and our storage procurement targets  
22 that exist as a separate target for all of the investor-  
23 owned utilities.

24 And the other was real-time pricing. Which to  
25 me it's a little frustrating that some utilities, like

1 Georgia Power, have had real-time pricing for large  
2 commercial and industrial customers for decades. I  
3 think it's time to take a serious look at real-time  
4 pricing for at least larger customers in California.

5 And with the growing prevalence of electric  
6 vehicles and even home storage devices, like Tesla's  
7 recent announcement, you know, I think that even at  
8 least making that available to residential and small  
9 commercial and industrial customers is something that we  
10 need to get started on right away.

11 Finally, I would just say, as we get to 50  
12 percent or beyond sometimes tough choices have to be  
13 made about reliability. And as some of you may know,  
14 President Picker issued an alternate decision that would  
15 approve the Carlsbad Energy Center. He would approve  
16 500 megawatts of gas-fired peaking resources.

17 And it's obvious that fast-ramping gas can help  
18 integrate more renewables. And whether they're  
19 absolutely necessary or not is debatable.

20 But it's also important to keep it in  
21 perspective. The 500-megawatts of peaker plants, and by  
22 definition they would have low-capacity factors, would  
23 contribute about 0.1 percent to the State's greenhouse  
24 gases on an annual basis.

25 So, if that's something -- you know, we think

1 may be necessary to preserve liability, especially in  
2 liability-constrained areas, sometimes those are hard  
3 choices that have to be made.

4 That's really all I have to say. I look forward  
5 to hearing everyone's comments and learning about  
6 everyone's ideas for moving to 50 percent and beyond.

7 COMMISSIONER MC ALLISTER: Great. Well, thanks  
8 for being so concrete, everybody, and we've gotten the  
9 agenda ten minutes ahead, which is very -- yeah, how  
10 about that? That's an uncommon occurrence, I think. At  
11 least in IEPR's that I've lead. I don't know what that  
12 means.

13 So, I'll kick it back to Heather and Suzanne.

14 MS. RAITT: Yeah, so our first speaker is  
15 Suzanne Korosec, the Deputy Director for the Renewable  
16 Energy Division. Thanks.

17 MS. KOROSEC: Good morning, everyone. Welcome,  
18 happy Monday.

19 Today I'm going to report on progress that's  
20 been made on recommendations and action items from the  
21 Energy Commission's Renewable Action Plan, which was  
22 adopted as part of the 2012 IEPR update, in February of  
23 2013.

24 So, the Action Plan built on some analysis in  
25 the 2011 IEPR to identify the main challenges facing

1 renewable development in California. And based on that  
2 analysis, the 2011 IEPR came up with five overarching  
3 strategies to support renewables.

4           These were identifying high-priority areas in  
5 the State for renewable development, evaluating the  
6 costs and benefits of renewable projects, reducing the  
7 time and cost of interconnection and integration,  
8 promoting incentives for renewables that created in-  
9 State jobs, and in-State economic benefits.

10           And, finally, coordinating state and federal  
11 financing and incentives programs for critical stages in  
12 the renewable development continuum, including research,  
13 development, demonstration, pre-commercialization, and  
14 then deployment.

15           So, the 2012 Renewable Action Plan built on  
16 these five strategies and identified 31 specific actions  
17 that needed to be taken.

18           Since we have such a full agenda today, I'm  
19 keeping this at a very high level, not a lot of detail.  
20 And, also, we did not do an exhaustive analysis of all  
21 of the activities over the past couple of years that  
22 have been done in support of these recommendations.

23           So, if it appears I've missed something that's  
24 important, please include that in your written comments  
25 for the workshop, and for our colleagues at other

1 agencies. If there's something your agency is doing  
2 that affects these recommendations, please contact me  
3 and let me know about that, so that we can make sure  
4 that we include that in our record.

5 So, starting with strategy one, which was to  
6 identify preferred areas for renewable development. The  
7 recommendations included working with local governments  
8 and utilities to include renewable DG in their planning  
9 processes.

10 Coordinating with local governments to develop  
11 preferred zones for renewables of all sizes and  
12 technology types, not just distributed generation.

13 To broaden the Energy Commission's electricity  
14 planning process beyond 2020, to look at the  
15 implications of renewable targets higher than 33  
16 percent.

17 And continuing efforts to develop renewables on  
18 State properties.

19 Recommendation one proved to be very timely.  
20 Since that was put into place, we've had several  
21 initiatives that have been launched to identify  
22 preferred areas for renewable development.

23 Assembly Bill 327 was signed in 2013. It  
24 requires the IOUs to file distribution resource plans  
25 that identify the best locations for DG, from a utility

1 perspective. That will help developers to understand  
2 the higher value places to put their projects.

3 And the PUC's also published a guidance document  
4 for preparing these plans, which have to be filed by the  
5 IOUs by July of this year.

6 CALISO has started a yearly process to identify  
7 available deliverability for DG projects. And the IOUs  
8 are posting renewable option mechanism maps that help  
9 project developers see potential project sites. The map  
10 show areas on the facility system that either do or  
11 don't have capacity for DG, which helps developers see  
12 how expensive a project might be, and how long it might  
13 take to get interconnection.

14 To help build a bridge between utility planning  
15 and local land use planning, the Energy Commission is  
16 working on a distributed energy resource pilot study.  
17 The goal there is to show developers how expensive --  
18 excuse me, better coordination between utility and local  
19 planning processes can make markets for distributed  
20 resources more effective.

21 And, finally, the Energy Commission has  
22 published several reports on the location-specific value  
23 of renewable DG projects. Two that are on the Energy  
24 Net Simulation tool, which helps to identify low-impact  
25 interconnection sites. And one that looks at whether



1 locating projects in certain areas can reduce utility  
2 system costs and impacts.

3 Recommendation two was to identify renewable  
4 zones of all sizes and types. The priority was to use  
5 the existing built environment, first, following by  
6 areas with minimal environmental or habitat value, such  
7 as marginal or impaired ag lands.

8 So, this was really meant to build on experience  
9 we got through the DRECP. And to begin by identifying  
10 zones in the Central Valley because of the economic  
11 disadvantages in that area, and also because of the  
12 opportunity to repurpose ag lands.

13 We've made some good progress on this  
14 recommendation. Obviously, the largest effort has been  
15 the DRECP, the unprecedented coordination between  
16 utilities, local governments, other State agencies and  
17 various stakeholders, which has allowed development  
18 zones to be created in the DRECP area.

19 The Energy Commission staff have been using  
20 datasets from the DRECP to develop and make overlays for  
21 environmental screening for statewide projects.

22 The Energy Commission is also working on a study  
23 of the San Joaquin Valley as a gateway to expand the  
24 DRECP work to other regions of California.

25 And the Energy Commission has also provided

1 about five and a half million dollars in grants to local  
2 governments, through the Renewable Energy and  
3 Conservation Planning Grants Program, to develop general  
4 plans and zoning ordinances that help to develop  
5 renewable resources.

6 Recommendation three targeted the need for  
7 planning efforts beyond 2020, given the need -- excuse  
8 me, the interest in higher renewable targets, and the  
9 uncertainty about continued operation of the State's  
10 nuclear plants, both of which proved a bit prescient.

11 Some of the analysis going on in this area, we  
12 have the Pathway Study, which was commissioned by the  
13 Energy Agencies and the Air Resources Board. It was  
14 completed in January. There was some updated  
15 information posted in April.

16 This included multiple scenarios to evaluate a  
17 range of possible 2030 GHG emission reduction targets,  
18 on our way to meeting the 2050 GHG targets.

19 That study found that it's possible to reduce  
20 GHG emissions from 26 to 38 percent, from 1990 levels,  
21 by 2020, using more energy efficiency, more renewables,  
22 electrification of buildings and vehicles, and reducing  
23 the carbon content of liquid fuels.

24 The CALISO's 2015-2016 transmission planning  
25 process is looking at several renewable portfolios for

1 2030, including one that specifically models a 50  
2 percent RPS. And this analysis is expected to begin in  
3 August of 2015.

4 And the DRECP is continuing to look at future  
5 scenarios, including potential central station renewable  
6 development in 2014, in the DRECP area.

7 Number four was on renewables on State  
8 properties. In 2011, we issued a report called  
9 Developing Renewable Generation on State Properties. It  
10 recommended a goal of installing 2,500 megawatts of  
11 renewables on State properties, with targets along the  
12 way of 833 megawatts by 2015, and 1,666 megawatts by  
13 2018.

14 And this was based on an inventory of potential  
15 at State properties, State lands, and properties with  
16 potential for wholesale generation.

17 However, according to the Department of General  
18 Services' Renewable Energy Directory, there's about 43  
19 megawatts of renewables installed. We've got about 8  
20 megawatts in the pipeline. So, clearly, we have a very  
21 long way to go.

22 The majority of the installed and planned  
23 projects are less than a megawatt in size, so this  
24 indicates we might be needing to focus more on using  
25 large properties, with potential for wholesale

1 generation to achieve that 2,500 megawatt goal.

2           Next is strategy two, which was to maximize the  
3 value of renewables by appropriately assessing benefits  
4 and costs. So, areas where we saw the need for  
5 improvement were in the RPS procurement process,  
6 residential rate design, improving the transparency of  
7 renewable generation costs, and making the connection  
8 between renewables and transportation electrification to  
9 encourage EV charging at key times.

10           So, for recommendation number five, under this,  
11 there's been some progress on the POU procurement side  
12 as a result of the requirements that POUs adopt and  
13 implement renewable resource procurement plans for the  
14 RPS. And that they procure enough eligible resources to  
15 meet their RPS targets.

16           Also, CEC staff have found, in general, that the  
17 POUs have improved their planning for and acquisition of  
18 renewable generation.

19           There's been less progress on some of the  
20 actions that were identified under this recommendation,  
21 particularly that RPS procurement by the IOUs and POUs  
22 should consider a wider variety of integration, like  
23 integration costs and benefits, interconnection costs,  
24 ability to provide reliability services, geographic  
25 diversity and technology diversity.

1           The PUC did release -- excuse me -- did evaluate  
2 RPS procurement reform, starting in October 2012.  
3 Released a decision in November 2014, on the 2014 RPS  
4 procurement plans that adopted findings related to  
5 certain elements of RPS procurement. But it didn't  
6 really address the items that we had identified in our  
7 Action Plan.

8           Also, under the new RPS OIR, that opened in  
9 February, the PUC is considering proposed revisions to  
10 its RPS calculator to include, among other things, an  
11 integration adder, which is consistent.

12           For recommendation number six, on residential  
13 rate restructuring, the PUC will be considering a  
14 proposed decision in the residential rate reform  
15 proceeding, I believe at the May Business Meeting. I'm  
16 not certain.

17           After tiered rates are flattened to be simpler  
18 and more consistent with the underlying cost of service,  
19 customers will then be offered time varying rate  
20 options, along with some marketing and education to help  
21 them understand and respond to those new rates.

22           The tier flattening is supposed to begin in  
23 2015, and the IOUs are going to propose default time of  
24 use rates by 2018, that will take effect in 2019.

25           Recommendation seven was to improve the

1 transparency of renewable generation costs. We've made  
2 some progress on that as it relates to distributed  
3 generation. The CEC's doing a study on how the costs of  
4 renewable DG vary based on location. And our ongoing  
5 distributed energy resource pilot study, that I  
6 mentioned earlier, is looking at the value of DG, and  
7 other distributed resources in helping to meet State  
8 policy goals.

9           However, we still need additional work on the  
10 action item to improve the CEC's data collection  
11 process, to really better track available, publicly  
12 available information on the costs of recently-built  
13 renewable projects.

14           Recommendation eight recognized the importance  
15 of electrifying the transportation system to meet our  
16 GHG reduction goals, but also the benefit of encouraging  
17 EV charging during times of low load, and high wind  
18 energy, to help increase the value of wind energy.

19           The recommendation also emphasized the need for  
20 transportation electrification in disadvantaged  
21 communities because they often face disproportionate  
22 impacts from burning fossil fuels.

23           So, there's been quite a bit of progress on this  
24 recommendation. These are some of the projects we are  
25 funding. Since the plan was adopted, our Alternative

1 and Renewable Fuel and Vehicle Technology Program has  
2 awarded close to \$40 million for plug-in electric  
3 vehicle infrastructure. This includes charging  
4 stations for multi-unit dwellings, workplaces, and  
5 highways.

6 And this slide is specifically awards made by  
7 the program that are in environmentally high risk  
8 communities, or areas with environmental justice  
9 indicators, for charging infrastructure at transit  
10 sites, hospitals, apartments and community associations.

11 The program has also awarded more than \$30  
12 million for electric trucks and buses in sensitive port  
13 areas, some of the projects highlighted here.

14 In the 2015-16 Investment Plan for the program,  
15 we did eliminate funding for some of the light-duty EV  
16 deployment because there's been a large amount of  
17 greenhouse gas reduction funding that's been given to  
18 the Air Resources Board for their Clean Vehicle Rebate  
19 Project, and that's covering the light-duty area.

20 We've also made progress on the action item to  
21 develop greater links between planning for renewable  
22 energy, distribution system, and ZEVs, and also to  
23 support the U.S. Department of Defense's work on  
24 vehicle-to-grid demonstrations.

25 In May of 2014, the CEC published the California

1     Statewide Plug-In Electric Vehicle Infrastructure  
2     Assessment, with the assistance of NREL. We've also  
3     completed ten regional plug-in electric vehicle planning  
4     grants. And our staff meet monthly with each of the  
5     planning regions to coordinate and help them with  
6     lessons learned.

7             The Alternative and Renewable Fuel and Vehicle  
8     Technology Program also held solicitations for  
9     Alternative Fuel Readiness Plans, and ZEV Readiness,  
10    with 24 awards, totaling more than five and a half  
11    million.

12            And our R&D division is managing a contract to  
13    co-fund a vehicle-to-grid demonstration project by  
14    USDOD, which is scheduled for completion in March of  
15    2016.

16            So, strategy three, as you can see by the number  
17    of recommendations under integration and  
18    interconnection, were really some of the major  
19    challenges we identified in the 2011 and 2012 reports.

20            These were divided into three categories,  
21    transmission interconnection, distribution  
22    interconnection and grid level integration.

23            So, starting with recommendation nine, this was  
24    to consider environmental and land use factors in the  
25    renewable scenarios that are used in procurement and



1 transmission planning.

2           The Energy Agencies has been working closely to  
3 identify areas in the State with high renewable  
4 potential, and relatively low environmental conflicts,  
5 as well as areas that are very sensitive that we want to  
6 avoid.

7           The Energy Commission's working with the PUC,  
8 and the ISO, and other agencies to identify  
9 environmental issues with new projects. We're involved  
10 in analyzing the most appropriate areas for generation  
11 and transmission to coordinate and streamline renewable  
12 project permitting.

13           We've recommended that environmental and land  
14 use information, that we got from the DRECP, should be  
15 incorporated into the renewable scenarios that are being  
16 used in the PUC's Long-Term Procurement proceeding, and  
17 also the CALISO's transmission plan process.

18           And the Energy Commission is working with the  
19 PUC on inputs into the RPS Calculator, and the potential  
20 to include environmental or land use screens.

21           In the 2014 IEPR update, we recommended that the  
22 State should improve the ability to perform landscape  
23 scale analysis. And we're working with local State and  
24 Federal partners, and other stakeholders to look at the  
25 available data and develop the ability to do this kind

1 of analysis.

2 This is focused on outside of the DRECP area.  
3 It includes the Western U.S., and potential  
4 international partners that are in the Western  
5 Interconnect. And this work is going to continue under  
6 the 2015 IEPR.

7 For recommendation number ten, the 2013 IEPR  
8 listed 17 transmission projects that we were tracking,  
9 that would help with renewable integration. Since then,  
10 CALISO has approved two more major transmission projects  
11 in the 2013-2014 Transmission Plan.

12 So, of the 17 projects in the 2013 IEPR, four  
13 are now operating. One was removed from the list. And  
14 with the two new projects, we're now tracking 14  
15 projects.

16 CALISO's 2014-15 Transmission Plan did not  
17 identify any need for any new transmission projects to  
18 support the 33 percent RPS, given the projects that are  
19 already approved or going through the CPUC process.

20 Recommendation 11 was streamlining transmission  
21 permitting. We held a workshop at the CEC, as part of  
22 the 2013 IEPR, in May of 2013, to talk about the lack of  
23 synchronization between renewable generation and  
24 transmission planning.

25 And the workshop participants felt that the

1 CALISO's generator, interconnection, and deliverability  
2 allocation procedures, and the annual transmission plan  
3 process really represent a big improvement in how new  
4 policy-drive transmission projects are identified.

5 But because these processes don't guarantee that  
6 transmission will be built by the time the generation is  
7 commercially available, the 2013 IEPR did recommend that  
8 the Energy Agencies evaluate the cost effectiveness, the  
9 prudence, and alternatives for requiring full  
10 deliverability for future renewable generation to meet  
11 RPS requirements.

12 The PUC's RPS Calculator proceeding is  
13 conducting a special scenario for the CALISO to use in  
14 its 2015-2016 Annual Transmission Plan that will address  
15 the 50 percent RPS portfolio by 2030.

16 And because it's important to consider  
17 environmental information early in the transmission  
18 planning process, to help identify transmission  
19 corridors that can be permitted, the Energy Commission  
20 funded a consultant report to look at the environmental  
21 feasibility of transmission alternatives that are being  
22 considered by the CALISO to address reliability, and  
23 other issues as a result of the San Onofre closure.

24 The report did find that most of the  
25 transmission projects being considered will face serious

1 challenges in their land use permits.

2 Moving on to distribution interconnection,  
3 recommendation number 12 was to address the lack of  
4 transparency in utility distribution planning processes.

5 Some progress on this recommendation. The  
6 utilities will be filing the Distribution Resource Plans  
7 by July of this year, as I said, as part of the AB327  
8 proceeding.

9 Related to that effort is a working group called  
10 The More than Smart Working Group, and it's led by  
11 CALISO staff. It includes the utilities, the Energy  
12 Commission, the PUC, and other stakeholders. And this  
13 is an offshoot of a paper entitled "More than Smart",  
14 that was published by Greentech Leadership Group, that  
15 describes a framework to improve the distribution grid.

16 The working group is focused on developing a  
17 transparent distribution plan that's integrated with all  
18 other State energy planning. And it's talking about how  
19 to integrate the new distribution resource plans into  
20 other planning efforts, like the long-term procurement  
21 plans, the transmission planning process, utility rate  
22 cases and the IEPR.

23 And the working group gives regular updates at  
24 PUC workshops, held under the distribution resource plan  
25 proceeding.

1           Recommendation number 13 was about  
2   disaggregating the Energy Commission's demand forecast  
3   between the utility planning area level to give  
4   stakeholders location-specific information on demand.

5           The first step for this recommendation was  
6   providing forecast results by climate zone. And the  
7   2013 IEPR, our forecast did include 16 climate zones,  
8   along with the usual eight planning areas.

9           And for the 2015 IEPR, we're expanding the  
10   number of climate zones to 20 and we're redefining the  
11   planning areas to be more consistent with the balancing  
12   authority areas in the State.

13          We also plan to continue to look at further  
14   disaggregation in future forecasts, depending on the  
15   availability of data.

16          Recommendation 14 was to create a statewide  
17   renewable data clearing house to help coordinate land  
18   use planning and utility system planning at both the  
19   distribution and transmission levels.

20          We've, unfortunately, seen very little progress  
21   on this recommendation. And part of the issue is the  
22   success of this recommendation depends on the  
23   availability of public data. And as we all know, data  
24   collection in the energy sector is complex. It's  
25   contentious. And until enough useful data is publicly

1 available, we're really limited in our ability to  
2 provide a statewide clearing house.

3 That said, there are some current data sources  
4 that are useful for planning. In May 2014, the PUC  
5 published a decision with rules for providing access to  
6 energy usage data to local governments, and researchers,  
7 and State and Federal agencies, when that access was  
8 consistent with State law, and when it doesn't conflict  
9 with consumer confidentiality concerns.

10 As part of the Rule 21 proceeding, California  
11 IOUs are now required to file quarterly net energy  
12 metering interconnection reports.

13 The Energy Commission is continuing to collect  
14 and post renewable energy statistics and data on our  
15 Energy Almanac and our Tracking Progress web pages. And  
16 there are several California counties that have begun  
17 posting useful information on where renewable projects  
18 are filing for permits.

19 The last recommendation under distribution  
20 interconnection, number 15, was the need for advanced  
21 inverters that provide fast and flexible control of  
22 output to help integrate and manage increasing amounts  
23 of distributed PV.

24 There's been quite a bit of work done on this.  
25 In January 2013, the CEC and the PUC formed the Smart

1 Inverter Working Group to develop technical  
2 recommendations on inverter-based distributed resources  
3 to support operation of the distribution system.

4 And the working group includes utilities,  
5 inverter manufacturers, renewable developers, government  
6 and other organizations. They've held weekly conference  
7 calls since this began in 2013.

8 So, recommendations are being developed in three  
9 phases. The first phase defined autonomous functions  
10 that were adopted by the PUC in December of 2014. Those  
11 will be implemented by mid-2016. They include the items  
12 here, anti-islanding, low- and high-voltage, and  
13 frequency ride through, volt VAR control, default and  
14 emergency ramp rates, and providing reactive power.

15 In phase two, the working group developed a plan  
16 to implement the ability of distributed resource systems  
17 to include communications, and some of the requirements  
18 for interacting with utilities with those  
19 communications.

20 The phase two document was submitted by the  
21 group to the PUC staff in February of 2015, and the PUC  
22 is coordinating with the IOUs on implementation.

23 In March 2015, the group began working on phase  
24 three recommendations. These include the more advanced  
25 inverter functions, emergency alarms, ancillary

1 services, storage-specific functions, the ability to  
2 respond to pricing, and ancillary services signals.

3           So next are the grid level integration  
4 recommendations. Number 16 was to establish a forward  
5 procurement mechanism for three to five years ahead, to  
6 give revenue streams for flexible capacity resources, to  
7 integrate renewables in a way that would allow all  
8 resources, like DR storage, natural gas plants to  
9 compete on a level playing field.

10           The PUC's long-term procurement plan, in 2014,  
11 was focused on flexibility issues at the 10-year forward  
12 horizon. But CEC staff tell me that the efforts of some  
13 parties to develop satisfactory forward projections of  
14 flexibility requirements were considered unsatisfactory,  
15 I think was the word that was used, or unconvincing.

16           And the PUC terminated this portion of the 2014  
17 LTPP in March of 2015. Instead, they've initiated a  
18 model development effort for the balance of 2015 to  
19 improve the models for use in the upcoming 2016 LTPP.

20           In early 2014, the PUC established the Joint  
21 Reliability Plan rulemaking that looked at whether to  
22 extend resource adequacy requirements from a one-year  
23 forward to a three-year forward horizon.

24           And in October 2014, PUC staff issued a report  
25 summarizing several workshops. But the parties were



1 really opposed to mandating the current interim method  
2 of setting forward flexibility requirements, so the PUC  
3 suspended this portion of the Joint Reliability Plan  
4 rulemaking. So, very little progress on this  
5 recommendation.

6           Number 17 focused on developing a comprehensive  
7 package of tariffs, rules and performance requirements  
8 for integration services. Right now, CALISO is working  
9 very closely with stakeholders to develop wholesale DR  
10 products that can participate directly in the market.

11           And in April, they held education forums on  
12 energy storage and aggregation of distributed resources  
13 to clarify the existing requirements, rules and market  
14 products for these resources to participate in ISO  
15 markets.

16           Later this spring, the ISO will start a  
17 stakeholder process to identify specific enhancements  
18 needed to the rules and products for these resources  
19 also to participate in markets.

20           CALISO has also developed detailed roadmaps for  
21 energy storage, demand response, energy efficiency.  
22 These include pathways to bring more of these resources  
23 into the system over the next several years, and the  
24 activities and the milestones that are needed for that  
25 to happen.

1           Number 18 focused on regional solutions for  
2 renewable integration. As Mr. Casey mentioned, this is  
3 an important part of integrating renewables.

4           So, here we've seen some major progress. CALISO  
5 and PacifiCorp announced a partnership, in February  
6 2013, to develop an energy imbalance market that would  
7 operate across participating balancing areas.

8           The EIM began operating in November 2014. NV  
9 Energy plans to join the EIM in the fall of 2015. And  
10 by the fall of 2015, EIM will cover seven western  
11 states.

12           I neglected to include on this slide, but also  
13 Puget Sound Energy will be participating starting in  
14 October of 2016.

15           Also, Arizona Public Service is considering  
16 joining. In mid-April they submitted a report to the  
17 Arizona Corporation Commission that identified  
18 significant cost savings for APS customers from their  
19 participation in the EIM.

20           It's an important integration tool. It allows  
21 participants to leverage resources across an entire  
22 region. CALISO recently announced that the total gross  
23 benefits of the EIM to date is more than \$11 million.

24           Another regional issue is, in April CALISO  
25 announced an MOU with PacifiCorp to explore PacifiCorp

1 becoming a participating transmission owner in CALISO.  
2 And this is another regional approach that will benefit  
3 California and the West by sharing resources throughout  
4 the region. As a side note, this will also allow  
5 electricity that's generated within or scheduled into  
6 PacifiCorp area to qualify as a bundled product,  
7 eligible for bucket one in the RPS program.

8           The last recommendation under integration was  
9 about making sure natural gas plants could be called on,  
10 when they're needed, to help integrate renewables. In  
11 2013, Columbia Grid released a study on electric  
12 transmission system reliability issues, with limitations  
13 on gas supply to electric generators along the I-5  
14 corridor. It found that the electric transmission  
15 system performed very acceptably under stressed  
16 conditions.

17           In a workshop on natural gas issues, as part of  
18 the 2013 IEPR, ISO stated that short-term operational  
19 coordination between natural gas supply and electricity  
20 production in California has been occurring with very  
21 few incidents.

22           And the 2013 IEPR also included a report on  
23 natural gas infrastructure that talked about gas and  
24 electric system interactions. And we're going to be  
25 continuing that discussion in the 2015 IEPR.

1           In March of 2014, FERC issued an order requiring  
2 all interstate pipelines to set up a system to post  
3 offers to buy excess capacity to help improve the flow  
4 of natural gas to gas-fired generators.

5           And in July of 2014, E3 did a report on natural  
6 gas infrastructure adequacy in the west. It found it's  
7 technically feasible to meet the variable gas demands  
8 needed to integrate high penetrations of renewables.

9           Also in 2014, PG&E and SoCal Gas submitted  
10 biannual advice filing letters to the PUC, demonstrating  
11 they have adequate backbone capacity to meet both  
12 current and forecasted demand.

13           And CEC staff is continuing to monitor FERC  
14 proceedings dealing with natural gas/electricity  
15 harmonization issues.

16           Finally, the CEC put out a solicitation in  
17 January of this year to evaluate whether renewable  
18 integration can be supported by the natural gas system  
19 without improvements or changes, and what changes or  
20 improvements would be needed to increase the percentage  
21 of renewables.

22           Moving on to strategy four, this focused on  
23 economic development opportunities from supporting  
24 renewable projects and technologies. And the Energy  
25 Commission had a very strong role in workforce

1 development and education when we were distributing ARRA  
2 funds from 2009 to 2012. And we continue to be  
3 committed to workforce development.

4 Through our R&D division we funded the  
5 California Smart Grid Center at Sac State University to  
6 develop a strategic plan for smart grid workforce  
7 development that was completed in February 2013.

8 And the market facilitation of our EPIC R&D  
9 Program provides funding for strengthening the clean  
10 energy workforce by creating tools and resources that  
11 connect the industry to the labor market.

12 The California Workforce Investment Board has a  
13 five-year strategic plan that recognizes the importance  
14 of clean energy jobs in California. It identifies a  
15 wide variety of green trades, ranging from carpenters  
16 and electricians, to solar installers.

17 And California has great success in jobs,  
18 particularly in the solar industry. The Solar Energy  
19 Industry Association's National Solar Job Census, for  
20 2014, showed that California has more than 50,000 solar  
21 jobs, which is about 30 percent of the solar jobs  
22 nationwide.

23 In addition to programs that were funded under  
24 the American Recovery Act, California also has the Clean  
25 Technology and Renewable Energy Partnership Academies.

1           These were established in 2011, with additional  
2   funding that was made available, starting in 2013, of \$8  
3   million a year through 2017, for about a hundred  
4   academies that are focused on green energy and  
5   technologies. We developed guidelines for that program.  
6   The academies are available to students in grade 9  
7   through 12. They provide career technical education in  
8   energy or water conservation, and renewable energy.

9           Finally, the California Workforce Investment  
10   Board has received \$3 million in Prop 39 funds to  
11   develop and implement a competitive grant program for  
12   eligible workforce training organizations to prepare  
13   disadvantaged youth, Veterans and others for employment  
14   in clean energy fields.

15           Strategy five focused on providing funding  
16   during key stages of the Renewable Research and  
17   Development Continuum, and to coordinate financing and  
18   incentive programs to provide the most value.

19           Recommendations 23 through 26 focused on  
20   advancing research and development for existing and co-  
21   located renewable technologies, for innovative renewable  
22   technologies, for integration, and for renewable project  
23   siting.

24           The primary action items here were to make sure  
25   that our process was publicly vetted, that the State

1 leveraged co-funding opportunities, that we avoided  
2 duplication, and that we published all research results  
3 on our website.

4           So, our R&D Division has awarded more than \$200  
5 million to research projects that support the  
6 recommendations in the 2012 Action Plan. And consistent  
7 with those recommendations, each award was evaluated  
8 through a public process. The results were published on  
9 our website, provided to all interested stakeholders,  
10 and we do continue to leverage other funding  
11 opportunities, when available, and to strike to avoid  
12 duplication.

13           For recommendation 23, we funded 41 projects,  
14 totaling \$70 million. These include projects to reduce  
15 installation and maintenance costs, to improve  
16 reliability and performance, to develop community scale  
17 bioenergy, do environmental impact assessment and  
18 mitigation. We're looking at opportunities for  
19 synergies from combining renewable technologies. We're  
20 reducing the cost of distributed PV, integrating  
21 advanced inverter technologies and smart grid  
22 components, and identifying strategies to make bioenergy  
23 projects more economic.

24           To advance innovative renewable technologies, we  
25 funded projects more than \$20 million, to bring

1 innovative technologies closer to commercialization, and  
2 to look at the potential for technologies that are  
3 further out on the horizon.

4           We're developing tools to support market  
5 facilitation, to verify the performance of innovative  
6 technologies. And we're developing technologies in the  
7 areas of biomass conversion, offshore wind,  
8 concentrating solar power, small hydro and geothermal.

9           Other projects are looking at strategies to  
10 reduce peak demand, to minimize the environmental  
11 impacts of energy generation, and bring technologies to  
12 market that provide increased environmental benefits.

13           For 25, this is promoting R&D for renewable  
14 integration. This is where we really have focused the  
15 bulk of the funding, 75 projects totaling \$109 million.  
16 These are projects to integrate intermittent generation,  
17 to improve solar and wind forecasting, to develop smart  
18 grid technologies, and micro grids, and to improve  
19 energy storage technologies.

20           And we've also funded applied research projects  
21 on storage, grid planning tools, and distribution system  
22 upgrades. And then technology, demonstration and  
23 deployment projects for renewable-based micro grids to  
24 demonstrate the benefits of local renewable generation.

25           Recommendation 26 was for proactive siting of



1 renewable projects. We funded 21 projects, totaling  
2 around \$9 million, to reduce and resolve environmental  
3 barriers to renewable deployment, to develop new  
4 technology designs, and studies, and decision support  
5 tools to avoid impacts to environmentally sensitive  
6 areas, and to provide environmental analysis to support  
7 identifying preferred areas for renewable development,  
8 such as the San Joaquin Valley.

9           We're also looking at the vulnerability of the  
10 electricity system to climate change, and identifying  
11 adaptation options.

12           The other recommendations under strategy five  
13 focused on financing issues. These are recommendations  
14 we've not seen much progress. We should probably  
15 evaluate how and when to raise these issues again.

16           Certainly, the extension of Federal tax credits  
17 remains a major issue, particularly for solar. The  
18 Federal Investment Tax Credit is currently at 30 percent  
19 for residential and commercial systems that were placed  
20 in service before December 31st, of 2016. After that,  
21 the commercial credit drops to 10 percent and the  
22 residential credit drops to zero, which is likely going  
23 to have an effect on residential solar development.

24           There's also continuing concern with the  
25 boom/bust cycles we see with the Federal Production Tax

1 Credit. Congress goes back and forth between expiring  
2 and extending the PTC, which has really adversely  
3 affected the wind industry.

4 And although we've made no progress on creating  
5 a clean energy financing working group, or evaluating  
6 the property tax exclusion, we have seen some movement  
7 on helping to finance customer-side renewable projects.

8 In 2013, Senate Bill 96 directed the California  
9 Alternative Energy and Advanced Transportation Financing  
10 Authority, or CAEATFA, to develop the PACE Loss Reserve  
11 Program to reduce the risk to mortgage lenders from  
12 residential PACE financing that's for energy efficiency  
13 or distributed renewable installations.

14 The Energy Commission provided \$10 million for  
15 CAEATFA's loss reserve. And this program makes first  
16 mortgage lenders whole for any losses in a foreclosure  
17 or a forced sale that's attributed to a PACE lien.

18 As of March 2015, there were more than 24,000  
19 residential PACE financings, that were valued at about  
20 \$500 million, that were covered by this program. No  
21 claims on the loss reserve to date. CAEATFA initially  
22 estimated the loss reserve would last 8 to 12 years, but  
23 they're reevaluating that program now that it's been  
24 active for almost a year.

25 Recommendation number 30 was related to the

1 Energy Commission's Clean Energy Business Financing  
2 Program, which was funded under ARRA. Unfortunately,  
3 the program experienced some difficulties with projects  
4 that were not achieving their goals. And, eventually,  
5 the program was just too difficult for the CEC, given  
6 the structure of our organization as a government agency  
7 versus the demands of private sector loans.

8           We're now working on transferring the funds to  
9 Department of General Services. We hope to have that  
10 transfer completed sometime this year.

11           Finally, recommendation number 31. This was to  
12 develop a marketing and outreach plan for the Energy  
13 Conservation Assistance Account Program because few  
14 local entities were actually taking advantage of the  
15 program to install renewable projects, because the  
16 requirements for the energy payback periods didn't  
17 accommodate longer payback periods that you see with  
18 renewable installations.

19           But in 2013, the loan payback period was changed  
20 in statute from 15 to 20 years. This has allowed more  
21 loan applicants, with solar projects, to participate in  
22 the program. Since 2013, we have funded 26 ECCA loans  
23 that include PV installations. So, the local agencies  
24 clearly are more interested in taking advantage of the  
25 program.

1           And the program has received additional funds as  
2 a result of Prop 39, and also from the Greenhouse Gas  
3 Reduction Fund, both of which, now the programs have  
4 lower interest rates, 1 percent or 0 percent. And I  
5 think these lower interest rates for the ECCA-Ed and the  
6 ECAA-GGRF may also make the loans more attractive for  
7 renewable energy projects.

8           So, thanks for hanging in there through 31 long  
9 recommendations. So, some really quick conclusions  
10 here. We've seen really good progress on identifying  
11 preferred areas for DG and utility scale development,  
12 including the Distribution Resource Plan proceeding, the  
13 CEC's Distributed Energy Resource Pilot Study, on the  
14 utility scale from the DRECP and local planning grants.

15           We've also made progress on electrifying the  
16 transportation system, evaluating the connections  
17 between EVs and renewable integration. California now  
18 has more than 9,300 charging stations, which is the  
19 largest nonresidential network in the nation.

20           We've deployed more than 10,000 light-duty EV  
21 cars and trucks, and 150 medium- and heavy-duty EV  
22 trucks.

23           We're doing the Vehicle-to-Grid project with the  
24 USDOD.

25           We've also made progress in advanced metering --

1 inverter protocols, excuse me, with the work that's  
2 being done by the Smart Inverter Working Group.

3           And the energy imbalance market is providing  
4 good regional solutions to renewable integration by  
5 allowing sharing of reserves and integration across a  
6 larger geographic regions.

7           Last, the Energy Commission has funded a wide  
8 variety of R&D projects that is helping to support  
9 renewable integration, and identify and mitigate  
10 environmental impacts of renewable development.

11           So, that's the good news. But there are areas  
12 that we'd like to see some additional work on going  
13 forward.

14           First, renewables on State property. As I said,  
15 we had a target of 2,500 megawatts. We're at 43  
16 installed, eight in the pipeline, so we've got a long  
17 way to go. As a State, we've been a renewable leader  
18 for decades and our public buildings and our State lands  
19 really need to reflect that leadership.

20           The next areas where we need more progress are  
21 in transparency of renewable cost information and  
22 transparency of distribution planning processes.

23           We need to improve our ability to track  
24 publicly-available information on renewable project  
25 costs that will help us understand cost trends and

1 drivers, and help support distribution planning.

2           And the energy agencies and utilities need to  
3 continue evaluating how to improve coordination and  
4 integration of the DG procurement programs, the long-  
5 term procurement plans, smart grid deployment plans, and  
6 transmission planning so that distribution planning is  
7 at least as transparent as transmission planning.

8           The Renewable Action Plan recommendation to  
9 develop clear rules, tariffs and performance  
10 requirements for integration services needs to be  
11 pursued. We need to fully leverage automated DR, energy  
12 storage, and other distributed resources to provide  
13 integration services and then, finally, workforce  
14 development.

15           Many of the action items in the plan were under  
16 the purview of other agencies, and because we're not a  
17 workforce development agency, we haven't been closely  
18 been following these efforts. So, more progress may  
19 have been made than we're aware of.

20           But like all industries in California, the  
21 energy industry is facing a lot of retirements as the  
22 Boomer Generation goes out of the system.

23           And as we move towards higher and higher  
24 percentages of renewables, we need to make sure we have  
25 the well-trained workforce in place to support our

1 renewable energy goals.

2           So that concludes my presentation. As I  
3 mentioned earlier, if there's anything I've missed,  
4 please include that in your written comments. And I'm  
5 happy to answer any questions from the dais.

6           COMMISSIONER MC ALLISTER: Thanks, Suzanne.  
7 That was terrific. I debated kind of taking a break in  
8 the middle to let people ask questions up to the point.  
9 So, hopefully, everybody's not super-saturated and has  
10 been taking notes so you can remember.

11           So much progress, really quite impressive. And  
12 thanks for that update.

13           I wanted to just highlight one thing, that many  
14 of the sort of areas where we need more progress have to  
15 do with the availability of information. And so, I  
16 think that's just an ongoing theme that we're seeing,  
17 both at my instigation, but I think by many -- with much  
18 agreement across the stakeholders that we need to figure  
19 out ways to get better information into the policy  
20 process. Into the process at the agencies, themselves,  
21 but also at the stakeholders so that they can come up  
22 with innovative solutions to those problems.

23           And the distribution planning, I think the  
24 distribution level engagement is particularly where the  
25 cutting edge is that needs to be -- and better

1 information can enable that in the marketplace and in  
2 the policy arena.

3 Let's see, I wanted to give Chair Weisenmiller a  
4 chance to say -- he was able to join us, which is great.  
5 Thank you very much.

6 And then I want to ask our colleagues from the  
7 ISO, the PUC if there were any things that you wanted to  
8 highlight from Suzanne's presentations. We talked about  
9 all the agencies. But given that you're here on the  
10 dais, it would be great to maybe put additional context  
11 or shine around some of the points that Suzanne made in  
12 her presentation.

13 So, I'll start with Chair Weisenmiller.

14 CHAIR WEISENMILLER: I worked with Commissioner  
15 Peterman on the initial Renewable Action Plan. And, you  
16 know, certainly appreciated her energy and vision there.  
17 And it's good to have this sort of progress report.

18 Obviously, there's still a lot to do. Although  
19 there's been, as you noted, a fair amount of progress in  
20 some areas. And certainly want to thank Suzanne for  
21 that comprehensive presentation.

22 COMMISSIONER MC ALLISTER: Either order I think  
23 is fine. Keith, you want to go first?

24 MR. CASEY: Well, first off, Suzanne, an  
25 excellent presentation. I was really impressed with the



1 level of both the scope and details that you had on  
2 these various recommendations.

3 Just with regard to recommendation 16, which  
4 relates to kind of a joint effort between the PUC and  
5 ISO to develop a forward-capacity, or forward-  
6 procurement mechanism to deal with flexibility, I think  
7 you accurately characterized the state of those efforts.

8 A couple of additional comments on that. One of  
9 the things we're focused on, now, with regard to  
10 flexibility is coming up with a more durable, robust  
11 definition of when we talk about flexibility in the  
12 system, what do we mean by it?

13 We developed a very simplistic, interim  
14 definition, but we really need to evolve that to really  
15 get more sophisticated in how we define it.

16 And, importantly, part of that definition needs  
17 to include downward flexibility. And I think, as we get  
18 into the presentations today, you'll hear a lot of  
19 discussion about how can we get more downward  
20 flexibility out of the existing fleet of resources we  
21 have out there, particularly the gas fleet.

22 And when we look at the integration challenges  
23 with the duck curve, and how we deal with over-  
24 generation in the belly of the duck, how do we get the  
25 minimum load of the generation that we need to have

1 online and the gas generation down to the lowest levels  
2 possible.

3           So, I think actually setting some definitions on  
4 downward flexibility, that might include a definition  
5 around minimum load requirements, could go a long ways  
6 to setting a structure to actually get the capability  
7 from the gas fleet to meet those requirements.

8           And I think the three-year requirement goes  
9 hand-in-hand with that. We have a lot of generating  
10 companies come to the ISO to talk about what's possible,  
11 the art of the possible with their existing gas fleet.  
12 And there's a lot of potential there to reduce minimum  
13 load, to get additional flexibility at a relatively low  
14 cost. But they're asking, where's the business model to  
15 finance this?

16           And I think a three-year requirement around  
17 flexibility would be an excellent tool to provide a  
18 revenue stream where plants can actually invest in those  
19 kinds of technologies.

20           COMMISSIONER MC ALLISTER: Keith, do you have  
21 any idea sort of what percentage of the energy supply  
22 we're talking about here? You know, I mean I imagine  
23 it's the load duration curve, it's one kind of end of it  
24 where those resources are needed.

25           But, you know, if we're talking about the need

1 for specific resources, you know, short period of time  
2 for ramping before and after the belly of the duck, or  
3 whenever it's needed, you know, that's one kind of  
4 thing.

5 MR. CASEY: Yeah.

6 COMMISSIONER MC ALLISTER: What percentage of  
7 time are we talking about?

8 MR. CASEY: I would say most of the time that,  
9 you know, the ramping issue that you see in the duck  
10 curve is not a one-day-a-year thing. It's a very  
11 persistent pattern. The summer gets much better. As  
12 the loads go up in the summer, you don't see that  
13 dramatic ramp issue we have. So, it's predominantly in  
14 the spring and fall months where we have the most  
15 significant duck shape, if you will.

16 So, we really need the flexibility in the system  
17 to be able to deal with that day in and day out.

18 COMMISSIONER MC ALLISTER: I guess I'm just  
19 thinking sort of hours-per-year kind of thing, when  
20 you're really having to lean on those resources. A  
21 couple hours in the morning and afternoon, say, or --

22 MR. CASEY: Yeah, I would say in terms of  
23 needing to rely on the gas fleet to manage the ramping  
24 challenge, right now that is the resource we have that  
25 has flexibility. And, clearly, we need to move away

1 from that if we're going to be successful in meeting  
2 these carbon goals, and get flexibility elsewhere in the  
3 system.

4           You know, recommendation 17 talked about some of  
5 the progress we're making with demand response. We've  
6 got a long ways to go with demand response. Despite all  
7 our efforts, we haven't even moved the needle on it.  
8 And that's incredibly frustrating and embarrassing that  
9 California can't do more in advancing demand response.

10           Clearly, storage is another opportunity. And,  
11 certainly, the regional diversity, getting a more  
12 coordinated dispatch with combined balancing areas can  
13 help to mitigate that ramping challenge as well.

14           So, there are a lot of other resources out  
15 there, but until we develop them in meaningful ways,  
16 we're going to be dependent on the gas fleet to manage  
17 this.

18           COMMISSIONER MC ALLISTER: Yeah, okay, thanks a  
19 lot. I think that business model point is really  
20 incredibly important. And in 2013, we actually talked  
21 about demand response a lot, and it was one of the  
22 issues that we were trying to move the needle on. And I  
23 think we got a little bit of progress, but it's kind of  
24 a market question that we need to, I think, elevate the  
25 conversation and rethink maybe, again.

1           CHAIR WEISENMILLER: Yeah, I was just going to,  
2 for the rest of the group, you and I sat through the  
3 discussion at PG&E about potentially cycling Diablo  
4 Canyon down at night to deal with, again, sort of over-  
5 generation issues. And I'm sort of surprised that they  
6 were talking about maybe going down as far as 50  
7 percent. But, obviously, I can't say those studies have  
8 gotten very far along.

9           COMMISSIONER MC ALLISTER: Yeah, that was very  
10 surprising to me, as well, and I'm kind of interested in  
11 the technical analysis of what that actually looks like  
12 but, great.

13           Did you want to say anything else, Keith?

14           MR. CASEY: No.

15           COMMISSIONER MC ALLISTER: Thanks a lot.

16           So, Scott, I wanted to give you an opportunity.  
17 Or anybody, actually. But, Scott, wanted to kind of  
18 give you the opportunity to jump in where you think  
19 appropriate.

20           MR. MURTISHAW: Well, first, I'd just say kudos  
21 to the Energy Commission staff for accurately  
22 summarizing a tremendous amount of activity at the PUC.  
23 Because we have been doing a lot over the last couple of  
24 years on all of these fronts.

25           I'll just respond to a couple of things in

1 particular. One, to note on the distribution resources  
2 plan rulemaking, this was recommendation number 12, the  
3 utilities are supposed to submit their initial  
4 applications for their first distribution resource plans  
5 in July. So, we're all waiting with baited breath at  
6 the PUC to see what, exactly, the utilities submit, see  
7 what the similarities and differences are.

8 But we know that because this is just the first  
9 time that we're initiating this process, we have to  
10 expect to start small. It's going to take probably two  
11 or three years before we get a sense of how to really  
12 implement distribution resource planning in a more  
13 proactive way across the entire service territories of  
14 these very large utilities.

15 So, it's going to be important to pilot test  
16 some ideas and to start small.

17 And then I would also say that, you know, at  
18 least in terms of using demand response and storage to  
19 provide more services to the grid, one company in  
20 particular that I've been following for a couple of  
21 years now, Power Tree, which does an integrated PV,  
22 electric vehicle charging and storage all as one  
23 package. It's a very ambitious set of services that  
24 they're trying to package together.

25 But they've been really struggling, working with

1 the ISO and PG&E on all of the metering requirements,  
2 and the tariffs, and the charges and fees associated  
3 with imports and exports, as the storage provides or can  
4 provide power to the grid.

5 And my understanding is that a lot of progress  
6 has been made, but sometimes the pioneer just has to  
7 work through a lot of challenging and complex issues.  
8 And once those are resolved, I hope we can see a more  
9 rapid expansion of those kinds of services from behind  
10 the meter.

11 And on the residential rate reform proceeding,  
12 there is a draft decision out there. It was scheduled  
13 for the May 21st meeting. But at an all-party meeting  
14 last week, Commissioner Florio announced that he intends  
15 to issue an alternative, which we still have not seen.  
16 So, at this point I think we're going to see a fairly  
17 significant delay before we can take that matter up for  
18 a vote.

19 COMMISSIONER MC ALLISTER: Thanks a lot, Scott.

20 Let's see, I guess, you know, I agree that  
21 demand response, you know, with everybody, that a lot of  
22 the issues with demand response aren't -- really,  
23 they're not technology. We have great technology and  
24 plenty of firms who really want to go out there and make  
25 things happen.

1           And I guess, what's the state of the  
2 conversation on sort of how to -- is that conversation  
3 going to be elevated to help cut through some of the  
4 transaction costs that they're facing out there?

5           Because I know on a larger scale, in the  
6 wholesale market there's also some activity within the  
7 territory, but they're also a different beast kind of,  
8 but two sides of a similar coin.

9           So, I guess I'm wondering sort of what's the  
10 state of that conversation in the DR proceedings over at  
11 the PUC?

12           MR. MURTISHAW: Well, yeah, a couple of things.  
13 I haven't really worked on demand response. I haven't  
14 followed those proceedings that closely.

15           I know that Commissioner Picker, at our last  
16 meeting, expressed some frustration with the fact that  
17 several of the parties, who are active in the demand  
18 response proceeding, all signed onto a joint stipulation  
19 last year, proposing to move out supply side DR even  
20 further into the future. You know, not actually  
21 implementing it for several more years.

22           And, of course, the Federal court cases have  
23 thrown some of the framework around supply side DR up in  
24 the air. So, getting that resolved as quickly as  
25 possible will be useful.



1           But President Picker has been somewhat  
2   frustrated with the lack of either urgency or ambition  
3   that some of the parties are showing towards moving, in  
4   a more forceful way, towards supply side DR that can  
5   complement our more price-responsive programs.

6           COMMISSIONER MC ALLISTER:   Okay, thanks a lot.  
7   And I want to just give President Picker major kudos for  
8   the more than smart activity.   I mean that's been, I  
9   think, really groundbreaking and started a lot of  
10   discussions that were kind of happening on the sly, but  
11   he's really centralized that and gotten the right people  
12   at the table to have that discussion, and it's going to  
13   pay off big dividends, I think.

14          CHAIR WEISENMILLER:   Yeah.   No, I was just going  
15   to say that Commissioner Florio's on point on demand  
16   response.   As you indicated, I think everyone was  
17   shocked that the settlement for demand response  
18   basically would take longer than World War II to get  
19   results, and tried to accelerate that.

20          And, certainly, Florio's staff is sort of on it  
21   full time at this point.   But as you said, there's a lot  
22   that -- you know, we haven't really seen the needle move  
23   on these programs in the last three years.   So, it would  
24   be good to get some progress.

25          COMMISSIONER MC ALLISTER:   So, open it up to

1 others?

2 COMMISSIONER DOUGLAS: So, I just had a couple  
3 of comments, really not questions. You know, I think  
4 it's in the nature of a high-level summary to make some  
5 things sound like they're done and done. And I just  
6 wanted to flag that in the area of, you know,  
7 environmental planning and how that should be used in  
8 decision making for energy and other kinds of --  
9 electricity and other kinds of infrastructure that, you  
10 know, we had a workshop last year. I see a number of  
11 people in this room who participated in that workshop.  
12 We had really good, a really broad-based panel  
13 discussion, we had really great representation from the  
14 PUC and the ISO providing input on, and some really good  
15 information on how the agencies currently coordinate  
16 around these questions. You know, environmental  
17 information, planning on the procurement side, planning  
18 on the transmission side, actual decisions. And we did  
19 not make any concrete recommendations about process  
20 changes in that workshop.

21 We got a lot of really good input and we're  
22 going to build on it with a workshop later this summer.  
23 And Suzanne can probably tell me the date, I don't have  
24 it off the top of my head, but she probably does.

25 MS. KOROSK: I think Heather probably has it,

1 actually.

2 COMMISSIONER DOUGLAS: Oh, all right. Well,  
3 sorry, Suzanne, I didn't mean to test you.

4 But, you know, I know that people bring a lot of  
5 ideas and strong opinions to this conversations. I hope  
6 folks, who are sitting there in the audience with those  
7 ideas and opinions, will bring them to the workshop that  
8 we're going to have later this summer. And Heather will  
9 help me with the date in a moment.

10 But I wanted to say a couple things about it.  
11 You know, one is that we're hoping to have some follow-  
12 on onto the discussion of how the State should use this  
13 kind of information in making decisions.

14 I also wanted to say that, and just clarify that  
15 one of the things that we are hoping will happen, and  
16 hoping will provide us with some ideas going forward is  
17 a stakeholder-based effort that would look at where  
18 there are some least conflict, or high-potential areas  
19 in the San Joaquin Valley.

20 We, the Energy Commission, are not leading any  
21 initiative in that area. But the question will become,  
22 you know, let's say that there is some consensus on  
23 really good opportunities for renewable energy  
24 development, whether that's in the desert, or in the San  
25 Joaquin Valley, or other parts of the State, or even out

1 of the State, how might we go about using that  
2 information? How might we think about it? What do we  
3 do with it?

4 I'm also hoping to invite some people with a  
5 more regional perspective. And so, hopefully, we will  
6 that. But that is forthcoming, so you didn't miss  
7 anything. And, hopefully, we'll get some participation.

8 Heather, when is it?

9 MS. RAITT: Oh, it's July 23rd.

10 COMMISSIONER DOUGLAS: July 23rd. So, hope to  
11 see you there, if you're interested. Thanks.

12 COMMISSIONER MC ALLISTER: Thanks. Okay, great.  
13 Well, so let's see, let's go to -- I guess we have open  
14 stakeholder discussion now or, Suzanne, did you want to  
15 call up --

16 MS. KOROSEC: Yeah, so I'll go ahead and  
17 introduce that real quick.

18 COMMISSIONER MC ALLISTER: Okay.

19 MS. KOROSEC: So, I'm going to ask folks to come  
20 up here. We had several folks who asked to be part of  
21 the discussion. We've got Chari Worster, Claire  
22 Halbrook, Daniel Kim, Laura Wisland, Nancy Rader, Peter  
23 Miller, Rachel Gold, Steven Kelly, and Obadiah  
24 Bartholomy.

25 So, if you could come up to the table, we've got

1 little tents there for you to write your names to help  
2 our court reporter to keep track of who's talking.

3 We do have a few extra seats. I think three.  
4 So, we can accommodate three additional participants, if  
5 there's someone here who would really like to  
6 participate in this discussion.

7 We're also going to provide 15 minutes at the  
8 end of the second half of this discussion, which is  
9 happening after lunch, for comments from folks that are  
10 not sitting at the table.

11 So, while everyone's getting seated and doing  
12 your nameplates, Governor Brown, in his inaugural  
13 address, announced the target of increasing renewable  
14 electricity from one-third to 50 percent.

15 It's an ambitious goal, but we've already seen  
16 records being set for increasing amounts of renewables  
17 delivering into the ISO grid each year. I believe there  
18 have been days when renewables have actually delivered  
19 as much as 40 percent of the energy into the CALISO  
20 area.

21 There's a lot of interest in how to implement  
22 this target, several bills being considered at the  
23 Legislature, lots of discussion between the energy  
24 agencies. So, we want to hear stakeholder opinions on  
25 the target, suggestions for how best to implement it,

1 and what are some of the challenges.

2 We have about 90 minutes for this discussion, 45  
3 before lunch, 45 after. So, please, focus your comments  
4 on the questions that went out with the notice. I'm  
5 going to post those on the screen here, in a second.

6 Try to keep your comments to two to three  
7 minutes apiece, so that everyone has a chance to talk,  
8 and so that we can get through all the questions in our  
9 allotted time.

10 Our moderator is Angie Gould, who leads our RPS  
11 Verification and Compliance Unit.

12 COMMISSIONER MC ALLISTER: Suzanne, I can tell  
13 that you used to be the lead on the IEPR. You seem very  
14 familiar in this role, so thanks very much.

15 MS. KOROSSEC: You're welcome.

16 COMMISSIONER MC ALLISTER: Yeah. Okay, go  
17 ahead, Angie, yeah.

18 MS. GOULD: Thank you, Suzanne. My name is  
19 Angie Gould and, again, I work in the Renewable Energy  
20 Division here at the California Energy Commission.

21 And thank you to everyone at the table for  
22 joining me today. And, you know, as we said, we're  
23 limited on time so we'll just jump right in.

24 Starting with the first question, what should a  
25 50 percent renewable policy framework look like? How

1 much should it rely on what is already in place versus a  
2 complete redesign of the existing policy structure.  
3 Should it replace the current renewables portfolio  
4 standard requirement or work in tandem with it.

5 And I thought I would start with those who are  
6 actually required to meet the RPS, which is the  
7 utilities. So, Claire or Obadiah, could one of you  
8 start?

9 MS. HALBROOK: Hi, everyone. I'm Claire  
10 Halbrook, with Pacific Gas & Electric Company. I'm in  
11 our State Agency Relations organization and that cover  
12 climate policy in a number of the agencies.

13 So, I actually think Chair Weisenmiller said it  
14 best when he and a number of the other agency leads in  
15 March filed or offered an op ad in the *Sacramento Bee*,  
16 entitled "More Renewable Energy Brings More Challenges".

17 And it said that, "Overall, we must make sure  
18 that our investments focus on reducing greenhouse gas  
19 emissions, improve reliability, and keep costs  
20 competitive. More of the same policies will not do the  
21 trick".

22 And so, I think that's really great insight for  
23 the conversation today. That while renewable energy  
24 investments must certainly be part of California's  
25 efforts to achieve our future greenhouse gas emissions

1 reduction goals, you know, the discussion should really  
2 focus on how we design the optimal suite of greenhouse  
3 gas emissions reduction strategies that look across the  
4 sectors, and complement one another.

5           And I think also, in the Energy Commission's  
6 fact sheet that was released following the Governor's  
7 Inaugural Address, it explained that in reaching a  
8 higher renewable energy goal it could be achieved in  
9 several ways. Including optimizing clean energy  
10 technologies, efficiency, demand management programs  
11 according to costs and system benefits.

12           So, we should really look at how this higher  
13 renewable energy goal fits within our broader greenhouse  
14 gas emissions reduction goals. And particularly, as we  
15 talk about regional coordination, how it fits in with  
16 USEPA's Greenhouse Gas New Source Performance Standards,  
17 for both new and existing sources.

18           So, as we talk about that regional coordination,  
19 understanding that there are -- the regions, with whom  
20 we hope to coordinate, will be facing some new  
21 requirements themselves, and that may affect their  
22 ability to import and export, and interact with  
23 California.

24           MR. BARTHOLOMY: Thanks, Claire. Obadiah  
25 Bartholomy, with SMUD. And I would just like to say,



1 with regard to this question I think you'll find that  
2 all of the utilities that are going to be speaking on  
3 this issue are not -- are in support of maintaining the  
4 current Renewable Portfolio Standard framework, but  
5 complementing that with a broader framework that's more  
6 focused on cost-effective carbon reduction.

7 I think the five large utilities, over the last  
8 year, have been working very closely on trying to come  
9 up with a policy framework, we've termed a clean energy  
10 standard, that would focus on setting specific carbon  
11 reduction goals aligned with where the State needs to go  
12 from a carbon reduction stand point.

13 And we recognize it would be very challenging to  
14 completely replace the RPS policy, as a policy  
15 framework. So, this has been designed to work to  
16 complement that policy. And, really, to heighten the  
17 focus on cost effectiveness and on creating the right  
18 economic signals for investment in additional energy  
19 efficiency, additional transportation electrification,  
20 and making sure that our renewables investment are  
21 really balanced, from a cost-effectiveness stand point,  
22 with those other very critical strategies for reducing  
23 carbon for the State.

24 MS. GOULD: Thank you. Do any of the generator  
25 representatives have a response?

1           MR. KELLY: Yeah, this is Steven Kelly with the  
2 Independent Energy Producers Association. And in some  
3 sense I find it kind of ironic that we've just extolled  
4 how well the RPS program has worked for California in  
5 developing new renewables. And just when we get to the  
6 point where it's really doing well, the proposal is to  
7 let's get rid of it.

8           This is kind of typical of California. And I  
9 really urge people to say on course on this.

10           What makes the California RPS work well is that  
11 there are clear standards, definitions of eligibility,  
12 clear standards of performance, and there's penalties  
13 for noncompliance, which is very important. And that  
14 has compelled people to move forward in an aggressive  
15 manner, over the last seven years, to develop the green  
16 portfolio that we have today.

17           There's nothing that says that you can't expand  
18 on what we have today to meet the 50 percent goal. And,  
19 usually, when I hear proposals about that we have to  
20 change everything going forward, it's a proposal that  
21 has no standards, no compliance obligations, and no  
22 penalties for nonperformance.

23           So, I'd really be hesitant, as a policymaker, to  
24 endorse that kind of approach without more substance to  
25 it.

1 MS. GOLD: Rachel Gold, for the Large Scale  
2 Solar Association. I want to second everything Steven  
3 just said.

4 And I would not that we've seen how the RPS is  
5 working and really proven to get, online, cost-effective  
6 renewables that are producing clean energy for the  
7 State. And so, to the points that were made earlier  
8 about market signals, the RPS is a clear, and proven and  
9 effective strategy of bringing renewable online, letting  
10 the market innovate and bring down costs by sending  
11 those signals to the market.

12 And in the areas where we can do better is  
13 sending additional signals to other kinds, you know,  
14 complementary strategies, including storage, more demand  
15 response, ensuring that those who want to provide  
16 ancillary services with other clean strategies have the  
17 market mechanisms to make that effective, and business  
18 models that work.

19 So, we see the RPS as a proven pathway to  
20 success for the State in reaching 50 percent and beyond.  
21 And for being critical to meeting our greenhouse gas  
22 reduction goals.

23 And I think that it's a mechanism that can be  
24 used as a backbone to an overall State strategy for  
25 meeting our larger goals. But it's critical that we

1 don't throw it out at this point, it's been really  
2 important for a robust market.

3 COMMISSIONER MC ALLISTER: Do you have any  
4 concrete ideas about how to sort of layer over some of  
5 the reliability and ancillary services issues? You  
6 know, you referred to it as a backbone. But sort of add  
7 those on in a way that provides clarity and sort of  
8 apples-to-apples comparisons across all the resources,  
9 you know, renewable and nonrenewable?

10 As we count those kilowatt hours, you know, they  
11 have to contain the right things in terms of the level  
12 of service and the types of services that they include,  
13 so we can compare and make sure we're following the  
14 economic approach, as well.

15 MS. GOLD: I think our perspective is that we  
16 have to start at looking at our current system and  
17 seeing what we can use better and more effectively. I  
18 think that's the first step that we can take in terms of  
19 moving effectively towards our carbon reduction goals.

20 So we know that, for example, the energy  
21 markets, there's room for them to be optimized. There's  
22 room for renewables to be dispatched in closer to real-  
23 time. And, you know, we've moved towards those pieces  
24 in implementing the 15-minute market, but there's  
25 certainly more that we can do.

1           And aligning some of those market signals from  
2 the energy markets, then, with the procurement practices  
3 will be necessary in terms of what the State desires,  
4 either through the long-term planning process in making  
5 those signals and requirements more clear or the, you  
6 know, revenue streams that are coming out of the  
7 CALISO's market.

8           Steven?

9           MR. KELLY: Yeah, if I could add to that, we  
10 have a standard of procurement which is kind of least  
11 cost/best fit. And while a lot of us kind of assume  
12 that that was originally going to take into account  
13 integration capabilities of renewables, storage  
14 capabilities of renewables, up until the last couple of  
15 years it seemed to be it was only least-cost kind of  
16 performance for selection in the procurement process.  
17 Which drives all of the renewables that are at least  
18 grid connected.

19           So, we have a tool, least cost/best fit, which  
20 can be adjusted and should be adjusted to take account  
21 of those factors that policymakers and the utilities  
22 need to see in renewables as a development.

23           If integration or the ability to balance a  
24 resource is something that is of higher value than not,  
25 and that was integrated into the procurement process,

1 you'll see more and more renewables develop projects  
2 that have that capability.

3 The problem is that that stuff has not been  
4 there, yet, really, and it should have been.

5 COMMISSIONER MC ALLISTER: Thanks. I want to  
6 let Nancy go ahead, sorry.

7 MS. RADER: Thanks. Nancy Rader, with  
8 California Wind Energy Association. First, I just  
9 wanted to echo, ditto the comments that Steven and  
10 Rachel made.

11 The California Pathway Study and other studies  
12 show we need to achieve 50 percent renewables to meet  
13 our greenhouse gas goals. I don't know why we would  
14 want to change horses right now, when we have a policy  
15 that's been really, extraordinarily successful in  
16 delivering renewables, 10,000 megawatts of central  
17 station, and 1,000 megawatts of wholesale DG.

18 But I want to underscore the fact that the RPS  
19 has always -- has never really been a least cost, price-  
20 only competition. There have always been other values.  
21 And it's really only recently, since the utilities have  
22 procured, really over-procured what they needed to meet  
23 the interim RPS goals, they over-procure with a bunch of  
24 solar, that we really fell behind in some of those  
25 values.

1           But like Steven said, there is a place, least  
2 cost/best fit, for every single indirect and direct  
3 cost, and benefit of each renewable technology. And  
4 we're seeing the PUC rapidly catch up, after the slew of  
5 procurements were made, integration cost adder,  
6 intravalue was adopted for the 2014 solicitation. And  
7 we're going to work on and finalize the California-  
8 specific value for the 2015 procurement cycle.

9           They're moving towards a capacity valuation and  
10 some of the utilities are already doing a capacity  
11 valuation approach that reflects the declining capacity  
12 value as penetration increases on the system.

13           And the utilities, of course, have been making  
14 changes of their own on the time of delivery of values  
15 during the day, which are also changing as solar  
16 penetration increases.

17           And so, these changes are likely, I think, to  
18 produce a more balanced portfolio of procurements going  
19 forward. And I think the value of the RPS calculator  
20 really can't be understated in terms of looking to see  
21 how we can best combine renewables to lower the total  
22 overall costs and lower the operational challenges.  
23 It's really essential to optimize the mix in order to  
24 minimize the operational challenges that you have to  
25 deal with.

1           And I think the PUC is making a whole lot of  
2 progress on that front and getting a lot more  
3 sophisticated there.

4           MS. WISLAND: Are we going in a circle or can we  
5 just jump in?

6           MS. GOULD: You can just jump in.

7           MS. WISLAND: Okay. This is Laura Wisland with  
8 USC, Union of Concerned Scientists.

9           I want to echo a lot of what Nancy, and Steven,  
10 and Rachel said about the RPS program providing a lot of  
11 needed market certainty both for developers, as well as  
12 grid planners. I mean, we are making significant  
13 transformational investments to our electricity grid,  
14 really thinking very differently about how we consume  
15 electricity, and generate electricity and build  
16 electricity generation infrastructure.

17           And without having a long-term number out there  
18 in the future, even if it has a lot of flexibility in  
19 terms of timing, I think it's really important to drive  
20 that research, and development and planning that is  
21 essential to happen.

22           So, when we start talking about moving away from  
23 something like that, towards something much more open-  
24 ended, that's simply driven by greenhouse gas  
25 reductions, while I see the benefit to thinking about



1 the entire electricity system from a GHG perspective, I  
2 really worry about losing, first of all, a lot of time  
3 arguing about what that specific number is. And if we  
4 have to boil that down to a carbon budget for each  
5 utility, how long that process is going to take, and how  
6 much time we might waste in the meantime.

7 But then, even if we do do that, losing that  
8 certainly. So, that's my biggest concern with going to  
9 just a simply GHG approach.

10 And then, of course, we've been working on  
11 renewable energy for decades in this State, for many  
12 more reasons besides just reducing carbon. So, I think  
13 it's important to keep those benefits in mind as we  
14 think through what the next, best tranche of renewables  
15 look like.

16 The other piece on integration that I'll mention  
17 now, but I'm going to talk about later in my  
18 presentation on reliability, is that in addition to  
19 squeezing out more flexibility with our existing gas  
20 fleet, in the context of integrating renewables, I also  
21 think we need to start thinking about the services that  
22 the renewable generation can provide in terms of  
23 flexibility.

24 I think there is a lot of potential there that  
25 has not really been discussed. We've been focusing on

1 demand response and storage technologies, which is  
2 great. But let's not forget that renewable generators  
3 can actually provide some of those services as well, and  
4 that needs to -- so, if we go down that pathway, I think  
5 we need to be thinking about what is it about our energy  
6 markets that may be holding renewables back from  
7 thinking about the services they could provide to the  
8 grid? And what is it about the way we're contracting  
9 for those renewables that makes that type of behavior  
10 more risky and how can we rethink that?

11 MS. GOULD: Thank you. And does anyone else  
12 have any responses to other comments made?

13 MR. MILLER: Peter Miller, with the National  
14 Resources Defense Council. And I guess I'll jump on the  
15 bandwagon, as well, and just acknowledge the  
16 extraordinary success that we've had so far from the  
17 RPS.

18 It's been a tremendously successful program. I  
19 think pretty much everybody's acknowledged that. And  
20 that's great news.

21 We think that an alternative framework could  
22 work going forward. Something that the utilities have  
23 been working on, a clean energy standard, is certainly a  
24 plausible alternative. Obviously, it would need to  
25 be -- have much more fleshed out, specific targets,

1 timetables, requirements, obligations.

2           At the same time, and I think other speakers  
3 have mentioned this, there's been a tremendous amount of  
4 investment, both legislative, regulatory staff, and  
5 stakeholders as well in developing the RPS framework  
6 that we've got. There are guiding regulations and  
7 parties are well-aware of that, and there's been a lot  
8 of staff resources put into that.

9           And I think we should be cognizant of that and  
10 thoughtful about whether a new framework provides the  
11 benefits that would be justified by the additional time,  
12 and effort and resources it would take to develop that  
13 new framework. Not just at the Legislature, but at the  
14 agencies as well. And I'm sure all of you up at the  
15 dais are well-aware of constraints on time and staff  
16 resources.

17           That said, clearly, we're moving into a new era.  
18 The key issues to get to 33 percent were can we build a  
19 lot of renewables and is it going to cost far too much?  
20 And we answered those questions quite confidently that,  
21 yeah, we can build a lot of resources and, no, it's not  
22 going to cost too much.

23           But we're now faced with the challenge of  
24 integrating renewables on a grid that's going to be, by  
25 2030, primarily renewable-dominated, not fossil-

1 dominated. And that's the big challenge we face going  
2 forward.

3 So, to the extent that we continue with the RPS  
4 framework, I think it does need to be modified, adjusted  
5 to take into account those principle challenges we face  
6 going forward.

7 Not all of the changes will be made within the  
8 RPS framework. Some of them, the parties have already  
9 mentioned, are with how we calculate least cost/best  
10 fit. And I'm forgetting the bill number, but there was  
11 a bill passed last year that specifically directed the  
12 PUC to address integration costs and include those in  
13 the calculator. I think that's an important task.

14 And there are, obviously, other policies and  
15 planning efforts underway about transmission planning,  
16 and expansion of the ISO, and EIM, that are outside of  
17 the RPS. They're going to be critical to getting to  
18 success.

19 But that said, I think our tendency would be to  
20 stick with the RPS, since it is working, and because of  
21 the big investment and figure out if, and how we can  
22 make that work for the challenges going forward.

23 MR. CASEY: If I could, just on this particular  
24 topic, ask the panel a question. I appreciate Steven's  
25 comment and I think it resonated with most of the panel

1 here. If it ain't broke, don't fix it.

2 But when you look at where we are today relative  
3 to the 33 percent goal, we have about 7,000 megawatts of  
4 solar on the transmission system right now.

5 The only resource being developed over the next  
6 five to six years, to get to 33 percent, is one  
7 technology in one State, solar PV in California. We're  
8 literally doubling our solar capacity from 7,000 to  
9 14,000, over the next five to seven years.

10 So, I guess I would ask the question, when we  
11 talk about the integration challenges, and I think you  
12 all know the over-generation challenge that solar PV  
13 presents, and the study work that's been out there, is  
14 the current RPS framework going to perpetuate more of  
15 the same? And do we need changes to it, to facilitate a  
16 more regional procurement approach where we can take  
17 advantage of the diversity of renewable resources that  
18 are out there.

19 We have amazing wind capabilities throughout the  
20 west. But the question is, are the current RPS buckets  
21 really going to facilitate that kind of regional  
22 diversity?

23 And another question is what about the  
24 distribution resources and the contribution they can  
25 make to a 50 percent goal?

1           Right now, we're focusing on central station  
2   transmission resources, but do we need to be thinking  
3   about the contributions the distribution system can make  
4   to meeting that goal, as well?

5           That doesn't have to be answered now, if it can  
6   be dealt with later.

7           MS. WORSTER: This is Chari, from ORA. So, I  
8   think we agree with what most everyone had said about  
9   the possible challenges to achieving 50 percent goal.

10          However, we believe that working with the  
11   current structure, tandem with the current structure is  
12   a good starting point. There's regulatory certainty.  
13   Utilities and generators have already spent years  
14   understanding the current policy framework.

15          There's a procurement process which just was  
16   currently updated to a more streamlined process.

17          We have the multi-year compliance periods which  
18   allow for more flexibility, and this reduces the  
19   incentives of over-procurement. It also promotes  
20   renewable energy production that is actually used in  
21   California.

22          However, I do agree that we do have certain  
23   issues that we may have to look at and it's the bucket.  
24   And specifically, the second bucket where we believe it  
25   inhibits the use of out-of-state renewable energy.

1           So that said, I think that a good starting point  
2   would be to use what we currently have and just build on  
3   that.

4           MS. GOULD: Okay. And actually, I think this  
5   might be a good time to just -- I think we're discussing  
6   it a bit anyway, to jump into question two.

7           What are the operational challenges of a 50-  
8   percent renewable policy framework?

9           Let's see, did you want to start, Steven?

10          MR. KELLY: Yeah, regarding the challenges and I  
11   think, Keith, you raised a really good point. But I  
12   don't think it's so much the paradigm, the RPS paradigm  
13   overall that's a problem. I mean, the E3 studies that  
14   everybody looks out to 2030 says that we have a  
15   challenge operationally if we don't change what we're  
16   going to do.

17          Fine, we got that. There are changes that can  
18   be done without throwing the baby out with the bathwater  
19   here.

20          And I think the real place to focus, as I  
21   alluded to in my prior comments is, is the least  
22   cost/best fit methodology failing? And if so, why?  
23   Because that should be flexible enough to address the  
24   concerns that we're seeing out even on a ten-year  
25   timeframe.

1           Recognizing that when you actually build  
2 renewables, they tend to come on lumpy additions, and  
3 you're going to get blocks of stuff coming in, and when  
4 you forecast based on that stuff, things look a little  
5 out of kilter.

6           But there are other -- there are things that we  
7 can do to improve the least cost/best fit methodology to  
8 make sure that we have the resources that match what we  
9 need, without actually undermining the buckets concept.  
10 Because the primary purpose of the buckets concept was  
11 to mitigate the risk of litigation on a commerce clause  
12 provision when last time the RPS was reformed. That  
13 still stands, probably. So, just that's where that came  
14 from.

15           But we could keep those buckets and move forward  
16 under that framework, and perfect the least cost/best  
17 fit stuff.

18           I'll talk later about, you know, how to gobble  
19 up the excess over-generation later today, which is  
20 another way to deal with the over-generation concern or  
21 problem that you're seeing operationally. That fix  
22 those problems without eliminating the RPS framework  
23 overall, that we've developed over the last 15 years.

24           MS. GOULD: Do the utilities have a response?

25           MR. BARTHOLOMY: Sure. So, a couple of



1 comments. To the point about over-generation, really,  
2 that's one of the key reasons that we're interested in  
3 coming up with a framework that allows for a  
4 commensurate amount of utility investment in carbon-  
5 reduction strategies that can deal with over-generation.

6           So, in particular, transportation  
7 electrification. If you look at what utilities spend in  
8 transportation electrification versus what we're  
9 spending in renewables, or what the State as a whole is  
10 spending in transportation electrification, we're doing  
11 some wonderful things there. But we're spending  
12 something on the order of \$1 to \$3 billion per year in  
13 RPS procurement, and our premiums associated with that.  
14 And that's before we even get into costs for renewables  
15 integration.

16           We're spending a tiny, tiny fraction of that on  
17 transportation electrification or on building  
18 electrification, which was also called for as a  
19 strategy, one of the forks in the road in the E3  
20 Pathways analysis. We're spending zero on that.

21           Both of those approaches could help us deal with  
22 over-generation issues and reduce carbon emissions from  
23 the transport and natural gas sectors.

24           But we don't have any policy framework that  
25 allows us to shift some of that \$1 to \$3 billion a year,

1 or what will be something quite a bit more than that in  
2 the future, towards those strategies that allow for  
3 renewables integration and carbon reduction at the same  
4 time.

5           Specifically, with the current set of renewables  
6 that we've got and the issues that we have associated  
7 with reliability there, probably the biggest issue, and  
8 I now we're working to address this with the development  
9 of smart inverters, but having power system event, where  
10 we end up with a loss of, potentially, as much as 3,000  
11 megawatts of PV going offline in reaction to a  
12 disturbance on the grid, is a significant issue. And we  
13 need to make sure that the PV that's being built out  
14 over the next six to seven years is adequately designed  
15 to respond to grid disturbances in a way that enhance  
16 reliability. So, I think that's critical and needs to  
17 be ensured in that procurement.

18           And I think as we get into more of those  
19 renewables providing grid services back, we're going to  
20 see some balancing impact on costs of renewables, where  
21 we have very low cost today, but almost no asks in terms  
22 of grid services back from those renewables.

23           The second issue I wanted to highlight is in  
24 particular, for a lot of the publicly-owned utilities  
25 that have a lot of large hydro in their systems, we're

1 going to be faced with fairly decent chunks of the year  
2 where we are spilling hydro in order to make room for  
3 renewables on our system.

4 And from a greenhouse gas reduction stand point,  
5 that has very limited value to us as a policy, and  
6 really speaks to the need to think about cost-  
7 effectiveness of carbon reduction more broadly than just  
8 from your renewable strategies.

9 COMMISSIONER HOCHSCHILD: Actually, if I could  
10 jump in and ask a question, or within the question you  
11 posed.

12 So, just to reiterate my opening comments, I  
13 said, greenhouse gas emissions in California, reducing  
14 those, is a sort of absolutely necessary but wholly  
15 insufficient outcome. Even if we stop all the emissions  
16 today, you know, California's six and a half percent of  
17 the country's emissions, and less than one percent of  
18 global emissions. Part of the goal has to be market  
19 transformation.

20 And I think, when you look at policies like the  
21 RPS and the CSI, providing that certainty that's allowed  
22 investment to flow into the clean energy sector, and  
23 bring down the cost reductions to the point -- we have  
24 actually met with Apple last week and, you know, they  
25 just procured a 280-megawatt project that they told me

1 was cheaper than gas power from PG&E. And that's -- I  
2 know all that cost reduction's a function of the market  
3 certainty.

4 But the piece I wanted to ask, really the  
5 utilities first, but others as well. We've been  
6 focusing on the 50-percent policy, what should that look  
7 like? But what about the nonrenewable procurement, are  
8 there ways that you can think of that the State could --  
9 we, as policymakers, could be encouraging that  
10 procurement, to the extent it has to happen, to be  
11 designed better to support the renewable procurement?  
12 If that makes sense.

13 Because, for example, I'm told by colleagues at  
14 the ISO that there are many gas contracts where the  
15 number of starts and stops are, you know, limited. And  
16 even when there's no technology barrier, for contractual  
17 reasons, you know, renewables get curtailed when that's  
18 really just a contractual, rather than a technical  
19 barrier.

20 I mean, other thoughts like that, any comments  
21 on that question?

22 MS. HALBROOK: Sure. So, I would certainly  
23 speak to the first part of what you were mentioning  
24 around the need for sort of a global solution to the  
25 greenhouse gas emission issue.

1           And I think we're seeing right now, you know,  
2   very successfully with the Cap and Trade Program here in  
3   California having linked with Quebec, and now pending  
4   linkage with Ontario, that some of these market-based  
5   programs around, that are focused on greenhouse  
6   emissions, are an excellent way to encourage that. You  
7   know, not only within our own -- the confines of our own  
8   country but, globally, to come up with these linkages.  
9   And seeing what the EU is doing, as well, with their  
10   carbon program and trying to sort of tighten up their  
11   carbon budget as well.

12           But I think, as what Obadiah mentioned earlier,  
13   around creating a greenhouse gas emissions target for  
14   the utilities, for the electric sector, would really  
15   serve, I think, to help address some of the concerns  
16   around the operational challenges we see with  
17   renewables. Where, really, these GHG reduction  
18   strategies can sort of compete, side by side, all of the  
19   costs and all of the benefits.

20           I think as what Laura mentioned earlier that,  
21   you know, with the renewables program here in  
22   California, with the RPS, we're not just specifically  
23   speaking to, okay, it's a greenhouse gas reduction  
24   program. It has a number of co-benefits, as well.

25           And so this GHG program, we could certainly see

1 a world in which we attempt to value some of those co-  
2 benefits that they offer, or at least sort of enumerate  
3 them and compare them side by side, rather than looking  
4 directly at the electric sector.

5 And I think Obadiah made some great comments  
6 about the need for additional transportation  
7 electrification, and electrification of other end uses  
8 as well.

9 MR. BARTHOLOMY: And just to speak to your  
10 question on procurement, for us going forward, really  
11 all of our procurement is renewable or related to  
12 integrating renewables. So, thinking about whether  
13 that's new storage facilities, new distributed storage  
14 approaches, new flexible gas plants, or changes to our  
15 existing plants to allow more flexibility within those,  
16 that's really where the focus of any nonrenewable  
17 procurement is at this point.

18 I think, though, there has been some procurement  
19 in the past, in terms associated with those contracts,  
20 that are creating some of the challenges with limited  
21 flexibility on the grid today. And I don't know exactly  
22 all of the political constraints on renegotiating those  
23 contracts, but that would be a key strategy, I think,  
24 for us to kind of open up the floor a little bit and  
25 allow for more of that solar generation to come on

1 without curtailment.

2 MS. GOULD: Any final thoughts from  
3 environmental or ratepayer reps?

4 MS. WISLAND: Yeah, I want to speak to that  
5 issue because we've been doing a lot of work on this.

6 So, on this question of what can we do to the  
7 other parts of the electricity portfolio to create more  
8 flexibility and make them more clean energy-friendly. I  
9 think that it's pretty important to take a look -- to  
10 take -- to do an assessment of our existing gas fleet,  
11 or maybe where we think we're going to be in 2024, or  
12 2025, 2030 and understand how those plants are going to  
13 be operated per the contracts they have now, and whether  
14 those contracts aren't going to make sense for what we  
15 think our electricity portfolio -- the way we think our  
16 electricity portfolio is going to have to function in  
17 the future.

18 So, it seems like there is a lot of  
19 inefficiencies in the current way some of the gas plants  
20 are operated and I think that step, that's like the low-  
21 hanging fruit. Let's make sure that these plants are  
22 being responsive to what else is happening on the grid.

23 I think the ISO is doing some analysis on that  
24 right now. But it would be really helpful for the  
25 results of that analysis to make its way into the long-

1 term procurement planning process at the PUC, where  
2 we're having these discussions about whether we need  
3 additional gas and what value that would provide. So, I  
4 think that's step number one.

5           And so, I'm going to present a little bit later  
6 about which types of gas plant flexibility may be most  
7 valuable to the system. Basically, what we're seeing is  
8 that reducing the minimum generation level is probably  
9 going to get you the biggest bang for your buck in terms  
10 of reducing renewable curtailment, and helping integrate  
11 renewables. But we can talk more about that later.

12           I think we also should be thinking about  
13 comparing the costs and the value of increasing --  
14 making investments to increase the flexibility of the  
15 existing gas fleet versus making investments in other  
16 types of non-fossil flexibility. Which one is going to  
17 get us more renewable integration? Which one is going  
18 to get us more greenhouse gas reduction? And which one  
19 is going to get us better costs benefits? That's an  
20 important valuation to do.

21           And then, from a policy perspective, if we think  
22 there is value to thinking through procurement  
23 strategies for the non-fossil resources to provide  
24 flexibility, you know, the way I think we do that is we  
25 have some sort of overarching carbon goal that's



1 impacting all of our procurement. So when we look out  
2 ten years, and think about everything we need on the  
3 system, we're thinking about it through a carbon lens.  
4 So, I think we kind of need both. We need an RPS and we  
5 also need some sort of overarching carbon strategy to be  
6 driving the other 50 percent of the investment.

7 And I think the Governor's Executive Order is  
8 kind of heading us in that direction, anyway.

9 CHAIR WEISENMILLER: Yeah. No, I was going to  
10 note, obviously there's been a lot of reference to the  
11 State-of-the-State 50 percent goal. But, obviously,  
12 that's within the context of the recent Executive Order  
13 setting an overall goal of where we need to go, as  
14 opposed to just a standalone.

15 And that's certainly integrated to get the  
16 State-of-the-State together into one coherent policy.

17 COMMISSIONER MC ALLISTER: I'm going to take  
18 advantage of -- oh, I'm sorry, was something else going  
19 to speak?

20 I was going to take advantage of having PG&E and  
21 SMUD right next to each other, and do a little compare  
22 and contrast, so apologies in advance for that.

23 But I guess we've talked a bit about all the  
24 various complementary things that need to happen, demand  
25 side, small-scale generation and large-scale generation,

1 and how, you know, those need to be orchestrated in a  
2 way that makes sense. Certainly have a lot of interest  
3 in leveraging the opportunities in efficiency in the built  
4 environment to create the head room that we need for  
5 some of the demand side technologies that are going to  
6 increase load.

7 And, you know, we want to be able to supply all  
8 of the above with renewables, wherever possible, and  
9 manage that process in a way that enhances reliability,  
10 even. Not just preserves it, but actually enhances it.

11 So, I guess I'm wondering, sort of if you could  
12 give us your respective ideas about how easy it is for  
13 you to make the right decisions in the near-term,  
14 medium-term to sort of do that? Get the investment to  
15 the right places, to focus on the built environment, to  
16 look at how to absorb some of the forward investments  
17 you need to make in the distribution grid, for example,  
18 to enable all that.

19 And on the transportation side, for example,  
20 it's going to drive some distribution grid investment.

21 What does that process look like at SMUD and  
22 also what does that process look like at PG&E? I think  
23 they're different. But how different, I guess, is my  
24 question? And functionally, time frames and sort of  
25 what needs to happen in terms of critical path?

1 MS. HALBROOK: Sure, I think I can speak mostly  
2 to sort of what we see as the critical next step forward  
3 at PG&E.

4 We're currently supporting a bill that's moving  
5 through the Legislature, Assembly Bill 802, which would  
6 help the utilities have, specifically, access to code  
7 savings from existing buildings.

8 So, I was fortunate enough to hear CPUC  
9 President Picker speak last week at the Navigating the  
10 American Carbon World Conference. And he really  
11 commented on the fact that the electric sector is  
12 approximately -- you know, electric generation  
13 approximately 20 percent of our statewide emissions, but  
14 the built environment is 30 percent, and transportation  
15 being about 40 percent.

16 And so, we really agree with that and we think  
17 that within our own service territory approximately 70  
18 percent of the existing energy efficiency potential is  
19 in that to-code savings. So, it's something that we  
20 think is sort of a critical next step to begin progress  
21 towards the Governor's goals, and to help us with that  
22 additional procurement that you mentioned, as well.

23 MR. BARTHOLOMY: And I guess I would say that we  
24 are also supportive of moving to a to-code type of a  
25 framework. Though, generally, we try to follow as

1 closely as we can on what the investor-owned utilities  
2 are doing. There's a huge body of work on energy  
3 efficiency accounting frameworks. And we report  
4 annually to the CEC and try to do our best to make sure  
5 that we're aligned with what's done statewide for energy  
6 efficiency.

7 I would say it's interesting, when we look at  
8 the numbers of how much we're willing to spend on energy  
9 efficiency and how much we're willing to spend on  
10 renewables, that we are willing to sign contracts for  
11 renewables that cost almost twice the price of what we  
12 can get energy efficiency for.

13 So, when you think about getting at that built  
14 environment, the policy signals are really misaligned to  
15 utilities, with an RPS framework that's disconnected  
16 from how much we're willing to look at cost  
17 effectiveness of energy efficiency.

18 Those two don't fit in the same box and, really,  
19 there's very little discussion across the organization  
20 about how can we make those tradeoffs because we have  
21 completely separate policy frameworks for them.

22 Similar discussion can be had around  
23 transportation electrification and around distributed  
24 generation. Each of those is looked at in a unique  
25 policy lens and we don't think about cost effectiveness

1 of those resources against each other, which might allow  
2 us to direct more investment towards the demand size  
3 measures that you mentioned, and more investment on our  
4 distribution grid, more investment in our local  
5 economies.

6 COMMISSIONER MC ALLISTER: I want to give  
7 everybody else an opportunity to chime in on this.

8 MR. KIM: My name is Daniel Kim, with the  
9 Westland Solar Park. I want to thank the Commissioners  
10 for allowing us to speak on these issues.

11 And I think the thing that I'd like to add to  
12 this conversation is really the importance and, actually  
13 it follows, I think, with the conversation about built  
14 environment and how to reduce greenhouse gas emissions,  
15 and energy costs.

16 And that is in water. Water delivery represents  
17 about 25 percent of the total usage of energy in  
18 California. And it is likely to increase given the fact  
19 that we are, you know, forecasted to see extended  
20 drought periods as a result of climate change.

21 And as the Westlands Water District is looking  
22 at delivery of water to its farmers, and Westland Solar  
23 Park is looking at the retirement of thousands of acres  
24 of marginally impaired farmland, and converting it to  
25 solar generation there is a lot of co-benefits that can

1 be created as a result of looking at this water energy  
2 nexus.

3 And that's not something that typically, I  
4 think, gets folded into these conversations about the  
5 RPS. And it definitely is not part of the dialogue that  
6 occurs in transmission planning. But it should be  
7 because if we're missing out on that ability to  
8 integrate what are likely to be the two largest policy  
9 issues facing California, because you can't build an  
10 economy without water, and you can't deliver water  
11 without energy.

12 So, I'd like to just make those points to this  
13 discussion.

14 MS. GOULD: Any of the other generator  
15 representatives, before we break for lunch?

16 MS. GOLD: I just wanted to comment specifically  
17 on the issue of over-generation and PV that's come up a  
18 couple of times in this conversation.

19 And I wanted to highlight that we have an  
20 incredible solar resources that we've been effectively  
21 harnessing through our procurement in the RPS thus far.  
22 And, you know, we see over -- obviously, the reliability  
23 of the system is key now, in going forward at all times,  
24 but we see this issue of a very predictable solar curve  
25 throughout the year as something that can be harnessed

1 to help meet the needs of electrification of the  
2 building sector, of electrification of the  
3 transportation sector, of the electrification of our  
4 water transportation needs and desalinization needs.

5 And those are all incredible opportunities for  
6 the State to take advantage of our solar resource, which  
7 we can now provide with a variety of solar technologies,  
8 solar PV and solar thermal. And with cost reductions  
9 that have declined dramatically, 78 percent over the  
10 last five years.

11 So, there are significant steps to be taken. We  
12 don't think those are technological barriers. But  
13 rather looking at, as Laura already mentioned, some of  
14 the contractual barriers, the minimum generation levels,  
15 how we're designing time-of-use rates, and how we're  
16 asking all resources when they bid in to provide the  
17 necessary grid services.

18 And PV generators, along with solar thermal  
19 generators, can provide a lot of the -- many grid-  
20 friendly services, including VAR support, and frequency  
21 response. And a number of our renewable technologies  
22 can do these and provide these services reliably. We  
23 need to ask them to do so. They have the technical  
24 capabilities and are ready to provide it.

25 MS. GOULD: Okay, and one final comment from

1 Steven.

2 MS. RADER: I have one, too, but go ahead.

3 MR. KELLY: Okay. Yeah, I just wanted to follow  
4 up on this idea or the comment related to energy  
5 efficiency and renewables as if it's a tradeoff. And I  
6 actually view them as complements.

7 And, you know, you can achieve fairly  
8 significant energy efficiency goals while having a very  
9 robust RPS. If energy efficiency is as cheap and  
10 effective as suggested, they should be doing more. You  
11 don't have to wait to get rid of an RPS to do that, you  
12 should do it now.

13 But I would point out that, you know, the other  
14 component of the Governor's proposal, which is critical  
15 to what we're talking about, is the electrification of  
16 the transportation sector.

17 And you're not going to electrify the  
18 transportation sector with energy efficiency. And if  
19 you want to electrify it with clean resources, you're  
20 going to electrify it with renewables.

21 And the decision to invest in the renewables has  
22 to be made well in advance of the time that you want the  
23 electrification of the transportation sector to have  
24 occurred so that you can get the dollars in place, and  
25 the investment in place to make that happen.



1           If you wait until 2028 and say, well, let's  
2   electrify the transportation sector, it ain't gonna  
3   happen. Some of those decisions have to be made  
4   relatively soon.

5           So, I just want to point out that, you know,  
6   energy efficiency and renewables are complements in an  
7   overarching portfolio. Renewables has an important  
8   place to play in the electrification of the  
9   transportation sector, which probably energy efficiency  
10   can't necessarily solve, although it drops overall  
11   demand and provides some residual power there.

12           And that's what we ought to be focusing on is  
13   how to get the investment in place, in time to make that  
14   happen.

15           MS. RADER: Well said, Steven. I totally agree  
16   with that. I just wanted to echo Mr. Kim's comments, as  
17   well, that we not forget about the water savings  
18   associated with non-thermal renewables, saving the water  
19   associated with gas, which is not insignificant.

20           I also just wanted to underscore the importance  
21   of accessing that flexibility that we have on the system  
22   now. We actually superimposed an ISO slide, showing the  
23   amount of flexible resources on the system, superimposed  
24   it on the duck. And there's twice as much. I mean,  
25   there's twice as much on the system, today, as we need

1 for 2020 duck neck. It's just that we can't access  
2 those.

3 And so, it's just critical that we find a way to  
4 break into that, including for load following down. I  
5 was glad to hear your remarks on that.

6 So, that's all for now. I do have some comments  
7 on your questions, though, for later. Thanks.

8 COMMISSIONER MC ALLISTER: Great. Any comments  
9 from the dais before we break for lunch? Great, okay.

10 MS. GOULD: Okay, thank you everybody. We'll  
11 start with question three after lunch, at 1:15.

12 COMMISSIONER MC ALLISTER: At 1:15, all right.  
13 Thanks.

14 (Off the record at 12:05 p.m.)

15 (On the record at 1:17 p.m.)

16 COMMISSIONER MC ALLISTER: All right, are we  
17 ready to pick it back up here. Thanks, everybody. Hope  
18 everybody had a great lunch. There are so many great  
19 culinary options in the neighborhood so, hopefully, you  
20 found one of them. Yeah, exactly, a lot of people ate  
21 sandwiches at La Bou, I think.

22 Okay, so let's pick up where we left off. I  
23 think we're on question three.

24 MS. GOULD: Yes.

25 COMMISSIONER MC ALLISTER: Great.

1 MS. GOULD: Okay, thank you, everyone.

2 So, question three is, should a 50 percent  
3 renewable policy maintain the current RPS policy of  
4 technology neutrality or should it favor technologies  
5 that provide specific benefits to the system?

6 And I was thinking we could potentially start  
7 with some of our environmental or ratepayer rates,  
8 because we haven't heard from you in a while.

9 MS. WORSTER: Hi. So, ORA sports technology  
10 neutrality for as long as the costs and benefits of any  
11 given technology of the system can be accurately  
12 quantified and assessed.

13 If not, then we would support a more strategic  
14 system-wide approach. I'm not really sure how. But,  
15 yeah, I think our first approach would be, you know,  
16 would be to support technology neutrality.

17 MS. GOULD: And how about the generator  
18 representatives?

19 MS. GOLD: Rachel Gold, with the Large-Scale  
20 Solar Association. We would support technology  
21 neutrality.

22 And I think one of the things that we can  
23 improve upon in the RPS process is continue to refine  
24 the various metrics by which different technologies are  
25 assessed. So that, if we're looking for different

1 services from renewables, then spending more time on  
2 defining what those look like, and what the parameters  
3 and requirements we need are, and then feeding that into  
4 the procurement process.

5 And the reason for that is that that's going to  
6 provide better ability for the market to respond more  
7 creatively and to bring in low-cost options from a  
8 variety of different technologies.

9 And I think that if you get into mandating  
10 specific procurement, from specific types of  
11 technologies, you can end up not getting what the system  
12 needs. So, we would definitely be aligned with ORA on  
13 that.

14 MR. KELLY: Yeah, this is Steven Kelly, with  
15 IEP. And I would share that sentiment.

16 I mean, the benefits to the system, in our view,  
17 are attributes that ought to be embedded into the  
18 procurement process or identified, and they provide  
19 values that should be reflected in the procurement  
20 process.

21 So, you can identify and procure to maximize the  
22 value of those benefits, without having to go down to a  
23 technology-specific kind of procurement practice, in our  
24 view.

25 MS. GOULD: And how about the utilities?

1           MR. BARTHOLOMY: I think we're supportive of  
2 technology neutrality, but hope that distributed  
3 generation can be amongst the technologies that we're  
4 being neutral about.

5           MS. HALBROOK: Sure. I mean, I think I would  
6 also currently echo the point on the importance of  
7 technology neutrality to sort of encourage competition,  
8 and drive down prices, and help with some of the  
9 innovation that we were talking about earlier in the  
10 introduction section.

11           But I think the other thing to keep in mind is  
12 our energy policies, as a whole, and the fact that there  
13 is certainly a lack of technology neutrality in some of  
14 the very specific procurement mandates we have that  
15 exist outside of the RPS.

16           So, to also, you know, take a look at those.  
17 And as we revisit all of our energy policy, looking to  
18 post-2020 and into 2030, of how we look at all of these  
19 things and how they complement one another.

20           MS. GOULD: Nancy, did you have a comment?

21           MS. RADER: Well, I pretty much answered the  
22 question in my first remark, I think, that we are --  
23 that the RPS is technology neutral and it always has  
24 striven to value the costs and benefits. In that sense,  
25 it's not technology neutral. It gives technologies

1 appropriate credit for their costs and benefits. And I  
2 think that's the way to go because it drives competition  
3 in the right direction, towards the values that we need.

4 I thought I might take the opportunity to  
5 respond to Mr. Casey's question on the buckets, and  
6 regional diversity.

7 I wanted to say that I think the current bucket  
8 structure can accommodate a fair chunk of out-of-state  
9 renewables. And I think there's some folks in Wyoming  
10 that are counting on that.

11 And I think dynamic scheduling can also  
12 accommodate some out-of-state renewables.

13 But I also want to say that a lot of that  
14 diversity we can get from in-state. Wind energy is a  
15 very good complement to solar and we have a lot of wind  
16 resources in-state.

17 I want to segue, then, to the DRECP, briefly,  
18 just to highlight our concerns with the draft plan that  
19 would put on the order of 75 percent of the wind  
20 resources, in the DRECP area, off limits, would prohibit  
21 wind development of about 75 percent of the area with  
22 the best wind resources.

23 So, we're quite concerned that our ability to  
24 diversify the portfolio with in-state resources is going  
25 to be really hampered if the DRECP goes through anywhere

1 close to where it is.

2 And then, finally, obviously expanding the  
3 regional footprint of the ISO would further expand that.  
4 And that new line that's going to go into Nevada will  
5 help with that.

6 We see that as a separate question, though, and  
7 one that has perhaps more to do with gaining flexibility  
8 in the integration resources, as much as, if not more so  
9 than the out-of-state renewable resources. So, thank  
10 you.

11 MR. KIM: Daniel Kim, with Westland Solar Park.  
12 And I would echo Nancy's comments, as well, on  
13 diversity. The geographic diversity is a key, I think,  
14 factor that needs to be taken into consideration in  
15 California, aside from whether or not we choose a  
16 technology or we go down a path of technology  
17 preferences.

18 Because if we're not accommodating a robust  
19 geographically diverse renewable system, and when I  
20 refer to that I mean both Central California, and  
21 Northern California, and Southern California, we're in  
22 effect, I think, creating a -- or actually making  
23 decisions on what technologies we're going to choose to  
24 go with. Because we're eliminating the ability of  
25 certain types of technologies that work very well in the

1 Central Valley that are not being allowed to participate  
2 in the RPS.

3 MS. GOULD: Thank you. Peter?

4 MR. MILLER: Well, I'll just jump in. Again, it  
5 seems to be broad agreement on the question of  
6 technology neutrality.

7 Our preference, we think this has worked well in  
8 the past, set performance standards and let the various  
9 technologies compete. That drives costs down and  
10 ensures that the State is meeting its needs in terms of  
11 performance.

12 Specific carve-outs are things that concern us  
13 for particular technologies. We think that there's  
14 really an opportunity to really focus on the State's  
15 goals in terms of market needs.

16 Identifying those are sometimes a challenge, but  
17 feel that that's generally the best way to proceed.

18 MS. GOULD: Thank you.

19 COMMISSIONER MC ALLISTER: I want to just follow  
20 up with something that Obadiah said, and maybe get  
21 Peter's view of this, as well.

22 So, you know, we have a lot of legacy --  
23 whenever we sort of get to some design of this new  
24 regime, whether it's sort of built, really, RPS 50  
25 percent, or whether it's slightly modified, or



1 significantly modified, we'll have a lot of legacy,  
2 small-scale rooftop, behind-the-meter DG.

3 And I'm wondering, I think I heard you say you'd  
4 like to include those systems as within the 50 percent.

5 I guess I'm wondering if you have some sort of  
6 next-run-down kind of ideas about, you know, what size  
7 above which, below which, you know, whether -- you know,  
8 if you have a lot of technical issues with respect to  
9 sort of metering and being ready for prime time to  
10 report in the system, and that kind of thing.

11 I'm wondering who, on the panel, has thought  
12 about that and possibly how that would look in practice?

13 MR. MILLER: I can jump in on that because we  
14 actually just had an internal discussion last week on  
15 this. It's an interesting question about whether and  
16 how to include DG solar in the RPS. It traditionally  
17 hasn't. To an extent there's a tradition there. And  
18 the focus has been on large-scale projects, wholesale  
19 projects.

20 And there's clearly a lot of interest in  
21 including it. It's renewable. And by that metric,  
22 alone, there's a good argument to be made to including  
23 it.

24 But there are a lot of complications, as well.  
25 And I guess I would say it's worth noting that not

1 including DG solar or, more generally, distributed  
2 renewables in the RPS isn't as big a change, isn't as  
3 big an impact as one might think because they already  
4 come out of the denominator. The kilowatt hours already  
5 come out of the denominator. So, you're effectively  
6 getting 50 percent credit, as 50 percent RPS, for that  
7 distributed generation.

8 Other issues that come up are, one, do we adjust  
9 the target? Fifty percent renewables is an ambitious  
10 target. But if we're including additional distributed  
11 renewables, does that want us to increase the target?  
12 And in particular, are we including existing distributed  
13 renewables or just incremental?

14 But the distributed market's going pretty well.  
15 There's high growth there and I think there's  
16 expectations it will continue. So, there's an argument  
17 to be made that we might want to raise the target if we  
18 include it.

19 There's also an important issue around ownership  
20 of the renewable attribute, or the REC. And if someone  
21 has marketed a rooftop solar system, in particular, on  
22 the basis of you get -- you're consuming clean,  
23 renewable electricity, and then those RECs are sold off  
24 and credited to the utility for purposes of RPS  
25 compliance, by law that person can no longer claim to

1 have clean renewables. They're just getting system  
2 power. And the utility is getting credit for the  
3 renewables.

4 And I don't know, and that may make a difference  
5 for particular homeowners. It may well make a  
6 difference for some businesses who want to be seen as  
7 consuming clean renewables.

8 The FTC would probably have something to say  
9 about that and there's some legal issues to resolve  
10 there.

11 So, it's a complicated, there's a variety of  
12 things. I think we're open to that option. Want to  
13 make sure that the State keeps pushing forward and has a  
14 suitably ambitious policy, and doesn't run into legal  
15 issues down the road.

16 MR. BARTHOLOMY: I agree with most of what Peter  
17 said. And I would say, yeah, we need to figure out how  
18 we are going to meter these systems, and who gets to lay  
19 claim to the renewable attributes. So, definitely agree  
20 with that.

21 I guess my comment was meant to be to the point  
22 that currently these resources are treated the same as a  
23 renewable energy credit from anywhere in the WEC. And  
24 the benefits from local distributed generation are  
25 pretty tremendous. And if you stack them up against all

1 the renewable resources that we're trying to procure  
2 under the RPS, they should float up towards the top in  
3 terms of a preferred resource. And, yet, we treat them  
4 either in that third category, which significantly  
5 devalues them, or as an offset against the denominator  
6 which devalues them even further.

7           So, I guess that really was what the point was,  
8 too, is that we should treat them as we value them and  
9 really count them in the category one resource.

10           COMMISSIONER MC ALLISTER: Does SMUD take the  
11 RECs, if they interconnect, or how does that -- what's  
12 your --

13           MR. BARTHOLOMY: So, as a condition of our  
14 incentive program, we claim the renewable energy credits  
15 from the systems and we also require metering as a  
16 condition for participating in the incentive program.

17           COMMISSIONER MC ALLISTER: Okay. Thanks to you  
18 both.

19           Anybody else?

20           MS. GOLD: Rachel Gold, for the Large-Scale  
21 Solar Association, again.

22           I think a couple of things I wanted to say about  
23 this issue, it's one that we've been doing a lot of  
24 thinking and talking about. And first is that we think  
25 that, you know, solar, distributed or wholesale, can

1 provide benefits, a variety of benefits.

2 And then, there's an important place for all  
3 sizes of renewable generation in meeting our emissions  
4 target at the State.

5 That being said, I think we have to be a little  
6 bit more specific about what we're talking about, when  
7 we talk about distributed generation.

8 Currently, there are distributed generation  
9 projects, of many sizes, that are structured as  
10 wholesale transactions, and fall into the bucket one  
11 category. And those transactions are fully  
12 participating in the market.

13 And I think where the disagreement comes up is  
14 what and how behind-the-meter resources should be  
15 treated. And we see those pathways and drivers as two  
16 very different markets.

17 So, we have a targeted set of policies for  
18 wholesale renewable generation, and that includes a  
19 variety of technologies. And we have a set of policies  
20 for behind-the-meter generation that drive a very  
21 different market that's based on consumer interest,  
22 largely, and different policies supporting that.

23 And we're concerned that by conflating the two,  
24 not only do you get into the important issues that Peter  
25 raised around double counting, and proper metering, but

1 that because they're driven by very different kinds of  
2 incentives and markets, they will -- pushing them  
3 together is simply not an effective policy.

4 So you might, instead of expanding the pie in  
5 terms of overall renewables in the State, actually  
6 shrink both markets by conflating the two. So, that's  
7 it.

8 MS. WISLAND: This is Laura, from UCS. I wanted  
9 to jump in, as well.

10 I'll just go out and say I don't think -- if we  
11 consider DG not RPS, I don't think we should include  
12 existing facilities. I just don't think that really  
13 gets us anywhere.

14 If you look at the bank of excess renewables  
15 that the IOUs, at least, have procured, I have not taken  
16 a look at the muni numbers any time recently, there's a  
17 significant amount of excess electricity for the RPS  
18 already banked.

19 If you add on the ability of behind-the-meter  
20 solar to contribute to whatever margin is left to get to  
21 50 percent, it becomes a lot smaller. It's actually  
22 really exciting, and surprising to me when I looked at  
23 those numbers, to see how far along we already are to a  
24 50 percent, not including behind-the-meter. So, I just  
25 think it's something -- it's important to think about

1 that.

2 I'll also just say that it's a little bit  
3 strange that we're having this conversation because I  
4 think the proposed amendments to the POU regulations for  
5 the RPS program are considering allowing behind-the-  
6 meter, POU-owned RECs to count for bucket one.

7 And, you know, obviously, this is a live issue.  
8 It's a live issue in the Legislature. The fact that  
9 this is moving forward at the CEC, just for the POUs,  
10 just for a certain type of behind-the-meter, is a little  
11 bit awkward. And I feel like if we talk about this  
12 issue, we should probably talk about it as a compliance  
13 tool for all the utilities, not just POU-owned  
14 facilities.

15 COMMISSIONER MC ALLISTER: So, that's a great  
16 point. I'm going to invite -- so we are -- we have an  
17 open IEPR proceeding. This is within the IEPR and I  
18 think everybody's views of that discussion are very,  
19 very welcome to get onto the record and, you know, into  
20 the IEPR as a policy recommendation that potentially  
21 could help integrate this discussion and raise the level  
22 to get more consistency. So, thanks for that.

23 MS. GOULD: And just a quick note, the POU  
24 regulations that are in play right now, today is the  
25 final day of the written comment period so, you know,

1 please, if you have any comments, you have several hours  
2 to submit them.

3 And also, if you make specific comments on them  
4 here, we have to respond to them in the final statement  
5 of reasons. So, I ask you to take pity on me and put  
6 written comments in.

7 But if we could -- if we can move along to  
8 question four, because we are pretty short on time.

9 Should renewable procurement, under a 50 percent  
10 renewable policy framework, differ from current  
11 procurement practices? And if so, how?

12 I was wondering if I could start with the  
13 utilities to talk about the different procurement  
14 practices already in place for retail sellers and for  
15 POU's.

16 MR. BARTHOLOMY: I think the key thing that I  
17 raised the point on earlier was that it would be nice to  
18 be able to look at the cost effectiveness of that  
19 renewable procurement against other carbon-reducing  
20 activities. And to have something built into that RPS  
21 procurement process, that structurally does that within  
22 the utility, would be an improvement on the current  
23 process especially if it would allow trading off against  
24 procurement targets, within the RPS, for other things  
25 that the State has acknowledged are critical to meeting



1 our long-term carbon goals that the electric utilities  
2 are going to play a strong role in.

3 MS. HALBROOK: I would echo Obadiah's comments.  
4 I think Steven Kelly made a great point, earlier, about  
5 the role of renewable energy and electric vehicle  
6 charging. And I think, currently, the real challenge  
7 there is these are dealt with in very separate  
8 proceedings. Although, we have already acknowledged  
9 that they very much complement one another and need to  
10 be thought of as sort of one in the same.

11 And I think I would just agree with Obadiah  
12 about the need to look at all GHG-reduction technology  
13 side by side, and the costs and benefits that they  
14 provide, rather than a specific type of technology.

15 MR. KELLY: Yeah, this is Steven Kelly, with  
16 IEP. I don't think the percentage of the policy  
17 actually is the determining factor here.

18 I mean, so what surprises me in looking back at  
19 the history of the procurement that has occurred,  
20 primarily at the PUC, has been the -- over the last  
21 three or four years we've had a focus on intermittent  
22 resources, and the potential problems that they provide  
23 from an operational perspective.

24 But if you look at the procurement outcomes, the  
25 most recent RPS outcomes, all most all of it is that

1 type of resource that is perpetuating that kind of  
2 problem.

3 I'm always struck by the fact that there are  
4 very little baseload renewables, geothermal, biomass  
5 that get selected. So, it's not the percentage so much  
6 that drives that outcome, I think.

7 But it's the Renewable Portfolio Standard was  
8 thought by many to be a portfolio of renewables. And  
9 what we tend to do is buy usually the least cost at that  
10 time, and if that continues to be least cost over four  
11 or five procurement cycles, you end up with a bunch of  
12 that stuff. And then we have potential for problems  
13 looking forward, if you forecast that out for ten years.  
14 Which is kind of where we find ourselves today.

15 So, I think there could be changes. I think it  
16 can be encapsulated, as I've said earlier, on least  
17 cost/best fit methodologies to perfect those selection  
18 processes. But I don't think it's a function of 50  
19 percent versus 33 percent.

20 MR. CASEY: Could I take that a bit further?  
21 Steven, what do you think needs to change to better  
22 reflect the all-in integration cost of different  
23 technologies going forward?

24 I know a lot of work's been done on the RPS  
25 calculator. Has it gone far enough? Do we need more?

1           MR. KELLY: Well, we haven't gone very far  
2 because now we have an imputed number which is, I think,  
3 3 bucks per kilowatt hour, or something like that, for  
4 this next -- or this current cycle of procurement.

5           I don't know if that's going to change the  
6 outcomes, you know, I just don't know.

7           We're in the process of trying to get a finer  
8 handle on what those potential integration costs are,  
9 and those should be included in the 2016 RPS RFOs. The  
10 procurements that actually occur in 2016.

11          So, we'll see. I mean, I'm hopeful. I mean, I  
12 think everybody down at the PUC, across the board, has  
13 advocated for a more sophisticated approach to  
14 integration cost adders, and integration of those into  
15 the procurement process. So, everybody seems to be on  
16 board with that.

17          I don't know if the direction we're going is  
18 going to solve the problem or not but, hopefully, it  
19 will.

20          COMMISSIONER MC ALLISTER: So, I want to just  
21 dig into that a little bit more. So, you know, so on a  
22 very pragmatic level what would you anticipate, or any  
23 of you on the panel, that those RFO documents would have  
24 to include that they do not currently include? Like  
25 what would the -- you know, would it be different kinds

1 of ancillary services? Would it be deliverability?  
2 What would the kind of -- what would drive, then, the  
3 configuration of projects that bid into it to increase  
4 their probability of getting selected under some  
5 modified least cost/best fit?

6 MR. KELLY: Well, one of the factors, for  
7 example, is the extent to which you might have to ramp  
8 up a gas-fired unit, right. What are the costs  
9 associated with that to support an intermittent  
10 resources? I think that's one of the components of what  
11 an integration cost adder might be.

12 When we have transmission cost adders, that are  
13 kind of also included in procurement, so that's kind of  
14 over there and that's another input into the process.

15 So, this is what does it take to integrate this  
16 resource based on its delivery point, and so forth, to  
17 the system reliably.

18 And most of this stuff, to be honest, is not  
19 terribly transparent to me. So, I'll just say that  
20 right out. I mean, we work on a lot of this stuff in  
21 what's called the RPS calculator proceeding down there,  
22 for planning purposes. But when it comes to procurement  
23 practices, as a stakeholder, I don't ever see that level  
24 of detail.

25 COMMISSIONER MC ALLISTER: Yeah, maybe Scott,

1 I'm sure you're more familiar with this than any of us  
2 here.

3 MR. MURTISHAW: Well, I'd make a couple of  
4 points. And, Steven, you actually alluded to this  
5 earlier.

6 As the utilities update their capacity values  
7 for solar, as the more solar we have on the system, the  
8 less capacity it effectively provides, and as they  
9 update TOD values for energy that will suppress the  
10 value for solar.

11 Because under the existing least cost/best fit  
12 framework the utilities do not accept bids just purely  
13 on the basis of cost. I mean, I think a lot of people  
14 in the room know that. It's the cost versus the benefit  
15 in terms of the capacity provide, any transmission  
16 upgrade costs that are associated with a particular  
17 project, and the delivery profile from the resources.

18 And I agree that we are, you know, probably two  
19 or three years behind where we would like to be in terms  
20 of having a real integration cost adder. But the  
21 reason, at least at this point, that you don't see many  
22 resources, other than wind or solar, winning in these  
23 competitive RFOs for renewables is that with solar  
24 coming in at some of the bids less than 6 cents a  
25 kilowatt hour, and geothermal being -- and you probably

1 know these numbers, Steven -- significantly higher than  
2 that, you'd have to have integration adders on the order  
3 of \$30 to \$40 a megawatt hour before geothermal starts  
4 winning on a least cost/best fit basis. At least with  
5 the capacity values and TOD values that solar is  
6 receiving to date.

7 But I assume that the utilities, in the coming  
8 RFOs, they should be making adjustments to those TOD  
9 values and capacity values.

10 MS. RADER: I think all of that's correct, what  
11 Mr. Murtishaw said. I think, you know, the least  
12 cost/best fit equation, the adjusted net market  
13 calculation has placeholders for all of those values,  
14 ancillary services, capacity value, everything's in  
15 there. It's just a matter of updating them to keep up  
16 with the current portfolio and how that changes those  
17 values.

18 And that's what we're behind on. And as I said  
19 before, a lot of it is because the utilities went kind  
20 of hog wild on solar before we had a chance to think  
21 about it. Really, that's what happened.

22 I think if that program had happened more  
23 gradually, we would have actually kept pace. We just  
24 sort of got ahead of ourselves.

25 But I just want to say, you know, there has not

1    been a winning wind contract in quite a while. Okay,  
2    but you don't hear the wind industry complaining that  
3    the RPS doesn't work. We still believe in the RPS  
4    framework. We believe if we get this values right that  
5    we're going to start winning again, that we're going to  
6    see some baseload served. We want to get, particularly,  
7    existing baseload. We believe in this framework. We  
8    think the PUC is doing a fabulous job catching up and  
9    upgrading. We really like the calculator.

10           So, I think it's really important to recognize  
11    that things are changing. A lot is happening down in  
12    energy division land, and we think it's all for the  
13    good.

14           COMMISSIONER MC ALLISTER: Excellent.

15           MS. WORSTER: Can I chime in?

16           COMMISSIONER MC ALLISTER: Yeah, go ahead.

17           MS. WORSTER: This is Chari, from ORA. So, I  
18    totally agree with you that we need to determine the  
19    time of delivery factors. We need to properly determine  
20    the ELCC capacity.

21           But also, I think what we also need to address  
22    is, and it's very real, is the proper valuation of over-  
23    generation. I mean, we've not addressed that. But if  
24    we focus on like, for example, the DG and stuff there  
25    is -- the duck curve is very real. There is going to be

1 over-generation.

2 And I don't think we've properly evaluated, you  
3 know, over-generation.

4 MS. GOLD: I'd just like to weigh in here. And  
5 I think, you know, one of the -- and we're very  
6 supportive of the development of the integration cost  
7 data and, currently, there's some good work underway to  
8 improve that interim matter, and we've been very  
9 supportive of that happening.

10 Every resource wants to feel like all of their  
11 costs and benefits are valued fairly. And so, we see  
12 progress being made in that area.

13 But when it comes to integration costs, we have  
14 to be very aware of where and how we count them and to  
15 acknowledge that we're not starting with a perfect  
16 system. There are many ways that our current system is  
17 inefficient. And attributing all of those costs to  
18 variable energy resources obscures the pictures of the  
19 costs and benefits that each resource can provide.

20 So with that in mind, we think that there does  
21 need to be updating of how provision of ancillary  
22 services are valued, how renewables can participate in  
23 meeting flexible RA needs, among others, to help flesh  
24 out the equation for those resources in the RPS  
25 procurement.



1           And that includes figuring out what happens with  
2 the valuation of resources that are co-located with  
3 storage. That's an area that's not very clear in the  
4 procurement right now, and I think there's more work to  
5 do there.

6           MR. KIM: One quick comment, Daniel Kim, with  
7 Westland Solar Park. I just wanted to highlight that  
8 the ability to have an adequate transmission system that  
9 allows for the delivery of renewable energy, consistent  
10 with what I believe were, you know, the RETI principles  
11 of building out the foundation lines it will, in my  
12 opinion, have the opportunity to answer some of these  
13 questions about grid integration.

14           Granted, you know, there's going to be  
15 integration problems locally, but I think with the  
16 system that we have currently we kind of exacerbate that  
17 integration because we have all the renewables in one  
18 geographic location, without the ability to transmit  
19 that adequately over, you know, 33 percent to other  
20 geographic areas where is load. And not focusing  
21 development of renewable generation close to load, that  
22 isn't just purely behind the meter.

23           So, I think that those are opportunities where  
24 policy in the renewable energy calculator discussions  
25 can be revisited.

1 MS. GOULD: Okay, let's move on to --

2 MR. CASEY: If I could --

3 MS. GOULD: I'm sorry.

4 MR. CASEY: -- just to talk a little bit about  
5 the transmission, and I'll get to a question on it.  
6 Part of the challenge we have, from a transmission  
7 planning stand point, is renewable development can  
8 happen in so many places, at so many levels. If you  
9 built transmission all over the State, just in case,  
10 we'd have exorbitant transmission costs.

11 So, we rely on a coordinated process with the  
12 PUC, in terms of developing the RPS portfolios, and  
13 considering the transmission implications of those  
14 portfolios into that to try to manage that issue.

15 But as somebody noted earlier today, one of the  
16 things we're exploring in the context of the 50 percent  
17 portfolios is should we require that high standard of  
18 transmission deliverability that, to date, the utilities  
19 have required in their procurement of renewables?

20 Which is really, you know, can those renewables  
21 be delivered to the load on a peak demand day, with two  
22 major transmission contingencies on the system? It's a  
23 very high standard.

24 And it drives more transmission than would be  
25 required under a less lenient -- or a more lenient

1 standard.

2           So, I was just curious if you all had any  
3 thoughts on that particular standard with regard to a 50  
4 percent portfolio?

5           MS. RADER: Well, I'll go again. That's another  
6 thing that the calculator's just doing some fabulous  
7 work on, with the CALISO's help, is to look at when it  
8 does make sense to make a renewable deliverable. And we  
9 think it's not going to be a lot of the time.

10           As long as we can get most of the power in,  
11 without curtailment, that's really what we need. And to  
12 go that extra mile really adds a lot of cost. And so,  
13 the calculator's going to look at that tradeoff between  
14 the additional RA value you get from the renewable  
15 versus the cost of the deliverability upgrade.

16           And we think that's huge for ratepayers, to look  
17 at that. And that's one of the real big benefits of the  
18 calculator.

19           COMMISSIONER MC ALLISTER: Can I follow up on  
20 that? So, maybe I'll just ask a very simple question.  
21 How afraid are you, really, of curtailment?

22           MS. GOLD: When we have been looking at this  
23 issue of over-generation and utilizing our midday solar  
24 resources, one of the things that we are finding is we  
25 need to change the way we think about renewables on the

1 system. And that means having renewables more fully  
2 participate in the overall markets.

3 And that means instead of thinking about  
4 curtailing renewables, thinking about dispatching  
5 renewables. And I think UCS will probably speak to some  
6 of this, as well.

7 But there are ways that we can get additional  
8 services out of variable energy resources that may  
9 require some curtailment, but that can be an overall  
10 benefit to the system.

11 And so, those costs and benefits need to be  
12 analyzed more closely and we need to think about how to  
13 utilize and dispatch our overall system more  
14 effectively. And part of that may come with some  
15 curtailment, but it can benefit the system as a whole.

16 MS. GOULD: And I'm sorry, we wanted to allow  
17 some time for public comment at the end of this  
18 discussion, so we have one whole extra question to get  
19 to. So, I was wondering if everybody could -- I'll just  
20 go down the line and you can touch on question five,  
21 maybe keep it to 30 seconds to a minute, if you can. Or  
22 if you don't have anything on question five and you want  
23 to touch on one of the previous questions you didn't get  
24 to speak your peace on, go ahead.

25 And so, I'll just start with Daniel Kim and go

1 down.

2 MR. KIM: Daniel Kim, with Westlands, again.  
3 Just wanted to make final points regarding the -- in the  
4 case of renewables in the Central Valley, in particular  
5 solar is the technology of choice that we're talking  
6 about, the -- you know, there are a lot of co-benefits  
7 that, as I pointed out earlier, that the agricultural  
8 community can gain from seeing this development occur.

9 But one of the things that, I think from kind of  
10 a planning stand point, that should be more adequately  
11 integrated into the RPS calculator, maybe through the  
12 ISO planning process, is the benefits having solar  
13 further on the west, and when I mean west, I mean I'm  
14 talking about kind of Northern California, west side,  
15 you know, the time of day is going to be -- and  
16 coincident peak is going to be different.

17 I think those are attributes that maybe aren't  
18 fully considered as both, you know, from a reliability  
19 stand point, as well as from energy delivery stand  
20 points.

21 So, I would just highlight that and I'll fill in  
22 the rest of my comments in written form.

23 MS. RADER: Okay, Nancy Rader. The question  
24 asks what are the roles of DG, energy efficiency, EV, et  
25 cetera, in achieving a renewable -- a 50 percent

1 renewables target?

2 I don't see it -- I don't think those things  
3 having a role in achieving the 50-percent goal, per se.  
4 Rather, I think we need to look at the  
5 interrelationships between all these things. I mean,  
6 the Pathways Study showed we need pretty much all of  
7 these things to meet our goals, right.

8 So, we know we need 50 percent renewables, more  
9 or less. So, we need to study the interrelationships.  
10 And I think that's what the planning that's happening  
11 down at the PUC is going to allow us to do.

12 I think once we -- the most important thing is  
13 to optimize that renewable portfolio to minimize the  
14 operational challenges. That's key and that is the  
15 least-cost way to address your operational challenges.

16 Then we take the remaining operational  
17 challenges into the long-term planning process, and we  
18 look and see, okay, what's the best way to get that  
19 flexible capacity, whatever it may be.

20 And so, I see these things interrelating, but I  
21 don't see them happening, you know, sort of integral to  
22 the RPS.

23 MR. KELLY: This is Steven Kelly, with IEP. And  
24 I think as we move from 33 to 50 percent goal, it's  
25 important to realize that the purpose is to realize

1 improvement, environmental improvement, which  
2 maintaining grid reliability. So, we all know that.

3 So, it doesn't necessarily do any good to count  
4 the same old stuff we did before, in a different manner,  
5 and let it count against an RPS goal. It makes no sense  
6 to me why you would do that.

7 So, we need to make sure that the elements in  
8 the RPS that are going to be counted against the RPS are  
9 real, and actionable, and measurable, that accurate  
10 accounting is going on.

11 I think there was some discussion, earlier,  
12 about the need to address ownership so that that  
13 accounting can occur in a proper manner, and the  
14 integrity of the system holds.

15 And I'll just reemphasize if, you know, you're  
16 counting stuff that has already been occurring for ten  
17 years, in a different way, in order to achieve the goal,  
18 you haven't achieved any benefits. And that's what we  
19 have to be aware of.

20 MS. GOLD: I just want to pause and reflect  
21 that, you know, the fact that we're having this  
22 conversation here, in California, is pretty incredible.  
23 And I, personally, am very proud to be a Californian and  
24 be working on these issues.

25 And we have challenges to address in meeting 50

1 percent, but I think they're achievable. And I think  
2 there are many complementary strategies, including  
3 efficiency, and distributed generation, and storage that  
4 we need to do a better job of bringing together to meet  
5 our overall emissions targets.

6 And that ensuring that parallel processes are  
7 working towards the same end goal is something that we  
8 need to keep our eyes on.

9 MS. HALBROOK: So, I think all of these  
10 technologies have an incredibly important role to play  
11 in our future greenhouse gas emissions reduction goal  
12 for 2030. And I think I would just be wary of any sort  
13 of siloed mandates of a specific renewables target, and  
14 a specific energy efficiency target, and a specific DG  
15 target, and a specific micro grid target. Because that  
16 seems --

17 COMMISSIONER MC ALLISTER: You forgot storage.

18 MS. HALBROOK: Oh, and specific storage. We  
19 already have that.

20 And so, I think that that's just something that  
21 I would be wary of. And there's some outstanding  
22 modeling efforts that are going on in California today.  
23 Obviously, the E3 Pathways work has gotten a lot of air  
24 time today. But the California Times model at UC Davis,  
25 Jeff Greenblatt's work at LBNL on the Cal Gaps Model,



1 the work by David Roland-Holst with the BEAR Model at UC  
2 Berkeley. You know, we can't just look at one model and  
3 think that it has all of the answers. Specifically,  
4 when they're all trying to achieve goals in different  
5 ways and include a variety of different input  
6 assumptions.

7           So, I just think we really need our policymaking  
8 to be informed by a lot of these great analytical tools  
9 that are out there. I know that the ISO is embarking on  
10 some work, as well. And I would just encourage everyone  
11 to really take a look at those.

12           And I believe the E3 Pathways work, in  
13 evaluating their 50 percent renewables, does include  
14 some distributed generation in that target, as well.  
15 So, looking more into that and how they did they're  
16 accounting would be valuable.

17           MR. BARTHOLOMY: I'd just like to say that I  
18 think the achievement of the carbon goals by California  
19 is incredibly important for showing leadership within  
20 the U.S., and within the world.

21           And I feel like a critical aspect of that  
22 influence that we'll have with our policies comes down  
23 to the cost effectiveness of those policies. And the  
24 more we end up with our siloed targets for each of these  
25 resources, the more challenging it is to come up with

1 integrated planning frameworks, where we're doing  
2 tradeoffs and maybe pushing certain targets out a few  
3 years, and focusing our investment efforts on things  
4 that can reduce carbon and help to integrate renewables.

5 I feel like the RPS policy has been very  
6 successful at driving large renewables and we know it  
7 can do that. For us, it's a question of should we be  
8 spending more of the resources today in the kinds of  
9 technologies that are going to help us as we get to the  
10 very long-term carbon goals.

11 And a lot of these here, there are opportunities  
12 for us to do more in distributed generation, in energy  
13 efficiency, in transportation electrification. And most  
14 of our focus at this point, in terms of dollars spent,  
15 is in the RPS area.

16 So, I think we need to look at balancing those  
17 and really focusing on the cost effectiveness of carbon  
18 reduction as we think about this policy going forward.

19 MR. MILLER: Peter Miller. And I'll just say  
20 thank you for the opportunity to speak today. I think  
21 that there's, you know, tremendous opportunity out  
22 there. The ability to call on technological innovation  
23 is astounding these. You know, you can put out a  
24 mandate and two days later, you know, we'll have a new  
25 technology that meets it, at half the price you thought

1 it was going to be. It's amazing.

2 And the real challenge we face is developing  
3 policies to get us there in ways that are successful.  
4 And to me, being able to speak on a panel with three  
5 energy agencies represented at the dais, is a real  
6 example of the kind of policy integration and  
7 coordination that we need to have to be successful.

8 Tough choices about whether to have siloed  
9 targets or, you know, one big, integrated target. And  
10 you can make mistakes in either direction. Too many  
11 little boxes and too complicated on one side.

12 But the kind of conversation that we're having  
13 today and the ability that I see from members of the  
14 dais to work across agency boundaries is really  
15 critical, I think, to allowing us to succeed. So, thank  
16 you.

17 MS. WORSTER: So, there are challenges to  
18 achieving the 50 percent goal. And one of them would be  
19 grid flexibility. And so, I think it is important to  
20 consider the costs and benefits of other programs, like  
21 DG, energy storage, EV, in order to provide additional  
22 flexibility.

23 But also with regard to DG, I think it's also  
24 important to be -- we have to be cautious about the net  
25 metering rules, so that those ratepayers that do not

1 have distributed generation do not subsidize ratepayers  
2 who already have DG.

3 MS. WISLAND: Let's see, just to close, I wanted  
4 to say a couple of things about curtailment, which may  
5 not come up in the next panel.

6 I think, as Rachel said, curtailment actually  
7 can be a really valuable and cost effective tool for the  
8 grid. We have to be really careful, but we also have to  
9 not try to manage the system so that we have zero  
10 percent curtailment. So, we're building a gas plant to  
11 get rid of that little extra percentage. There is a  
12 cost benefit analysis there that I think it's important  
13 to have.

14 On the issue of renewables being able to provide  
15 some of this flexibility, when they otherwise would be  
16 curtailed, that means it's more valuable to them.

17 The one policy kink there is that the way we  
18 count renewables for the RPS is megawatt hours generated  
19 to meet retail sales, not to meet any sort of ancillary  
20 service requirements. So, I haven't quite figured out  
21 how to change the statute to open the door up for  
22 renewables to do that. But I think that's going to be  
23 an important policy thing to be thinking about.

24 In terms of just bigger picture, we're talking  
25 about whether the RPS is the right policy mechanism

1 going forward. I think that's the right conversation to  
2 have. But really, at the end of the day, all of the  
3 models that Claire mentioned show that we're going to  
4 need at least 50 percent clean electricity on the system  
5 to power our system.

6 Including, and I think for the E3 Pathways, I  
7 think it was like 50 percent wholesale plus DG, so they  
8 actually went beyond that.

9 So, as we think about tradeoffs and talk about  
10 cost effective policies to reduce GHGs, I do think it's  
11 valuable to talk about that in the short term. And it  
12 may be because at the least the IOUs have so much  
13 renewable bank, they can actually afford to go slower on  
14 renewables and move faster on vehicle electrification,  
15 even if they do have that 50 percent target out there,  
16 because they do have so much bank.

17 But I think in the long run we're not going to  
18 be able to afford to say either/or, electrification or  
19 clean energy. It's going to have to be both.

20 COMMISSIONER MC ALLISTER: Great. Well, thanks,  
21 everybody for your comments.

22 I think there's been a great discussion here  
23 today and I like -- and I'll pick out one theme that I  
24 feel like we've heard in different ways, from different  
25 perspectives, and that's this need to unpack. You know,

1 not just rely uniquely on a kilowatt hour, on an energy  
2 basis, but unpack what's actually being delivered and  
3 kind of move renewables, you know, from sort of maybe  
4 it's late adolescence into full adulthood, or something.  
5 But kind of, you know, going to the big leagues and  
6 compete with all the skills that it can bring to bear,  
7 that they can bring to bear.

8           So, I'm very happy to see such engaged  
9 stakeholders and such a high level of discussion here.  
10 I, too, am very proud to be a Californian and having  
11 this conversation. And I think it's -- you know, I work  
12 with a lot of energy offices across the country and  
13 they're always just astounded at not only does our  
14 energy office have 650 FTEs, but we don't even do many  
15 of the things that they do.

16           So, you know, many states have half an FTE, or  
17 five FTEs, or something like that. So, we're able to  
18 really do things here.

19           And I want to just -- well, actually, I think  
20 Commissioner Hochschild, you have a comment you wanted  
21 to make, as well?

22           COMMISSIONER HOCHSCHILD: Just a very brief  
23 comment. First of all, I just want to thank all the  
24 panelists for a very, very fruitful discussion.

25           You know, in football you don't throw the ball

1 to where the receiver is, you throw it to where the  
2 receiver's going. And at a minimum, I think that's kind  
3 of the policymaker challenges in just looking at all of  
4 the evolution that's happening.

5 And I just wanted to highlight, the model to  
6 date has been, you know, generation follows load, right.  
7 And I think we're entering an area where, to some  
8 extent, you know, load will follow generation.

9 And I work with a lot of home builders in my  
10 role here, and one of the things we're seeing now is the  
11 all-electric home. So, with City Ventures, a builder in  
12 L.A., that's doing these all-electrics, they get rid of  
13 the furnace, the switch over the gas furnace to  
14 electric. The dryer, the stove, and so forth. And that  
15 saves \$4,500 on the construction of a new home in  
16 avoided costs of running the pipe to the house. You  
17 know, you can see a trend like that and they're taking  
18 off.

19 And, you know, I just bought an electric bike  
20 two weeks ago. And it's actually funny, I've got a  
21 nine-year-old daughter, and I have a little kid  
22 attachment, and I'm on this bike and I'm passing this  
23 guy who looks like he's racing the Tour de France. I  
24 just passed him up the hill. I don't think he saw that  
25 I had an electric bike, but I felt great.

1           But, you know, if something like that becomes  
2 standard in the future and electric cars, you know,  
3 Tesla coming out with a \$35,000 car that goes 200 miles  
4 on a charge, you know, in 18 months. Right, this is  
5 where we're headed.

6           All of these things have to be factored in, in  
7 terms of how much, actually, baseload we're going to  
8 need, how flexible we can be, and it's difficult. It's  
9 a difficult challenge because some of that's unknowable.

10          But I do feel very bullish about the  
11 electrification trend in general, and where technology  
12 can go in terms of us being more nimble. Overseeing new  
13 construction, now, for KB Homes, and other of these,  
14 these smart refrigerators that, you know, they know  
15 you're on a time-of-use rate, and they'll pre-cool to  
16 that peak period and then be off. Or when they run, the  
17 defrost cycle on the refrigerator is flexible.

18          So, these kinds of things, I mean there is going  
19 to be, I think, more and more nimble flexibility on the  
20 appliance side and the usage side.

21          But all that's got to be factored into this as  
22 well, so --

23          COMMISSIONER MC ALLISTER: So, thanks for that.

24          MR. CASEY: Yeah, I just wanted to offer some  
25 good news on some of the suggestions here.



1           One on the role that renewables can play in  
2     integrating renewables, a bit of good news on that front  
3     is we're actually seeing, quite consistently, a  
4     significant amount of renewables providing economic bids  
5     into our market today. And they are getting dispatched  
6     to help with the over-generation situation.

7           So there are contract provisions that, in the  
8     utilities' contracts, that enable that kind of economic  
9     bidding. And the ISO is fully supportive of that. We  
10    completely agree that the policy shouldn't be zero  
11    curtailment of renewables.

12          And there's a proceeding, a long-term  
13    procurement proceeding at the PUC, where there's lots of  
14    analysis that we are providing to show the incremental  
15    benefit you can get from allowing some level of  
16    renewable curtailment, without undermining, of course,  
17    your RPS objectives. But reducing reliance on the gas  
18    fleet for that.

19          Another bit of good news with regard to  
20    regionalism. You've heard a lot of discussion about the  
21    energy imbalance market. And we've already see in, you  
22    know, the limited five months it's been in operation,  
23    that when we have over-generation conditions on the  
24    system, and we do have them, the duck curve is alive and  
25    well, that we're actually seeing next flows out of the

1 ISO into PacifiCorp, where they're actually able to take  
2 some of that surplus power off of us, instead of us  
3 having to curtail it.

4 So, these are all very encouraging signs on the  
5 value regionalism can play. And as this over-generation  
6 issue becomes more and more prevalent, having a deep  
7 liquid market for that surplus energy is going to be  
8 critically important. So, I'll stop there.

9 COMMISSIONER MC ALLISTER: Thanks, Keith.

10 Scott, do you want to have some final comments  
11 for this panel?

12 MR. MURTISHAW: Well, I think, just given the  
13 time constraints, I think we've probably -- I'm happy to  
14 just let things move on and hear from the next panel.

15 COMMISSIONER MC ALLISTER: Great. So, yeah, I  
16 wanted to just build on something Commissioner  
17 Hochschild said where, you know, this fifth question  
18 really wasn't about, you know, one-to-one tradeoffs  
19 between efficiency and renewables, not at all in fact.

20 And I think the idea was to talk about how they  
21 interact and how we really need both ends of the supply  
22 chain, and everything in between for everything to work  
23 together. You know, standards are going to be really  
24 important in terms of interoperability. Communication  
25 technologies are going to be really important.

1 All sorts of fundamental technologies that, you  
2 know, mostly exist already, but we've got to figure out  
3 how to get them cost effectively into our appliances,  
4 and our power plans, and everything in between.

5 And so, there are some great technologies,  
6 really cutting edge stuff, in the marketplace today.  
7 Fuel switching, big, big, big issue in terms of, you  
8 know, where this new electric load is going to be  
9 offsetting, locally, what's currently local combustion.

10 And so, we need that headroom in the system.  
11 And what is the optimal point? How do we avoid massive  
12 investments in the distribution grid, where we can by  
13 using controls and, you know, micro grid type  
14 technologies, demand response and efficiency.

15 So, I think the problem that we're trying to get  
16 out with that fifth question is really how to have the  
17 discussions in an integrated way? And I think we  
18 already started to talk about this. And so that they  
19 are all moving forward, and parallel, and actually  
20 talking to each other so that we end up in a place where  
21 we kind of know what impact is going to happen, from  
22 which source, and how are they going to relate?

23 And I think, also, one thing we do -- another  
24 thing that we do here in the IEPR, every time, is the  
25 demand forecast. We do various forecasts,

1 transportation fuels, natural gas, electricity, et  
2 cetera. And, you know, that's -- the discussion is  
3 actually almost broader than even that these days. And  
4 so, we need good data, good information to make the  
5 forecast really work. But we also have to make sure  
6 that just on the ground, in the business environment  
7 that people are installing the right technologies that  
8 can actually operationalize all of this stuff.

9           So in any case, I think that's the kind of  
10 ideation that I think we'd like to have in comments,  
11 certainly what we're trying to get at with the question  
12 five there.

13           And I know many of you are thinking about these  
14 in greater depth than, certainly, I am. So, we'd really  
15 like to see some -- you know, your best ideas in the  
16 comments, when you submit.

17           Okay, so with that, thanks Angie, appreciate it.  
18 And we'll move on to the next panel.

19           Oh, we have some space --

20           MS. GOULD: We have space for public comment.

21           COMMISSIONER MC ALLISTER: Public comment, okay,  
22 great.

23           MS. GOULD: And, sorry, if I could ask you all  
24 to remain at the table just in case -- I'm sorry, in  
25 case somebody has a question for somebody who's on the

1 panel.

2 MS. RAITT: So, if anybody did want to have --  
3 make comments on this panel, the issues and challenges  
4 of the 50 percent renewable target, I don't have any  
5 blue cards, but you could come up to the microphone and  
6 introduce yourself.

7 MR. TINGLE: Hello, I'm Ray Tingle, from Sierra  
8 Club. Just a few quick comments.

9 First of all, Sierra Club, as many of the  
10 participants in the panel have mentioned, really does  
11 support continuing the basic structure of the RPS for  
12 all of the many great reasons that were cited.

13 We also think there's some -- well,  
14 philosophically, we're supporting technology neutrality.  
15 Still, there's some strategic reasons to support a  
16 diversity of technologies, geographic diversity, project  
17 size diversity.

18 And in that context, we especially would like  
19 some policies to be set up to fully value wholesale  
20 distributed generation because it can be close to load,  
21 incurs very little environmental damage, quick to  
22 permit, local jobs, all those kind of reasons.

23 Another thing is I think the State's making some  
24 great progress on the smart inverters and those are  
25 really going to help out in terms of parts of the

1 integration challenge that we have.

2 In addition to that, to the extent that the  
3 utilities all have to come up with the flexible  
4 resources behind the scenes, and pay for those, to  
5 integrate particularly solar, why not take some of that  
6 money and provide incentives to those customers that are  
7 developing their solar resources. Have them put storage  
8 at the same time, and thereby lessen the growth of the  
9 belly of the duck getting larger, basically.

10 On the over-generation issue, and I don't know  
11 if the CEC's doing this right now, but I think it might  
12 be beneficial, in addition to all the other potential  
13 solutions out there for dealing with over-generation, to  
14 maybe fund a grant, working with CALISO and utilities to  
15 do an electrolysis pilot with fuel cells. And just  
16 start getting some experience as using that as one of  
17 the potential solutions. It's not a silver bullet, but  
18 I think it does hold some potential.

19 And then, lastly, I just wanted to refer to  
20 Rocky Mountain Institute's recent report, "The Economics  
21 of Load Defection". And I think that's a very  
22 significant report that just came out.

23 And I think, along with Commissioner  
24 Hochschild's comments about we need to look to where --  
25 really need to look to where we're going and, of course,

1 we're all trying to do that.

2 But the potential there for load losses over  
3 time, with the advent of more solar with storage, I  
4 think is very real and it's going to come. They even  
5 forecast in one market where load reduction could come  
6 down to as much -- as little as 25 percent of business  
7 as usual by 2030.

8 So, as we're looking at RPS, and everything  
9 we're doing, we need to look at it in the context of  
10 what's the scenario going to be in 2030, and 2040 and  
11 2050?

12 Thank you very much.

13 COMMISSIONER MC ALLISTER: Thanks. Thanks for  
14 being here.

15 Any other commenters? Tim Tutt?

16 MR. MILLER: If I could jump in. I'd note that  
17 there is an electrolysis pilot that SoCal Gas is  
18 sponsoring. I think they've gotten some money from DOE.  
19 And just a response that we think that's a great  
20 initiative, test it out, and a new technology to  
21 generate renewable hydrogen.

22 COMMISSIONER MC ALLISTER: Great, thanks.

23 MR. TUTT: Hello, Tim Tutt, from SMUD. At the  
24 risk of being accused of a double credit because SMUD's  
25 on the panel, I just wanted to say a few things about --

1           COMMISSIONER MC ALLISTER: Hometown advantage,  
2   that's okay.

3           MR. TUTT: I mean, first, we heard talk about DG  
4   being included in the RPS today. And I just wanted to  
5   point out that it is already included, it is already  
6   eligible for the RPS, both existing and any ongoing, new  
7   DG is already eligible.

8           So, I think SMUD would look askance at any kind  
9   of proposals or change which said that the existing DG  
10   that we have already submitted to the CEC for RPS  
11   compliance is no longer part of the RPS structure. I  
12   think that should still remain part of the RPS  
13   structure.

14          Second, the --

15          MR. CASEY: Can I ask a clarifying question?

16          MR. TUTT: Yes.

17          MR. CASEY: You're talking about behind-the-  
18   meter DG?

19          MR. TUTT: Yes. It's already included in our  
20   RPS compliance for the first compliance. It's bucket  
21   three.

22          And I would point out, in that regard, that  
23   there's at least one POU, that I'm aware of, that has  
24   the same thing, behind-the-meter DG that has been  
25   registered with REGIS, certified by the CEC that they're



1 not going to fully count for the RPS because of the way  
2 the categories work. It's not a limited percentage of  
3 your overall renewable procurement. It's a limited  
4 percentage of your PCC 1, 2 plus 3 procurement.

5 So, an early actor that has a lot of  
6 grandfathered resources can't include as much bucket  
7 three recourses as somebody who's waited to get their  
8 procurement going now. That early action is being  
9 devalued by the way the categories work right now.

10 Then another questions is whether or not these  
11 DG resources, if they were fully included, would  
12 exacerbate the net load curve issue. And I'd just like  
13 to point out that these resources, existing and new  
14 ones, are already there, already generating and  
15 contributing to the net load issue.

16 So, including them more fully in the RPS is  
17 really -- there should be an argument for including them  
18 more fully, rather than excluding them in favor of  
19 additional renewables that would tend to exacerbate the  
20 issue.

21 And finally, I guess I'd just be wary about  
22 arguments that say existing resources shouldn't count.  
23 As I said, DG's already included. If the question is  
24 whether we want the RPS to foster new renewables, then  
25 that should be in place for all resources. There

1 shouldn't be one set of rules for DG and another set for  
2 new resources.

3           So, I guess I don't think that's every going to  
4 happen. I think nobody would want all of the existing  
5 success of the RPS, and it has been successful, to  
6 suddenly not count in favor of adding a bunch of new  
7 resources. So, I just think that should be avoided.  
8 Thank you.

9           COMMISSIONER MC ALLISTER: Thank you for being  
10 here.

11           Heather, do we have anybody on the phone or on  
12 the WebEx?

13           MS. RAITT: Yeah, we have one person, Jan Reed.

14           MR. REED: Hello?

15           MS. RAITT: Go ahead, Jan.

16           MR. REED: Yeah, I just had a comment about, I  
17 believe it was item number three, concerning renewables.  
18 And there was some comment made about energy efficiency.  
19 And to me, it's kind of a risk management situation.  
20 The question isn't which is better, renewables, or  
21 energy efficiency, or demand response, et cetera, but  
22 what is the proper mix of them.

23           All of these different types of resources and  
24 different types of programs have different risk and we  
25 need to diversity the risk for the ultimate benefit of

1 ratepayers. That's my comments.

2 COMMISSIONER MC ALLISTER: Thank you very much.

3 MS. RAITT: Okay, we'll open up the phone lines  
4 for just a moment. Please mute your line if you didn't  
5 want to make comments. And if you do want to make  
6 comments, we're unmuting the lines and you can make a  
7 comment.

8 Okay, I'm not hearing any. So, I think I'd like  
9 to thank the panelists. And go ahead and take your  
10 seats and we'll get the next panel up here.

11 COMMISSIONER MC ALLISTER: Thanks, everybody.  
12 Really appreciate your spending the bulk of your day  
13 with us, very helpful.

14 MS. RAITT: If the Renewables and Reliability  
15 Panel could come up to the table, that would be great.

16 So, we're just assembly at the tables before we  
17 get back, started with the discussion.

18 MR. BARKER: Okay, so we'll go ahead and get  
19 started. So, thanks to the panelists. Some of you guys  
20 are doing double time here. And I think this panel will  
21 actually be kind of an extension of a lot of the  
22 conversations that we've had earlier today.

23 And so, the focus here is to talk more about  
24 over-generation. Where we were calling this kind of the  
25 over-gen, or I think I was initially calling this the

1 over-gen panel, but right around the time we were  
2 pulling the panel together UCS put out a pretty  
3 interesting paper. And where we were calling it over-  
4 gen, they were calling it renewables and reliability.  
5 So, thanks for the paper and letting us steal the name.

6           So, when I think about renewables, I started  
7 here at the Energy Commission in 2007. And in 2007, we  
8 had already had, let's say, an RPS. Whether active or  
9 not, we've had an RPS for about five years. So, in  
10 2007, I think our renewable percentage was about 13  
11 percent.

12           And then, two years later, our RPS had been,  
13 let's say, active for now seven years, and our renewable  
14 percentage was 10.9 percent.

15           So, over the course of the two years, when I  
16 first started here, we actually -- because of load  
17 growth and with a lot of the contracting that we had  
18 been doing, up until then we really hadn't seen anything  
19 online.

20           And then, you know, following that year we had  
21 the huge ARRA push, which we all know quite well, having  
22 helped with a lot of those projects from the Governor's  
23 office.

24           And I guess I would like to think now we're  
25 becoming even more successful, right. So, we're at

1 about 25 percent renewables. What's interesting, and  
2 this kind of came up earlier today, but let's say the  
3 first 10 or so percent of renewables, the profile was  
4 more of the baseload, so that was having the geothermal,  
5 sort of even your small hydro, your biomass.

6 And then the next 15 percent, that's really been  
7 more of the wind and solar. And so, we're seeing  
8 definitely a shift in resource profiles.

9 And so the next incremental, from 25 to 33  
10 percent, is probably going to be filled more with  
11 intermittent renewables. So, that's something to keep  
12 in mind.

13 I think we've also been very successful, if the  
14 whole goal of RPS is actually to de-carbonize the grid,  
15 we've been very successful. So, AB 32 is a goal of  
16 carbon emissions to that of 1990 levels, and that is  
17 sort of industry-sector wide.

18 I think we can be happy, we can be pretty proud  
19 that on the electricity sector, we're actually 20  
20 percent below where our emissions were in the  
21 electricity sector in 1990.

22 So I think on the electricity side, they've  
23 really been doing their part. And that's both by  
24 increasing renewables, but also by divesting and not re-  
25 contracting with coal.

1           So when we think of over-generation, I think in  
2 the past we've been scared. We've been looking at it as  
3 an issue or a problem. But I think the panel here  
4 today, a lot of the panelists look at it sort of also as  
5 an opportunity.

6           And, you know, how can we reduce -- how can we  
7 find, let's say, excess load that could then help suck  
8 some of those renewables? But I think we also need to  
9 keep in mind actually the magnitude.

10           And so, how we're going to start with that is by  
11 a presentation by the ISO to talk about, really, the  
12 issues.

13           And so, when folks -- we do have a gentleman  
14 from Poseidon. So, when folks talk about desalinization  
15 as an opportunity to suck up some of that load, let's  
16 think about the magnitude.

17           When we do talk about electrification, the  
18 transportation sector, let's think about the magnitude.  
19 So, about 600,000 cars charging all at the same time is  
20 only 1,000 megawatts.

21           So, when we're looking at, you know, over-  
22 generation issues, let's say in the kind of baker's  
23 dozen, you know, the 13,000-megawatt level, that's a  
24 whole lot of cars. So, it's something to keep in mind,  
25 about the magnitude.

1           So, kind of how we're going to lay out this  
2 panel is we're going to receive a presentation from the  
3 ISO, going over sort of identifying what they're seeing  
4 at the ISO, both today and the also looking kind of in  
5 the 2024 timeframe.

6           And then we'll have a presentation from UCS,  
7 going over sort of the opportunities that they see as we  
8 increase renewables.

9           And then, we have a number of panelists that  
10 will give us, I think, kind of an interesting  
11 perspective both on what we can do with our existing  
12 resources, but then also changes in contracting going  
13 forward, opportunities to provide demand response. And  
14 some of them do have presentations, as well.

15           So with that, I'd like to kind of turn it over  
16 to Dennis to start with their presentation.

17           MR. PETERS: Sure. Thanks, Kevin, and thanks to  
18 the CEC for convening this really important conversation  
19 and for including the ISO in the panel.

20           So, you really took the words out of my life, in  
21 terms of the way you -- I like the way you framed the  
22 panel as, yeah, certainly there are challenges. And  
23 we're going to talk about, you know, just in this brief  
24 presentation what we've seen, what we are looking to in  
25 2020 and 2024.

1           But, yes, there's definitely opportunities. And  
2 so, I liked the way you framed that, Kevin.

3           So, let's go to the first slide here. Maybe.  
4 This is the song and dance portion of the presentation.

5           MS. RAITT: Sorry, Dennis, I'm having some  
6 technical problems here.

7           MR. PETERS: Ah, there we go. We've all talked  
8 about some of the history here. I mean, I recall  
9 starting at the ISO 15 years ago and we were in the  
10 middle of an energy crisis. And then ten years ago we  
11 saw this big boost to renewable, put AB32. Five years  
12 ago we were at 20 percent and five years from now we'll  
13 be at 33 percent. And now, we're talking about 50  
14 percent in 2030. So, in terms of development in such a  
15 short period of time in this 100-year-old industry, it's  
16 just been an incredible development.

17           You know, and kind of the idea of some  
18 challenges and opportunities, so certainly some  
19 challenges there with we've seen rapid growth in  
20 utility-scale renewables, a rise in consumer-owned  
21 solar. We've got the Governor's 50 percent goal. But  
22 then, the challenges create opportunities, so  
23 opportunities in California and the West. And I'll go  
24 through those in a few slides.

25           So, in terms of just kind of the numbers,



1 utility-scale and consumer-owned renewables, right now  
2 capacity-wise, at least now on the ISO's balancing  
3 authority area, about 6,400 megawatts of wind and 7,100  
4 megawatts of solar. And we're seeing new solar peaks  
5 literally every month. We've surpassed 6,000 megawatts  
6 in terms of peak on solar. And as was mentioned  
7 earlier, we expect to see solar projects double in the  
8 next five to seven years, and definitely on track for 33  
9 percent, for 2020.

10           And then on the other side of the meter, in  
11 terms of consumer solar, that's growing fast as well,  
12 about 2,500 megawatts of consumer solar.

13           And when I saw it's invisible to the ISO, it's  
14 invisible in terms of forecasting. It's sort of  
15 embedded in the load forecast. It makes it difficult,  
16 sometimes, for forecasting and for operations.

17           And then, of course, what we already talked  
18 about, the 50 percent goal, what is that? You know,  
19 we've been doing some work on that, others have been  
20 doing work on that in terms of what does that mean? Is  
21 that 50 percent RPS? Is that 50 percent overall  
22 renewables? So, that remains to be seen.

23           The next slide. So, what's an ISO presentation  
24 without a duck, a duck curve. So, show of hands from  
25 anybody who hasn't seen the duck curve. No, I'm

1     kidding.

2                 So, as Keith mentioned, the duck curve is alive  
3     and well. And I think everyone understands kind of the  
4     basics of this and how it works. So, I just think I'll  
5     try to give some updates in terms of the two big  
6     challenges for grid operations being, you know, over-  
7     generation and ramping. You know, we talk about this  
8     panel as we're going to focus on -- we didn't call it  
9     over-generation, but we were talking about over-  
10    generation.

11                We can't forget that ramping is also an issue  
12    that's out there, as well.

13                MR. CASEY: Dennis, just with regard to the duck  
14    curve, this is based on a 33-percent renewables. And as  
15    you look at the duck curve under higher RPS, the belly  
16    of the duck sinks and sinks. You see here it's about  
17    12,000 megawatts.

18                We actually, in some of the worst hours, under a  
19    40 percent RPS, see the belly of the duck go negative.  
20    Which means if you shut everything off on the system,  
21    you still couldn't accommodate all the renewables.

22                So, you know, Kevin made the point about scale.  
23    That's another data point for you on scale here. So, I  
24    promise I won't keep interrupting you.

25                MR. PETERS: No, I appreciate it. Thanks,

1 Keith.

2 Just, so, we all know the over-gen, obviously  
3 caused by the increased amount of solar in the middle of  
4 the day, and the inability to curtail -- or non-  
5 dispatchable resources, like geothermal, nuclear hydro,  
6 CHP. And, certainly, it causes some reliability  
7 problems in terms of, you know, if we had to turn off  
8 any plants that maybe we needed later for ramping  
9 purposes, and don't have that ability to restart. In  
10 terms of some of the economic curtailment potential, you  
11 know, generators paying others to take energy.

12 And then what, really, no one wants to see is  
13 exceptional amounts of curtailed renewable resources.

14 But just to give you an idea of kind of where,  
15 you know, this curve here is showing a March 31st date,  
16 and let's keep that as this is looking at the 33  
17 percent.

18 In 2014, we actually saw net demand dip much  
19 lower than what we expected it to be in 2014. You can  
20 see kind of the red dot there, we went below 15,000  
21 megawatts and we weren't expecting to get anywhere near  
22 that until 2015, 2016.

23 Then on the ramping side of things, we've  
24 already seen, in December of last year, as much as a  
25 10,000-megawatt ramp, and we expect that to grow to

1 13,000-megawatt ramp by 2020.

2           Okay, next slide. This is just a summary of the  
3 curtailment, some manual renewable curtailments that we  
4 saw in 2014, sort of in February through April. The  
5 highest amount there was 749 megawatts curtailed for 90  
6 minutes.

7           The next slide. So, just kind of looking out to  
8 2020, so what's causing the over-generation and the  
9 increased ramping, I mean sort of the supply side, you  
10 know, increased amount of particularly solar on the  
11 system in the middle of the day. And then, on the other  
12 side is decreased load on the customer side.

13           So, with the increase in solar DG, we expect by  
14 2020 to see loads decreased by 3,000 megawatts. So,  
15 with that the gross load goes down.

16           Then net demand, which is our -- that's  
17 essentially our duck curve, which is the gross load  
18 minus the utility-scale solar and wind, we expect that  
19 to drop by four to five thousand megawatts, due to more  
20 utility-scale solar.

21           And we expect that we would need at least four  
22 to five thousand megawatts of additional resources in  
23 order to get 3,000 to 4,000 megawatts of downward  
24 dispatchability.

25           We heard Keith mention this morning, early,

1 we're going to have a need for more downward  
2 dispatchability. And, primarily, it will be that the  
3 reason for the additional megawatts of resources to get  
4 to 3,000 to 4,000 due to the minimum load on resources.

5 And again, I mentioned this on the previous  
6 slide, that the evening three-hour ramp is expected to  
7 grow to 13,000 megawatts by 2020.

8 This is sort of complicated slide here. As part  
9 of the CPUC's long-term procurement plan proceeding, we  
10 looked at 2024. We did five scenarios, and this is part  
11 of the 2014 LTPP.

12 We did a trajectory case, sensitivity on that  
13 without Diablo Canyon. And we did a high load case. We  
14 did a 40 percent RPS in 2024 and a 40 percent RPS, with  
15 expanded preferred resources. We sort of picked this  
16 one as kind of, you know, most likely to show the big  
17 difference between what you see in terms of if you had  
18 unlimited curtailment, just what you could potentially  
19 see in terms of over-generation at 40 percent RPS.

20 So, you can see there's 822 -- that's 800  
21 plus -- can't help being an engineer -- 822 hours where  
22 we see curtailment and that's as high as 12,000  
23 megawatts. And that's in a 40 percent RPS scenario in  
24 2024.

25 You know, so the number of -- here we get into

1 the opportunities, the solutions here. You know, and  
2 I'd categorize solutions really kind of into three  
3 areas, load, procurement, and better regional  
4 coordination.

5 So we just kind of list a few there. Certainly,  
6 storage is a game changer, a place to sink some of this  
7 additional generation.

8 Targeted efficiency, energy efficiency, so  
9 energy efficiency that's in those -- particularly in  
10 the -- when I say by targeted, you know, those evening  
11 hours when we've got the big ramps. We don't  
12 necessarily need more energy efficiency in the middle of  
13 the day when you've got a low net load, net demand.

14 Demand response. You know, we've typically  
15 always thought of demand response as, you know, shutting  
16 off load. You know, we need a place to sink all that  
17 additional generation. So, we need to start thinking in  
18 terms of DR up and not just down.

19 Economic dispatch of renewables, as Keith  
20 mentioned, that's already helping somewhat. We're  
21 starting to see more renewables bid in, put economic  
22 bids in and that helps, as well.

23 This morning, or the previous panel talked about  
24 decarbonizing transportation. That's certainly  
25 additional load, at least if it's in the right time

1 during the middle of the day, particularly in these  
2 spring and fall months.

3           Retrofitting, you know, existing plants so  
4 they'd have lower P mins and more flexible. On the load  
5 side of things TOU rates, but aligning them more with  
6 grid conditions versus just geography. And deeper  
7 regional coordination.

8           You know, in terms of all these solutions, I  
9 mean a lot of us all are talking about it. We are  
10 looking at these kinds of things in initiatives at the  
11 ISO. The PUC is certainly talking about these things in  
12 various proceedings and we need to match those up, and  
13 make sure we get to what the best, most cost-effective  
14 solutions are.

15           And I think there's kind of three areas for all  
16 of the solutions. You know, what's the time it takes to  
17 implement it, what's the cost, and then what's the  
18 overall impacts. Those are the things to look at in all  
19 those areas of solutions.

20           And the last slide. Just, again, the  
21 regionalism. I mean, there's great -- there's a very  
22 timely solution, very high value. We've already seen  
23 the benefits of the EIM, the energy imbalance market  
24 with PacifiCorp. You know, the diverse assets, both in  
25 place for excess renewables out of California as well

1 as, you know, integration resources that are helpful to  
2 us in terms of integrating renewable resources. It  
3 leverages the ISO's market systems.

4 And then, of course, in terms of the full  
5 participation, now we're talking not just in terms of a  
6 small, you know, five-minute energy imbalance market,  
7 but now we can look a day ahead. There's significant  
8 benefits there.

9 Of course, the studies are underway. We've got  
10 an MOU with PacifiCorp to look at this integration and a  
11 number of benefits. I mean, improve reliability through  
12 broader visibility, and consolidated planning, and  
13 there's definitely a greater ability to add renewable  
14 generation to the system with a larger area, and lower  
15 operating costs. There's a lot to still learn, but  
16 we're moving forward.

17 So, I've probably taken enough time there, but  
18 thank you.

19 MR. BARKER: Thanks, Dennis.

20 You know, your presentation talked about a  
21 couple of key points, one's curtailment. And maybe  
22 later, when we hear from IEP and PG&E, but to get sort  
23 of what have you guys been seeing is this -- you know,  
24 is the force curtailment as a paid-for curtailment? Is  
25 it not paid? And so, kind of your thoughts on that.



1           And also, with respect to downward flexibility.

2   And so, what -- can we take advantage of some of the  
3   assets that are already out there? And by doing, say, I  
4   don't know, maybe minimal upgrades we can actually  
5   increase -- we can the P mins down, and so we can also  
6   help with some of that downward flexibility. That might  
7   be something worth exploring, too.

8           So, the next presentation, Laura, if you want to  
9   go ahead and kick off what you guys have seen.

10           MS. WISLAND: Sure. Okay, is my presentation  
11   up?

12           So, I'm Laura Wisland. I'm with the Union of  
13   Concerned Scientists. We've been working on renewable  
14   energy issues and renewable integration for a while now.  
15   I think Dennis set me up really well by explaining that  
16   this is not a technical issue.

17           Getting to 50 percent renewables in California  
18   is not a reliability issue. It's an economic issue.  
19   The problem is really defined as we're anticipating that  
20   there's going to be a lot of curtailment on the system.  
21   A lot of the reason for that is we're taking advantage  
22   of an amazing solar resource we have in California, that  
23   also happens to be relatively low cost. And I think  
24   it's our challenge to figure out how to take advantage  
25   of as much solar as we can, in the middle of the day,

1    when it's generating. And then, also bring on  
2    additional types of resources to smooth that generation  
3    over time and turn down the gas plants as much as  
4    possible, so we're getting the commensurate greenhouse  
5    gas benefit.

6                So, the next slide, please. So, this is our  
7    version of the duck graph. And the reason why I wanted  
8    to show it like this is I think what's missing from the  
9    ISO's duck graph is what else is on the system that's  
10   contributing to the over-generation.

11               So, certainly, all of this solar coming on in  
12   the middle of the day is contributing to the over-  
13   generation. But it's exacerbated by the fact that we're  
14   not able to turn down everything else and make room for  
15   that solar. There are resources that are crowding out  
16   that solar.

17               And which makes it -- which poses the question,  
18   why aren't we able to take advantage of those low,  
19   marginal-cost resources? And are there things that we  
20   can be doing?

21               And what we're finding through our own analysis  
22   is that there's a lot of gas that could potentially be  
23   online in the middle of the day, not because we actually  
24   need the energy from those gas plants, but because we  
25   need the reliability services that they're giving us,

1     that they're providing to the grid.

2             And, certainly, we're going to need to maintain  
3     reliability. So, I think one of our biggest challenges  
4     is figuring out how we could swap out some of the gas  
5     and use other types of resources, including the  
6     renewables, to provide some of those reliability  
7     services.

8             So, the next slide, please. So, this slide is  
9     just to go a little bit deeper on that and show you that  
10    assumptions for what else is on the system and what  
11    those things are providing really matters.

12            We have been using the same model, the  
13    production cost simulation model that the ISO's been  
14    using in the LTPP process. And the graph that Dennis  
15    showed you with all the dots, showing all the  
16    curtailment that could happen in a 40-percent scenario,  
17    when we ran a sensitivity on that scenario, that removed  
18    a pretty important assumption that they were making on  
19    how to provide reliability services.

20            We saw curtailment go down by 40 percent. And  
21    this assumption that they're making is called the  
22    regional generation requirement, which is not in law  
23    today, but it's in anticipation of some NERC  
24    requirements that are going to require us to keep fast-  
25    acting grid services on the grid in specific local

1 areas.

2 And the way the ISO constructed this assumption  
3 in its modeling required that in every hour 25 percent  
4 of the electricity come from local sources. And those  
5 local sources had to be from conventional resources.

6 And, clearly, that made a big, big difference in  
7 the amount of curtailment on the system.

8 So, I'm not saying that the regional generation  
9 requirement isn't important. But I think before we go  
10 too far down the pathway of providing reliability  
11 services with specific resources, we need to be thinking  
12 about why we're making those assumptions. And whether,  
13 for instance, some non-fossil resources could contribute  
14 to those local generation requirements in a way where  
15 they wouldn't also be generating on the system and  
16 crowding renewables out.

17 So, next slide, please. So, what I'm going to  
18 do really quickly, I only have ten minutes, is walk you  
19 through some preliminary analysis that we've been doing,  
20 using the same Plexos model on 50 percent scenarios.

21 And these results are going to be coming out in  
22 a public report, probably in June. But because a lot of  
23 the things that we're learning from this analysis are  
24 very relevant to the conversation we're having today, I  
25 thought it would be interesting to bring them up and

1 show you some of the quantitative evidence for the  
2 things that we're saying.

3 And I just also wanted to say that really the  
4 brains behind these analyses is Jimmy Nelson. He's  
5 sitting right there.

6 So, because I won't have time to go into a lot  
7 of the assumptions, if you guys have questions about the  
8 analysis, we can talk to you afterwards.

9 This slide is basically just some quantitative  
10 evidence that providing downward flexibility and  
11 downward reserves really is going to matter for the  
12 amount of curtailment we see on the system.

13 So all we did in this scenario is take a 50-  
14 percent RPS, in the ISO service territory, and remove  
15 the downward reserve requirement, and curtailment went  
16 down quite a bit.

17 And the way we're defining downward reserves in  
18 this model I think is important. Because people think  
19 of downward reserves today as what we can buy and sell  
20 in the ancillary service market, so regulation spin and  
21 non-spin.

22 And here, we're really talking about downward  
23 regulation and load following.

24 So, I think this just shows us that this  
25 figuring out how to provide these resources with as many

1 clean -- as many non-fossil generation sources as  
2 possible is going to be really important.

3           The next slide. So, what we did, to just get a  
4 sense of what types of resources could provide downward  
5 reserves, and what's the relative value of having  
6 additional flexible gas provide these reserves, as  
7 opposed to having renewables provide these reserves.

8           And what we found is that actually renewables  
9 providing some of these reserves is very valuable. So,  
10 the flexible gas scenario that we have in here in here  
11 actually makes the gas -- the ISO's gas fleet, in 2024,  
12 dramatically more flexible than the way it's operating  
13 in the model, in the base case scenario.

14           And, specifically, we reduced the minimum up-  
15 time/down-time to two hours or less. We reduced the P  
16 min generation level by half. We doubled the ramp rate  
17 and we reduced the start/stop time profiles to one hour.  
18 And that's how much curtailment we saw reduced by making  
19 all of those dramatic improvements to the flexibility of  
20 the gas fleet.

21           Conversely, with the renewables, we allowed the  
22 renewables to provide a maximum of 20 percent of their  
23 available generation in any hour to provide downward  
24 reserves. And just doing that allowed the curtailment  
25 to go down more than the flexible gas.

1           Now, obviously, there needs to be more analysis  
2 down and we need to talk about the costs of each of  
3 those tools. But I think it gives us some evidence to  
4 have that discussion more fully in the long-term  
5 procurement planning process, in the way we contract for  
6 renewables, and the way we think about what are the most  
7 valuable retrofits to our gas fleet that are really  
8 going to help us integrated more renewables.

9           COMMISSIONER MC ALLISTER: Just a quick question  
10 about the report. Is it going to have policy  
11 recommendations for how to structure, say, you know,  
12 that market or how to unpack the renewables to provide  
13 those specific services?

14           MS. WISLAND: I think it's going to have some.  
15 And it's going to have some examples of other balancing  
16 area authorities that have been thinking about this  
17 issue. But it's not going to have a full package of  
18 here's everything that we need to do. That's something  
19 that we've been thinking a lot about and, hopefully,  
20 we'll have some follow-up work to do that.

21           COMMISSIONER MC ALLISTER: Thanks.

22           MS. WISLAND: Yeah. So, the last slide, this  
23 is -- this slide, basically, the take home here is that  
24 as we think through all of the different ways to lower  
25 GHGs in the electricity sector, and the best and most

1 cost-effective ways to reduce renewables that gets you  
2 lower amounts of curtailment, and also maximize  
3 greenhouse gas reductions.

4           We do need to be not just jumping to the  
5 conclusion that by dramatically increasing the  
6 flexibility of the gas fleet we're going to get a ton of  
7 benefit.

8           So, what you're seeing here is on the left bars,  
9 for both the red and the blue, that's the 50 percent  
10 renewables base case. The flexible gas is dramatically  
11 increasing the gas fleet in the way I just described.

12           The non-fossil solutions is we added one  
13 gigawatt each of storage, advanced demand response, and  
14 additional exports out of the ISO. We also removed the  
15 regional generation requirement and we allowed  
16 renewables to provide downward reserve.

17           So, admittedly, that's empowering renewables and  
18 empowering non-fossil flexibility solutions to do a lot  
19 of work on the grid. But as you can see, if you do  
20 that, you get significant more benefit in terms of  
21 curtailment reduction from deploying these non-fossil  
22 resources than you do in dramatically increasing the  
23 flexibility of the gas system.

24           So again, you know, this is one scenario.  
25 There's a lot to unpack here. But I think it shows us



1 that it's worthwhile really thinking through the full  
2 range of benefits that these non-fossil solutions can  
3 provide.

4 Thanks, that's it.

5 MR. CASEY: Just some follow-up questions. Just  
6 a clarification on the work that the ISO submitted in  
7 the LTPP. I believe the 25 percent gen requirement  
8 applied to San Diego and Southern California, but not  
9 PG&E, so it wasn't system wide.

10 MS. WISLAND: There was an ISO 25 percent  
11 requirement.

12 MR. CASEY: Yeah, that's what I'm talking about.

13 MS. WISLAND: And then there was also a 25  
14 percent requirement for San Diego and Southern  
15 California Edison.

16 MR. CASEY: I'll have to check on that. My  
17 understanding was it was just Edison in San Diego.

18 And one of the assumptions was imports could go  
19 to zero, net imports could go to zero. So, in the  
20 analysis that we did, showing over-generation,  
21 California historically has imported 25 percent of its  
22 energy needs.

23 This analysis assumes that we can export all the  
24 way where the ties are floating at zero, or basically.  
25 And it sounds like in some of the studies you did, you

1 took it even further to where we're actually a net  
2 exporter during those over-generation periods, correct?

3 MS. WISLAND: Yeah, so in the slide that I  
4 showed that had the sensitivity on simply removing the  
5 regional generation requirements, we have the same  
6 assumptions on imports and exports that the ISO has. We  
7 did not change that assumption. So, simply removing the  
8 regional gen requirement reduced curtailed by 40  
9 percent.

10 MR. CASEY: Yeah, okay.

11 MS. WISLAND: In the 50 percent analysis, that I  
12 was just showing with these later slides, the non-fossil  
13 solutions does include one gigawatt of net exports to  
14 the system.

15 MR. CASEY: I see, okay. Okay. And just to  
16 clarify on the driver for the 25 percent, admittedly  
17 it's a proxy for having upward dispatch capability.  
18 Some of it's related to the NERC standard on frequency  
19 response capability, that you have to have some emoted  
20 headroom per the standard. That if there's an event on  
21 the system, you carry your fair share of frequency  
22 response.

23 But some of it's related to local transmission  
24 contingencies. So, we keep generation online today, in  
25 critical areas. Especially with the loss of San Onofre,

1     where if we have a major transmission contingency, we  
2     need capability to go up quickly.

3             And I guess a question would be with regard to  
4     renewables, because these are contingency type events,  
5     are you actually looking at keeping renewables  
6     persistently under-performing in case you have a  
7     contingency where they would have to respond?

8             MS. WISLAND: I mean, we're not recommending  
9     that in this analysis.

10            MR. CASEY: Yeah.

11            MS. WISLAND: I will say that in the sensitivity  
12     that we ran, that allowed renewables to provide  
13     reserves, we allowed them to provide downward reserves  
14     and upwards reserves. And the large majority of times  
15     where renewables actually did provide reserves, they  
16     were providing downward reserves. I think that just  
17     makes more sense for them, generally speaking, from an  
18     economic stand point.

19            MR. CASEY: Right.

20            MS. WISLAND: But I wouldn't -- I mean, it's  
21     certainly possible for them to provide upward reserves.  
22     And if it penciled out economically, then they probably  
23     could.

24            MR. CASEY: Right.

25            MS. WISLAND: And on the regional gen

1 requirement, you know, there are a lot of really  
2 important reasons why it's necessary to have generation  
3 in local areas. I think the point is that when we  
4 figured out that this assumption made such a difference  
5 to curtailment in the LTPP, and we submitted a data  
6 request to the ISO, saying please give us more  
7 information on how you got this 25 percent number,  
8 because that really matters. And why you decided only  
9 to allow conventional resources to participate.

10           It wasn't a very straight forward answer and I  
11 think that's because we're all moving into uncharted  
12 territory about trying to understand how little local  
13 generation we need to have on the system and ensure  
14 reliability. And I think it just means that we need to  
15 dig into this issue further and that we need to do more  
16 analysis to figure out what that right number is.  
17 Because the 25 percent really seemed like it was a  
18 placeholder or it was a --

19           MR. CASEY: A proxy.

20           MS. WISLAND: A proxy, yes.

21           COMMISSIONER MC ALLISTER: So, I just want to  
22 put a finer point on that. So, I mean, this seems like  
23 something that would necessarily vary by area, really.  
24 It really is a function of the particulars of the grid  
25 in each particular load pocket, essentially.

1 MR. CASEY: Right.

2 COMMISSIONER MC ALLISTER: So I guess I'm  
3 wondering, you know, does the ISO sort of have ongoing  
4 analysis going on to see, you know, what the variation  
5 bars across the State might be around that 25 percent?

6 MR. CASEY: Yeah, we are looking at can we get  
7 more rigorous in terms of defining what the percentage  
8 is. It's clearly not zero.

9 COMMISSIONER MC ALLISTER: Yeah.

10 MR. CASEY: Is 25 percent excessive? Again, my  
11 information from the ISO's team was we only enforced it  
12 in San Diego and L.A., not system wide.

13 So, to answer your question, we will look to  
14 provide additional analysis on, you know, further  
15 clarifying what exactly is driving that need, and what  
16 is the right percentage.

17 But I did want to just clarify that, you know,  
18 this is really an upward capability that we're talking  
19 about. Demand response could be a great resource for  
20 this, the right kind of demand response that it can be  
21 controllable, fast-acting.

22 You know, renewables could certainly do it as  
23 well. The challenge there, of course, is do you want to  
24 forego that level? Because this is typically  
25 contingency-based dispatch, do you want to consistently

1 have your renewables under-performing relative to what  
2 they could do just to have that upward capability.

3 MS. WISLAND: Yeah. I mean, I would say in  
4 terms of upward flexibility, it probably makes more  
5 sense for something like a storage device that can, you  
6 know, discharge really quickly to provide that service,  
7 instead of renewables.

8 MR. CASEY: Yeah.

9 MS. WISLAND: I will also say, and I hope I  
10 don't screw this up, I'm looking at Jimmy, that in the  
11 LTPP 40 percent, where we removed the regional gen  
12 requirement, that was the biggest factor driving  
13 curtailment. Because in that analysis the ISO was  
14 allowing downward flexibility to come from other  
15 generation in the rest of the WECC.

16 And in our 50 percent scenario we were -- that  
17 analysis does not rely on the rest of the WECC for  
18 reliability. And in that scenario, the provision of  
19 downward reserves makes a much bigger difference in  
20 terms of driving curtailment than the regional  
21 generation requirement.

22 So, that seems like the first thing to deal with  
23 is the downward flexibility piece.

24 MR. CASEY: Yeah.

25 COMMISSIONER MC ALLISTER: Thanks, Laura.

1           MR. BARKER: Thanks, Laura.

2           So, I think we'll just kind of start by going  
3 down the aisle, staring here with Graham.

4           So, the month of April, I think it was kind of  
5 marked at the beginning of the month with a kind of  
6 groundbreaking Executive Order, and then I think it's  
7 kind of closed with another piece.

8           And so, for the Executive Order that was  
9 released on April 1st, it's dealing a lot with the  
10 drought issues. And so a number of folks have thought  
11 that, one, to deal with the drought there's  
12 desalinization. And what can we get out? Is there  
13 opportunities to help with sort of the reliability  
14 issues that we're seeing with desal, in a way killing  
15 two birds with one stone.

16           So, I guess I'll turn it over to Graham to kind  
17 of walk through their technology. He's with Poseidon  
18 Energy, who are about to go live with their project down  
19 in Carlsbad.

20           But then, also, you know, think through sort of  
21 the opportunities there with, obviously, the water  
22 requirement is really your prime goal, but what are some  
23 other flexibilities you have.

24           So go ahead, thanks.

25           MR. BEATTY: Yes, thank you very much. Yeah, so

1 my name's Graham Beatty, with Poseidon Water. And thank  
2 you for the invitation to speak here today.

3 Large-scale desalinization is relatively new to  
4 California, so I'd like to first introduce Poseidon  
5 Water, our project in Carlsbad, just north of San Diego,  
6 and then finally discuss the energy opportunity overall.

7 Poseidon Water is a private company. We  
8 specialize in permitting, financing, constructing and  
9 operating large-scale water projects. We've been in the  
10 business for about 20 years. And today we are highly  
11 focused on seawater desalinization.

12 Governor Brown's Executive Order on the drought,  
13 Article 17, calls for implementing WET, a Water Energy  
14 Technology Program with a special focus on  
15 desalinization and renewables.

16 And I just want to note that Poseidon Water is  
17 already committed to carbon neutrality. The  
18 desalinization process creates no additional greenhouse  
19 gases. And we'll be purchasing carbon offsets for the  
20 power we do purchase from the grid.

21 A good place to start would be with the Carlsbad  
22 desalinization project, just north of San Diego. This  
23 is as a result of a long-term water purchase agreement  
24 with the San Diego County Water Authority, that  
25 recognized the need for a locally controlled, drought-



1 proof water supply.

2           The project produces 50 million gallons of  
3 drinking water, about eight percent of San Diego's water  
4 supply, and is the largest, most advanced desalinization  
5 plant in the Western Hemisphere.

6           I thought it would benefit the room to just show  
7 a few pictures of what a desalinization plant looks  
8 like. Everyone has seen a Tesla, but no one quite knows  
9 what a desalinization plant is.

10           If you go to the next slide, you'll note that  
11 our project, in the bottom right you'll see the Encina  
12 Power Plant. Our project is in the back of the power  
13 plant. It's a brown field redevelopment. We took down  
14 some old oil tanks and constructed our facility.

15           The next slide, please. When it's all  
16 constructed, it will look like a small warehouse, or  
17 even a library. You won't be able to see it from the  
18 beach, you won't be able to see it from the street. And  
19 no noise and no other kind of adverse effects to the  
20 locals there.

21           The next slide, please. One of the big  
22 advantages of desalinization in California is that we  
23 can actually use existing infrastructure. So, without  
24 impacting the beaches, we can use a power plant intakes  
25 and outfalls. Once-through cooling is being outlawed in

1 California, but we can use that existing infrastructure  
2 to pull in source water for the desalinization process.

3 The next slide, please. And we'll leave it here  
4 for the rest of the conversation. I have some  
5 construction pictures, but in the interest of time we'll  
6 move forward.

7 I'd like to turn, now, to desalinization and  
8 energy. Electricity consumption accounts for 50 percent  
9 of our operation expense, and so we're constantly  
10 looking for new ways to optimize that cost. The process  
11 of removing salt from ocean water is energy-intensive,  
12 requiring 30 to 35 megawatts in Carlsbad.

13 Let's put that in context. Our facility uses  
14 less power than a modern data center, and it's only 25  
15 percent more power-intensive than exporting water to  
16 Southern California.

17 So, the real opportunity today is that with  
18 renewable power, desalinization really turns water into  
19 a batter with demand response. We can engineer plants  
20 that ramp up water production when there is a surplus,  
21 and ramp down production to smooth the duck curve. With  
22 on-site and off-site water storage, the excess water  
23 will also serve demand by varying our production times.

24 Just as important, with desalinization as a  
25 long-term power customer, we can provide renewable

1 developers with the revenue they need to build projects.  
2 However, many challenges exist with current regulations  
3 and direct access restrictions.

4           So, I'll end with one final note here. Given  
5 this water/power nexus, in our view curtailing renewable  
6 energy generation is like not capturing stormwater when  
7 it rains and foregoing an opportunity for regional,  
8 locally-controlled, drought-proof water supply. Thank  
9 you.

10           MR. BARKER: So, what type of flexibility can  
11 you -- these are reverse osmosis, correct?

12           MR. BEATTY: Correct.

13           MR. BARKER: And so are there issues with  
14 running the pumps harder or faster than it's designed?  
15 And if so, you know, does that hurt the maintenance of  
16 the facility, I guess? Also, and then what's the speed  
17 at the level to which you -- so, if you're at a 35-  
18 megawatt draw, how fast can you ramp down and at what  
19 point would be sort of the minimum capability?

20           MR. BEATTY: Yeah, in the desalination process,  
21 really, to think about it is you're manufacturing water.  
22 So, at the push of a button you can ramp up or ramp down  
23 your production almost instantaneously.

24           The way we would envision it is we essentially  
25 over-engineer the plan so that when there is large

1 demand for water, or a large surplus of energy, we'd be  
2 able to accommodate that.

3           The State Water Board did just did pass their  
4 Ocean Plan Amendment, which has given us regulations  
5 around ocean water desal. And so, for example, you  
6 cannot pull in water more than half-a-foot per second.  
7 But you can engineer around that. You can make your  
8 intakes larger. The preferred approach is a subsurface  
9 intake, essentially where you're bringing ocean water  
10 below the surface.

11           But if you can't do that, you can do a screened  
12 intake. And if you build it large enough, you won't --  
13 kind of like if you put a straw into a glass of water  
14 and you suck through it, if you try to get more of that  
15 water you're going to increase the velocity. But if you  
16 put in ten straws and design a larger intake, then you  
17 can make sure that environmental mitigation and  
18 environmental ordinances won't be impacted.

19           COMMISSIONER HOCHSCHILD: What is the cost  
20 difference between desal water and the other water  
21 contracts that San Diego is buying? If you're able to  
22 disclose that, I don't know if that's --

23           MR. BEATTY: Yeah, sure. In rough terms,  
24 basically, the Metropolitan Water District can supply  
25 San Diego with an acre-foot of water, which is an acre,

1 a foot deep, for about \$1,000 per acre foot.

2 We can produce water for about \$2,000 per acre  
3 foot.

4 To put that into context, though, the rate of  
5 expense growth for imported water has been about 6.7  
6 percent for the last 30 years, where we more or less  
7 rise with inflation. So, we do expect those lines to  
8 cross. Plus, you have the ability to turn on those  
9 pumps when you need it. You know, we're not dependent  
10 on the snowpack. We don't need rainfall. We turn on  
11 the switch and we have pure water.

12 COMMISSIONER HOCHSCHILD: And just out of  
13 curiosity, looking ahead at what the future can hold  
14 here, I mean how optimistic are you about the ability to  
15 bring down the cost of the process through new  
16 technology or greater scale?

17 MR. BEATTY: Yeah, desalination is a fairly  
18 mature technology. We think that if we can marry our  
19 projects with renewable projects, that that's a great  
20 opportunity to take the components of the demand  
21 response debate off the table and have cheaper energy.

22 So, like I said, energy's about 30 percent of  
23 our operating costs. So to the extent we can do that,  
24 that's a big win for the water community.

25 COMMISSIONER MC ALLISTER: But given that this

1 is a pretty capital-intensive investment, what sort of  
2 capacity factor do you need to kind of make it  
3 worthwhile, make it pay. You know, if you're getting  
4 two thousand bucks and it's take or pay, you know, you  
5 sort of have an incentive to keep the thing running.  
6 And I'm wondering how flexible you can be?

7 MR. BEATTY: Well, it all depends on the  
8 customer. But as long -- for example, what we're really  
9 talking about is over the course of a day. If we can  
10 ramp up production at one point during the day, and then  
11 ramp it down during the next point in the day, we're  
12 still delivering the average amount of water that the  
13 customer needs.

14 COMMISSIONER MC ALLISTER: And that incremental  
15 investment isn't as big, isn't a deal breaker in terms  
16 of over-sizing a plant to do that?:

17 MR. BEATTY: That's correct.

18 COMMISSIONER MC ALLISTER: Okay.

19 MR. BARKER: So, moving right along, I think  
20 it's interesting because, Steven, your comments to the  
21 IEPR, you've talked about desal as an opportunity. But,  
22 you know, I'd be interested in sort of members of your  
23 association, what you see both on the conventional side  
24 and how they're thinking about doing business kind of in  
25 the future, but then also your sort of large-scale

1 renewable representatives.

2 MR. KELLY: Okay, thanks Kevin. So, since this  
3 is the afternoon and this is a renewable and reliability  
4 panel, I did want to start my comments on things that  
5 don't make sense to me, just to liven things up. And  
6 then get into the curtailment issues and the natural gas  
7 issues that came up.

8 COMMISSIONER MC ALLISTER: I thought you were  
9 supposed to be the expert, man. Steven, I don't know if  
10 we have that much time.

11 (Laughter)

12 MR. KELLY: Let me start at the beginning. So,  
13 this is coming from the airport, flying back from  
14 Chicago in a snowstorm.

15 So, the one comment that I hear a lot is that  
16 too much renewables causes a reliability problem. And I  
17 fully understand that too little capacity or too little  
18 energy is a reliability issue.

19 Too much capacity and too much energy, I don't  
20 think of it as a reliability problem. What I think of  
21 it is, is a management problem, or a procurement  
22 problem, or an operations pain that they've got to deal  
23 with, but it's not a reliability problem.

24 And I think that's important for us to remember  
25 as we move forward on this because that's what we're --

1 there are tools today to manage over-generation. The  
2 real problem is that nobody likes the answer.  
3 Curtailment or we're going to pay Arizona Public Service  
4 to take our renewables if the price goes to zero or  
5 below. Nobody really likes that.

6 So, it brings me to kind of the observation,  
7 which we've filed in our IEPR comments, which is why is  
8 that the only solution?

9 This is exactly the type of power that  
10 California businesses want. In periods of over-  
11 generation, it is either zero or negative price, which  
12 means we're paying other people to take it. Why aren't  
13 we paying California businesses to take it, then? Why  
14 should we pay APS that? We should pay these guys to  
15 take it.

16 And it's emissions free, essentially, in all  
17 cases. So, it's the perfect stuff that we want. The  
18 problem is we don't have the demand that can follow its  
19 generation and that's what we have to focus on as we  
20 move forward.

21 We mentioned desalinization as a prime candidate  
22 for being able to utilize this resource. There are  
23 other uses, too. It's dawned on me, recently, that the  
24 pumping load to pump excess water in wet years, back  
25 into the underground aquifers, would be a great use for



1 this. What's missing is real-time pricing. What's  
2 missing is an opportunity for California businesses, and  
3 particularly new businesses to take advantage of real-  
4 time prices, so when the price is zero, or is negative,  
5 they will do something. They will ramp up their  
6 operations to use this for a public benefit.  
7 Desalinization to create water, pumping load to save  
8 water, just like storage facilities. And that's missing  
9 today and we should work on that.

10 So, I wanted to then talk about some of the  
11 specifics that came up about curtailment, and it's one  
12 of the issues, and it's one of the solutions we have  
13 today, and why sometimes it works and sometimes it  
14 doesn't.

15 The reality is today, except for some of the  
16 expiring QF contracts, I think most of the PPAs that are  
17 being negotiated today have curtailment provisions in  
18 them. Up to 200 hours, as I recall, the PUC standard.  
19 And people will negotiate around that. Some will  
20 negotiate more, some will negotiate less. It just  
21 drives the price.

22 One of the problems we've got is that the PPAs  
23 that everybody is executing from the intermittent side,  
24 a lot of them have PTCs that they get paid Federal money  
25 to continue to operate. So, there's a nexus there

1 between what they're getting paid for producing a  
2 kilowatt hour and what the payment is for curtailing.  
3 So, we've got to work that out on a contract basis. I  
4 think we have been doing that over the last couple years  
5 with the utilities.

6 COMMISSIONER MC ALLISTER: Hey, Steven, can I  
7 just jump in real quick?

8 MR. KELLY: Yeah.

9 COMMISSIONER MC ALLISTER: Can you comment on  
10 the -- like, how public is this information you're  
11 talking about in the contracts and sort of like what do  
12 we know about that?

13 MR. KELLY: Well, typically, contracts are not  
14 public.

15 COMMISSIONER MC ALLISTER: How does the  
16 marketplace bring itself to understand what's going on  
17 so that it can gauge its efforts going forward, I guess  
18 that's all I'm saying?

19 MR. KELLY: We litigated for levels in the last  
20 two or three RPS plan proceedings. Originally, the  
21 utilities were asking for 100 percent curtailment  
22 rights. We argued that that is, from a commercial  
23 perspective, that's infeasible. Because if people are  
24 facing the risk of 100 percent curtailment, they'll  
25 never get the banks to finance a project.

1           So we worked that out over the course of a  
2 series of PUC proceedings. And I think the rule now is  
3 the pro forma standard contracts are about 200 hours.  
4 And then everybody negotiates around that. I don't ever  
5 see that detail.

6           MS. WISLAND: Also, just to get a sneak -- I  
7 mean, you can also look at the RPS procurement plans.  
8 There's a section in each of the RPS procurement plans  
9 that talks about how they deal with curtailment.

10          MR. CASEY: I think an important aspect of that  
11 is if you're curtailing in response to a negative price,  
12 which means you're getting paid not to generate, who  
13 collects that wholesale price?

14          Because if it's passed through back to the  
15 renewable owner, then I would argue they're indifferent.  
16 As long as that price is reflecting their loss  
17 opportunity of generating, they're indifferent to  
18 whether they operate or not.

19          And we've had examples, numeric examples where  
20 if the utility passed that price back to the generator  
21 and made them indifferent, the utility is still better  
22 off having the economic dispatch. So, it's a win/win  
23 for both, even if the utility passes back that wholesale  
24 price back to the developer.

25          So, you know, Steven's talking about 200 hours

1 in the context of the generator doesn't get paid, if it  
2 doesn't produce.

3 MR. KELLY: Yeah, but some of them have to pay  
4 for curtailment.

5 MR. CASEY: I know some of the utilities are  
6 actually passing through those negative prices back to  
7 the generator which makes it, you know, potentially  
8 unlimited. Obviously, if you do too much, you'll  
9 undermine your RPS. But that's an important aspect of  
10 that discussion.

11 MR. KELLY: That's correct.

12 COMMISSIONER MC ALLISTER: Yeah, thanks.

13 MR. KELLY: So, the other thing I wanted to real  
14 quickly address is the role of natural gas, and the P  
15 min issue, and so forth, that I heard come up.

16 First, one, you know, it's hard to envision  
17 today a world in which natural gas is not going to be  
18 needed to help maintain the grid reliability. I mean,  
19 we're moving toward more storage. Storage is talked  
20 about. The most we're going to get by 2024, maybe, is  
21 1,400 megawatts out of the PUC's current storage  
22 procurement process. E3 says that's woefully inadequate  
23 to meet the needs of what you're going to need by 2030.

24 So, you're going to need natural gas under all  
25 the scenarios that I'm hearing about.

1           The question is how much, what is the P min at  
2   which they're going to operate at and how do they -- can  
3   they sustain that?

4           And there's a couple of things to be thinking  
5   about in regards to that. Most natural gas facilities,  
6   particularly ones that are existing and have come off  
7   contract, or even if they're on contract, most of them  
8   are capacity contracts with tolling arrangements.

9           So, if they don't get called by the ISO or the  
10   utilities, they don't run. They operate at P mins. And  
11   that's a situation where while they may be creating some  
12   GHG emissions over the course of the entire portfolio of  
13   GHG emissions for the State of California, it's almost  
14   de minimis.

15          There is some interest in modifying the units  
16   that exist today to facilitate the lowering of their P  
17   mins. And one problem is that there are no market  
18   signals, really, to facilitate that to happen.

19          If you're going to make what be a multi-million  
20   dollar investment to lower your P min on an existing  
21   natural gas facility, you're going to want to know that  
22   you've got an opportunity to get a capacity payment for  
23   more than one year.

24          So, one of the things that we've been arguing  
25   for was a multi-year RA obligation, which is no longer

1 on the table today. That would have helped solve that  
2 problem because then natural gas generators would have  
3 had the incentive and the means by which they would  
4 retrofit their units to drop their P mins down to the  
5 technical feasible level.

6 In the absence of a revenue stream that they can  
7 see, that's not likely to happen. I mean, it would be  
8 foolhardy to make that investment.

9 So, there's a couple of things to fix the  
10 problem that Laura was talking about. Which is, yes, we  
11 can drop the P mins. But people need to see capacity  
12 signals that allow them the confidence that they'll have  
13 the revenue stream to make the investment, to make the  
14 changes, even if they're not going to operate on an  
15 hourly basis because that's tolled. They may not care  
16 at that point.

17 But the ISO cares because they want them there  
18 for a reliability asset and that makes perfect sense to  
19 us.

20 So, I just wanted to end -- I'll end that now,  
21 and I'll pass it to other parties.

22 COMMISSIONER MC ALLISTER: Thanks, Steven.

23 MR. CASEY: Just a clarification or a response  
24 to your comment about the reliability and over-gen. And  
25 I think we largely agree with you, the over-generation

1 issue is a societal policy issue. We can get really  
2 good at curtailing renewables. And we're going to make  
3 sure that we have the right capacity on to meet the ramp  
4 and keep the lights on. We're not going to compromise  
5 that.

6 So, we're really highlighting this issue as  
7 something we have to get ahead of from an environmental  
8 stand point, in terms of success in meeting our GHG  
9 goals, and really driving the solutions that need to  
10 happen because there is no silver bullet here.

11 I think we're all for getting the additional  
12 flexibility from the gas fleet, but that's not a silver  
13 bullet. We've got to get load shift, demand response,  
14 storage. There's a whole bunch of things that have to  
15 happen to address this.

16 So, I just wanted to reinforce your comment  
17 about things that don't make sense to you.

18 (Laughter)

19 MR. BARKER: So moving along, I'd like to hear  
20 from PG&E. And, you know, we've heard that the  
21 utilities, so probably all the IOUs, they've already  
22 probably contracted to get the 33 percent. But, so  
23 those are pretty much all tied up.

24 But what is -- what are you guys thinking about  
25 as far as contracting for the next tranche to get to the

1 50 percent and your perspective on the over-gen  
2 situation.

3 MS. BLUM: So, I'm Christin Blum and I'm part of  
4 PG&E's Renewable Transactions Team.

5 And there have been a lot of questions today  
6 about what we're doing on our contracting strategy. So,  
7 I can definitely share what PG&E's doing and how we're  
8 thinking about it.

9 So, first I'll address at how we're looking at  
10 additional flexibility within our PPAs, and then how we  
11 look at that as part of our least cost/best fit  
12 evaluation criteria through our solicitations.

13 And I do just want to make one quick note. PG&E  
14 procures renewables through a number of different  
15 programs. We have a renewable mechanism, feed-in tariff  
16 programs. Really, what I'm focused on today is our  
17 modifiable PPA that we use in our annual solicitation.  
18 So, there can be a little bit of difference in terms.

19 So, PG&E's long been in support of having  
20 economic curtailment provisions within our PPAs. It's  
21 important to avoid over-generation, reliability  
22 curtailments from the ISO, as well as to protect our  
23 customers from higher electricity costs.

24 Even with the loss of the REC, sometimes it can  
25 make sense not to run a renewable resource if there's



1 going to be large negative prices. And we want to avoid  
2 those for our customers.

3           Additionally, we are now seeking full  
4 dispatchability rights within our RPS PPAs. With the  
5 implementation of FERC 764, as well as just the growing  
6 amount of renewables on the grid, it really makes sense  
7 to have those dispatchable rights within our PPAs.

8           One of the constructs under the RPS rules is  
9 that it makes more sense for the utilities to generally  
10 sign long-term contracts. And so, these provisions are  
11 really important, in particular, because these are going  
12 to be 10, 20 year deals, and we're only anticipating  
13 seeing more need for flexibility going forward.

14           So, diving into the actual curtailment  
15 provisions within our PPA, we generally have two types  
16 of curtailment provisions. The first, focused on  
17 reliability, those are curtailments issues by the ISO or  
18 the PTO, and those are unlimited in the PTA. They're  
19 out of the control of PG&E in its merchant capacity.

20           The second type which we're talking about today  
21 are the economic curtailment provisions. And so those  
22 can be in the form of a self-schedule, or an economic  
23 bid that results in a dispatch for less than the full  
24 forecasting output of the facility during that interval.

25           And so, in our 2014 form, we have unlimited

1 rights for economic curtailment, as well as we have full  
2 dispatchability. In the solicitation we ask for that to  
3 be the primary offer and then to also have a secondary  
4 offer with some limitations on curtailment, so that we  
5 could look at the difference in the economics between  
6 those two.

7           One main difference that has come up a little  
8 bit here is that the curtailments from the ISO or from  
9 the PTO are unpaid under the PPA. However, curtailments  
10 that are done at our call, PG&E is buyer, are paid a  
11 negotiated rate under the PPA.

12           And we really feel that this framework is going  
13 to work well for us to have this unlimited flexibility  
14 with our resources, as well to pay generators. There's  
15 benefits for customers, it's fair for generators and it  
16 results in a more efficient ISO market.

17           So, diving into those different stakeholders and  
18 kind of the benefits a little bit more, in the short  
19 term for our customers it provides, as I mentioned, the  
20 ability to avoid negative prices which, you know, can be  
21 significant for them.

22           In the longer term, having fully dispatchable  
23 resources will, you know, hopefully lead to a more  
24 efficient CAISO market and overall lower costs for  
25 everyone going forward.

1           Additionally, we do have provisions in the  
2 contract if an economic curtailment order is not  
3 followed. There are protections for customers such that  
4 the generator has to bear the cost of the negative  
5 pricing, any penalties or charges associated to the  
6 failure to comply, and they're not paid for that  
7 generation. So, that's how we protect customers through  
8 our economic curtailment provisions.

9           For generators, the provision is really meant to  
10 make them indifferent. You know, we understand that  
11 generators need some sort of revenue certainty in order  
12 to finance their projects. And, generally, what we're  
13 seeing is that our terms work for the financing  
14 community, that the projects can get financed with these  
15 terms because generators are getting paid.

16           Additionally, because generators aren't paid  
17 during periods of over-generation and reliability  
18 curtailments, it's really in their interest to provide  
19 as much economic curtailment flexibility as possible,  
20 because that's when they get paid. And it works out  
21 well for them.

22           And then, lastly, in terms of the ISO as a  
23 stakeholder, you know, we're seeing more and more over-  
24 generation and negative pricing events, even in these  
25 very low hydro years. And so, we really see it as a

1 benefit to the overall market of providing more flexible  
2 renewables in. You know, these aren't resources that  
3 are going to be, hopefully, self-scheduled. They're  
4 going to be dispatchable and so, hopefully, that will  
5 lead to just a more efficient market.

6 So, in the limited time I have, that's a general  
7 overview of how we're looking at economic curtailment  
8 within our PPA.

9 I will say that our 2014 RPS solicitation is  
10 still ongoing. It's up on our website. So, if you want  
11 to take a look at our solicitation protocol, as well as  
12 our pro forma PPA, it's all up there and people can take  
13 a look if you have an interest in that.

14 And then, quickly, I'll just run through how we  
15 use curtailment, intermittency, and dispatchability as  
16 part of our least cost/best fit evaluation criteria.

17 So, those three attributes are factored into  
18 both our net market value and our portfolio-adjusted  
19 value, when we value renewables.

20 For those that are less familiar with how we do  
21 this, the net market value is really meant to be the net  
22 of an offer's cost versus its market benefit. So,  
23 regardless of who were to buy the contract, that would  
24 become the economic value in the market.

25 And then we take that and do some adders and

1 adjustments to get at what is the value of that offer to  
2 PG&E, given our existing portfolio and our preferences.

3 So, for example, we have a preference to have  
4 resources within our service territory, so that's one  
5 adjustment we make to get to portfolio-adjusted value.

6 So within net market value, the way that we look  
7 at our energy forward curves, that incorporates all of  
8 the things we've talked about today in terms of the duck  
9 curve and what we think the penetration of renewables  
10 will be in the future. That's already factored into our  
11 energy forward curves.

12 Additionally, when an offer provides more  
13 flexibility to us, ability to be dispatched, that should  
14 increase the energy value of that offer to us. Because  
15 looking out in the future, when we see potentially  
16 negative prices in our forward curves, we would be able  
17 to avoid those if an offer had curtailment or  
18 dispatchability rights. So, that should increase the  
19 value, the energy value of an offer to us.

20 And then, lastly, regardless of how much  
21 curtailment or dispatchability rights we have,  
22 intermittent resources do create real costs for the  
23 grid.

24 And so, as people have mentioned today, this is  
25 the first year we're using a non-zero integration adder.

1 It's an interim adder, but that's really meant to  
2 reflect the short-term costs of operating existing  
3 resources to integrate intermittent resources, as well  
4 as the long-term costs we're going to have to address  
5 going forward.

6 And I think through the LTPP we'll have a more  
7 permanent solution for an integration adder soon.

8 And then within portfolio-adjusted value, after  
9 we have that sort of market look at it, we do add an  
10 additional curtailment adder that reflects the cost to  
11 our portfolio of having a more limited resource in it.

12 So that can include anything, such as energy  
13 imbalance costs, you know, extremely volatility we might  
14 see in a spot market for ancillary services, or any  
15 other costs that we're going to bear by having a more  
16 limited resource in our portfolio.

17 So, that's kind of a quick overview of how we  
18 look at these items within the way we do our least  
19 cost/best fit evaluation and in our PPA.

20 COMMISSIONER MC ALLISTER: Thanks very much.  
21 I'm curious, do you have any renewables contracts that  
22 provide additional ancillary services? Have you built  
23 in, you know, any sort of regulation or any other  
24 services in any renewables contract, sort of -- yeah.

25 MS. BLUM: So, in our renewables contract we get

1 all attributes that a project can offer. So, all of its  
2 capacity, energy and ancillary services.

3 I am not involved in how we operationalize that.  
4 But to the extent that there's an ability to use those  
5 in the market, we would have those rights under our PPA.

6 COMMISSIONER MC ALLISTER: Okay, thanks.

7 MR. BARKER: Thanks, Christin.

8 So, we've heard a little bit already today about  
9 the energy imbalance market and also the -- not the  
10 need, but the benefits of a regional approach. And so,  
11 we've invited PacifiCorp to be here to -- you guys have  
12 about six months of data from the energy imbalance  
13 market and so, you know, what have you guys seen? And  
14 also, what do you see kind of in the future in  
15 forecasting in terms of over-generation.

16 MS. KELLY: Well, thanks for inviting us here  
17 today. My name's Jennifer Kelly, and I work in our  
18 Short-Term Energy Supply Management Department in  
19 PacifiCorp.

20 Joe Horner was originally going to be here.  
21 He's our Director of Energy Supply Management, and he  
22 had another obligation, so I'm filling in for him.

23 I'll do my best to speak to his slides. He's  
24 got a slightly different bent on things. He flies at a  
25 higher level than I do. I'm down in the trenches most

1 of the time. So, I'll do my best. And, certainly,  
2 everybody here is flying at a much higher level than me,  
3 too. I'm not so policy-oriented, but I'll take any  
4 questions that people have and I'll do my best to answer  
5 them.

6 So, I'm a little bit out of my element here.  
7 We're Portland based and so we're not as much -- we're  
8 not yet, anyway, we're not so California-centric. We  
9 may be soon.

10 So, I'll just provide a little bit of background  
11 about PacifiCorp, for those who don't know.

12 So, with the first slide, this is our service  
13 territory and it's spread over -- we have two million  
14 customers, spread over a six-state region. It's divided  
15 into two different control areas, what we call PacWest,  
16 which is basically the Pacific Northwest and California,  
17 and PacEast, which is all the rest of it.

18 PacEast is, for the most part, predominantly  
19 thermal. We have about 65 percent coal and 15 percent  
20 natural gas.

21 PacWest, for the most part is largely renewable,  
22 hydro and wind for the most part.

23 And you'll notice, I should point out, the very  
24 puny grey line between PacEast and PacWest is a  
25 transmission constraint for us. And I'll talk more



1 about that, but that is in large part why many of our  
2 curtailments happen in PacEast.

3           So, the next slide, please. The vast majority  
4 of our wind generation resources are in our PacEast  
5 control area. And so, we do find ourselves in  
6 situations where we're over-generating and we can't move  
7 those resources to PacWest and, indeed, into California  
8 as easily as we would like. We are seeing very dynamic  
9 transfers, as Keith Casey has already mentioned. And we  
10 are seeing benefits there, without a doubt.

11           But for the most part, the curtailing of our  
12 projects is coming from those transmission restrictions.

13           We also have curtailments due to reliability  
14 issues, but those are less, I'd say, than our  
15 transmission restrictions.

16           We have 2,000 megawatts of wind on our system,  
17 approximately 1,000 megawatts is owned and another 1,000  
18 megawatts is purchased.

19           We have a peak of 10,000 megawatts of load.  
20 Just to give you an idea, put that into perspective of  
21 what we're dealing with relative to our wind capacity  
22 and our peak load, so we're looking at 2,000 megawatts  
23 capacity, again, to reiterate, and 10,000 megawatts of  
24 load.

25           We have very little solar online. We have about

1 500 megawatts of solar coming on line in the next year  
2 and a half that's purchased solar.

3 We have approximately 100 megawatts of behind-  
4 the-meter residential solar at the moment. It's  
5 increasing steadily. But it rains a lot in Portland, so  
6 we don't have quite the issue that you all have here in  
7 California, for better or worse.

8 And so on to the next slide. So, Joe wanted me  
9 to talk about the integration challenges that we're  
10 seeing with the renewables, as well as some of the  
11 things that we're trying to do to deal with it.

12 The list that you'll see here isn't anything  
13 new. We've talked a lot of these things already today.  
14 I don't have a punchline, unfortunately.

15 But I will say that I'm very happy to hear a lot  
16 of the conversation that is happening here today  
17 relative to focusing on economic solutions, and making  
18 renewables economic.

19 Because what we are focused on is keeping our  
20 rates low for our customers and doing that in an  
21 economic way. And we believe that bringing more  
22 renewables into the market needs to happen in an  
23 economic way.

24 And I've heard Laura to speak on that several  
25 times, as well as others. So, that's something of

1 critical importance to us. And, indeed, one of the  
2 reasons why we joined the energy imbalance market.

3 So, Joe's first point, to limited or no  
4 dispatchability comes from the fact that half of our  
5 wind is owned and half is PPAs. And we don't dispatch  
6 our PPAs.

7 I loved some of the things that Christin said.  
8 I mean, I took copious notes and I'm going to go back  
9 and talk to some of our contracts people. There are a  
10 lot of good ideas there.

11 But we only have about 800 megawatts of  
12 dispatchable wind. That's wind that's on AGC, that we  
13 can dispatch according to ISO DOTS, to the discharge  
14 operating targets. So, that limited our  
15 dispatchability.

16 The other big factor in limiting the  
17 dispatchability is the production tax credit, and the  
18 disincentive we have to not curtail our projects because  
19 of the lost production tax credits.

20 And that's a really big deal for us and one of  
21 the reasons why our operators are very focused on not  
22 curtailing our projects is just for that reason. And  
23 so, until we can figure some kind of fix for that, I  
24 think that issue is here to stay, at least for us.

25 And we've already talked about -- Steve was

1 talking about this, the changes in system reliability.  
2 Those come largely from sudden changes in drops, and  
3 ramp up and ramp down from wind. And from largely when  
4 our forecast is different than what we were originally  
5 intending.

6 And so, when we see these ramps that we weren't  
7 intending, and they happen quickly, and they happen  
8 fast, and they're big drops, big magnitudes, that's when  
9 we start seeing reliability issues. Most of the time we  
10 can fix those things.

11 But again, they happen mostly when our forecast  
12 is off. And a forecast is a forecast, it's never right.  
13 And so, we are forever vulnerable to those. And forever  
14 will be vulnerable to forecast issues. Those are not  
15 going to go away. We just need to figure out how to  
16 deal with those in a more effective way.

17 The over-generation point. For us, we have a  
18 very different scenario than you all have in California.  
19 Our duck curve is -- well, we don't really have a duck  
20 curve. But for in the springtime, I think that's one of  
21 the things that speaks to why the symbiosis between  
22 PacifiCorp and CAISO is working is because we do have  
23 different systems, and we have different demands on our  
24 system than you do. And so, I think it can and has  
25 worked very well.

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1           We see over-generation situations, particularly  
2   in the spring, when we can't back our thermals down  
3   anymore and we have a lot of hydro on our system coming  
4   from high water flows in the spring. Sometimes we see  
5   floods. Not so much this year, but we have seen them in  
6   the past and we have a lot of water in our system.

7           We also have environmental constraints that  
8   don't allow us to back our hydro down as much as we  
9   might like, particularly in the spring for fish runs.  
10   So, we have some environmental constraints that are  
11   limiting our ability to back down hydro, as well.

12           So, that's what we're looking at there. And I  
13   mentioned, already, the over-generation relative to our  
14   wind in PacEast, and not being able to move that out of  
15   PacEast into PacWest, and then down into California.

16           And all of those things lead to higher costs for  
17   us. And in terms of carrying higher reserves to account  
18   for the variability of wind, and soon to be solar.

19           And I also alluded to the fact that this  
20   forecast error also causes us issues, and we see  
21   differences in the -- the differences between our day-  
22   ahead forecast, and we've set up our system to work  
23   according to how much wind we're expecting on the system  
24   in the day-ahead. And when that doesn't happen in real  
25   time, or an hour ahead, we find ourselves in a world of

1 hurt. So, if those differences are large, we feel more  
2 pain than if our forecast is right.

3 And so, on to our next slide. That's one of the  
4 reasons why we are doing a lot, and much of what I spend  
5 my time doing is focusing on improving our forecasts,  
6 and working with our forecasting vendor to improve these  
7 forecasts to the best of our ability, and getting real-  
8 time data from each of our turbines, MET data,  
9 generation data, as well as increasing ramp -- improving  
10 ramp forecasts and things of that nature.

11 So, both on a day-head basis and a real-time  
12 basis, if we can reduce that error, we're going to  
13 reduce our costs associated with the variability in the  
14 wind.

15 One of the other things we try to do is to take  
16 the forecasts that we get from our vendor and put them  
17 into daily dispatch models. So for many years we had a  
18 forecast for our wind, and it was largely for our real-  
19 time operators' situational awareness, so they could see  
20 what was coming at them and try to dispatch in real-  
21 time. Dispatch our other units in a way to accommodate  
22 wind.

23 But we're not doing that so much anymore.  
24 Although they're still using it for that, what we're  
25 trying to do is be proactive and take the day-ahead

1 forecasts and put them into system models that will  
2 dispatch our units economically.

3           We're also taking probability forecasts, the P25  
4 and the P75, and we're putting them into models that  
5 will calculate for us what our day-ahead reserve plan is  
6 going to be so that we can dispatch our units, not just  
7 according to generation needs, but also according to  
8 reserve needs. And that generally varies based on the  
9 reliability of the -- if the P25 and the P50 are very  
10 narrow, we feel very confident about that forecast and  
11 we feel better about scheduling fewer reserves.

12           If that spread is larger, then we don't feel so  
13 confident in that forecast and, you know, we might want  
14 to look at keeping more reserves on our system during  
15 those times.

16           Dispatch flexibility. I think what Joe's  
17 getting at here is just the fact that Steven Kelly  
18 referred to, is that we rely on natural gas to make up  
19 for the variability in our VERs. We don't see that  
20 going away.

21           We are in a situation where we are going to  
22 retire our coal as time goes on. And we're looking at  
23 replacing that, not just with renewables, but also with  
24 natural gas. That's the reality of the economics for us  
25 at the moment and that's what we're looking at in the

1 future.

2 We also have a tiny bit of natural gas storage.  
3 We don't have a lot. We have one Bcf, which is a small,  
4 but what I'm told is a meaningful amount to our real-  
5 time operators. So that's helpful on an intra-day  
6 basis. There are some issues associated with using it,  
7 and penalties and costs, which would be really nice to  
8 discuss more fully or vet some of those issues, fully,  
9 that don't make it as easy to use as we would like.

10 And I know that Laura mentioned something  
11 related to that earlier, about looking at the long-term  
12 contracts with natural gas, and how best to fit that in  
13 with what we're looking at in our forward vision.

14 And Keith Casey has already spoken to the  
15 benefits of the energy imbalance market and the value of  
16 having that outlet to transfer energy back and forth as  
17 we need it. And it has been a powerful tool for us.

18 And one of the reasons why we're looking at, you  
19 know, moving to become a full CAISO member.

20 And, you know, as I mentioned earlier, the  
21 broader balancing authority areas, as you have a larger  
22 footprint, a larger diversity of generators, you know,  
23 the law of numbers, the variation is going to -- the  
24 geographic diversity will modify those variations  
25 between load and generation. And so, I think the larger



1 footprint we have, the better off we're going to be.  
2 The value of regionalism, I don't know who coined that  
3 term, but I liked it and it seemed to fit.

4 So, that's all I have.

5 COMMISSIONER MC ALLISTER: Thanks very much for  
6 being here, that's super helpful, really. And you did  
7 great. Welcome to California. You did great.

8 And I think this is a precursor of things to  
9 come. You know, I think the ISO could probably state  
10 that even more emphatically. But I think it's really  
11 nice to have just forthright, explicit integration  
12 beyond our borders and all the diversity that that  
13 entails. And, you know, hopefully, these mechanisms  
14 can -- we can learn at each step and make them better as  
15 we go forward. So, thanks very much.

16 MR. BARKER: So, another potential --

17 COMMISSIONER MC ALLISTER: Yeah, Kevin, I think  
18 Scott had something to say, as well.

19 MR. BARKER: Oh, I'm sorry.

20 MR. MURTISHAW: Well, I guess I have a question  
21 that maybe some combination of the folks from the ISO  
22 and PacifiCorp can answer.

23 But I'm just curious if there have been any  
24 modeling, yet, about the implications of full  
25 integration with PacifiCorp and possibly other balancing

1 authority areas in WEC, and the over-gen problem.

2 So, we have the chart showing several instances  
3 of thousands of megawatts of over-gen in the spring, but  
4 how much does that go down with PacifiCorp integrated  
5 with the Cal ISO? Or do we even have a ballpark idea?

6 MR. CASEY: Well, we certainly have some  
7 anecdotal data on some of the transfers we've seen out  
8 of the ISO to PAC, just these past six months when we've  
9 had over-generation negative pricing. I don't have the  
10 specific numbers on me. You know, but we're seeing the  
11 economics moving in the right direction when we're in  
12 that situation.

13 The ISO is conducting some analysis looking at,  
14 in the context of a 50-percent renewable, what are the  
15 incremental benefits to a regional coordinated dispatch  
16 versus an ISO-only dispatch. We hope to have that  
17 analysis done by the end of this year, which will shed  
18 some light on what we see as -- in terms of mitigating  
19 the over-generation, if we're able to operate a  
20 coordinated system WEC-wide versus just the ISO trying  
21 to manage itself, how does it help to do that.

22 So I'm not aware, unless Dennis knows, I don't  
23 think we have any specific numbers or studies to date,  
24 but we should have some by year end.

25 MR. BARKER: Some other solution to the belly of

1 the duck, but then also the neck of the duck, is demand  
2 response. And so, if you can kind of talk through a  
3 little bit about how you guys are aggregating loads to  
4 address the situation. But then, also how do you see  
5 things as ramping up in the future and what is the  
6 potential out there?:

7 MS. MANAL: Yeah, absolutely. And I know  
8 that -- I want to be cognizant about time, so I'm going  
9 to take out, kind of rearrange my comments. I'm going  
10 to try to keep it to a few minutes, so we have some time  
11 for discussion. But if you guys want more, just tell  
12 me.

13 We've talked a lot today about the challenges of  
14 our success. Frankly, California's been tremendously  
15 successful. And because of that, we have to deal with  
16 this whole new set of challenges and it's refreshing,  
17 actually.

18 And AMS, Advanced Microgrid Solutions, the  
19 company that I'm representing, we are a living example,  
20 we are one of many companies that this confluence of the  
21 RPS, the 50-percent goal, demand response, and the  
22 storage mandate. So just keep in mind that there's  
23 probably a dozen others out there doing different  
24 things, slightly similar, but there's a lot happening in  
25 the space.

1           People often use the analogy that advanced  
2 demand response is where solar was probably about ten  
3 years ago. I think it's slightly over-used, but it's  
4 probably accurate. There's a lot of potential here and  
5 I think we're just scratching the surface.

6           So Keith, I heard what you said and, Kevin, what  
7 you said about scale. And this market segment has a  
8 huge potential. And I'm not even sure I can quantify it  
9 because we're, frankly, figuring it out as we go in many  
10 respects, both on the regulatory side and in the market.

11           So what I'd like to do is just give a brief  
12 example of the projects that we're building for Southern  
13 California Edison, and then highlight some of the  
14 advantages of behind-the-meter.

15           I think behind-the-meter resources, whether they  
16 be traditional demand response or behind-the-meter  
17 storage, have often been overlooked because they've  
18 historically been so small. You'd look at a 20 Kw  
19 system, a 25 Kw system, so it's never really been viewed  
20 as a viable way to deal with some of our grid  
21 challenges.

22           But I think what we've seen, with Edison's  
23 recent procurement of our product and several others, is  
24 that we now have this ability because of advancements in  
25 battery storage technology, because of advancements in

1 software to actually scale behind-the-meter resources in  
2 a way that provide benefits to the host customer, but  
3 also provide real grid benefits.

4           So, we're currently building, in Southern  
5 California, in two load-constrained areas, in Irvine and  
6 West Los Angeles, 50 megawatts of what are essentially  
7 virtual power plants.

8           We go to large users of load. We install a  
9 battery on their system. The host customer realizes  
10 savings on their energy bill so it's attractive to them.  
11 They have no upfront costs and they instantly realize  
12 benefits. And that is unique in and of itself, but it's  
13 not the part that's really going to transform the grid.

14           What transforms the grid is taking those  
15 aggregates of buildings, say 20 buildings to reach 10  
16 megawatts, putting a software overlay on them and giving  
17 them to the utility in a way that they are firm, and  
18 fully dispatchable, and also resource adequate.

19           So, our initial applications are really for  
20 periods of peak demands, dropping load, and shifting the  
21 load instead of building a peaker, or upgrading  
22 transmission distribution lines by placing a system  
23 directly at the point of congestion.

24           When the utility dispatches are 50 megawatts,  
25 we're able to take 50 megawatts instantly off the grid

1 for a four-hour period.

2 Now, the flip side of this is directly relevant  
3 to what we're talking about today. You can also take  
4 this, to use our Edison contracts as an example, this 50  
5 megawatts, charge when the utility wants you to, for as  
6 long as they want you to, and then discharge.  
7 Effectively shifting the peak to whenever we need it.

8 And so, if I could leave you guys with just one  
9 thing, because I did promise to be brief, I think that  
10 behind the meter DR, you know, advanced demand response  
11 storage, has a tremendous ability to not only move us  
12 towards our goals, but solve a lot of these challenges  
13 that we're talking about today.

14 You know, they can scale like we never thought  
15 possible. They are exactly at the point of congestion.  
16 In many cases they don't even require interconnection,  
17 you know, very simple interconnection. They are firm  
18 and they dispatchable. They defer, in some cases  
19 eliminate the need for transmission and distribution  
20 upgrades. They have a relatively simple path to market  
21 and they're being procured right now.

22 So, I'll end with that and I'm happy to answer  
23 any questions.

24 COMMISSIONER MC ALLISTER: Go ahead, Kevin.  
25 Thanks for being here, Manal.

1           MR. BARKER: But I think we were planning -- we  
2 were planning on probably opening it up to other  
3 questions. But since we are way behind in time, you  
4 know, I'd like to just thank all the panelists for their  
5 comments and presentations. And I guess hand it back  
6 over to Heather.

7           MS. RAITT: And so, if the Commissioners are  
8 ready to move on to the next panel and thank our  
9 panelists. And if you could go ahead and take your  
10 seats and then we'll have the next panel come up to the  
11 tables, please.

12           The next panel's on the Update from the Publicly  
13 Owned Utilities on the Progress Toward Renewable Goals.

14           So, for folks on WebEx, we'll just take a minute  
15 to reconfigure the room.

16           Okay, so our first speaker on this panel is John  
17 Dennis, from the Los Angeles Department of Water and  
18 Power.

19           MR. DENNIS: This is just to provide you with an  
20 update on our renewable portfolio projects and where  
21 we're at.

22           These two slides that we have today give you an  
23 idea, a glimpse of our compliance period one, two and  
24 three, just showing our trajectory as we go from 20, up  
25 to 33 percent by 2020.

1           And what's kind of interesting, as we see our  
2 compliance period one, we see a variety of projects that  
3 are there, about 900 megawatts of a combination of both  
4 small hydro, as well as wind projects that have made up  
5 the additions in compliance period one.

6           In compliance period two, you see largely filled  
7 in our plans currently in service, underway, or under  
8 construction right now, racing to meet the investment  
9 tax credit's 745 megawatts.

10           And then, also, on our projection for compliance  
11 period three, we have a variety of solar, but also some  
12 small hydro and layering in three geothermal plant  
13 projects for 514 megawatts.

14           For SB1, or our net energy meter program, our  
15 solar incentive program, we have right now, currently,  
16 15,500 customers signed up under that program. We've  
17 done about 2,500 of those customers in the last six  
18 months. A total of 129 megawatts are installed to date,  
19 and \$257 million of incentives have been paid out  
20 towards that program.

21           And then you can see the goals that we've set  
22 there for the solar incentive program, 97 megawatts for  
23 compliance period one, 125 megawatts for period two, and  
24 then a residual of 56 megawatts for period three, with a  
25 total of 288 megawatts, a million dollars of incentives



1 to be offered, as well as an overall goal of 310  
2 megawatts by 2020.

3 The next slide. These are just our overall  
4 targets. As we're doing this particular work, we're  
5 also looking at a 15 percent energy efficiency goal.  
6 We're seeing some sizeable reductions in CO2 emissions.  
7 Those two larger drops in the 2015, as well as the 2025  
8 period, is the reduction of our coal and getting off our  
9 coal production.

10 And then also, as we see some other goals that  
11 we've just talked about, electrification, 2030, of  
12 580,000 electric vehicles or the equivalent of those in  
13 Los Angeles, in our service territory at that time. And  
14 that's going to be, as well, equivalence during that  
15 time.

16 So, we have a variety of challenges ahead of us.  
17 On September 16th, of 2014, we hit our all-time peak of  
18 6,400 megawatts. Total, as far as our demand, we see  
19 about 1,400 megawatts of renewables that are currently  
20 in service to day. We've got 1,256 megawatts that are  
21 under construction as we speak and we've got 2,721  
22 megawatts that are planned of renewables.

23 In addition to this, we have about 500 megawatts  
24 of demand response target ed by 2024, and 154 megawatts  
25 of energy storage in a variety of forms that is planned

1 by also that timeframe.

2 And then, to just add a little bit more to that  
3 challenge, we're also in the transition of our existing  
4 coastal plants to transition off ocean water for cooling  
5 our plants by 2029.

6 So, that's just a quick snapshot. I believe  
7 that's what we're -- just wanted to share with you, with  
8 regards to our current status on the energy-metered  
9 program. We have sizeable challenges ahead of us.

10 As other notes, as we've looked at the future  
11 for 50 percent RPS, right now, when we hit 33 percent we  
12 see that our targets right now, as far as our current  
13 production, we'd curtail about .2 percent of that  
14 renewable energy when we hit 33 percent.

15 When we go to 40 percent load of renewable, we'd  
16 curtail about 1.5 percent.

17 But when we jump up to the 50 percent, we're  
18 right there at that target, as an earlier chart had  
19 shown, one of the other presenters, we're curtailing  
20 about 4.6 percent.

21 So, we do see some challenges as we work towards  
22 a 50 percent. We're trying to see, again, not only an  
23 RPS goal, but also the possibilities of equivalent  
24 credits as we look towards not just the RPS goals, but  
25 also greenhouse reductions. Certainly, a great

1 obligation to ensure reliability to our customers.

2 But perhaps there's opportunities as we look at  
3 this REACH for equivalent credits, as it would approach  
4 toward electrification, transportation, storage and  
5 energy efficiency opportunities. Thank you.

6 MS. RAITT: Okay, then our next speaker, I'll  
7 just go in the order of the agenda, is Tim Tutt, from  
8 SMUD.

9 MR. TUTT: Thanks for the opportunity to be on  
10 the panel. I'm just going to run through a few slides  
11 that provide you information about where SMUD is in its  
12 RPS and SB1 compliance.

13 The next slide. This slide just shows sort of a  
14 historical background. It shows the growth in renewable  
15 procurement as a percentage of retail sales and the five  
16 largest utilities in California. And it just points out  
17 that SMUD has grown consistently over the historical  
18 period, from a distant third to first in renewable  
19 procurement. And we continue to grow and move forward  
20 in the future.

21 The next slide. This gives you a picture of our  
22 renewable portfolio in 2014. As you can see, there's a  
23 mixture of resources there. We truly believe that  
24 procuring renewables should be a portfolio of resources,  
25 not depending on just one source.

1           I don't know, hearing talk about the RPS  
2 calculator and changes in that today, I don't know how  
3 you can structure -- I guess I should say, I'm sure you  
4 can structure a calculator with the right assumptions to  
5 get any mix of resources you want out of a procurement,  
6 if you fooled around with the assumptions enough.

7           We don't do that. We just simply say we need a  
8 mixture of resources and our least cost/best fit is  
9 trying to find the cheapest resources that also give us  
10 that mixture.

11           COMMISSIONER MC ALLISTER: Tim, how do you -- do  
12 you have highly defined attributes that you're looking  
13 for and some way for the bidders to demonstrate that  
14 they possess them?

15           MR. TUTT: No. It's simply a case of agreeing  
16 amongst -- internally, amongst the company personnel,  
17 that it's good to have some geothermal in our mix. It's  
18 good to have some biomass in our mix so that we have --  
19 and we're not wholly dependent on one source of  
20 renewables.

21           COMMISSIONER MC ALLISTER: Okay, thanks.

22           MR. TUTT: The next slide. This shows the RPS  
23 status of SMUD for the first compliance period. As you  
24 can see, our obligation was about, a little over 6,000  
25 gigawatt hours of renewables to meet the compliance

1 period requirement. We actually procured over 7,000  
2 gigawatt hours of renewables during the period.

3           However, we only retired about just enough to  
4 make compliance, just 20 percent. So, we have an  
5 additional three percent that we have not retired. It  
6 doesn't show up in some of the CEC data that we are  
7 above the 20 percent level in terms of actual  
8 procurement.

9           It's an issue that we'd like to work with to  
10 change because we do want it to be shown that we are,  
11 you know, procuring as much renewable resources as we  
12 actually are.

13           We do preserve those unretired RECs just for the  
14 flexibility of potentially using them for another  
15 purpose, until we need them for potential retirement for  
16 the RPS.

17           And also, I'd like to point out we have about a  
18 thousand gigawatt hours and a little bit more of  
19 historic carryover, which we've applied for and haven't  
20 yet received the final number determination of how much  
21 of that we'll be eligible for.

22           The next slide. This, I just threw in to show  
23 you the impact of the drought, because the drought is a  
24 big topic these days. Our expected small hydro  
25 procurement, prior to 2014, when we say, you know, going

1 forward, a standard water year was about 250 gigawatt  
2 hours of small hydro. Our actual small hydro  
3 procurement in 2014 was about 80. So, that's a 75  
4 percent or so reduction in small hydro just because of  
5 the drought.

6 I think what that says to me is it's important  
7 to recognize that variability in procurement. That's  
8 going to affect wind and solar resources to some extent,  
9 as well. And make sure that you have that in your  
10 procurement plans in terms of making sure you're  
11 compliant, and not just counting on a normal water year,  
12 for example. And also, it reinforces the importance of  
13 having a portfolio of resources so you're not fully  
14 dependent on something that's going to have that much  
15 variability.

16 The next slide. For compliance periods two and  
17 three, this again shows our projected retail sales and  
18 RPS requirement for those periods. And our committed  
19 procurement, that's facilities that we already have  
20 under contract and are expecting to provide generation  
21 in those periods, although that can vary as I mentioned,  
22 shows that we are fully compliant and above compliance  
23 for compliance period two, when we finally get to the  
24 point of submitting our compliance period report.

25 And very close to compliance for compliance

1 period three. And this is without counting any of the  
2 carryover that we might have from the first compliance  
3 period.

4           So, we're feeling like we will be compliant with  
5 that carryover, even if we don't do some of the recent  
6 activity that's shown on the second -- on the right half  
7 of this slide.

8           And first, we do have a large biomass, small  
9 hydro contract that ended in 2014, so we've lost that  
10 significant resource.

11           But we've extended contracts with the local  
12 landfill and wind projects, and are grandfathered  
13 biomethane contracts that began producing and coming  
14 into our combined cycle power plant.

15           We have some new local dairy digesters and solar  
16 that have begun producing. Most of that is counted in  
17 that committed procurement category that you see there.

18           But we also are considering several new options  
19 for wind, solar, geothermal and biogas. Again, trying  
20 to make sure that not only are we compliant through  
21 2020, but getting ready for the next tranche of  
22 renewable requirements. Whether it's an RPS, it's just  
23 a 50-percent target, it's related to low carbon and  
24 trying to -- continuing to decrease our carbon content  
25 in our supply to be consistent with our board goals.

1           The next slide. A slide showing our SB1 status.  
2   You can see here that we've got nearly 70 megawatts of  
3   SB1 projects installed at this point.

4           We see the SB1 requirement for us as a financial  
5   commitment, not a megawatt commitment. So in the end,  
6   we expect that we'll be getting up somewhere close to  
7   900, 100 megawatts before we use up the financial  
8   commitment that we have made under SB1.

9           You can see here, as well, that early on in the  
10  2009 through 2011 years, we had significant growth in  
11  our commercial, our nonresidential SB1. More recently,  
12  that's slowed down and we have continued strong growth  
13  in our residential sector.

14          And even in the case where both -- in both  
15  sectors our incentives are down to the last couple of  
16  steps in SB1, so they're down to fairly low levels in  
17  both residential and commercial. And that's important  
18  because if residential keeps growing, as we see it here,  
19  we haven't been able to include the residential systems  
20  in our RPS procurement so far. The transaction costs  
21  have proven prohibitive. So, we'll be losing that  
22  procurement as we move forward in RPS. Unless we can  
23  figure out a way to reduce those transaction costs.

24          The next slide.

25          CHAIR WEISENMILLER: Tim, one question. In



1 terms of the net energy metering caps, where are you  
2 relative to those?

3 MR. TUTT: We're well below the net energy  
4 metering cap. I don't have the exact number, Chairman  
5 Weisenmiller, but I think it's probably -- we're  
6 probably around one and a half percent, and our cap is 5  
7 percent of our peak load.

8 CHAIR WEISENMILLER: And what about LADWP, what  
9 percentage are you, of your net energy metering cap?

10 MR. DENNIS: I think it's about .4 percent, or  
11 something --

12 MR. TUTT: So then this is my final slide. I  
13 just wanted to point out that we're still doing a lot of  
14 research to try to resolve some of the issues that have  
15 come up today for our service territory. Looking at new  
16 resources, the grid impacts that we're all seeing, the  
17 mitigation alternatives, and system effects and  
18 policies.

19 You've seen some of that research in previous  
20 presentations and discussions amongst us and your  
21 research staff.

22 A couple of new ones. We're looking at a 484  
23 kilowatt solar canal project, covering the South Folsom  
24 canal to reduce -- to offset the pumping load there, and  
25 reduce evaporation, and help with the drought.

1           And we're also doing a pilot biomass  
2   gasification project, or looking at developing that if  
3   the financial circumstances work out. And that's sort  
4   of entirely new type of resource. It's not landfill gas  
5   or digester gas, it's gasification of biomass.

6           And then, we've done a lot of work over the last  
7   few years on developing better forecasting models and  
8   examining the effect of geographic variation.

9           I think we're going to be rolling out, this  
10   year, some of those forecasting efforts on a distributed  
11   generation basis, so that our customers will be able to  
12   have a better idea from the potential production from a  
13   system they might install in their house, in a user-  
14   friendly manner.

15          And examining communications between PV  
16   inverters in the system to allow monitoring and possibly  
17   control. This is one of the questions we've had in the  
18   past about the fact that we have PV systems with an  
19   inverter meter, which is reasonably accurate, plus or  
20   minus five percent. And then in series with that, we're  
21   installing a second meter, revenue quality. That's a  
22   State requirement. And then it goes up the line like  
23   that.

24          At some point, with smart meters, we anticipate  
25   the potential at least for taking out that series second

1 meter, so that we can understand the generation from the  
2 system simply from the communication between the  
3 inverter and our smart meters.

4 We're doing research, a variety of research on  
5 storage, house, neighborhood and system levels.  
6 Obviously, in electric vehicles, managed charging.

7 I've participating in some of those research  
8 projects with my own electric vehicles at SMUD.

9 And we're doing some demand response pilots and  
10 goals. I think our goal for demand response this summer  
11 is 10 megawatts of demand response and it's supposed to  
12 increase from there going forward.

13 And that's all I have, thank you.

14 CHAIR WEISENMILLER: Okay, Tim, one question.  
15 If I recall correctly, SMUD's participating in the  
16 "Smarter Than" effort, is that right?

17 MR. TUTT: The "More Than Smart Grid"?

18 CHAIR WEISENMILLER: Yeah.

19 MR. TUTT: We hosted a workshop. And I believe  
20 that we have staff monitoring and part of that, the  
21 committee's looking at that, yes.

22 CHAIR WEISENMILLER: Yeah.

23 MR. TUTT: I'm not very familiar with how that  
24 work is going right now, but we are participating.

25 CHAIR WEISENMILLER: Yeah, I mean, that's my

1 recollection of the meetings that I've been at. I  
2 believe there's been a gentleman from your company  
3 there.

4 MS. RAITT: Okay. So, our next speaker is Tanya  
5 De Rivi, from the Southern California Public Power  
6 Authority.

7 MS. DE RIVI: Thank you very much, everyone.  
8 I'm the Director of Government Affairs for SCPPA, as we  
9 like to call ourselves, and will be covering, briefly,  
10 three main issues that I was asked to cover before I  
11 left for Barcelona and returned very late last night.

12 One on the RPS compliance filings, RPS beyond 33  
13 percent, and the five percent NEM cap status of our  
14 SCPPA members.

15 SCPPA members for the RPS are working very hard  
16 towards meeting California's 33 percent RPS target,  
17 under an overarching need to address climate change  
18 initiatives, and should be on track to meet interim RPS  
19 targets through 2020.

20 Some of our members are even ahead of pace.  
21 Pasadena Water and Power, for example, has met or  
22 exceeded both the State and its own 40 percent goal by  
23 2020 RPS target, with renewables accounting for  
24 approximately 29 percent of their retail sales last  
25 year.

1           Anaheim Public Utilities had delivered  
2 approximately 33 percent of its retail load with  
3 renewables last year.

4           We also do have a member that serves a small,  
5 disadvantaged community in Southern California, who did  
6 not reach the first compliance period RPS target, given  
7 locally-adopted cost implementation measures under the  
8 RPS and having been fully resources already. Though,  
9 they anticipate being caught up with RPS targets in the  
10 second compliance period.

11           SCPPA would also like to take this opportunity  
12 to urge the Energy Commission to complete the  
13 verifications of the first compliance period filings as  
14 soon as possible. We're nearly halfway through the  
15 second compliance period, without knowing whether the  
16 Energy Commission will deem our individual members in  
17 compliance with the RPS, leaving them with no  
18 opportunity to go back to make corrections, and little  
19 time to correct anything going forward.

20           RPS beyond 33 percent, up to 50 percent, SCPPA  
21 generally supports the clean energy standard framework  
22 envisioned by the big five, publicly- and investor-owned  
23 utilities, including one of our members, my alma mater,  
24 LADWP, which would allow for additional flexibility to  
25 meet emission reduction targets by employing various

1 programs and technologies that are best suited for each  
2 particular utility and its customers in the most cost-  
3 effective means possible.

4 Any effort to expand the RPS to 50 percent will  
5 require added flexibility in meeting such an aggressive  
6 target. Absent the clean energy standard framework,  
7 many utilities may be forced to over-procure, even if  
8 they are already fully resourced.

9 The State must understand issues with straining  
10 assets and being unable to recover costs in the market.  
11 Our customers, ultimately, are the ones having to pay  
12 for this. And our small- and medium-sized utilities, in  
13 particular, do not have the ability to spread added  
14 costs across millions of customers.

15 When Governor Brown announced the 350's goal to  
16 be achieved by 2030, SCPPA immediately initiated an  
17 effort to, across our membership, develop a list of  
18 recommendations and comments to help policymakers in  
19 developing the associated policies and programs.

20 This list of recommendations, which I brought  
21 copies of, was developed working through several of our  
22 working groups, including our renewables working group,  
23 resource planning, public benefits, regulatory and  
24 energy storage across 187 of our SCPPA member utility  
25 staffers, then presented to our SCPPA board in February,

1 before being shared with State policymakers, including  
2 the Energy Commission.

3           For increasing electricity derived from  
4 renewables, up to 50 percent by 2030, SCPA recommended  
5 four main goals. One is ensuring electric grid  
6 reliability and stability, including performing a  
7 comprehensive power resource gap analysis of what  
8 California would need to achieve 50 percent renewables,  
9 in coordination with regional reliability entities, and  
10 providing a safety valve mechanism to address  
11 instability or challenges to the reliable operation of  
12 the electric grid in the west.

13           Second was ensuring that costs to California  
14 ratepayers are affordable and remain so.

15           Third is allowing maximum electric utility  
16 industry flexibility to meet the goal, including the  
17 ability to ensure a diverse portfolio mix, and  
18 maximizing credit for distributed generation systems and  
19 geothermal, for example, broadening the definition of  
20 what is a renewable resource to encourage development of  
21 more projects, and harmonizing State policies with  
22 Federal goals, wherever possible, such as with  
23 biomethane. And incentivizing regional cooperation as  
24 is envisioned under the clean power plan by the  
25 Environmental Protection Agency.

1           And fourth, eliminating unnecessary barriers and  
2   minimizing administrative overhead, particularly in  
3   terms of streamlining certification and timeliness of  
4   the verification process, as well as improving overall  
5   data reporting obligation, which has doubled in recent  
6   years alone, for our limited staff resources.

7           And I would be remiss if I did not again  
8   highlight SCPPA's very strong belief that all renewable  
9   distributed generation resources should be counted as  
10   bucket one, particularly given the State's march towards  
11   50 percent renewables by 2030.

12           Our members continue to believe that the current  
13   bucket three RPS categorization undervalues and deters  
14   further development of such resources under a declining  
15   portfolio balance requirement cap.

16           California renewable resources should be valued  
17   more highly than out-of-state renewable resources, under  
18   California's own RPS. Said differently, we now get  
19   higher credit for out-of-state wind than we do for solar  
20   in our own backyard. This isn't right. A panel in the  
21   desert should have the same value as a panel here at  
22   home, on one of our own rooftops.

23           Particularly given how much sun we have in  
24   Southern California, bucket one status for distributed  
25   generation resources should be a statewide policy for



1 all utilities, including the IOUs.

2 Accessing a broader renewables market is the  
3 best and most cost-effective way for California  
4 utilities to meet such an ambitious goal.

5 I'm personally hopeful that, especially after a  
6 presumed 50 percent RPS program comes into effect, that  
7 the solar industry as a whole recognizes that there will  
8 be more than enough room for both small- and large-scale  
9 solar projects to succeed together for the benefit of  
10 California ratepayers.

11 And finally, on NEM excluding LADWP. I  
12 understand that we were requested to provide an update  
13 on where our members are in terms of meeting our net  
14 energy metering caps.

15 So, for the purposes of brevity, I calculated on  
16 average that SCPPA members are now at approximately 40  
17 percent of the way towards their NEM caps. This, again,  
18 excludes LADWP.

19 That range covers a low for one utility around  
20 10 percent and a high of around 60 percent, so there is  
21 still a long ways to go.

22 Again, most of the home ground solar is not even  
23 counted towards meeting the 33 percent by 2020 RPS  
24 target. And I want to note here that utilities  
25 generally use a system peak demand, with NEM programs

1 catered to meet customers' needs, as governed by their  
2 local government boards because this approach has worked  
3 well for their communities.

4           Not all municipal utilities have smart meter  
5 capabilities to even be able to capture individual  
6 customer peak demand for every single customer in any  
7 calendar year, necessary to be able to perform the  
8 aggregate customer peak demand calculation, which is now  
9 mandated upon the IOUs, following a lengthy CPUC  
10 proceeding.

11           And many of our members also do not have the  
12 staffing capabilities to perform such a complex  
13 computation, particularly those smaller systems that  
14 serve disadvantaged communities.

15           Next.

16           MS. RAITT: Okay, next is Scott Tomashefsky,  
17 from the Northern California --

18           CHAIR WEISENMILLER: I was just going to ask her  
19 to please docket the SCPPA comments.

20           MS. RAITT: Okay, Scott Tomashefsky.

21           COMMISSIONER MC ALLISTER: Scott and Tony, I  
22 actually have to leave. I just want to make sure  
23 everybody knows it's not out of any disrespect. I have  
24 a hard conflict I can't avoid. And I will listen to the  
25 recording later.

1           MR. TOMASHEFSKY: Thank you, appreciate it.  
2 Thanks a lot, guys. Thanks for sticking it out with us  
3 for most of the day, as well.

4           COMMISSIONER MC ALLISTER: And thanks for  
5 everybody on this panel, as well, I really appreciate  
6 your being here.

7           MR. TOMASHEFSKY: And I was speaking to Angie at  
8 the break, and I thought rather than talk during the  
9 panel when you had seven people, I thought I'd give you  
10 like a 30-second snapshot here, on this end, in terms of  
11 flexibility, and the programs, and where things are  
12 going.

13           I think the main thing to keep in mind, at least  
14 at this juncture, is there are a lot of things that were  
15 discussed when we developed the RPS program through the  
16 legislative process, and then through the regulatory  
17 development here with the enforcement regulations.

18           And the notice on alternate compliance and  
19 flexible compliance was an important feature. And as  
20 I'll talk about it for a minute or two once I get into  
21 my prepared remarks, that I won't docket because it's on  
22 handwritten notes, is flexibility really makes it  
23 possible for smaller entities to comply.

24           And without that, it would be virtually  
25 impossible in a lot of different ways. It becomes a

1 question of trying to figure out what your best  
2 priorities are, and then dealing with aggregation and  
3 the like.

4 But I'll talk about that. And if you think  
5 about the fact that you've got right now, not only are  
6 we talking about the RPS, changing it to a 50 percent  
7 objective, you're really dealing with a climate program  
8 that is also pending a pretty signification decision  
9 from the Federal government on the clean power plant and  
10 how that works with interrelationships. And that's  
11 really CALISO issues discussed all during the course of  
12 the day.

13 There are an awful lot of loose ends that rely  
14 us to be adaptable to try and figure out how that moves  
15 forward.

16 So, as much as we want adaptation for climate  
17 programs, I think we need adaptation when we look at the  
18 renewable program when we go forward here.

19 So, I liked a lot of the tone of the comments  
20 today, as far as not getting ahead of the fact that the  
21 program is generally working pretty well. And,  
22 actually, there's not a lot of results out here to test  
23 that official. Although, we have a pretty good idea of  
24 where we're going. So, those are important  
25 considerations.

1           So from our stand point, if you look at the  
2 issues of flexibility, just a perfect example, the  
3 notion that one of our members, Truckee Donner, has the  
4 flexibility to avoid the bucket requirements because of  
5 its location to the ISO, vis-à-vis everything else.  
6 They have basically taken a percentage that had the  
7 State of California coming to Truckee to tell them how  
8 problematic it is that they're dealing with coal  
9 contracts in 2006, to having a local decision to  
10 basically not go forward with that contract.

11           Today, in 2014, they will be close to 50 percent  
12 in terms of renewable development. That is only because  
13 of flexibility that's provided to the program.

14           We have a lot of different examples of that, as  
15 well. It just can't happen without that type of  
16 flexibility.

17           The Port of Oakland, another example.  
18 Basically, at zero percent, with the exception of a  
19 solar array along the runway as late as 2011. Their  
20 power content label for 2013 had them coming in at 46  
21 percent.

22           So, when you start to look at the things that  
23 have been put in play and the decisions that are being  
24 made by each of these entities, without having it really  
25 being prescribed, you're coming up with fairly

1 significant results and fundamental changes in terms of  
2 what the State is trying to accomplish on renewables  
3 going forward.

4           So, when we start to look at things like a 50  
5 percent renewable, I think the answer is if you're  
6 looking for someone to say no problem at all, I think  
7 it's still challenging in terms of how we get there.

8           I think the framework is put in place for us to  
9 look at it from a positive way and move forward.

10           And Scott, just to your comments, when you were  
11 saying it was really easy to get to 33 percent, I would  
12 suggest it was attainable to get to it. Easy, not at  
13 all. In terms of the things that we had to  
14 fundamentally recalibrate to get to that point was -- I  
15 don't want to downplay the importance of the things  
16 we've done. And that goes across both public and  
17 investor-owned utilities. That is a power sector  
18 success story when you start looking at the things we've  
19 done. It's not a bad story.

20           Looking at some of our members in terms of  
21 specifics, we have Palo Alto that is ready to be at a 50  
22 percent renewable by 2017. They have engaged in a  
23 number of solar PPAs, that they're getting them to that  
24 particular place. Not to mention the fact that they  
25 have a carbon neutral plan that's been in play, by

1 council decision, since 2013.

2           You've got Santa Clara basically sitting at 33  
3 this year, and they'll be above 40 percent next year.

4           You have Alameda and Ukiah who have been  
5 regularly over 50 percent. And, in fact, the only  
6 reason they're below 50 percent is in terms of  
7 flexibility. Taking some of the RECs, selling it to  
8 other members, so that they can actually made additional  
9 renewable purchases.

10           So even though the numbers are adjusting, the  
11 direction and objectives of the State in terms of moving  
12 forward with procuring renewables is going in the right  
13 direction. That's exactly what the State wants. And  
14 the reason you can do that is because you've got the  
15 flexibility to be in there.

16           For our smallest members, we actually have an  
17 RFP on the street right now to look at 40 megawatts of  
18 solar PPAs starting in 2017. So, if anyone's interested  
19 in responding to that, from NCPA perspective, you can go  
20 to our website. And CPA.com, you'll actually find that  
21 RFP, if you're interested. We're certainly interested  
22 in hearing from you.

23           Those are the ways that we help our smaller  
24 members that may not have the megawatt bandwidth to  
25 actually make those investments by themselves. So those

1 are, again, good stories.

2 Challenges on how we're dealing with those  
3 things, we have -- as you know, our two percent snowpack  
4 doesn't get you a lot of hydro generation. And  
5 regardless of whether it's large or small hydro, it's  
6 still an important component of our carbon objectives,  
7 which is also front and center with respect to the  
8 things we're doing here.

9 We also have, with our smallest members being  
10 tied to Federal power, hydro power projects, to the  
11 Central Valley Project, you do not have the ability to  
12 sell off retail sales, so you have to take those  
13 resources.

14 So, when you start to look at flexibility on why  
15 you can and cannot make certain targets, those are  
16 certain, important considerations when the water does  
17 flow. When the water doesn't flow, we have other  
18 situations to deal with.

19 But if you've got a flush year, like we had I  
20 think in 2011, you can look at some of those renewable  
21 members and they're close to 100 percent when you  
22 include full Federal hydroelectric power.

23 And certainly, from a cost-containment  
24 perspective, it's not really a practical thing to get  
25 rid of that for purpose of meeting a statistical number.



1 Flexibility makes that work.

2 Turning over to net metering, I think, Chairman,  
3 you had the question in terms of percentages on net  
4 metering. Our aggregate number is about 2.6 percent.  
5 That ranges in the membership from about .6 to 6.2. The  
6 only one of our members that's over the 5 percent  
7 threshold is Lompoc.

8 An interesting sidebar to that, though, is that  
9 peak load is based on a system peak for the year.  
10 Lompoc's peaks in December.

11 So, if you look at the fact that their peak load  
12 in the summertime is significantly lower, it starts to  
13 change the understanding of what that five percent  
14 number means.

15 So, when we start to debate the issue of whether  
16 it should be coincident or non-coincident peak, there  
17 are other issues to think about. So, it's not that  
18 straight forward in terms --

19 COMMISSIONER HOCHSCHILD: So, but Scott, just on  
20 that point. I mean, we hear a lot from the Legislature  
21 about ensuring there's parity between the POU's and the  
22 IOUs. And the Governor, as you know, signed AB327 into  
23 law, which enshrines that aggregate customer peak  
24 demand, how that's defined.

25 And what I'm hearing, I guess, from the woman

1 from SCPPA, part of the issue is just the ability to  
2 capture the information necessary to make the  
3 calculation.

4           So from your perspective, is that really the  
5 barrier? I mean, if that were via smart meters or some  
6 other support to allow the calculation to be made, I  
7 mean what other rationale is there for a different  
8 methodology?

9           Because, I mean this is kind of an issue of  
10 concern, obviously, to ensure there's parity.

11           MR. TOMASHEFSKY: Yeah, you make a point in  
12 terms of the technical aspects of what you can calculate  
13 and what you can't. If you had the analog data  
14 available, it's not going to give you that same type of  
15 granularity that you might want to do.

16           But there is a secondary aspect to that. When  
17 you start to look at the service territories that we  
18 have, you know, they're very focused. They're one  
19 climate zone, it's one specific area, and they have  
20 certain features that get clouded when you're dealing  
21 with a much larger service territory. Which is not a  
22 knock to the service territory that's larger. But there  
23 are different climate zones and different dynamics  
24 which, when aggregated up, provides you an opportunity  
25 to do certain things.

1           So, when you start to look at just how you're  
2   operating the system and looking at the impacts on your  
3   system, it's a little bit different when you're focusing  
4   on a very small area. You just don't have that  
5   divergence that can sort of be softened, if you will,  
6   and with a larger service territory. So, that's just  
7   one element of it.

8           So, it's much easier for us to look at it from  
9   here it is, here's our climate zone, we peak in the  
10   winter. It just doesn't make sense for us. Truckee  
11   Donner peaks in the winter, not an issue, they don't  
12   even have a summer peak.

13          So, it's that type of thing, it's just  
14   different. So, just have to give that some  
15   consideration. But you're right, that is part one. You  
16   just can't --

17          CHAIR WEISENMILLER: Yeah, I think the issue is  
18   not just where you stand on the NEM cap, but what do we  
19   need to do to actually move -- sort of moving further  
20   along the scale in terms of getting actual  
21   installations?

22          MR. TOMASHEFSKY: Well, we are seeing a lot of  
23   installations. But what you do see, though, just when  
24   you generally look at it, is the focus is not so much on  
25   the residential, per se, because the rate structure is

1 somewhat different. We're not dealing with the tier 4,  
2 tier 1 issues quite the same way. And there's  
3 differences, but not quite the same way.

4 We're you're finding activity occurring in a lot  
5 of our member locations is you've got the Big Box  
6 stores, with the large-scale installations, where you  
7 have one or two. And then you start to raise the  
8 question about whether that blows the CAP away.

9 And so when you have -- as you're coming to the  
10 end of the program here, and looking at that five  
11 percent number, that's now getting tested a little bit.

12 If you look at the number in aggregate, when I'm  
13 saying we're 2.6 percent, I think PG&E's number is in  
14 the area of -- it's less than that, in terms of 2.4.  
15 But the scale that they're dealing with is much greater.

16 So, when you go to a community and you say I  
17 want to go ahead and put this on a Wal-Mart, or an  
18 officer building, or whatever it is, you put one or two  
19 projects in there and you'll add a significant amount of  
20 load to meeting that threshold.

21 So, it starts to raise that question. You start  
22 to get into the dynamics of how that impacts the system.  
23 And maybe it requires the rethinking in terms of what  
24 you're trying to define with five percent. You know,  
25 that was kind of an arbitrary number to say once you get

1 to a certain point, then you're going to have some  
2 issues with your system.

3 And so, arbitrarily we said this is where we  
4 should be. It started at .5 percent, went to 2 and a  
5 half percent, went to 5, and there's been discussions  
6 about where that's going.

7 CHAIR WEISENMILLER: Yeah, I think that part of  
8 what people were trying to do is really jump start the  
9 installations of solar.

10 MR. TOMASHEFKY: Yeah. Yeah, I would argue that  
11 we're not really behind in that regard. And the fact  
12 that a lot of the commercial/industrial installations  
13 are actually occurring in some of these areas is not  
14 something we should shy away from. But it's certainly  
15 affecting the numbers.

16 One other thing I wanted to just share, in terms  
17 of SB1, within our membership, our numbers, if I  
18 calculated it correctly, we're at about \$45 million of  
19 investments on that. And as Tim had mentioned, we look  
20 at it more from a dollar investment perspective, rather  
21 than a megawatt, just in terms of how the rebates have  
22 been offered and how things have scaled down.

23 And I know we've had these conversations in the  
24 past, but there's certainly a lot of movement in that  
25 direction and I think you'll find even further positive

1 stories that come out of the 2014 --

2 COMMISSIONER HOCHSCHILD: But just to recap, I  
3 mean and correct me if I have these numbers wrong, but  
4 this is from our last meeting. I mean, the IOUs are  
5 done with the CSI program. The POUs, as I recall, are  
6 about two-thirds of the way through the money and about  
7 a third of the way through the megawatts. Is that  
8 roughly ballpark? But that was my take home from the  
9 last time we --

10 MR. TOMASHEFSKY: Yeah, in aggregate.

11 COMMISSIONER HOCHSCHILD: Yeah, for SB1.

12 MR. TOMASHEFSKY: Yeah, I don't have the number  
13 on the megawatts, but we're about 60 percent on the  
14 dollars.

15 COMMISSIONER HOCHSCHILD: On the dollars.

16 MR. TOMASHEFSKY: Yeah. But you should see a  
17 significant bump up in 2014, just very similar with  
18 what's been going on with everything else.

19 COMMISSIONER HOCHSCHILD: Okay.

20 MR. TOMASHEFSKY: And you'll get that report  
21 July 1st or so, within a week or so.

22 So, I think the story, itself, is a good one. I  
23 always cringe -- you know, in the ten years since I've  
24 left this building, I know one of the things I continue  
25 to hear is public power is not doing enough. And that

1 always makes me cringe. I mean, there's always more you  
2 can do. But in terms of commitment, I think you've  
3 heard it from each of us here, whether it's at the L.A.  
4 and SMUD level, which goes at a different level than  
5 most of us, there's still a lot of activity. And we  
6 find our role, and I imagine Tanya would say the same  
7 with respect to SCPPA, is that there's a lot of  
8 aggregation and information sharing that we deal with,  
9 with our smaller members, to make sure that everyone's  
10 going in the same direction. Even if the line may not  
11 be quite as straight as you might like, it's certainly  
12 in the right direction.

13 So with that, I'll end my comments. Thank you.

14 MS. RAITT: Okay, the next is Tony Andreoni,  
15 from the California Municipal Utilities Association.

16 MR. ANDREONI: Thank you. Thank you for  
17 inviting me here today. And I have to say, going last,  
18 on the last panel has its advantages. Much of what has  
19 already been said by my colleagues here on the panel  
20 holds true for many of our, or most of our CMUA members.

21 In general, overall, regarding the RPS program,  
22 you all probably can recall back to many of our members,  
23 our individual utilities actually had fairly aggressive  
24 RPS percentages on the books ahead of time, before SBX1-  
25 2. So, many of our folks have been very aggressive as

1 far as procuring and making sure that they get to the 33  
2 percent by 2020.

3 As you've heard, some have already been very  
4 successful in being able to do that.

5 In aggregate, for the first compliance period,  
6 from what we've looked at, we see all of our members,  
7 again in aggregate, meeting the 20 percent and beyond,  
8 actually exceeding the 20 percent.

9 And when you consider some of the historic  
10 carryovers, I know we still have to go through the  
11 verification process. We're much closer to getting to  
12 the second phase of this, which is reaching the 25  
13 percent.

14 So, our folks are going to continue to move  
15 along the path. They're going to look at all potential  
16 areas to procure, whether they own it or whether they're  
17 looking at other agreements, they're working very hard  
18 in being able to do that.

19 As you heard earlier, they're looking to be able  
20 to possibly count what's behind the meter. There's  
21 going to be a huge amount of solar, and with the 50-50-  
22 50 that's being laid out, the amount of solar on the  
23 system is just going to increase by that amount.

24 And so, we're trying to figure out, we're going  
25 to be working through the RPS rule process, which



1 comments are due in, I think, the next 30 minutes. We  
2 will have our comments in to Angie on where we are and  
3 we'll continue to work with CEC moving forward.

4 We do think it's extremely important to continue  
5 this relationship and working on trying to find ways of  
6 meeting the goals, staying flexible, recognizing there's  
7 just not a one-size-fits-all for all of our utilities.

8 The medium and smaller utilities that you're not  
9 necessarily hearing from today, all do have challenges.  
10 And even though in aggregate we met the requirement,  
11 there are still some challenges that utilities have  
12 faced to make sure they can meet the percentages.

13 They're definitely on track, though, to make  
14 sure they're meeting the 33 percent by the 2020 time  
15 frame.

16 On the net energy metering, we were asked to  
17 just provide just an update. I think what you heard  
18 from SCPPA and NCPA covers many of our members.

19 With one caveat, we do have one of our members,  
20 at the Turlock Irrigation District, which you've all  
21 heard from in the past, they exceeded the five percent  
22 NEM cap. But they did not stop. They're continuing to  
23 fund and they've been able to continue with their  
24 program and try to evenly distribute what's available.  
25 Up to the point of meeting the five percent, you know,

1 they've well exceeded the \$20 million in what they've  
2 provided as far as incentives.

3 They're continuing, just this year alone, in  
4 roughly two and a half million in providing incentives.  
5 But again, you have to make sure that the overall system  
6 is fair for all customers.

7 But we continue to work and make sure that the  
8 solar program continues to add more, more resources.

9 So with that, I'll stop there.

10 COMMISSIONER HOCHSCHILD: Really, just  
11 appreciate your efforts there. I mean, I think there's  
12 a lot of focus on the Governor's 50 percent goal.

13 But, you know, one of the other critical policy  
14 objectives he set in his first term was a 12-gigawatt DG  
15 goal as part of it.

16 And I was just there, the lowest impact form of  
17 energy generation there is, is on a roof. You're not  
18 having to disturb land and so forth. So, very much  
19 appreciate your efforts.

20 In fact, all of you for your testimony today.

21 CHAIR WEISENMILLER: Well, but again, I would  
22 also remind everyone that we now have an Executive Order  
23 that's pretty sweeping in terms of where we need to get  
24 to, in terms of greenhouse gas emissions. And,  
25 certainly, you're not going to do it all alone with

1 renewables. You know, you really have to look very  
2 seriously about what you can do to help us electrify  
3 transportation, and what you can do to really help us  
4 cut down on use of energy in buildings.

5 I mean, and I realize that you're not  
6 particularly homogenous. I've heard the statistic that  
7 the top nine municipal utilities are at 97 percent of  
8 the sales. So, I mean, it's pretty concentrated.  
9 Although, certainly, the PUC regulates like Kirkwood,  
10 and some other fairly small entities that don't quite go  
11 through the PG&E or Edison process.

12 So, we're sort of struggling with, you know, the  
13 sort of smaller entities.

14 MR. TUTT: If I make a comment? In response to  
15 your discussion about parity, Commissioner, it's my  
16 understanding that at the retail seller or at the IOU  
17 world, they do have a different way of calculating the  
18 megawatt or the net metering cap. But they also have a  
19 2017 date that, if they don't reach that cap by then,  
20 they can move to what's being described as a net energy  
21 metering 2.0 system still under development.

22 SMUD is internally looking at what might come  
23 after net metering for us, and doing a lot of analysis  
24 of grid requirements, distribution grid requirements,  
25 what we can do internally. But we don't have that 2017

1 off ramp.

2 We are going to be required to do net energy  
3 metering until we hit however our cap is defined. So,  
4 there's parity that runs both ways.

5 And in terms of, Chair Weisenmiller, jump  
6 starting the installations, we think our customers have  
7 done fairly well with our incentives to install them.

8 As I've said, our residential customers in  
9 particular seem to be very interested with installing  
10 solar these days, with the new financial arrangements  
11 that have come out in the solar industry.

12 But I can tell you that inside the utility there  
13 is this question of how do we -- how do we foster  
14 installations of a resource that really is only product  
15 content category three, and four the State's RPS. That  
16 does come up. It doesn't seem to have the value, from  
17 an RPS perspective, that we'd want for a local rooftop  
18 resource.

19 MS. RAITT: Okay, if we're done with questions  
20 from the dais, then we can move on to public comment.

21 So, if there are folks in the room who have  
22 comments, you can come up to the microphone and identify  
23 yourself. Nobody.

24 And we have nobody on WebEx, so we can just open  
25 up the phone lines, briefly. If you're on the phone

1 lines, please mute your line, unless you'd like to make  
2 comments. Just one more moment.

3 All right, it sounds like we don't have any  
4 comments today.

5 COMMISSIONER HOCHSCHILD: All right, thanks  
6 everybody for coming.

7 (Thereupon, the Workshop was adjourned at  
8 4:39 p.m.)

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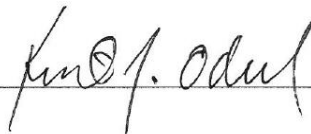
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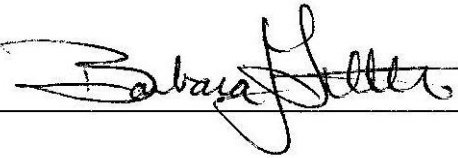
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