

## DOCKETED

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EVIDENTIARY HEARING FOR THE AMENDMENT TO THE  
PALEN SOLAR ENERGY GENERATING SYSTEMS

BEFORE THE CALIFORNIA ENERGY COMMISSION

In the Matter of the:	)	
	)	
	)	
Palen Solar Energy Generating	)	Docket No. 09-AFC-07C
Systems Amendment	)	
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PALO VERDE COLLEGE  
 ONE COLLEGE DRIVE  
 BLYTHE, CALIFORNIA  
 WEDNESDAY, JULY 30, 2014

**APPEARANCES****COMMITTEE:**

Karen Douglas, Presiding Commissioner  
David Hochschild, Associate Commissioner

**HEARING OFFICER:**

Kenneth D. Celli, California Energy Commission

**ADVISORS:**

Jennifer Nelson, Advisor to Commissioner Douglas  
Gabriel Taylor, Advisor to Commissioner Hochschild

**PUBLIC ADVISOR:**

Alana Matthews, Public Advisor

**CEC STAFF:**

Jennifer Martin-Gallardo, Attorney  
Christine Stora, Compliance Project Manager

**PETITIONER/APPLICANT:**

Scott Galati, Attorney for Palen Solar Holdings, LLC  
Charles Turlinski, Palen Solar Holdings, LLC  
Matthew Stucky, Abengoa Solar, Inc.  
Andrea Grenier, Centerline

**INTERVENORS:**

Center for Biological Diversity:  
    Lisa Belenky, Attorney; Ileana Anderson  
Basin and Range Watch:  
    Kevin Emmerich, Laura Cunningham

**INTERVENORS (cont):**

Colorado River Indian Tribes:

Sara Clark, Attorney; Nancy Jascula, Attorney

Californians for Renewable Energy:

Alfredo Figueroa, Tanya Gulesserian

**PANEL ONE - PROJECT DESCRIPTION**

- Christine Stora, Compliance Project Manager
- Charles Turlinski, Palen Solar Holdings, Llc
- Matt Stucky, Abengoa Solar, Inc.
- Bruce Kelly
- Bill Powers, Center for Biological Diversity
- Ed Brady
- Gerry Bemis
- Shahab Khashmashrab
- Mary Lou Taylor
- Jacqueline Record
- David Vidaver, Energy Commission
- Mark Hester, Energy Commission
- David Schlosberg, Petitioner

**PANEL TWO - ALTERNATIVES**

- Charles Turlinski, Palen Solar Holdings, Llc
- Matt Stucky, Abengoa Solar, Inc.
- Arne Olson, Petitioner
- Jeanine Hinde, Energy Commission
- David Schlosberg, Petitioner
- David Vidaver, Energy Commission
- Mark Hester, Energy Commission
- Ileene Anderson, Center For Biological Diversity
- Bill Powers, Center for Biological Diversity

**PANEL THREE - OVERRIDES**

Charles Turlinski, Palen Solar Holdings, Llc  
 Matt Stucky, Abengoa Solar, Inc.  
 David Schlosberg, Petitioner  
 David Vidaver, Energy Commission  
 Mark Hester, Energy Commission  
 Bruce Kelly  
 Bill Perez  
 Roger Johnson, Energy Commission

**PANEL FOUR - BIOLOGY/AVIAN RISK ASSESSMENT**

Ken Levenstein, West Environmental & Statistical  
 Matt Stucky, Abengoa Solar, Inc.  
 Wally Erickson, West Environmental & Statistical  
 Geoff Lesh, Energy Commission  
 Chris Huntley, Aspen Environmental Group  
 Gordon Pratt???

Shawn Smallwood, Ecologist  
 David Harper, Colorado River Indian Tribes  
 Ileene Anderson, Center For Biological Diversity  
 Alfredo Figueroa, Californians For Renewable Energy  
 Karen Voltura, DeTect Applied Radar Technologies  
 Richard Kaae  
 Charlie Kalinski  
 Elwood Norris, Hypersound  
 Brett Fooks, Energy Commission  
 Carol Watson, Energy Commission  
 Gustavo Buhacoff, BrightSource  
 Binyamin Koretz, BrightSource  
 Gordon Pratt, University of California Riverside  
 Chris Morris, Petitioner

**PUBLIC SPEAKERS**

John Light

David Vasquez

Mike Dea, Laborers Local 1184

Andy Schwartz, Operating Engineers Local 112

Arlene Kingery, Hpo Quechan Indian Tribe

Frank Beals

Gabriel Villarreal, Building & Construction Trades Council

Kathy Snow, Abengoa, Abeinsa Epc

Robert Frost, IBEW Local 440

James Schluster, Liuna

Glenn Cross, Union 1184 Local Of Blythe

Larry Mclaughlin, Inland Empire/Desert Community Colleges

Neva Eddy, Colorado River Indian Tribes

Cheryl Harper-Esquerra, Colorado River Indian Tribes

Tom Ditsch, U.S. Fish And Wildlife

Manfred Scott, Quechan Tribe

Amanda Barrera, Colorado River Indian Tribes

Lorey Cachora, Quechan Indian Tribe

Ivy Ledezma, Colorado River Indian Tribes

Joyce Dick, Colorado River Indian Tribes

Jermaine Fisher

Daphne Hill-Poolaw, Colorado River Indian Tribes

Linda Otero, Fort Mojave Indian Tribe

Bud Long

## INDEX

PROCEEDINGS	9
PROJECT DESCRIPTION	29
ALTERNATIVES	80
PUBLIC COMMENT	144
OVERRIDES	160
BIOLOGY - AVIAN	220
PUBLIC COMMENT	310
BIOLOGY - RISK ASSESSMENT	327
ADJOURNMENT	456
REPORTER'S CERTIFICATION	457
TRANSCRIBERS' CERTIFICATION	458

## EXHIBITS

<u>PROJECT DESCRIPTION</u>	ENTERED
PETITIONER	
1152, 1166 THROUGH 1169	76
STAFF	
2017	75
CENTER FOR BIOLOGICAL DIVERSITY	
3113 THROUGH 3125, 3146 THROUGH 3149, 3152	78
<u>ALTERNATIVES</u>	
PETITIONER	
1124, 1150, 1151, 1179	141
STAFF	
2030, 2031	142
CENTER FOR BIOLOGICAL DIVERSITY	
3091	143
<u>OVERRIDES</u>	
PETITIONER	
1125, 1129, 1143 THROUGH 1149, 1181 THROUGH 1193	214
1206	216
STAFF	
2017, 2018, 2019	218
CALIFORNIA UNIONS FOR RELIABLE ENERGY	
6000	219



## EXHIBITS (CONTINUED)

ENTERED

BIOLOGY - AVIAN & RISK ASSESSMENT

## PETITIONER

1127, 1128 THROUGH 1141, 1153 THROUGH 1165, 1170, 1173 THROUGH 1178, 1182, 1186, 1188, 1194 THROUGH 1205	448
--	-----

## STAFF

2017, 2018, 2019, 2029, 2034	449
------------------------------	-----

## CENTER FOR BIOLOGICAL DIVERSITY

3092 THROUGH 3112, 3126 THROUGH 3145, 3150, 3151	450
--	-----

## COLORADO RIVER INDIAN TRIBES

8035	447
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BLYTHE, CALIFORNIA  
WEDNESDAY, JULY 30, 2014

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COMMISSIONER DOUGLAS: So welcome to the second day of evidentiary hearings for the Palen Solar Electric Generating System. Again, I'm Karen Douglas. I'm the Presiding Member of the Committee.

To my right is our Hearing Officer Ken Celli, to his right is David Hochschild; he's the Associate Member of this Committee. So next to David Hochschild on his right is Gabe Taylor, Commissioner Hochschild's adviser. The court reporter is at the far end of the table. And on my left is one of my advisors, Jennifer Nelson. I've got an intern in the room, just so folks know that she's associated with the Committee, Kelly Johnson.

And before we begin I'll start by having the parties introduce themselves, so let's start with the Petitioner.

MR. GALATI: Scott Galati representing Palen Solar Holdings.

MR. STUCKY: Matt Stucky with Palen Solar Holdings.

MR. TURLINSKI: Charles Turlinski, Palen Solar Holdings.

COMMISSIONER DOUGLAS: Thank you.

1 Staff.

2 MS. MARTIN: This is Jennifer Martin-Gallardo,  
3 representing staff.

4 MS. STORA: Christine Stora, Compliance Project  
5 Manager for staff.

6 COMMISSIONER DOUGLAS: Thank you.

7 All right. Intervenor Center for Biological  
8 Diversity.

9 MS. BELENKY: This is Lisa Belenky with the  
10 Center for Biological Diversity, and Ileene Anderson is  
11 also here with me.

12 COMMISSIONER DOUGLAS: Thank you.

13 Intervenor Basin & Range Watch.

14 MR. EMMERICH: Hi. Kevin Emmerich of Basin and  
15 Range Watch, and Laura Cunningham both are here.

16 COMMISSIONER DOUGLAS: Thank you.

17 Intervenor Californians for Renewable Energy.

18 MR. FIGUEROA: Alfredo Figueroa.

19 COMMISSIONER DOUGLAS: Welcome.

20 HEARING OFFICER CELLI: One moment. We need  
21 your mic to be a little better. Could you say your name  
22 again, please, Alfredo?

23 MR. FIGUEROA: Alfredo Figueroa.

24 HEARING OFFICER CELLI: Thank you.

25 MR. FIGUEROA: Okay.

1 THE COURT: All right. Thank you.

2 Intervenor CURE.

3 MS. GULESSERIAN: Tanya Gulesserian for  
4 California Unions for Reliable Energy.

5 COMMISSIONER DOUGLAS: Thank you.

6 All right. Now I know we have members of LIUNA  
7 in the audience here to speak. Let me just ask, LIUNA  
8 also intervened as a party in this proceeding, so do you  
9 have an attorney or someone who's actually participating  
10 beyond...

11 MALE VOICE: (Inaudible)

12 MR. LIGHTEN: What's that?

13 COMMISSIONER DOUGLAS: Either Hidelberto Sanchez  
14 or Eddie Simmons are listed on our list as the intervenors  
15 from LIUNA. Is either one, either Hidelberto Sanchez or  
16 Eddie Simmons here?

17 MR. LIGHTEN: No.

18 COMMISSIONER DOUGLAS: Okay.

19 MR. LIGHTEN: No.

20 COMMISSIONER DOUGLAS: Are you here from LIUNA  
21 to give public comment?

22 MR. LIGHTEN: I'm not. I --

23 COMMISSIONER DOUGLAS: Okay. We'll get some  
24 people, okay. All right. Thank you.

25 MR. LIGHTEN: We've got a few members that would

1 like to speak in behalf --

2 COMMISSIONER DOUGLAS: If you could speak at the  
3 microphone.

4 HEARING OFFICER CELLI: Please come to the  
5 podium.

6 COMMISSIONER DOUGLAS: And introduce yourself  
7 and speak at the podium. Thank you.

8 MR. LIGHTEN: Yeah. Hi.

9 COMMISSIONER DOUGLAS: Sorry. There you go.

10 MR. LIGHTEN: Yeah. I'm just here. I brought  
11 some members in support of the project that live in the  
12 area.

13 HEARING OFFICER CELLI: Your name, sir?

14 MR. LIGHTEN: John Lighten (phonetic).

15 HEARING OFFICER CELLI: Okay, John Lighten.

16 MR. LIGHTEN: The Labors Union.

17 COMMISSIONER DOUGLAS: Okay.

18 MR. LIGHTEN: We've got a couple of members  
19 here. One went through the apprenticeship in support of  
20 the project. I'm not sure what's going on with the  
21 intervention, but my boss will be here in a few minutes  
22 and he will probably answer any questions.

23 HEARING OFFICER CELLI: And what is your boss'  
24 name?

25 MR. LIGHTEN: Mike Day.

1 HEARING OFFICER CELLI: Mike Day, okay.

2 COMMISSIONER DOUGLAS: All right. Very good.

3 Well, just wave when he comes in. And the main thing  
4 we're trying to ascertain is whether LIUNA's participation  
5 today will be to listen to the proceeding and make public  
6 comment or whether someone from LIUNA is here to  
7 participate as an intervenor, and so when he comes in --

8 MR. LIGHTEN: Yeah. I'll have him here in just  
9 a few minutes.

10 COMMISSIONER DOUGLAS: All right. Well, thank  
11 you.

12 MR. LIGHTEN: I appreciate it.

13 COMMISSIONER DOUGLAS: Absolutely. Thank you.  
14 All right. Intervenor Colorado River Indian  
15 Tribes.

16 MS. CLARK: Good morning. This is Sara Clark  
17 and I have Nancy Jасulka with me as well.

18 COMMISSIONER DOUGLAS: Good morning.

19 Are there any federal public agencies  
20 represented in the room today? If there are, please come  
21 to the podium and introduce yourselves.

22 MR. MCMENIMEN: Good morning. I'm Frank  
23 McMenimen, Project Manager with BLM.

24 COMMISSIONER DOUGLAS: Good morning. Welcome.  
25 Any other federal government agencies here in

1 the room today or on the phone?

2 Could we unmute someone.

3 MS. HOWARD: Good morning. This is Amy Howard  
4 with the National Park Service on the phone.

5 COMMISSIONER DOUGLAS: Good morning. Thank you.  
6 Anyone else?

7 DR. PAGEL: Good morning. This is Dr. Joel  
8 Pagel from the U.S. Fish and Wildlife Service.

9 COMMISSIONER DOUGLAS: Thank you.

10 DR. PAGEL: And Dr. Tom Dietsch will be on  
11 later.

12 COMMISSIONER DOUGLAS: Great. Could you repeat  
13 the names, please, from Fish and Wildlife?

14 DR. PAGEL: Yes. Dr. Joel Pagel, P-a-g-e-l, and  
15 then Dr. Tom Dietsch, D-i-e-t-s-c-h, will be on later.

16 COMMISSIONER DOUGLAS: Thank you.

17 Anyone else on the phone from federal government  
18 agencies?

19 Do we have any local government, state or local  
20 government agencies in the room or on the phone, aside  
21 from the Energy Commission which is of course in the room  
22 and on the phone?

23 All right. What about officials representing  
24 Native American Tribes or Nations besides the Colorado  
25 River Indian Tribes who have already been introduced as

1 intervenors? If so, please come to the podium.

2           Okay. Are there any elected officials in the  
3 room or on the phone today?

4           All right. Now our Public Adviser is in the  
5 back of the room, Alana Mathews, and I wanted to say  
6 yesterday there were a number of members of the public  
7 here who had never participated before in an Energy  
8 Commission proceeding and today there may be as well or  
9 there may be people who are now in day two of their first  
10 ever Energy Commission proceeding. So this really do want  
11 to recommend to you that Alana is a really great resource  
12 to go to if you find yourself sitting there wondering what  
13 on Earth is going on and who's who and what's the  
14 relationship between the parties and what are we doing.  
15 And so I really want to recommend that.

16           She can help you out. She's also holding in her  
17 hand some blue cards. If you'd like to make public  
18 comment, a couple of people have done this already, it  
19 would be really helpful if you fill out the blue cards.  
20 That way obviously we can read off of them to call people  
21 up and we also get a sense of how many people are  
22 interested in making comments.

23           We've noticed place comment for -- what is the  
24 time? (Conferring.) We'll offer the opportunity to make  
25 public comment around lunchtime. It might not be exactly



1 noon, but sometimes people don't want to stay here all day  
2 long in order to be able to make public comment and the  
3 close of taking evidence, which could be relatively late  
4 tonight. So we'll offer an opportunity for public comment  
5 around lunchtime and also another opportunity around maybe  
6 not exactly at 5:00 pm, so that we're not holding people  
7 up until relatively late into the night, unless you're  
8 here because you really want to stay through the whole  
9 proceeding.

10           With that let me turn this over now to the  
11 Hearing Officer.

12           HEARING OFFICER CELLI: Good morning, ladies and  
13 gentlemen. Welcome to Day Two of the Palen Solar Electric  
14 Generating Systems Evidentiary Hearing. Today the project  
15 topics we will be covering will be: Project Description,  
16 including storage and gas; Alternatives; Overrides; and  
17 Biology. And Biology would include impacts to birds,  
18 bats, and insects from the solar flux, and mitigation of  
19 solar flux impacts either by curtailment or deterrents.  
20 So that's the universe of topics we're going to be  
21 covering.

22           A couple of housekeeping matters. The first  
23 thing I want to say is that if you are someone who wants  
24 to make a comment, or a witness, we need you to speak into  
25 a microphone. Everything we are saying today we're making

1 a record. We have a court reporter. This is all being  
2 recorded. But if you're not on the microphone, not only  
3 will you not be part of the record but there are also  
4 people on the telephone who are participating through  
5 WebEx and they won't be able to hear you either. So we  
6 want everybody to be fully able to participate whether  
7 they are here, on the phone, or whether they are here in  
8 person. So for that reason we want you to use the  
9 microphones.

10 As you can see, I am speaking directly into the  
11 mic. I've got about, I don't know, six inches between my  
12 mouth and the mic. And if I turn away from the mic and  
13 start talking like this, as you can hear, you lose the  
14 record. It goes away. So when you're talking on the mic,  
15 don't turn your head away from the mic, please. Just stay  
16 right on top of the mic, speak directly into the mic, and  
17 this way we will have a perfect record. So that's it on  
18 the mic.

19 The court reporter. We have almost everybody  
20 here today.

21 Is there anyone on the telephone who is here  
22 from LIUNA, representing LIUNA? If so, -- actually,  
23 Garrett, you don't need to unmute everybody -- I'm going  
24 to ask if you are with LIUNA, to please send a chat  
25 through the WebEx to let us know who you are or that

1 you're there, and then we can open the line and unmute you  
2 so you can fully participate in the process.

3           Now yesterday I explained how we are going to  
4 proceed, and really maybe I should just touch the  
5 highlights. This is an adjudicatory proceeding. This  
6 isn't legislative. So what we're doing is we're taking in  
7 evidence, to weigh the evidence, and determine whether  
8 there is sufficient evidence for any sort of determination  
9 by the Committee, who will be making a recommendation to  
10 the full Commission.

11           So what is going to come of this hearing is a  
12 presiding member's proposed decision that goes to the full  
13 Commission, and the Commission will make a final decision.  
14 Only the parties, who are the Applicant, the Intervenors,  
15 and the Energy Commission staff may present evidence for  
16 introduction into the formal record.

17           Technical rules of evidence may be relied upon  
18 as guidance, but only relevant, noncumulative evidence may  
19 be admitted if it is the sort of evidence upon which  
20 reasonable or, rather, responsible persons are accustomed  
21 to rely in the conduct of series affairs. That's what the  
22 regulation says.

23           Testimony must be under oath. Each party has  
24 the right to present witnesses, introduce exhibits, and  
25 rebut evidence of another party subject to limitation by

1 the Presiding Members.

2 Questions of relevance will be decided by the  
3 Committee. Hearsay evidence is admissible to supplement  
4 or explain other evidence, but is not sufficient in itself  
5 to support a finding.

6 The Committee will rule on motions and  
7 objections, and will take official notice of matters  
8 within the Energy Commission's field of competence and any  
9 fact that may be judicially noticed in California courts.

10 The total testimony includes sworn testimony of  
11 parties' witnesses, the reporters transcripts, the  
12 exhibits received into evidence, briefs, pleadings,  
13 orders, notices, and comments submitted by members of the  
14 public.

15 The decision of the Committee must be based  
16 solely on the record of competent evidence.

17 Members of the public, you will be able to  
18 comment today at noon and five o'clock.

19 And let's see if there is anything else.

20 We talked yesterday, we are employing an  
21 informal hearing process. And the way it works is  
22 basically this. All parties, witnesses are called at once  
23 as a panel. They are going to sit on this table directly  
24 across from the Committee. Once they are sworn,  
25 Petitioner's experts will give a brief opening statement,

1 summarizing their key points and conclusions of their  
2 testimony, followed by staff's experts, then intervenors'  
3 experts. And, generally, I'm going to be going in order  
4 as they sit around the table here.

5           Each party's expert will be allowed to state  
6 their position without interruption before the dialogue  
7 ensues. After all the experts have stated their position,  
8 the Committee will guide a discussion between the expert  
9 panelists. The testimony will include discussions among  
10 the panel without the lawyers and nonlawyer intervenors  
11 asking questions.

12           If you're an expert witness here today, please  
13 remember to identify yourself before you speak every time  
14 you're going to speak so that the people on the telephone  
15 know who you are, and it also helps the court reporter.

16           After we've heard from all of the experts and  
17 any discussion that may ensue, the Committee will allow  
18 attorneys to ask questions of the witness. And we will go  
19 through all of the attorneys after that.

20           So with that, there is a housekeeping matter, a  
21 couple of things. First of all, as I'm looking over  
22 there, I mentioned yesterday that here in Riverside County  
23 there is a rule of court that says that during the summer  
24 months attorneys do not have to wear their sportcoats or  
25 their jackets. So I'm looking over at Mr. Turlinski and

1 Mr. Stucky, and I'm just cooking looking at you. So  
2 please feel free to take your coats off. You don't have  
3 to wear your coats today. That's the local custom.

4 And then we have a housekeeping matter,  
5 basically a motion from the Center for Biological  
6 Diversity with regard to exhibits -- or a question. I  
7 don't want to characterize it. Let's hear from you.

8 MS. BELENKY: Yeah. Thank you. Mr. Celli and  
9 good morning, everyone. And this is Lisa Belenky  
10 speaking, which I was supposed to say at the beginning.  
11 Sorry.

12 At the Pre-Hearing Conference you said that  
13 there would be -- you would not take late-filed documents  
14 and testimony. And you said that if there is anything you  
15 wanted to use, simply to put it up on the screen as part  
16 of testimony, not new, you could file it by Friday, that  
17 all the parties could file it by Friday.

18 Instead, we did get new information from the  
19 Applicant and from staff through Monday. And we do  
20 believe this is prejudicial. I have not had a chance to  
21 fully review any of that. And my experts haven't had a  
22 chance to fully review any of it. So we do believe it's  
23 prejudicial. And I want to make sure that that's clear on  
24 the record, that we believe we need additional time before  
25 we can fully respond to those and would like to keep the

1 record open after these hearings, if necessary, in order  
2 to fully respond.

3           And those were both on Biological. There was  
4 Project Description and there was also Override. All of  
5 those with new information filed after the Pre-Hearing  
6 Conference.

7           HEARING OFFICER CELLI: Thank you, Ms. Belenky.  
8 I took a look. We put out yesterday on the Public Adviser  
9 table a copy of the exhibit list, so anybody who wants to  
10 follow along can take a look at the exhibit list.

11           According to this exhibit list that was printed  
12 on the 22nd, so that would have been the day before the  
13 Pre-Hearing Conference, Petitioner's exhibits went up to  
14 Exhibit Number 1193. Staff's exhibits went up to Exhibit  
15 2028. CBD's exhibits went up through 3150. Basin & Range  
16 Watch's exhibits went up to 4008. Californians for  
17 Renewable Energy went up to 5002. CURE put in one  
18 exhibit, 6000. And CRIT went up to 8080 -- 8036, Exhibit  
19 8036.

20           So I don't know if you tracked those numbers,  
21 but the way I think we should handle that, Ms. Belenky, in  
22 the interests of time and efficiency, is if there is a  
23 motion to put in an exhibit that's greater than the  
24 numbers that I just read off, then the parties would then  
25 object to the exhibit and we'll hear whether there's good

1 cause and hear and weigh the prejudice and make a ruling  
2 at that time, because I don't think right now is the time  
3 for me to go exhibit by exhibit.

4 MS. BELENKY: I think that's fine, except that  
5 we still don't even have printed copies of some of them  
6 and haven't had been able to review them. So we will be  
7 objecting in a blanket way.

8 HEARING OFFICER CELLI: Right.

9 MS. BELENKY: And I don't know how much depth we  
10 can go into.

11 HEARING OFFICER CELLI: Yeah. The objection is  
12 preserved. And we -- again, when they want put in  
13 exhibits later in the day, we'll hear about what it is and  
14 why they're putting it in late, and make a ruling then.  
15 So thank you.

16 Is there anything else on that from any of the  
17 parties, staff, or...

18 MS. BELENKY: No, I agree with you.

19 HEARING OFFICER CELLI: ...or Petitioner?

20 I think what it was mischaracterized, what  
21 happened at the Pre-Hearing Conference, I was the one that  
22 raised, "Commissioner, we received rebuttal evidence that  
23 we didn't have an opportunity to do." and I asked for  
24 permission, and everybody agreed that I could file new  
25 exhibits on that one topic only rebutting staff's avian.



1 And I would do it by Friday, which I did.

2           They have a written copy, which is being passed  
3 out today. It was docketed on Friday, just as we all  
4 agreed at the Pre-Hearing Conference. So the idea that  
5 the Pre-Hearing Conference, we only agreed that we would  
6 only give copies of what we were going to put up on the  
7 screen is only part of the story.

8           The other part of the story, the reason that I  
9 raised the entire issue was that we had not had an  
10 opportunity to rebut. So rather than surprise people with  
11 what we're going to talk about here, we created some  
12 graphs. And those graphs were docketed, as we all agreed  
13 to on Friday. I thought we had an extension to Friday to  
14 be able to docket that information. We docketed on  
15 Thursday and Friday. Nothing from us on Monday.

16           HEARING OFFICER CELLI: Okay. Ms. Belenky,  
17 anything on that?

18           MS. BELENKY: Yeah. That was not my  
19 understanding of the discussion. We may have had  
20 different interpretations. I was on the phone. Sometimes  
21 it can be a little confusing. But, in any case, staff  
22 still docketed many documents on Monday. And they said  
23 they might be able to get us paper copies, we still  
24 haven't seen those, and we do feel that it's prejudicial.

25           HEARING OFFICER CELLI: So mostly it's staffs

1 that --

2 MS. BELENKY: Well, no, I actually disagree with  
3 what was said at the Pre-Hearing Conference and what  
4 Mr. Galati now says is that -- at the Pre-Hearing  
5 Conference I do not believe that you allowed new evidence  
6 to come in by Friday. I did not understand that that was  
7 your ruling at that time. So we may need to go back to  
8 the transcript, and we can talk about it after we've all  
9 had a chance to read the transcript --

10 HEARING OFFICER CELLI: I actually just saw in  
11 my emails that I got the transcript, so --

12 MS. BELENKY: Good.

13 HEARING OFFICER CELLI: -- we'll look into that.  
14 Anything on this issue from CURE?

15 MS. GULESSERIAN: No.

16 HEARING OFFICER CELLI: Mr. Figueroa?

17 MR. FIGUEROA: No.

18 HEARING OFFICER CELLI: Okay. Thank you.

19 CRIT?

20 MS. CLARK: No.

21 HEARING OFFICER CELLI: Basin & Range Watch?

22 MR. EMMERICH: No.

23 HEARING OFFICER CELLI: Okay. Thank you.

24 Again, the way we'll deal with this is when it  
25 comes time to bring a motion to move the evidence in, we

1 will rule on the individual pieces of evidence and hear  
2 what the reason is for the lateness, etc., at that time.

3           So the first thing we're going to do today is  
4 tackle Project Description, including storage and gas. So  
5 the way I'd like to proceed today is I'd like the  
6 Petitioners -- how many witnesses do you have, Mr. Galati?

7           MR. GALATI: We have three.

8           HEARING OFFICER CELLI: Okay. So the first  
9 three chairs would be the Petitioner's witnesses, followed  
10 by staff's. How many staff witnesses do we have here  
11 today? Three. So the next three chairs would be -- are  
12 they all on the phone?

13           MS. MARTIN ]: I think most of the witnesses are  
14 on the phone, yes, from staff.

15           HEARING OFFICER CELLI: Do we have anyone here  
16 at all?

17           Oh, you're a witness, too?

18           MS. STORA: Yes.

19           HEARING OFFICER CELLI: So you would sit in the  
20 fourth chair, Ms. Stora.

21           And witnesses for the intervenors, who has  
22 witnesses today for Project Description? Anyone.

23           Do you have, Ms. Belenky, on Project Description  
24 any witnesses here?

25           MS. BELENKY: We have a witness on the phone.

1 HEARING OFFICER CELLI: Okay.

2 MS. BELENKY: We have --

3 HEARING OFFICER CELLI: Mr. Powers, yeah. Oh,  
4 okay.

5 MR. GALATI: Mr. Celli, if I could have  
6 permission for Mr. Kelly to be able to stand at the podium  
7 instead of sit?

8 HEARING OFFICER CELLI: Sure. That's perfect  
9 okay.

10 But what I would like you to do, Mr. Kelly, is  
11 get that mic, the boom mic -- right -- down at that, and  
12 you're going to want to tighten it down so it doesn't  
13 slink down on you. See there's a little crank, little  
14 silver crank on the -- yeah. And this way it will be  
15 right at your mouth.

16 Okay. So the way we're going to proceed, folks  
17 who are on the telephone, is I'm going to swear in the  
18 people who are here in the room first and then we will  
19 swear in the people on the phone.

20 So Marlee, if you would. Please rise.

21 (Panel Sworn)

22 HEARING OFFICER CELLI: Thank you. You may be  
23 seated. Those of you who are sitting. All the witness  
24 who are in the room now have been sworn.

25 Now who are the witnesses that are on the phone

1 for staff?

2 MR. KHASHMASHRAB: Here is Shabab Khashmashrab.  
3 We have Gerry Bemis for natural gas as related to air  
4 quality.

5 HEARING OFFICER CELLI: So Shabab  
6 Khashmashrab, --

7 MR. KHASHMASHRAB: And --

8 HEARING OFFICER CELLI: -- Gerry Bemis.

9 MR. KHASHMASHRAB: And Ed Brady, engineering.

10 HEARING OFFICER CELLI: Ed Brady. Anyone else?

11 MS. TAYLOR: Mary Lou Taylor, soil and water.

12 HEARING OFFICER CELLI: Mary Lou Taylor. This  
13 is on project description, Mary Lou Taylor.

14 Anyone else, any other witnesses,  
15 Ms. Martin-Gallardo, that you have?

16 MS. MARTIN: I was just curious if Jacqueline  
17 Record was there?

18 HEARING OFFICER CELLI: Jacqueline Record, is  
19 she --

20 MS. RECORD: Yes. I heard.

21 HEARING OFFICER CELLI: Okay. Now I just want  
22 to make sure that this works efficiently and we can  
23 actually hear you. So I have Shabab Khashmashrab, Gerry  
24 Bemis, Ed Brady, and Mary Lou Taylor and Jacqueline  
25 Record. And are you all in the same room?

1 MR. KHASHMASHRAB: Except Mary Lou.

2 HEARING OFFICER CELLI: Okay. And Mary Lou we  
3 can hear fine. So please gather around that little phone  
4 spider thing and we need you to speak very clearly today.

5 Can you hear me okay, Shabab?

6 MR. KHASHMASHRAB: Yes. Yes. We're almost  
7 bumping heads here.

8 COMMISSIONER DOUGLAS: Almost bumping head.

9 HEARING OFFICER CELLI: Oh, okay, very good.  
10 Put your heads together. All right. Then I'm going to  
11 ask all of you to please rise, including Jacqueline  
12 Record. Raise your right hand to be sworn.

13 And, Marlee, if you would, please.

14 (Telephone Panel Sworn)

15 HEARING OFFICER CELLI: Okay. Then the parties  
16 on the telephone are sworn. Let's begin with Petitioner's  
17 witness.

18 Go ahead. Mr. Stucky.

19 MR. STUCKY: Thank you. The Petition to Amend  
20 filed by Petitioner to initiate the current proceeding  
21 described two 250-megawatt units that would be built  
22 according to a certain phasing plan. And recently  
23 Petitioner filed a new phasing plan and that new phasing  
24 plan is the subject of my current testimony.

25 So if we could display Exhibit 1167, please.

1           Commissioners, if you can't see that, you also  
2 have it in your packet hard copy, so do the parties.

3           Palen Solar Holdings now proposes to build two  
4 250-megawatt units sequentially. The first phase would  
5 consist of the northwestern tower and the associated solar  
6 block and solar field. This phase would also include the  
7 common area, the switch yard, and all project linears  
8 including the project access road to gen-tie and the  
9 natural gas supply line.

10           Phase 2 would consist of the second 250-megawatt  
11 unit, or the southeastern tower and its associated power  
12 block and solar field. However, we are willing to accept,  
13 in fact we have proposed, a condition of certification  
14 that states that the project owner must seek a future  
15 Energy Commission amendment that at a minimum adds thermal  
16 energy storage to Phase 2 prior to constructing that  
17 second 250-megawatt phase of the project.

18           And building a project with thermal energy  
19 storage is a goal of the Petitioner and of the two member  
20 companies individually. And the Petitioner has prepared  
21 testimony elaborating on the benefits of energy storage as  
22 well as the policy and the commercial hurdles that remain  
23 before energy storage is appropriated into the project and  
24 built at this proposed site. However, recognizing that  
25 energy storage is of interest to the California Energy

1 Commission as well as the California Independent System  
2 Operator and the CPUC, recognizing that this Committee has  
3 struggled with the question of project impacts versus  
4 project benefits, and acknowledging that Palen Solar  
5 Holdings must discuss project commercial terms with the  
6 offtaker before constructing the second phase, Palen Solar  
7 Holdings is willing to insert this condition, Project  
8 Description 1, into the license.

9           CEC staff confirmed at the Pre-Hearing  
10 Conference this revised phasing plan requires no further  
11 analysis on their part. For our part, we have proactively  
12 prepared several exhibits to address questions that may  
13 arise from the new phasing plan. And we don't believe  
14 that any additional analysis is required.

15           I don't need to display these exhibits, but  
16 Exhibit 1168 provides a new table showing estimated  
17 construction personnel on a month-by-month basis during  
18 the construction of Phase 1. When compared to the  
19 previous construction personnel table for the previous  
20 phasing plan, each month shows the same or in most months  
21 many fewer construction workers onsite than previously  
22 analyzed by staff.

23           Petitioner also provided Exhibit 1169, which is  
24 a modified condition of certification in soil and water 3,  
25 which allocates the use of groundwater during construction



1 and operation of the project. The overall volume of  
2 groundwater used draw not increase.

3 Exhibit 1170 is a modification of condition and  
4 certification bio 29. This condition identifies all acres  
5 of disturbance for the two project phases, matches each  
6 acre up with mitigation ratios identified for certain land  
7 and other bio conditions of certification, and prescribes  
8 compensatory litigation requirements for each space.

9 The remaining piece of bio 29 that must be  
10 modified is the table that presents the mitigation and  
11 security payments for each phase of the project,  
12 construction. And the security deposit amounts are  
13 typically calculated by CEC and therefore must be provided  
14 by CEC staff.

15 No other conditions of certification, other than  
16 the conditions that may be the subject of this hearing,  
17 such as trans up in cold 1. Need to change. PSH has  
18 checked the preliminary site grading plan and determined  
19 that material revisions to that grading plan are not  
20 needed, other than advancing the preliminary designs to a  
21 final stage. If the northwest unit is constructed in its  
22 entirety before the second or southeastern unit is  
23 constructed.

24 Our written testimony also includes confirmation  
25 or clarification of other project features or

1 characteristics, but proposes no further changes to the  
2 previously-submitted Project Description.

3 That concludes my statements.

4 HEARING OFFICER CELLI: So just to be clear, the  
5 foot print is identical to what we've already -- there is  
6 no change to the footprint?

7 THE WITNESS: That's correct.

8 HEARING OFFICER CELLI: Okay. Thank you.  
9 Go ahead, Mr. Turlinski.

10 MR. TURLINSKI: I have no further comments.

11 HEARING OFFICER CELLI: Okay. Thank you.

12 Then we'll turn to staff. Ms. Stora?

13 MS. STORA: This is Christine Stora.

14 In the petition to amend, as we were just  
15 discussing, the Petitioner proposed the co-destruction of  
16 both the project towers would occur simultaneously. In  
17 rebuttal testimony the Petitioner filed a new phasing  
18 plan. The proposed construction schedule is shortened to  
19 28 months for the construction starting prior to the  
20 spring of 2015.

21 After interviewing staff in all technical areas,  
22 staff agrees with the petitioner that the new phase-in  
23 plan that require versions to -- two conditions of  
24 certification: Bio 29 and splitting water 3. Staff  
25 agrees with the Petitioner's proposed changes in bio 29.

1 But, as mentioned, is it a fair will be provided  
2 additional information on binder 29, table 3, "The  
3 mitigation securities" by construction to lose and grades  
4 on their testimony, and when they come before you later  
5 today.

6 Staff agrees to the Petitioner's proposed  
7 changes to soil and water 3. Staff does note that one  
8 small correction needs to be made. The Petitioner  
9 provides two verifications in this condition, and the  
10 first appearance of the word "verification" should be  
11 removed.

12 Other technical areas from the impacts  
13 associated with the phasing plan would either be  
14 beneficial or have no impact with the construction of one  
15 tower. No other changes to conditions of certification  
16 would be needed for this revised phase-in plan. Should  
17 the Committee choose to adopt the proposed condition PD1,  
18 it should be included in the Commission's.

19 Staff has no other further comments at this  
20 time.

21 HEARING OFFICER CELLI: Thank you, Ms. Stora.  
22 So did you, or Ms. Martin-Gallardo, did you envision that  
23 we were going to take any statements from your telephonic  
24 witnesses at this time?

25 MS. MARTIN: Only when you had questions

1 regarding storage and natural gas.

2 HEARING OFFICER CELLI: Okay. And we have no  
3 other witnesses here -- well, sorry, Mr. Sullivan is it?

4 MR. KELLY: Mr. Kelly.

5 HEARING OFFICER CELLI: Mr. Kelly, you're with  
6 the Petitioner?

7 MR. KELLY: Yes.

8 MR. GALATI: Okay, fine. You're just there to  
9 answer questions on storage if you have the -- okay. And  
10 I do have a question. Earlier we took in some evidence, I  
11 don't remember what exhibit numbers or whether they were  
12 -- I think we received exhibit numbers at the first  
13 evidentiary hearings about thermal energy storage and the  
14 placement. Do you recall at the evidentiary hearing  
15 Commissioner Hochschild asked a question and that was the  
16 only evidence on storage. We have subsequently filed  
17 beginning in February information about storage that I  
18 have marked. We have not taken it in. Okay, yeah.

19 HEARING OFFICER CELLI: And that's not coming in  
20 now?

21 MR. GALATI: It is in our Override testimony,  
22 okay, and so I'm not offering it now. And it was about  
23 the future to put storage even at the first unit and how  
24 it could accommodate storage in the first unit. That was  
25 the subject matter of the testimony. We talked about it

1 in Overrides.

2 HEARING OFFICER CELLI: Okay, great. Thank you.

3 So Intervenors, it sounds like the Petitioner  
4 and the staff seem to be eye to eye on this, so I'm going  
5 to start with Ms. Gulesserian and ask if you have any  
6 questions of these witnesses or the witnesses that are on  
7 the telephone?

8 MS. GULESSERIAN: I have no questions. Thank  
9 you.

10 HEARING OFFICER CELLI: Any questions for Mr. --

11 MR. FIGUEROA: No questions.

12 HEARING OFFICER CELLI: From Craig --

13 MR. GALATI: May I just interject? I thought we  
14 had one more witness that was going to make a statement on  
15 the phone from CBD?

16 HEARING OFFICER CELLI: Oh, I'm sorry. You  
17 know, forgive me. If they're not sitting here, I forget  
18 that they're out there, so that was Mr. Powers, right?

19 Mr. Powers, are you --

20 DR. POWERS: Could I --

21 HEARING OFFICER CELLI: Yes, please go ahead.  
22 You have the floor.

23 DR. POWERS: Would you like me to make a  
24 statement about my testimony in its entirety?

25 HEARING OFFICER CELLI: We are talking about

1 Project Description. As you just heard, the staff and the  
2 Applicant presented with regard to this new phasing plan  
3 of the Phase 1 and Phase 2 of the Palen Project. And so  
4 we would like to hear from you on your position about the  
5 phasing of the two phases of the Palen Project.

6 DR. POWERS: I will briefly summarize then that  
7 I think that the PPD of December 2013 made the right  
8 decision in denying the project. The issue at thermal  
9 storage to me is effectively a nonevent. The amount of  
10 storage we talked about is tiny. Based on my  
11 calculations, the storage would add 15 minutes of  
12 generation at the rated output of the plant. And that  
13 same capability could be achieved with photovoltaics using  
14 battery storage and either a utility scale or distributed  
15 scale.

16 Another factor with putting empty storage out at  
17 Palen, which is outside the L.A. Basin load pocket is none  
18 of that storage would count toward offsetting the local  
19 capacity requirement in that basin, meaning that you put  
20 storage at Palen you would still need to add new gas  
21 turbine capacity in the L.A. Basin, for example, to cover  
22 that load pocket. Whereas if you put the storage in the  
23 L.A. Basin itself, you basically achieve two goals with  
24 one energy storage package.

25 And that's it. That's what I have to say on

1 that topic.

2 HEARING OFFICER CELLI: Thank you, Mr. Powers.

3 I have a question. We have some exhibits, some  
4 testimony from Mr. Powers, and I was wondering can you  
5 tell me what exhibit number that is, Ms. Belenky?

6 MS. BELENKY: His testimony?

7 HEARING OFFICER CELLI: Right. While she's  
8 looking at that --

9 MS. BELENKY: I have his opening testimony in  
10 this phase. I mean there's other testimony for  
11 Mr. Powers. His opening testimony was 3113.

12 HEARING OFFICER CELLI: 3113.

13 MS. BELENKY: His rebuttal testimony was 3146,  
14 and there are a lot of exhibits associated with that as  
15 well.

16 HEARING OFFICER CELLI: What I'm interested in,  
17 he mentioned that this was only going to generate 15  
18 minutes of generation, the storage. And I was wondering  
19 is that in one of these exhibits?

20 MS. BELENKY: Yes.

21 HEARING OFFICER CELLI: Which exhibit would that  
22 be?

23 DR. POWERS: Yes.

24 MS. BELENKY: I believe it's Exhibit 3146 on  
25 page 3.

1 HEARING OFFICER CELLI: Thank you.

2 Okay. With that, we understand what the  
3 parties' opening positions are. What I'd like to do then  
4 is now that we've heard from Mr. Powers, do you have any  
5 other questions?

6 CURE?

7 MS. GULESSERIAN: I have no questions.

8 HEARING OFFICER CELLI: Mr. Figueroa.

9 MR. FIGUEROA: No questions.

10 HEARING OFFICER CELLI: Ms. Clark.

11 MS. CLARK: I have a few questions.

12 HEARING OFFICER CELLI: Go ahead.

13 MS. CLARK: I'm wondering if -- I suppose this  
14 might be a question for Ms. Stora -- but I'm also happy to  
15 hear from the Petitioner as well -- if you could explain  
16 what you envision the scope of environmental review would  
17 be at the future petition to amend in order to get the  
18 thermal storage added, whether that would just be looking  
19 at impacts from thermal storage or would other concerns be  
20 addressed?

21 MS. STORA: This is Christine Stora. I can talk  
22 to you a little bit about process and how the compliance  
23 unit would handle this should they choose to come in and  
24 give us petition to amend with the additional storage.

25 It's not uncommon for developers to come in



1 during the construction with petitions to change various  
2 things on power plants. And so this would be handled as  
3 any other standard amendment. It would be up to the  
4 Committee or to the Commission to decide whether or not it  
5 would be handled in this format or we would have a  
6 Committee assignment or if it would be a standard staff  
7 amendment, where just staff would do it and then present  
8 at the full Commission.

9           So our process would be the same as it is now,  
10 it's just a matter of whether or not a committee would be  
11 assigned.

12           MS. CLARK: And are you envisioning that any  
13 further review of tower two would be even higher at that  
14 time?

15           MS. STORA: Certainly if it's needed we would  
16 look at that. I mean if a lot of time goes by, like say  
17 they come in in five years or six years down the road and  
18 environmental conditions have changed, we certainly would  
19 review that in addition to the storage.

20           MS. CLARK: But if they came in in say a year  
21 and it doesn't look like there's any significant  
22 information, they could proceed on the environmental  
23 review that we've been going through at this time?

24           MS. STORA: If staff deems that that's  
25 appropriate we would do it on a

1 technical-area-by-technical-area basis. I would still ask  
2 for them to review it and tell me if anything needed to  
3 change.

4 MS. CLARK: Okay. And a related question to  
5 that is whether staff has considered adding any sort of  
6 timing requirement to the new condition to ensure that  
7 data doesn't get too stale, essentially; that you can only  
8 come in for a petition to amend if you're doing it within  
9 a certain period of time, otherwise we're categorically  
10 not going to agree that the power 2 data is sufficient and  
11 it would have to be a new proceeding?

12 MS. STORA: Yes. Staff hasn't considered a time  
13 limit at this time.

14 MS. CLARK: So they could come in year 24 and  
15 ask for this?

16 MS. MARTIN: I'm going to just step in. I think  
17 you're asking questions that Christine can't testify to.

18 HEARING OFFICER CELLI: So that objection would  
19 be sustained. The witness lacks foundation.

20 Go ahead, Ms. Clark.

21 MS. CLARK: Do you have a witness that could  
22 answer that?

23 HEARING OFFICER CELLI: Well, that would be a  
24 legal question.

25 MS. CLARK: Thank you. I do not have any

1 further questions.

2 HEARING OFFICER CELLI: Then --

3 MS. CLARK: Actually are we talking about  
4 natural gas at this point?

5 HEARING OFFICER CELLI: Well, right now let me  
6 ask Petitioner: Are we separating out the natural gas  
7 topic or would you have these same witnesses cover that?

8 MR. GALATI: These are the same witnesses who  
9 would testify. We don't need natural gas. We're happy to  
10 answer questions about it.

11 HEARING OFFICER CELLI: Okay. We don't have  
12 that in the record yet, I mean at least from these  
13 witnesses.

14 MR. GALATI: Yeah. Mr. Stucky just referred to  
15 an exhibit in which we said that --

16 HEARING OFFICER CELLI: Okay.

17 MR. GALATI: -- and confirmed that we don't need  
18 natural gas. What we provide on thermal storage and  
19 describe the revised phasing plan. So these three  
20 witnesses are available for all three of those questions.

21 HEARING OFFICER CELLI: Okay. So then go ahead  
22 with those questions. So just to be clear, the position  
23 is that there is no change to the natural gas as it is in  
24 the current petition.

25 MS. CLARK: I understand the Applicant's

1 position.

2 I'm wondering, I don't know who staff witnesses  
3 are on this particular topic.

4 MS. MARTIN: Sure, I can help you with that.  
5 It's in our Pre-Hearing Conference statement. And Shabab  
6 Khashmashrab is on the phone for natural gas. Jacqueline  
7 Record, --

8 MS. CLARK: Okay.

9 MS. MARTIN: -- Gary Bemis, as it relates to air  
10 quality.

11 MS. CLARK: Okay. I guess it's a question for  
12 all three of them then, is whether -- I'm curious to hear  
13 your opinion as to whether Petitioner's answers to the  
14 questions that were posed in staff's opening testimony  
15 were sufficient to answer their questions?

16 HEARING OFFICER CELLI: Mr. Khashmashrab.

17 MR. KHASHMASHRAB: Again they have an opening  
18 statement here and it's staff's position that it is not  
19 possible to at this time determine whether or not the PFI  
20 facility will require a change in the amount of natural  
21 gas proposed by the Petitioner to be used each year. The  
22 solar power technology is relatively in early stages of  
23 deployment, development in large scale. And we believe  
24 that the best evidence for determining how much natural  
25 gas the project would need, it's going to have to be

1 through actual operational experience for a limited amount  
2 of time.

3           The project Petitioner's have pretty much made  
4 their decision based on design and taking into account  
5 different, very appropriate factors. And that raises,  
6 however, for us to make a conclusion that natural gas  
7 would not need to be increased after the plant becomes  
8 operational, and make that with a hundred percent  
9 uncertainty. So it's not possible at this time to make  
10 that decision.

11           MS. CLARK: Okay. And nothing in Palen's  
12 rebuttal testimony has satisfied your concerns that there  
13 is not a hundred percent certainty with respect to the  
14 natural gas?

15           MR. KHASHMASHRAB: It has been helpful. One  
16 second, let me find my notes, please.

17           They have come back saying that no gas based on  
18 preliminary design. Preliminary design would be needed,  
19 which even if they have accounted for site weather data,  
20 start-up, shutdown assumptions, and they work with the  
21 manufacturer of the turbine to take into account those  
22 variabilities. They have accounted for a terminal  
23 operational operations during cloud cover.

24           They have also mentioned that they don't intend  
25 to generate power. For natural gas, they have also said

1 that there will be no recycle in the citizen, which means  
2 as opposed to ISIS, where they will allege natural gas.  
3 However, again, we don't have hard data from a plant  
4 that's similar in size to this that can you tell us for a  
5 hundred percent certainty but that the project's proposed  
6 natural gas is going to be adequate and there will be no  
7 need for increase.

8           Again, the project may very well prove to be  
9 needing any -- not needing any more natural gas. It may  
10 prove to need maybe even less than what they're proposing  
11 or may prove to be maybe more; and in what percentage, we  
12 just don't know.

13           So that's -- they too already know that. My  
14 opinion, to allow the plant to operate under weather site  
15 conditions at the time to determine exactly if what they  
16 have proposed is adequate.

17           MS. CLARK: Great. Thank you. I have no  
18 further questions.

19           HEARING OFFICER CELLI: Thank you.

20           Then CBD.

21           MS. BELENKY: Thank you. I have several  
22 questions of various parties. I would like to clear up  
23 one issue that would be you as the Committee had refused  
24 to take judicial or official notice of the Cal ISO  
25 database. And we didn't see anyone objecting to this

1 factual matter that Mr. Powers had raised in his opening  
2 testimony. And I would like to just ask the other parties  
3 if they object.

4           The fact that we were relying on the Cal ISO  
5 database for was that the SE one-hour peak load from 2006  
6 was 23,831 megawatts and that the one-hour peak load in  
7 2013 was 22, 498 megawatts, showing a decline. And that  
8 is the only reason that we were citing that database. And  
9 if anyone else objects, --

10           HEARING OFFICER CELLI: So I want to -- I don't  
11 have --

12           MS. BELENKY: -- have to clear that up.

13           HEARING OFFICER CELLI: I'm sorry. I didn't  
14 mean to talk over you.

15           I want to be clear that the reason I wasn't  
16 willing to take official notice of it was that when I  
17 clicked on that URL that you gave me, there was a splash  
18 page. Itself was not getting any data. There was more  
19 click-through that you had to do to get that, get to where  
20 you wanted.

21           So I wasn't ruling on that evidence, but what  
22 I'm saying was that hyperlink wasn't probably what you  
23 wanted to get into evidence. So what I was suggesting was  
24 that if you could get to the page that you wanted that had  
25 the data that you wanted to put in, and put that evidence

1 in, then that would be a better way of going about it.

2 MS. BELENKY: Yes. Thank you. And it is a  
3 database that requires a password, so it appeared to me  
4 that this would be simpler. Nobody objected to this  
5 statement of fact, that as long as there's no objection we  
6 can just move forward. We don't need another exhibit.

7 HEARING OFFICER CELLI: Oh, I see what you're  
8 saying. Well, let's have Mr. -- is it Mr. Powers, let's  
9 have him state it into the record instead of you so we've  
10 got some testimony.

11 MS. BELENKY: He already put it in his opening  
12 testimony.

13 HEARING OFFICER CELLI: Okay.

14 MR. GALATI: We didn't object because you had  
15 ruled not to take judicial notice of it. We clicked on  
16 the link, couldn't get in. I don't know what the evidence  
17 says, I can't verify that what she or Dr. Powers is saying  
18 accurate. If Dr. Powers wants to say he read this and  
19 this is what it is, do you accept that as hearsay, or they  
20 can provide me the page that shows that. That's how it  
21 normally works and in that case I have no objection.

22 HEARING OFFICER CELLI: That would be, it seems  
23 to me, the shortest point between A and B, is to just put  
24 that -- is it a single page, Ms. Belenky? Just a single  
25 sheet of --



1           MS. BELENKY: I believe it's two pages, and we  
2 can put it in as Exhibit. If we are allowed to keep the  
3 record open for another day so that we have time to do  
4 that.

5           HEARING OFFICER CELLI: Okay. Let's mark that  
6 -- you should mark that as your next in order. And when  
7 we put in evidence, let's make sure to put that in.

8           I don't have a problem with that because she  
9 already put all of the parties on notice that she wanted  
10 that evidence in.

11          MR. GALATI: No. She wanted the database from  
12 Cal ISO in.

13          HEARING OFFICER CELLI: Right.

14          MR. GALATI: I didn't see that she wanted to  
15 show one particular item of it, so that I could respond to  
16 it. I can't respond to the database from Cal ISO.

17          HEARING OFFICER CELLI: I know.

18          MS. BELENKY: The testimony is extremely clear  
19 exactly what Mr. Powers was relying on the database for.  
20 And if you didn't put any testimony that opposed that  
21 fact, that's what we're talking about. A fact about the  
22 peak load at SCE in two different years.

23          HEARING OFFICER CELLI: And, Ms. Belenky, that  
24 reference from Mr. Powers is in Exhibit -- is that in --  
25 what exhibit is that?

1 MS. BELENKY: Exhibit 3113, page 7.

2 HEARING OFFICER CELLI: 3113, page 7, okay.

3 MR. GALATI: I'll try not to continue to be so  
4 legal and technical. If Ms. Belenky wants to use it other  
5 than hearsay, she can provide me the document so I can  
6 look at it. If she wants to read, have Mr. Powers say  
7 what something says, that's hearsay and it's not in and of  
8 itself sufficient to establish a fact. So give me the  
9 document, and we can avoid that problem.

10 HEARING OFFICER CELLI: Okay. So I think that's  
11 the understanding we have right now.

12 So you have the floor, Ms. Belenky.

13 MS. BELENKY: Thank you. I would like to ask  
14 first -- I guess this is to all of the witnesses.  
15 Previously the company stated that adding the storage was  
16 infeasible at this time. So I am -- I'm trying to  
17 understand what makes you think that it will be feasible  
18 at some later time --

19 HEARING OFFICER CELLI: That would be a  
20 question --

21 MS. BELENKY: -- and when you believe that would  
22 be.

23 HEARING OFFICER CELLI: And that's a question to  
24 Petitioner's witnesses.

25 MS. BELENKY: Well, I believe staff as well. I

1 would like staff to respond as well.

2 MR. STUCKY: We actually have some testimony on  
3 this topic later. I think it's under Overrides. But I  
4 can state that there are -- there's policy movement, I  
5 guess I will say, in the state that seems to be desiring,  
6 valuing thermal energy storage. And we need to equip  
7 utilities, and it seems to be a desire for them to add  
8 that to their port folio.

9 MR. TURLINSKI: I'm going to add just a little  
10 bit of it. This is Charles Turlinski from Palen Solar  
11 Holdings.

12 Our testimony I think lays out that we could do  
13 it now. There not the economic conditions that enable us  
14 to do that today. But from a technical standpoint, we can  
15 -- for a technical there is a plug-and-play capability to  
16 put thermal storage into the project. From an economic  
17 standpoint, there is not the appropriate incentive to  
18 enable it today. So I think that's not a drastic change.  
19 And, as Mr. Stucky mentioned, there is a policy movement  
20 that might enable the economic half to enable storage to  
21 be economically viable in the future.

22 HEARING OFFICER CELLI: I just want to say that  
23 any witnesses that want to pipe in that have further  
24 answers can do so, any of staff's witnesses.

25 MS. MARTIN: I would just request that if there

1 is a direct question to staff, that you state it again for  
2 the record. And I'm going to ask Eddie Vidaver and Mark  
3 Hester to still listen carefully. They're not sworn in on  
4 this bank, but they may be able to speak to your question.  
5 This is just a --

6 HEARING OFFICER CELLI: Wait a minute. They're  
7 not sworn in.

8 MS. MARTIN: That's right. And so that's why  
9 I'm just asking to have her restate the question because  
10 they may have that and we may need to -- I don't know if  
11 you can swear them in on that, --

12 HEARING OFFICER CELLI: Yes.

13 MS. MARTIN: -- but they're the relevant folks  
14 to speak to the things that I thought we were going to be  
15 talking about in Alternative.

16 HEARING OFFICER CELLI: Well, let me ask you  
17 this. Who are the witnesses? So who are Petitioner's  
18 witnesses for Override?

19 MR. GALATI: Just a minute.

20 HEARING OFFICER CELLI: Because if these are all  
21 the same players, maybe we should take all evidence at  
22 once. Then we're not playing the silo game of trying to  
23 figure out what topic we're talking about.

24 MR. GALATI: Yes, for Override I just need to  
25 swear in one more witness.

1 HEARING OFFICER CELLI: Who would that be?

2 MR. GALATI: It would be David Schlosberg.

3 HEARING OFFICER CELLI: So what I'm proposing to  
4 do, since we're -- there seems to be a lot of overlap  
5 here, is I'm thinking we should have all of the witnesses  
6 on all of the topics and we can take care of them all at  
7 once. Is there any objection to that?

8 MS. BELENKY: My concern is that it also  
9 overlaps with Biology and it also overlaps with  
10 Alternatives. So if you want to swear in everybody and  
11 just have a big free-for-all, that's fine with me.

12 HEARING OFFICER CELLI: Well, then if we don't  
13 do that --

14 MS. BELENKY: I'm not sure what we're --

15 HEARING OFFICER CELLI: Yeah.

16 MS. BELENKY: I'm just trying to ask a couple of  
17 questions here. It's true they will overlap with the  
18 questions in Override and in Alternatives and in Biology.  
19 It's just inevitable.

20 HEARING OFFICER CELLI: Right. So you know  
21 what, rather than take the time, just hold that  
22 questioning until we get to Override.

23 MR. STUCKY: Mr. Celli, I guess I can say that  
24 Exhibit 1148 addresses that question, and we will be  
25 presenting on that later but, to give Ms. Belenky an

1 answer, that exhibit, we think, answers the question.

2 HEARING OFFICER CELLI: Okay. Thank you.

3 Ms. Belenky, go ahead.

4 MS. BELENKY: Yes. I would like to ask staff if  
5 you considered the possibility that there would only be  
6 one tower since the second tower, there is another  
7 condition that is a major condition, it appears, if you  
8 considered what any Alternatives, given that there may  
9 only be one tower?

10 MS. MARTIN: I'm going to object and say that  
11 goes to Alternatives, a discussion in the Alternatives  
12 section. I think --

13 HEARING OFFICER CELLI: If she can answer that  
14 question, I don't think that that's -- it doesn't require  
15 that much expertise. The question is did they make such  
16 an analysis, and the project manager should be able to  
17 answer that.

18 MS. STORA: I can testify to, yes, staff did  
19 consider this could potentially lead to only one tower  
20 being built; and that the analysis that I spoke to earlier  
21 does cover that; but I can't talk to the Alternatives  
22 portion and whether or not we considered additional  
23 Alternatives beyond that.

24 MS. BELENKY: Thank you. I'm also wondering if  
25 the staff considered the likelihood of the second tower

1 being built?

2 MS. STORA: Yes, of course we did. That's what  
3 the Petition to Amend has been all along. But I guess I'm  
4 confused by your question.

5 MS. BELENKY: The likelihood that the -- my  
6 question is did staff consider the likelihood that the  
7 second tower would be built with the additional condition,  
8 given that there now would not be an already-signed PPA  
9 that is associated with that tower?

10 MS. STORA: Well, we did give consideration so  
11 if the Petition to Amend came in with storage, that we  
12 would do an amendment and reevaluate it at that time.

13 MS. BELENKY: Thank you. I may actually be  
14 slightly confused as to what the staff believes would be  
15 approved as to tower two.

16 MS. STORA: Staff reviewed the construction and  
17 operation of both towers. If the Petitioner chooses to  
18 build one tower, staff hasn't reviewed that. If the  
19 Petitioner wants to bring in storage with tower two, we  
20 have not done a full analysis on that and would have to do  
21 a petition to amend at a later date, if they choose to  
22 submit that in a petition.

23 MS. BELENKY: I'm sorry to belabor this point, I  
24 just want to understand. Is it your position that tower  
25 two would be approved, that they could build a tower

1 there?

2 MS. STORA: Only after -- the way they have  
3 written Condition Project Description 1, building tower  
4 two would require them to come back in with an amendment,  
5 including storage, to build the tower. They are  
6 effectively cutting out that tower during the first phase  
7 and saying we will come back is an amendment with tower  
8 two and storage, to build that portion.

9 MS. BELENKY: And what would be approved as to  
10 tower two in this initial approval, assuming it happened?  
11 What would be approved as to that tower?

12 MS. STORA: If the Commission chooses to accept  
13 Project Description 1 as a condition, I believe the  
14 Petitioner, and this is probably more of a legal question  
15 than a staff question, but my understanding would be that  
16 they would only be allowed to build tower 1 until they  
17 submitted a petition to build tower 2 and storage. If we  
18 accept that as a licensed condition, I believe that's how  
19 it would be forced to be built.

20 I might add that if the Committee does not  
21 accept Project Description 1, we still have a two-tower  
22 project. So it depends on whether or not they accept  
23 Project Description 1 in the license or not.

24 MS. BELENKY: Thank you. And this may be a  
25 question for Alternatives, so I apologize if we need to



1 wait and talk about it then, but does the first phase  
2 match what was called the reduced-acreage Alternative in  
3 the Alternative?

4 MS. STORA: I can't speak to that at this time.  
5 I'd need to see some maps and probably talk to the  
6 Alternatives staff.

7 MS. BELENKY: Thank you.

8 Then I had a question for our -- well, actually  
9 another question for the company. How much storage are  
10 you committing to? Are you committing to a certain amount  
11 of storage in this condition?

12 MR. STUCKY: We are not at this time.

13 MS. BELENKY: And then I believe this may again  
14 overlap -- I'm sorry -- with Alternatives, but I would  
15 like to ask at this point as well if it turns out that the  
16 storage is not feasible, which was actually stated at  
17 various times, then the project that is being approved, it  
18 appears, would be just one tower?

19 MR. GALATI: I will object that that's  
20 mischaracterization. The witnesses have clearly made a  
21 distinction between the technical feasibility and economic  
22 feasibility. She says that we said it was infeasible. We  
23 said it was economically infeasible.

24 HEARING OFFICER CELLI: Actually she just said  
25 infeasible. She didn't say economic or otherwise. So

1 that's --

2 MR. GALATI: Correct.

3 HEARING OFFICER CELLI: -- you're specifying the  
4 point for her, but I'll sustain the objection.

5 You might want to just clarify what  
6 infeasibility you're talking about, Ms. Belenky.

7 MS. BELENKY: Well, I wish we really all knew.  
8 I think that there has been a bit of a moving target with  
9 feasibility, but be that as it may, I'm trying to  
10 understand what the project did at this point.

11 We had a Project Description starting with this  
12 amendment that was taking a permitted solar trough project  
13 and putting two towers there. We have now been told the  
14 trough is infeasible, we've been told that towers with  
15 storage are infeasible on various bases, and we've been  
16 told that photovoltaics are infeasible by the Applicant.

17 And I'm just trying to understand what the  
18 project is that we are actually discussing at this point.

19 HEARING OFFICER CELLI: Okay. So there's two  
20 separate things, I just want to draw a distinction.  
21 Feasibility, all the feasibility business will be an  
22 Alternatives discussion; we'll talk about that then. But  
23 that is a fair question to Mr. Turlinski or Mr. Stucky,  
24 that she's trying to understand what is the project today.  
25 Correct? Are we talking two towers or one tower with the

1 potential for a future second tower with thermal energy  
2 storage?

3 MR. TURLINSKI: The Project Description I think  
4 covers it in detail. It has always been a project with  
5 two towers. The one addition that we've added to the  
6 amendment is the cost, Project Description number 1.  
7 Yeah. Project description number 1, that changes our  
8 obligations under a potential license, but otherwise that  
9 has always been a two-tower project that we are proposing,  
10 a 500-megawatt project that we are proposing.

11 MS. BELENKY: And I would just like to ask my  
12 witness, Bill Powers, if he wanted to commit at all on the  
13 storage, additional storage, or anything else that's been  
14 said, just to give him an opportunity since he's on the  
15 phone.

16 HEARING OFFICER CELLI: Go ahead, Mr. Powers.

17 DR. POWERS: I apologize. I was on mute.

18 I don't have anything to add on this issue of  
19 economic versus technical feasibility.

20 HEARING OFFICER CELLI: Actually the question  
21 went more to the change in the Project Description, as I  
22 understood it. This phasing, on whether you had any  
23 comment on this phasing?

24 DR. POWERS: Could you repeat that last word,  
25 the --

1 HEARING OFFICER CELLI: Phasing, p-h-a-s-i-n-g.  
2 Phasing of the project into two phases.

3 DR. POWERS: Oh, I have an opinion of it. To me  
4 it's much ado about nothing really. There is going to be  
5 so little electric power produced by the storage proposed  
6 that it seems like a lot of work for almost nothing.

7 MS. BELENKY: I have no further questions at  
8 this time.

9 HEARING OFFICER CELLI: Thank you, Ms. Belenky.  
10 Mr. Emmerich or Ms. Cunningham.

11 MR. EMMERICH: Well, yeah, I'm pretty confused  
12 by this too. So I'll just ask some basic questions here.  
13 You know this seems like an eleventh-hour deal where we're  
14 hearing about this plan. And I guess I would first like  
15 to ask the staff, I mean given that Mr. Powers thinks that  
16 it won't produce a lot of energy, do you feel that storage  
17 is going to need a lot of salt?

18 I mean it's probably going to need a lot of that  
19 material, and do you consider that a hazard material  
20 hypothetically if there were some kind of spill in the  
21 region?

22 MS. MARTIN: Well, --

23 MS. STORA: This is Christine Stora. Being that  
24 we haven't received a petition to amend on the storage  
25 component, I can't personally speak to it that much. We

1 haven't evaluated it yet, so we don't know what the  
2 storage component would be.

3           Shabab on the phone, I would ask that you maybe  
4 add some information about how much salt you think might  
5 be included in a storage component or if we would consider  
6 that a hazardous material. I open that up for you to  
7 answer if you have anything to add there.

8           HEARING OFFICER CELLI: Actually the amount was  
9 raised but whether it was a hazardous material was  
10 questioned.

11           MS. STORA: I thought I heard that.

12           MR. EDWARDS: Well, --

13           MR. BEMIS: This is Gerry Bemis, Energy  
14 Commission staff. Shabab stepped out of the room for a  
15 moment, but his background is not in hazardous materials  
16 anyway, as I understand it. That would be somebody else.

17           MS. MARTIN: I'm just going to say that this  
18 whole storage discussion would occur in an amendment  
19 situation.

20           MR. EDWARDS: That's right.

21           MS. MARTIN: I don't think this is a time, we  
22 don't have a proposal, and I don't think it's fruitful to  
23 discuss what could happen in the future at what level  
24 right now.

25           HEARING OFFICER CELLI: Okay. I appreciate

1 that. I kind of was expecting a one-word answer since we  
2 all eat salt, but --

3 MR. EMMERICH: I was actually expecting that too  
4 because I think we might be making it a little more  
5 complicated than it is. I'm simply asking you if you're  
6 going to incorporate thermal storage and use more salt in  
7 a high concentration, if that still would be considered a  
8 hazardous material. And I think what I'm getting at here  
9 is that to me this seems more like an Alternative than  
10 actual plan amendment.

11 Maybe I can ask you guys this. The Boyce  
12 Project and the Calico Project (phonetics) both converted  
13 the photovoltaics. And when both of those happened, you  
14 look at the staff assessments or the supplemental staff  
15 assessments, or whatever they were called, and you found  
16 that the environmental footprint of both of those projects  
17 was less, yet the CEC went ahead and did full reviews of  
18 both of these projects.

19 And what I'm seeing here is you're changing the  
20 plan, you're thinking it's somewhat insignificant because  
21 it theoretically fits within a footprint, but you maybe  
22 don't want to go through the whole process. And if you do  
23 create a supplemental staff assessment, can we request a  
24 long review period? I want like two or three months to  
25 look at this because you're not giving us enough

1 information here.

2           The glint and glare conversation ended in sort  
3 of a backward solution, I thought, yesterday. I don't  
4 think that was resolved either. And I think maybe this --  
5 you need some more upfront information. That's just my  
6 general impression here, so my comment and question.

7           HEARING OFFICER CELLI: Thank you for that  
8 comment, Mr. Emmerich. I don't want to gloss over your  
9 question about the hazardous material, which is, as I  
10 understand it, and correct me if I'm wrong, when they come  
11 in with their amendment, then that amendment would get the  
12 full analysis as we normally would, of which hazardous  
13 materials is always one of the things that CEQA requires a  
14 full analysis of. So I take it that that would be a  
15 future -- in an amendment that would be part of that  
16 future amendment, correct?

17           MR. GALATI: That's what we propose to you with  
18 PD1.

19           HEARING OFFICER CELLI: So that's where that  
20 would show up. Thank you.

21           Any further questions from Basin & Range Water?

22           MR. EMMERICH: No.

23           HEARING OFFICER CELLI: Thank you.

24           Staff.

25           MS. MARTIN: I have no questions.

1 HEARING OFFICER CELLI: Petitioner.

2 MR. GALATI: Yes. I would like to ask Mr. Kelly  
3 a question.

4 Mr. Kelly, there has been sort of an impression  
5 left by, I think, Mr. Powers that the storage possibility  
6 at this site is sort of window dressing. Can you address  
7 his comment about there was only 15 minutes of storage or  
8 not meaningful storage could be added at the site both  
9 either at the existing facility or in the Phase 2?

10 MR. KELLY: There's sort of two ways to use  
11 storage. One is to design the plant so that you have  
12 excess thermal capacity available from your solar  
13 collection system to put into thermal storage and you can  
14 take energy out of the storage later on in the day or just  
15 basically extend the operating day. That's sort of one  
16 philosophy.

17 The second philosophy is you stick with an  
18 existing design, like they have at Palen, there is not  
19 excess capacity in your solar field or in your receiver to  
20 put energy into storage. So given that limited sort of  
21 excess capacity that's available in the current design of  
22 Palen, Mr. Powers is right, there is probably only enough  
23 energy to put 15-minutes worth of energy into storage to  
24 spend the operative there.

25 However, it's still possible, though, to design



1 the system such that you basically postpone start-up of a  
2 turbine in the morning and then put energy into storage  
3 that would only go to turbine. Then later on the day,  
4 start the turbine and then extract energy late in the day  
5 in order to basically extend electric generated capacity  
6 late in the afternoon in order to match oftentimes the  
7 peak loads that Southern California Edison would have, say  
8 between 4:00 and 6:00 p.m.

9 So depending on how you operate the plant, you  
10 can view it as having 15 minutes of storage or you can  
11 have as many as two hours, three hours, or four hours of  
12 storage depending on how you dispatch the turbine starting  
13 in the morning.

14 MR. GALATI: And, Mr. Kelly, you haven't been  
15 involved in the design of what Phase 2 would look like,  
16 have you?

17 MR. KELLY: No, I haven't.

18 MR. GALATI: I have a question for staff. And  
19 this question is for either Gerry Bemis or Shabab  
20 Khashmashrab, whichever one of you can answer this  
21 question.

22 MR. KHASHMASHRAB: Yes.

23 MR. GALATI: Which one of you is most familiar  
24 with the final determination of compliance in the Palen  
25 Project?

1 MR. BEMIS: Hi. This is Gerry Bemis and  
2 Jacqueline Record, who did the air quality analysis.

3 MR. GALATI: And that document imposes a  
4 limitation on the natural gas that can be used at the  
5 facility; is that correct? Either through a true natural  
6 gas limitation or efficient standard?

7 MS. RECORD: This is Jacqueline Record. Yes,  
8 there is a limitation on natural gas feed.

9 MR. GALATI: So you incorporated those  
10 conditions into the Energy Commission staff assessment?

11 MS. RECORD: Yes, that is correct.

12 MR. GALATI: And those were adopted in the PMPD?

13 MS. RECORD: That is also correct.

14 MR. GALATI: So the Applicant cannot use more  
15 natural gas unless it comes to the Commission and asks for  
16 an amendment and justifies that amendment; would that be  
17 fair?

18 MS. RECORD: That is a fair assessment, yes.

19 MR. GALATI: One follow-up question for  
20 Mr. Turlinski.

21 Mr. Turlinski, did you check with the engineers  
22 on whether they thought they needed natural gas now?

23 MR. TURLINSKI: In regards to thermal energy  
24 storage or --

25 MR. GALATI: No, in regard to the project that's

1 proposed.

2 MR. TURLINSKI: Yes, we did check with the  
3 engineers.

4 MR. GALATI: And, just to summarize, their  
5 preliminary design says they don't believe they need  
6 additional natural gas at this time?

7 MR. TURLINSKI: That's correct.

8 MR. GALATI: No further questions.

9 HEARING OFFICER CELLI: Okay. I just want to  
10 ask Mr. Powers if you wanted to respond to anything, any  
11 of the testimony we just heard?

12 DR. POWERS: No. I think that testimony  
13 confirms that 15-minute calculation.

14 HEARING OFFICER CELLI: Okay. But there was  
15 also testimony that could be, depending on how you  
16 engineered it and configured it, up to four hours of  
17 storage.

18 DR. POWERS: No, that's not correct. The only  
19 way to do that would be to take the 250, say for the first  
20 phase. For the second phase with storage, the only way  
21 with the number of heliostats that they've got, at 81,000  
22 plus, that they could generate hours of storage, is to  
23 drop the rating of that plant to, say, 150 megawatts and  
24 send a lot of the energy into storage tanks. But it would  
25 not be a 250-megawatt net facility.

1 HEARING OFFICER CELLI: Mr. Kelly, do you have a  
2 response?

3 MR. KELLY: It depends on whether you find the  
4 250 megawatts. Mr. Powers is right, given the existing  
5 design you cannot start the turbine, say, 8:00 in the  
6 morning in the run it till, say, 4:00 in the afternoon at  
7 250 megawatts on a continuous basis and provide energy for  
8 thermal storage when you're striking that assessment.

9 However, you could also postpone turbine  
10 start-up until, say, noon. With the energy that would  
11 normally go to the turbine into thermal storage. Start  
12 the turbine at, say, noon. Operate at 250 megawatts and  
13 then extend the operation of the turbine to beyond late in  
14 the afternoon, perhaps even near sunset, at the full  
15 250-megawatt continuous rating. It depends on how you  
16 plan to dispatch the turbine relative to accepting energy  
17 from the receiver. Energy from the receiver can either go  
18 to the turbine directly or it can go into thermal storage.

19 And depending on how you postpone the start-up  
20 of the turbine, determine the operating periods of the  
21 turbine, and the alphabet of the turbine during those  
22 times you're operating the turbine.

23 COMMISSIONER DOUGLAS: Mr. Kelly, --

24 DR. POWERS: Right. I understand all of that,  
25 but all you're doing is taking the existing amount of

1 energy that that facility is capable of producing and  
2 saying during daylight hours, when you would expect that  
3 unit to be sending power to the grid, we're not going to  
4 do that. We're going to send no power to the grid before  
5 noon, we're going to send it to thermal storage, that is  
6 true, you can do that. But I haven't seen any description  
7 like that as far as how you would operate your facility.  
8 And it would make no sense from a contractual standpoint  
9 that during daylight hours, when the value of power is  
10 high, you would withhold power production, you would store  
11 it, and then you would release it when it is least  
12 valuable. It doesn't make sense.

13 MR. KELLY: I think it depends on your power  
14 purchases agreement. If you're being paid -- let's pick a  
15 number -- ten cents for energy at ten o'clock in the  
16 morning, 25 cents for energy at 2:00 p.m., then you're  
17 going to postpone operation of the turbine to take  
18 advantage of the 15-cent differential between morning  
19 pricing and afternoon pricing. It all depends on the  
20 power purchase agreement. If you have --

21 DR. POWERS: And that is not a correct  
22 statement. You cannot export, as I understand it, more  
23 than 250 megawatts. So you would be sending 250 megawatts  
24 to the grid now without storage. And this talk of  
25 withholding it until noon, and then do what, send 500

1 megawatts to the grid from a 250-megawatt facility? I  
2 mean you're really scrambling the number of different  
3 elements to make this case for a hypothetical thermal  
4 storage facility.

5 MR. KELLY: Well, it all depends on the capacity  
6 of your charging heat exchangers and your discharging heat  
7 exchangers. Technically this is all certainly a practical  
8 thing to do. Solar Reserve does it at the Crescent Dunes  
9 Project. They postpone operation to --

10 MS. BELENKY: Objection. This is not in the  
11 record in earlier testimony and --

12 HEARING OFFICER CELLI: No, it's responsive to  
13 what Mr. Powers said, so I would -- what is the basis of  
14 your objection?

15 MS. BELENKY: Well, my objection right now is  
16 that Crescent Dunes isn't operating, so I'm not sure what  
17 he is going to testify to as to the Crescent Dunes Power  
18 Plant.

19 HEARING OFFICER CELLI: Okay. Overruled. I'm  
20 going to let you finish your answer. Go ahead, Mr. Kelly.

21 MR. KELLY: So at Crescent Dunes they have the  
22 option. They have a large thermal storage capacity that  
23 are roughly ten hours. They can postpone turbine start-up  
24 until late in the morning. And then postpone turbine  
25 start-up until, say, 10:00 in the morning, 11:00 in the

1 morning, and then run till probably 10:00 or 11:00 p.m. in  
2 order to match the load of a utility. And so they  
3 certainly have that flexibility.

4 MR. TURLINSKI: This is Charlie Turlinski from  
5 panel and solar holdings. Can I just ask, there is an  
6 Exhibit 1149 and it might help the conversation.

7 HEARING OFFICER CELLI: Okay. What is Exhibit  
8 1149?

9 MR. TURLINSKI: It's what is known as the duck  
10 curve for the Commissioners, so I think you're probably  
11 familiar with it. Mr. Kelly spoke into the technical  
12 aspects of storage and how it could be deployed or  
13 dispatched. There's also the commercial aspects, and  
14 that's what we're getting at. The entire conversation  
15 from a commercial front, when we're working back to  
16 economically feasible, economically feasible is defining  
17 the values of storage. And those come in the short term,  
18 the short duration, and the long term.

19 I think Mr. Powers is referring to just one of  
20 those uses. That's an arbitral movement, moving storage  
21 from one moment to another moment.

22 There is also, when you look at the Exhibit  
23 1149, there are other potential values that have not been  
24 fully defined by policy or regulation, the Cal ISO, but  
25 are a constant conversation and important with the system.

1 They include ramping. When you look at the Cal ISO duck  
2 curve, one of the primary concerns of intermittent  
3 technologies coming onboard is the fact that they will  
4 come off at around the evening, some time in the evening,  
5 and what you see is a ramp, a very steep ramp. And that's  
6 one of the primary values.

7 And as a company we have been in the middle of  
8 those conversations, trying to work with utilities  
9 personnel to value, actually hit a value as to what  
10 ramping at the capacity project might be to the utility.  
11 And they vary. They vary based on the location of the  
12 project, they vary based on the utility, but fundamentally  
13 I think my testimony is that there is not simply a value  
14 of high-power energy being moved to lower-priced hours.  
15 There is an entire atmosphere of energy pricing pertaining  
16 to storage and pertaining to durations.

17 DR. POWERS: May I comment on that, please?

18 HEARING OFFICER CELLI: Is that you, Mr. Powers?

19 DR. POWERS: It is, it's Mr. Powers.

20 HEARING OFFICER CELLI: Go ahead.

21 DR. POWERS: I would like to point out that the  
22 controversial duck graph shows a steep curve in March and  
23 April, when power prices are at their annual lows. So  
24 anyone building a facility with the idea that they're  
25 going to make a lot of money selling power to address a



1 daylight power need in California in March or April is  
2 mistaken.

3 MR. TURLINSKI: Well, as a follow-up to that,  
4 this is Charlie Turlinski, that's why we can build storage  
5 now. There is not the economic incentive to do it, so.

6 COMMISSIONER DOUGLAS: I was going to ask, this  
7 is Commissioner Douglas, I've got a couple of additional  
8 questions on storage, I'm really holding it for Override  
9 so that we have all the witnesses on deck who can answer  
10 those questions. There's just one question that  
11 Mr. Kelly's comment raised in my mind that I wanted to ask  
12 now.

13 Mr. Kelly, you talked about potentially sending  
14 energy into storage as opposed to the generator or the  
15 turbine --

16 MR. KELLY: Yes.

17 COMMISSIONER DOUGLAS: -- in the morning hours  
18 when the price is lower and then generating power later  
19 into the evening. And that of course assumes that the  
20 power purchase agreement is structured in such a way that  
21 you have incentive to do that.

22 MR. KELLY: Right.

23 COMMISSIONER DOUGLAS: Do you have the  
24 flexibility to, for example, generate in the morning,  
25 store energy in the middle of the day, and then produce

1 later into the evening, or is there some importance to the  
2 order of operation that you gave us in your example?

3 MR. KELLY: To give an example, this is not the  
4 same technology but it's Solana, the photovoltaic trough  
5 plan just outside of Phoenix, that's what they do. They  
6 have what they call load to operation, in which APS pays a  
7 premium for the plant to start at roughly 4:00 or 5:00 in  
8 the morning, run for a couple of hours until, say, 6:00 or  
9 7:00, this is probably in the winter, then shut off the  
10 turbines. Face the cutback on the turbines depending on  
11 the availability of thermal capacity in the storage  
12 system. And then return to operation late in the  
13 afternoon and then operate early in the evening, say 3:00  
14 p.m., maybe like 6:00 or 7:00 p.m. There would be a  
15 premium for that. And they've demonstrated that that type  
16 of load shifting can be done. It can be done on an  
17 economic basis because of the premium offered by APS to do  
18 so. So that can be done in that type of a storage system.

19 The storage system for Palen has not been  
20 designed yet, and so you can't really make the statement  
21 that, yes, that is a feature that will be available. But  
22 from a technical point of view, it can be made available,  
23 yes.

24 COMMISSIONER DOUGLAS: All right. Thank you.  
25 I'm going to hold the rest of my storage questions for the

1 Override, but thank you for that.

2 HEARING OFFICER CELLI: I think this has been a  
3 very robust discussion and I wanted to ask any of the  
4 witnesses either here, any of the experts on the phone or  
5 in the room, if you had any further comments with regard  
6 to -- we're talking about gas or storage, just go ahead  
7 and speak up if you have anything further you think we  
8 should address now in Project Description.

9 DR. POWERS: This is Bill Powers.

10 HEARING OFFICER CELLI: Go ahead, Mr. Powers.

11 DR. POWERS: I just want to reiterate that the  
12 storage bill 8025-14 was passed in the law in October and  
13 it will require 1325 megawatts of energy storage online  
14 contemplated by 2020, operational by 2024, but just  
15 reiterate that by putting storage in the load pockets in  
16 California, such is that the L.A. Basin; SD, San Diego  
17 area, that you obviate the need by doing that for an  
18 equivalent amount of combustion turbine capacity to cover  
19 those load pockets. And it just makes common sense that  
20 if we're developing energy storage that the first priority  
21 would be to get that storage into the load pockets.

22 HEARING OFFICER CELLI: Anyone else?

23 MR. GALATI: We have a witness that can address  
24 that during Overrides and Alternatives.

25 HEARING OFFICER CELLI: And Mr. Powers is

1 available for when we're talking about Overrides?

2 MS. BELENKY: Yes. Yes, he is. Yeah.

3 HEARING OFFICER CELLI: Okay. Then we will  
4 table that until we get to Overrides.

5 Anything further from any of the witnesses on  
6 the telephone?

7 Okay. Then let's start with staff. Do you have  
8 any motion with regard to Project Description?

9 MS. MARTIN: Staff would move into evidence  
10 Exhibit 2017, and that is all.

11 HEARING OFFICER CELLI: Okay. Any objection  
12 from the Petitioner on Exhibit 2017?

13 MR. GALATI: No objection.

14 HEARING OFFICER CELLI: CURE?

15 MS. GULESSERIAN: No objection.

16 HEARING OFFICER CELLI: Mr. Figueroa?

17 MR. FIGUEROA: No objection.

18 HEARING OFFICER CELLI: CRIT?

19 MS. CLARK: No objection.

20 HEARING OFFICER CELLI: Center for Biological  
21 Diversity?

22 MS. BELENKY: No objection.

23 HEARING OFFICER CELLI: Basin & Range Watch?

24 MR. EMMERICH: No objection.

25 HEARING OFFICER CELLI: Okay. Then Exhibit 2017

1 is received.

2           Petitioner, do you have a motion with regard to  
3 Project Description?

4           MR. GALATI: Yes. I'd like to move in 1152,  
5 1166, 1167, 1168, and 1169.

6           HEARING OFFICER CELLI: The motion is to move  
7 into evidence 1152, 1166, '67, '68, and 1169. Any  
8 objection from CURE?

9           MS. GULESSERIAN: No objection.

10          MR. FIGUEROA: No objection.

11          HEARING OFFICER CELLI: That no objection came  
12 from Mr. Figueroa.

13          Any objection from CRIT?

14          MS. CLARK: No objection.

15          HEARING OFFICER CELLI: Center for Biological  
16 Diversity?

17          MS. BELENKY: No objection.

18          HEARING OFFICER CELLI: Basin & Range Watch?

19          MR. EMMERICH: No.

20          HEARING OFFICER CELLI: Staff?

21          MS. MARTIN: No objection.

22          HEARING OFFICER CELLI: Okay. Then Exhibits  
23 1152, 1166, 1167, 1168, and 1169 which were marked for  
24 identification are now received into evidence as Exhibits  
25 1152, 1166, 1167, 1168, and 1169.

1 CURE, any motion with regard to exhibits for  
2 Project Description?

3 MS. GULESSERIAN: No.

4 HEARING OFFICER CELLI: Okay. Mr. Figueroa?

5 MR. FIGUEROA: No.

6 HEARING OFFICER CELLI: CRIT?

7 MS. CLARK: No.

8 HEARING OFFICER CELLI: Center for Biological  
9 Diversity?

10 MS. BELENKY: Yes. We would move Mr. Powers'  
11 testimony and exhibits. The exhibits are 3113 through  
12 3125, inclusive, and Exhibit 3146 through 3149, inclusive.  
13 And, in addition, we would keep open 3152 to provide the  
14 database information that we will do by the end of the  
15 week.

16 HEARING OFFICER CELLI: All right. But let's  
17 move in 3152 now such as it is, and then we'll expand on  
18 that.

19 Any objection from staff into moving into  
20 evidence 3113 through 3125, inclusive, 3146 through 3149,  
21 inclusive, and 3152?

22 MS. MARTIN: No objection.

23 HEARING OFFICER CELLI: Petitioner, any  
24 objection?

25 MR. GALATI: No objection.

1 HEARING OFFICER CELLI: CURE?

2 MS. GULESSERIAN: No objection.

3 HEARING OFFICER CELLI: Mr. Figueroa?

4 MR. FIGUEROA: No objection.

5 HEARING OFFICER CELLI: CRIT?

6 MS. CLARK: No objection.

7 HEARING OFFICER CELLI: Basin & Range Watch?

8 MR. EMMERICH: No objection.

9 HEARING OFFICER CELLI: Okay. Then Exhibits  
10 3113 through 3125, inclusive, 3146 through 3149,  
11 inclusive, and 3152 are received into evidence.

12 Basin & Range Watch, did you have a motion?

13 MR. EMMERICH: No. We have no evidence further.

14 HEARING OFFICER CELLI: Okay, very good. I want  
15 to thank everybody on the phone. I'm going to excuse  
16 those witnesses who are done testifying, who are not going  
17 to be testifying on Overrides or Biology or Alternatives,  
18 which we're getting into Alternatives next. So those  
19 witnesses who are not going to be testifying as to  
20 Alternatives or Overrides or Biology, are excused at this  
21 time.

22 MS. BELENKY: Oh, I just want to make sure  
23 Mr. Powers is going to stay on the WebEx for the next --

24 HEARING OFFICER CELLI: Yes.

25 MS. BELENKY: The Overrides, I'm not sure what

1 order we're doing, Alternatives, Overrides?

2 HEARING OFFICER CELLI: We'll do Alternatives  
3 next, so, Mr. Powers, don't go away, please.

4 DR. POWERS: Okay, I will stay.

5 HEARING OFFICER CELLI: Thank you. It's 10:35  
6 by my watch and we are going to take a break until 10:45  
7 to give the court reporter a little breather. So  
8 everyone, please be back in your seats. And I'm going to  
9 ask that the parties have your experts on Alternatives  
10 seated and ready to go at 10:45. We are off the record.

11 (Off the record from 10:39 a.m. to 10:59 a.m.)

12 HEARING OFFICER CELLI: So folks, we're just  
13 waiting for the court reporter's computer to come up. And  
14 while we're waiting -- we are good -- while we're waiting,  
15 though, if anybody wants to make a public comment today  
16 and, again, we're going to break at noon for public  
17 comment, or noonish, please fill out a blue card with our  
18 Public Adviser, who is Alana Matthews, who's standing  
19 there and got her hand in the air. Fill one of these out.  
20 She brings it to us and then we call your name, and that's  
21 how we do public comment. So if you want to make a  
22 comment, that's the way it's done.

23 Are we on the record? Oh, good, we're back. Go  
24 ahead.

25 COMMISSIONER DOUGLAS: So we've been joined by



1 some representatives of National Park Service. Let me  
2 just ask if you could introduce yourselves for the record  
3 and then we'll get going with alternatives.

4 MR. SABALA: Luke Sabala, Physical Scientist,  
5 Joshua Tree National Park.

6 COMMISSIONER DOUGLAS: Thank you.

7 HEARING OFFICER CELLI: Is that it?

8 COMMISSIONER DOUGLAS: Yeah.

9 HEARING OFFICER CELLI: Okay, thank you. So we  
10 are now on to the feasibility of alternatives. I have  
11 Mr. Turlinski, Mr. Stucky, and who's sitting next to  
12 Mr. Stucky?

13 MR. SCHLOSBERG: David Schlosberg.

14 HEARING OFFICER CELLI: You're going to need a  
15 microphone, Mr. Schlosberg.

16 MR. GALATI: We have one other witness on the  
17 phone for the Applicant. It's Arne Olson. Can we make  
18 sure he's on the phone?

19 HEARING OFFICER CELLI: Okay, Arne Olson. Are  
20 you on the phone, Mr. Olson?

21 MR. OLSON: I am. Can you hear me?

22 HEARING OFFICER CELLI: Yes, we can, very  
23 clearly.

24 And Mr. Powers, are you still with us?

25 MR. POWERS: I am.

1 HEARING OFFICER CELLI: Okay, one moment. My  
2 WebEx says "thank you for using WebEx". That's not good.  
3 Oh, there it is.

4 Okay, staff?

5 MS. MARTIN: Yes, we have Janine Hinde, Mark  
6 Hester and David Vidaver.

7 HEARING OFFICER CELLI: And they're all on the  
8 phone?

9 MS. MARTIN: I'd like to make sure.

10 HEARING OFFICER CELLI: Janine Hinde, are you on  
11 the phone?

12 MS. HINDE: Yes.

13 HEARING OFFICER CELLI: Thank you. And Mark  
14 Hester, are you still there?

15 MR. HESTER: I am.

16 HEARING OFFICER CELLI: And David Vidaver?

17 MR. VIDAVER: Yes.

18 HEARING OFFICER CELLI: Okay, anyone else,  
19 Ms. Martin Gallardo?

20 MS. MARTIN: That's it.

21 HEARING OFFICER CELLI: Okay, alternatives, we  
22 have Ileene for CBD. Do you have that, Mr. Powers? Bill  
23 Powers, not Mark. Ileene Anderson. And do we have any  
24 other intervenor witnesses on the topic of alternatives?

25 MS. GULESSERIAN: Not on alternatives.

1 HEARING OFFICER CELLI: Mr. Figueroa?

2 MR. FIGUEROA: No.

3 HEARING OFFICER CELLI: CRIT?

4 MS. JASCULCA: No.

5 HEARING OFFICER CELLI: Basin and Range Watch?

6 MR. EMMERICH: No.

7 HEARING OFFICER CELLI: Okay, is there anyone on  
8 the phone from -- who's representing LiUna on the  
9 telephone? If so, just send a chat and we'll open up your  
10 line.

11 Okay, then with that let's have the people who  
12 are in the room please rise and be sworn.

13 (Panel sworn)

14 HEARING OFFICER CELLI: Be seated. And then on  
15 the phone we have Arne Olson, Janine Hinde, Mark Hester,  
16 David Vidaver and Bill Powers that need to be sworn if you  
17 would, please.

18 You're still under oath, Mr. Powers.

19 (Telephone Panel sworn)

20 HEARING OFFICER CELLI: Alternatives, let's hear  
21 from the Petitioner first, please.

22 MR. TURLINSKI: Okay, this is Charlie Turlinski  
23 from the Petitioner. I think we have showing Exhibit  
24 1150. So I just wanted to use this side to point out the  
25 limitations of the Petitioner as it pertains to actually

1 executing on the proposed alternatives. And it  
2 essentially breaks down to the difference between the  
3 short term and the long term.

4           The alternatives being trough or photovoltaic  
5 were they to be found feasible that project would, in  
6 essence, be a hypothetical project. And I say that  
7 because of reality, because that project would no longer  
8 have a PBA that supports, and finances, and enables the  
9 financing of the project. It would have no applicable  
10 transmission. In a world, in the California network that  
11 is substantially transmission congested, you'd be starting  
12 over and there would be some risk to switching over, for  
13 PV, in particular, and trough. And, in particular, as it  
14 pertains to the company, we have no clear mandate or path  
15 towards a technology solution, certainly not a competitive  
16 advantage.

17           So essentially, I think we're trying to say if  
18 solar trough or PV were feasible, they would be at least  
19 five, six, seven, eight years out because we are  
20 essentially starting over. We don't believe that's  
21 feasible for us as a company, as a Petitioner.

22           So yeah, and our fundamental testimony I think  
23 is just that the project that we're proposing is viable  
24 now, is available to deliver now, it's available to  
25 deliver on the State's policy objectives now. It's able

1 to supplement the switch-over for once-through cooling.  
2 It's able to supplement the retirement of SONGS, now, at  
3 least within the window that's viable.

4 And just as importantly, it's capable because it  
5 has a PPA producing real economic activity now, real jobs  
6 now, not five or ten years in the future.

7 So our testimony is just that the alternatives,  
8 as proposed, are infeasible, I believe.

9 Oh, I want to just, I think, pass it on to Arne.  
10 We have a little more testimony coming from the  
11 Petitioner.

12 HEARING OFFICER CELLI: Go ahead, Mr. Olson.

13 MR. OLSON: Okay (inaudible)

14 HEARING OFFICER CELLI: Mr. Olson, are you on a  
15 speakerphone?

16 MR. OLSON: Oh.

17 HEARING OFFICER CELLI: Can you reach the  
18 handset?

19 MR. OLSON: Yes, I can. Is this better?

20 HEARING OFFICER CELLI: That's better. Use the  
21 handset, please. Go ahead. Go ahead, Mr. Olson, you have  
22 the floor.

23 MR. OLSON: Okay, great. I have 20 years of  
24 experience in the energy industry, the last 12 as a senior  
25 consultant and then a partner at E3. And while I've been

1 at E3 I've been the lead on many studies in --

2 HEARING OFFICER CELLI: Excuse me, Mr. Olson?

3 MR. OLSON: -- potential in California and the  
4 rest.

5 HEARING OFFICER CELLI: Mr. Olson?

6 MR. OLSON: Yes.

7 HEARING OFFICER CELLI: Can you hear me?

8 Okay, we have your resume. Do we not, Mr. Galati, we have  
9 his resume in the record?

10 MR. GALATI: Yeah, there are a couple of points  
11 that might be relevant to you about what he's about to say  
12 about the PUC.

13 HEARING OFFICER CELLI: About the PUC?

14 MR. GALATI: His work at the Public Utility  
15 Commission that is airs on this.

16 HEARING OFFICER CELLI: Let me just ask the  
17 intervenors, is anybody going to challenge this expert as  
18 an expert witness in terms of qualification as an expert?  
19 I'm seeing lots of shaking heads no. Does anyone think  
20 they would? Do I hear a yes from anyone?

21 Okay, then I really don't want to go there.  
22 Let's have him testify as to the facts, please.

23 Go ahead, Mr. Olson.

24 MR. OLSON: All right.

25 HEARING OFFICER CELLI: We don't want to hear

1 about your background. We really want to hear what your  
2 testimony is with regard to alternatives. Go ahead.

3 MR. OLSON: That's fine, thank you.

4 So I'm talking about 1179, and I'll try to refer  
5 to it as that throughout the state policy argument here.  
6 So that's 1179.

7 About the testimony of Mr. Powers, witness for  
8 the Center for Biological Diversity, I'll ask the  
9 Commission to reject the PSEGS project on the basis that  
10 the solar PV is a superior alternative. And Mr. Powers  
11 has not determined any specific project or project  
12 location for the distributed PV resources that he says can  
13 replace the PSEGS project.

14 In fact, he's asking the Commission to find that  
15 distributed PV is a superior alternative just based on the  
16 premise that it's a distributed resource. He's  
17 effectively proposing a categorical alternative and I'd  
18 ask the Commission to reject PSEGS because it's the wrong  
19 category of generation. It's inter-station category, not  
20 a distributed category.

21 1179 shows that distributed PV is not a feasible  
22 alternative because it would require an implication of  
23 thousands of potential sites, and individual negotiation  
24 of thousands of building owners. It's not practical for  
25 Palen Solar Holdings or any individual company to acquire

1 that many sites on a timely basis.

2 And as a result, these types of systems are too  
3 (inaudible) to different mechanisms such as your tiering  
4 tariff structure, (inaudible) a feed-in tariff, some kind  
5 of a policy program run through a central (inaudible)  
6 procurement mechanism.

7 Now, the Commission found in its decision, in  
8 Docket No. 09-AFC-6, which approved the Blythe Solar Power  
9 Project, that acquisition of 152 separate parcels from 43  
10 landowners would not be feasible. And in this case  
11 we're talking about almost 92 more sites and 92 more  
12 property owners to have to negotiate with. So I believe  
13 that that conclusion is even more relevant in this case.

14 And with regard to Mr. Powers making a State  
15 policy argument in a project siting case, I remember one  
16 of the policy reasons for California to encourage the  
17 adoption of distributed PV and the State has a number of  
18 policy programs in place that would do exactly that.

19 All of these existing programs do not obviate  
20 the need for central station renewable generation projects  
21 like PSEGS for RPS compliance. And it seems appropriate  
22 to consider a new policy program as an alternative to a  
23 specific project proposal.

24 Now, in 1179, I also brought out a number of  
25 specific objections on Mr. Powers' testimony. I would



1 just like to highlight a couple of those here.

2 Section (inaudible) Mr. Powers makes some  
3 assertions regarding anticipated increases in the number  
4 of rooftop PV systems installed under the California Solar  
5 Initiative and the State's Net Energy Metering Program.

6 Well, contrary to Mr. Powers' assertions,  
7 customer-sited PV systems are not used for RPS compliance  
8 in California today. And in the (inaudible), PV rules are  
9 not functionally connected to a single solar power project  
10 that produces power using a spring turbine.

11 The California Solar Initiative and Net Energy  
12 Metering Program targets are not mandatory procurement  
13 requirements and the savings of that customer-sited PV  
14 installation are made by customers and are entirely out of  
15 the hands of utilities. So distributed PV programs are,  
16 therefore, not practical to consider as an alternative to  
17 a central station under the project.

18 Installation of customer-sited PV does reduce  
19 retail sales, which does defer the need to get RPS energy.  
20 However, the effect is only temporary and is soon offset  
21 by load growth which, again, contrary to Mr. Powers'  
22 assertions is expected to continue over the next ten  
23 years.

24 Section 3 of that exhibit is about assertions  
25 that Mr. Powers has made regarding the California PUC's

1 storage mandate.

2 Contrary to Mr. Powers' assertions, not all  
3 storage procured under the mandate will be located in the  
4 L.A. Basin.

5 Now, it's certainly true that locating storage  
6 in the L.A. Basin provides high local capacity value than  
7 locating it elsewhere, but local capacity value is only  
8 one of the potential value streams for energy storage.

9 There are many, many others that need to be  
10 considered including station capacity, energy arbitrage,  
11 ancillary services, such as regulation, spinning reserve  
12 and supplemental reserve, and integration of higher  
13 penetrations of renewable resources.

14 Now, in general, there's been a lot of interest  
15 in energy storage as a technology for integrating  
16 renewables. I think all of us understand intuitively that  
17 at some level (inaudible) penetration, some type of  
18 storage will be needed. However, there's not been a very  
19 specific understanding to date about exactly what kind of  
20 storage would be needed, what level of penetration of wind  
21 and solar, and what location on the grid.

22 There are some studies that are beginning to  
23 give us a better indication of that, including (inaudible)  
24 Study investigating a higher renewable portfolio standard  
25 in California, which was published in January and funded

1 by the utilities in California. I was the lead author of  
2 that study.

3           And there are others, including a recent study  
4 from the Lawrence Berkeley National Laboratory that  
5 reaches similar conclusions. You know, which are that,  
6 potentially (inaudible) constrains that the California  
7 grid might not be able to absorb all of the solar energy  
8 that could be produced during daylight hours at RPS loads  
9 of 33 percent and above, and especially when you get to 40  
10 percent and 50 percent. And one of the solutions that  
11 that study investigated was longer duration storage and  
12 what I found was something like 6 to 10 hours of storage  
13 to help soak up that over-generation they're chalking up  
14 during daylight hours and discharging during the night.

15           Now this, of course, is counter to economics,  
16 which rewards production during the daytime. So what  
17 we're seeing is a shift in the economics of different  
18 types of renewable resources and of different (inaudible)  
19 technologies as you move from 20 percent RPS, where we are  
20 today, up to 33 percent and 40 percent, and above.

21           Well, when you're talking long durations of  
22 storage, some of the kinds of storage, such as compressed  
23 air, pumped hydro, and other energy storage are  
24 well-suited to long duration and can provide very  
25 significant economies of scale.

1           Now, this is less true for battery technologies.  
2 You know, essentially, if you were to turn a four-hour  
3 battery into a six-hour battery, you essentially have to  
4 ground twice as many batteries. You have to double the  
5 capacity of the battery banks to do that.

6           Now, complicating everything with respect to  
7 storage today is the fact that AB 2514, which is  
8 legislation that enables the storage mandate, requires  
9 that the storage be cost effective. Well, there's been a  
10 lot of definition about what that means. And cost  
11 effective today is different from cost effective 10 years  
12 from now and 20 years from now.

13           So as we know, and quite appropriately, the  
14 CPUC's storage mandate is actually very flexible. And the  
15 amount of storage located at the PSEGS site could meet up  
16 to 48 to 50 megawatts towards FCE's 550 or 580 megawatt  
17 storage mandate.

18           And So I looked and there was still a lot of  
19 uncertainty about what kind of storage might be built,  
20 when and where, what kind of storage is lowest cost, what  
21 kind of storage has the highest benefits, and what kind of  
22 storage has the best benefit-to-cost ratio. So I think  
23 it's very appropriate at this stage in our involvement of  
24 storage to think about all different kinds of storage,  
25 including distributed energy storage of the type that

1 could be built at the Palen site.

2 Now, section 4 of Exhibit 1179 rebuts several  
3 specific assertions that Mr. Powers has made regarding the  
4 cost of distributed PV systems relative to the cost of  
5 solar power tower projects.

6 Now, I'd like to note that, first, the cost is  
7 not an issue to be adjudicated in this proceeding. And,  
8 of course, that's true with respect to storage as it is  
9 with respect to distributed PV versus power tower.

10 Now, there are other proceedings that consider  
11 cost at the CPUC, and the appropriate procurement plans,  
12 and the approval of specific power purchase agreements.  
13 Nevertheless, Mr. Powers' use of the preconstruction cost  
14 estimate of a much larger (inaudible) PV project located  
15 in New Mexico, to represent costs for installment of  
16 kilowatt rooftop systems in Los Angeles is clearly  
17 inappropriate.

18 Installed costs reported in 2014 for rooftop  
19 projects larger than 10 kilowatts in California are 261  
20 percent higher than the cost of Mr. Powers' site.

21 And Mr. Powers' also inappropriately compares  
22 the cost adding five hours of battery storage to a PV  
23 project with the cost of adding six hours of molten salt  
24 storage to a thermal project. And after correcting for  
25 these errors and using Mr. Powers' numbers for storage

1 costs at face value, I show that a thermal project with  
2 molten salt storage has lower capital cost than an  
3 equivalent rooftop system, and that's before considering  
4 the much higher capacity factor that the solar thermal  
5 project (inaudible)

6           And I'd also like to note here that if it does  
7 turn out that battery storage is cheaper, more cost  
8 effective than thermal energy storage, then there's  
9 nothing that would prevent barring storage from being  
10 built at the PSEGS site, and providing the same types of  
11 grid services that the molten salt storage would provide.  
12 It has that kind of flexibility in the event that battery  
13 storage ends up being more cost effective.

14           And in conclusion, I'd like to emphasize that  
15 rejecting PSEGS on the basis of a categorical distributed  
16 PV alternative would be a very broad signing of  
17 potentially far-reaching implications.

18           If the Commission finds that PSEGS is not needed  
19 because of the categorical 500-megawatt distributed PV  
20 alternative, I'll promise that the next central station  
21 application will reuse the same argument, based on the  
22 same 500-megawatts of distributed PV potential.

23           Because the 500 megawatts are theoretical, not  
24 actual projects in physical locations, the Commission  
25 could never determine whether those 500 megawatts are

1 still out there to be developed. So effectively,  
2 rejecting PSEGS on the basis of a categorical distributed  
3 PV alternative will be equivalent to determining that  
4 central station renewable generation is no longer  
5 necessary to meet California's RPS and GHG goals.

6 The Commission considered and rejected this  
7 argument in 2010, in the Ivanpah Solar Electric Generating  
8 station case, and that's Docket No. 07-AFC-5.

9 The Commission found that central station  
10 renewables, like solar thermal generation, this is a  
11 quote, "Are also necessary. Distributed solar must be  
12 viewed as a partner, not a competitor or replacement for  
13 utility scale solar".

14 And I believe that this finding still is  
15 appropriate today. Thank you.

16 HEARING OFFICER CELLI: Thank you, Mr. Olson.

17 I think that's all of Petitioner's witnesses at  
18 this moment?

19 MR. GALATI: That's correct.

20 HEARING OFFICER CELLI: Okay, then let's hear  
21 from staff's witnesses.

22 MS. MARTIN: I'm just going to say, as I stated  
23 in the pre-hearing conference statement, staff did not  
24 prepare written testimony in these areas, but we're making  
25 our experts at the Energy Commission available, Mark

1 Hester and David Vidaver, for questions should anyone want  
2 to ask should the Committee have any questions for staff  
3 on these issues.

4 And as well, Janine Hinde, who prepared the  
5 alternatives testimony for the FSA, although we're not  
6 anticipating that those issues are before the Committee,  
7 she is available to answer any of those questions.

8 HEARING OFFICER CELLI: Well, let me just ask  
9 Mr. Vidaver, and Mr. Hester, and Ms. Hinde whether you  
10 have any areas of disagreement with what you just heard  
11 from Mr. Turlinski or from Mr. Olson?

12 MR. VIDAVER: You just cut out, Hearing Officer  
13 Celli.

14 This is Dave Vidaver, with Energy Commission  
15 staff. I don't have any issues with anything that either  
16 of the gentlemen said.

17 HEARING OFFICER CELLI: Okay, or any of the --  
18 are you all together in one room?

19 MR. HESTER: Yeah, this is Mark Hester. I don't  
20 actually have any issues with what they said.

21 HEARING OFFICER CELLI: Or Ms. Hinde?

22 MS. HINDE: No.

23 HEARING OFFICER CELLI: Okay, Ms. Anderson,  
24 let's hear from you, or Mr. Powers. So first, we'll hear  
25 from Ms. Anderson and then we'll hear from Mr. Powers.



1 MS. ANDERSON: Perhaps Mr. Powers would like to  
2 go first because he can directly address some of the  
3 comments made previously.

4 HEARING OFFICER CELLI: Okay, Mr. Powers, go  
5 ahead.

6 MR. POWERS: I'd like to just start off with the  
7 idea that everything about this project is conjectural and  
8 hypothetical. And my testimony on the issue of  
9 distributed photovoltaics is specifically that recent  
10 legislation AB 327, which was passed into law in October  
11 of 2013, dramatically increased the size of the Net  
12 Metering Program in the State of California.

13 And, well, the (inaudible) that we were already  
14 about to hit our California Solar Initiative target of  
15 1,940 megawatts of distributed PV probably this summer.  
16 We are at, I think, including projects that are built and  
17 in construction of at least 1,800 megawatts of a program  
18 that was supposed to provide 1,940 megawatts by the end of  
19 2016. So we're on the order of two to two and a half  
20 years in front of our targets for that program.

21 And that AB 327 codified into California law  
22 utility caps on net metering to be met, either met before  
23 the middle of 2017 or the program would be -- met 2017  
24 mandate. And (inaudible) with that program, in my  
25 opinion, exists because we are far ahead of where we

1 anticipated being in terms of net metering installation.

2           Mr. Olson's complaint that it would be difficult  
3 for Brightsource to line up thousands of individual  
4 customers and sign thousands of PPAs is misfounded.  
5 Brightsource doesn't have to do anything. The CEC doesn't  
6 have to do anything.

7           There are thousands of business and individual  
8 homeowners that are doing this on their own. And this  
9 program has been taking off and will continue to take off.

10           What does it mean in terms of this project? It  
11 means that 20,200 megawatts of additional distributed  
12 solar not even anticipated a year ago, would be codified  
13 into the California law, but (inaudible) happened. And it  
14 did not get covered for net-metered solar (inaudible) in  
15 the RPS program at this time. But it did get coded for  
16 driving down loads. And as the loads are driven down,  
17 one-third of that load is supposed to be met by the RPS  
18 projects.

19           And So we installed 3,300 plus megawatts of  
20 solar we didn't anticipate of distributed solar that  
21 benefits the RPS program ends, and we draw 1,000 megawatts  
22 plus of equivalent RPS need. And that happens  
23 automatically. And that's all CEC or Brightsource needs  
24 to do.

25           On the issue of Mr. Olson raised the point of

1 getting more bang for the buck from Palen that rooftop  
2 solar, the one thing, a number of our calculations on  
3 comparing DC to AC, that I won't go into at this moment,  
4 but the bottom line is we don't know what Palen's capacity  
5 factor is going to be. It might be curtailed by migratory  
6 bird meetings and its capacity factor is going to change.  
7 And to make any kind of comparison at this point between a  
8 very ambitious projected capacity factor from Palen and  
9 (inaudible) rooftop solar in our urban areas might be  
10 misplaced.

11           And so the bottom line is, if you were to reject  
12 this project or continue the denial, what's going to  
13 happen?

14           Approximately 1,000 megawatts of RPS capacity is  
15 going to be displaced by unanticipated additions of  
16 rooftop solar (inaudible)

17           So this is the real benefit. And the fact that  
18 it's codified in California law that the target for the  
19 utilities will add a (inaudible) incentive for the program  
20 and, again, it's far outstripping the anticipated targets  
21 that we had originally. But that's just for this change.  
22 That's just for the (inaudible) that are in California law  
23 at this time. It isn't accepting land target additional  
24 lands, or what I anticipate will happen is it's getting  
25 some (inaudible) to put in rooftop solar.

1           But we don't want a CSI program, we don't need  
2 State incentive for these programs to take off. And  
3 unless they are artificially hobbled by legislation, then  
4 they will begin to accelerate and prosper. So right now  
5 the CEC can rest assured that a denial of this project,  
6 even though it be more than that a program that CEC did  
7 not anticipate when they were on the verge of making this  
8 decision in December of 2013.

9           One other point, please, and that is this issue  
10 of conflating a program that's actually successful and  
11 happening, like this idea that Mr. Powers is making some  
12 type of State policy statement, and Mr. Powers is actually  
13 making a common sense statement is that much is happening.  
14 We are not currently taking into consideration that our  
15 RPS load requirement has been dropped by approximately  
16 1,000 megawatts through this step, alone. It not only  
17 opens up, it gives the CEC latitude. It's not on your  
18 shoulders.

19           This is going to happen, anyway. Authorizing  
20 Palen is just icing on top of, well, icing relative to the  
21 benefit of this distributed PV program. Thank you.

22           HEARING OFFICER CELLI: Thank you, Mr. Powers.

23           Ms. Anderson, go ahead.

24           MS. ANDERSON: Thank you. My testimony today is  
25 not -- I haven't submitted it because it's basically going

1 to be pointed at the confusion that I still have over what  
2 the project description is. And I just wanted to say that  
3 it sounds to me like right now what's being considered is  
4 permitting a one tower, without any storage, with the  
5 possibility of having a second tower with storage sometime  
6 in the future, but it's not -- I haven't heard any  
7 obligation that that second tower with storage would  
8 actually ever have to be built. And so my concerns, of  
9 course, are more slanted towards, you know, alternatives  
10 and biology.

11 My concern is that if a single tower were to be  
12 permitted and constructed, it really, it should be  
13 designed and built outside of the Sand habitat, which  
14 would further reduce some of the impacts that's already  
15 been testified to by our expert, Dr. Alan Muth (phonetic),  
16 in previous evidentiary hearings.

17 It's also my opinion that the single tower would  
18 not halve, as in h-a-l-v-e, halve the impacts to the  
19 biological resources.

20 Instead, I think it would be something like a  
21 more linear relationship. And I'm sure we're going to  
22 talk about this more in Biology, but I wanted to mention  
23 this now, in alternatives. In other words, halving the  
24 project size would not reduce the impacts by half.

25 So that's sort of what I wanted to talk about.

1 I don't know if that's me or not -- that's what I wanted  
2 to talk about today with regards to these, the  
3 alternatives, is it seems like this new project  
4 description, i.e. the phasing, really has an opportunity  
5 to, you know, improve the project by reducing impacts.  
6 And I still think that needs to be fully more discussed in  
7 Biological issues. Thank you.

8 HEARING OFFICER CELLI: Thank you.

9 Before I go around to the attorneys, I just want  
10 to ask the witnesses, themselves, if they wanted to  
11 respond to anything that their counterparts raised?  
12 First I'll ask Petitioner's witnesses.

13 MR. TURLINSKI: This is Charlie Turlinski, with  
14 the Petitioner.

15 HEARING OFFICER CELLI: Go ahead.

16 MR. TURLINSKI: I'll just respond briefly to one  
17 thing, one point that I think Mr. Powers was generally  
18 making.

19 As project developers, we spend an enormous  
20 amount of time with the utilities and utilities personnel.  
21 And I can just say, based on experience, I can't speak for  
22 the utilities, themselves, but they do not issue PPAs  
23 lighting.

24 They are very aware of what their demand  
25 constraints are and what the future might or might not

1 look like. And they are, in my experience, extra aware of  
2 the PUC guidance both in terms to procure power that  
3 fulfills their mandate in terms of their obligations to  
4 operate a safe and resilient power system, but also to  
5 procure renewable energy that is cost effective.

6 So that's their expertise and the utilities'  
7 expertise to issue the PPAs and, ultimately, pay the  
8 ratepayers' dollars out for those PPAs I think is guidance  
9 to whether or not there is demand for such a product as  
10 what we are proposing.

11 HEARING OFFICER CELLI: Mr. Olson, did you have  
12 anything you wanted to add?

13 MR. OLSON: Yes, I did. There are a couple of  
14 things that I would like to just clarify.

15 In the first statement by Mr. Powers and all,  
16 that AB 327 increased the cap in an unexpected way. I  
17 don't think that's quite accurate.

18 I think what AB 327 now did was codify the  
19 decision that the CPUC had made on how much net -- how  
20 much rooftop PV could be added under the Net Energy  
21 Metering Program, which was merely the CPUC's  
22 interpretation of the five percent of load rule.

23 So effectively (inaudible) a similar number to  
24 what's in AB 327, through their interpretation of five  
25 percent as being five percent of the sum of all of the

1 non-coincident loads of all customers across California,  
2 rather than some other interpretations that the utilities  
3 have preferred, five percent of (inaudible) peak load  
4 which would have led to a much lower number.

5           So this was new -- this has been noticed over  
6 years that simply more clarifies that megawatts of rooftop  
7 PV was going to be allowed under the current net energy  
8 metering loads. AB 327 really codified, essentially, that  
9 calculation.

10           And, you know, this increase that Mr. Powers  
11 refers to in his testimony, from 1,800 to 5,000 megawatts  
12 of rooftop PV, responds that these PV sales reduces the  
13 quantity of RPS-eligible energy that the IOUs have to  
14 procure to continue to be compliant with the RPS.

15           Now, I addressed some of those statements very  
16 explicitly in my testimony, Exhibit 1179. And based on my  
17 calculations of how much central station, solar power  
18 tower projects will be deferred by this additional 3,316  
19 megawatts of rooftop PV that Mr. Powers refers to is on  
20 the bottom of page 4, of Exhibit 1179, where I go through  
21 what's really just a very simple calculation that if we  
22 were to add 3,316 megawatts of rooftop PV, this is how  
23 much energy I can expect out of that using the costing  
24 factors of 17 to 18 percent, which is what we're seeing  
25 from those type of systems. And if I factor in the fact



1 that PSEGS is expected to produce by a 32 percent capacity  
2 factor, the math is pretty clear that central station  
3 resources that are displaced is not 1,100, as quoted by  
4 Mr. Powers, but something more like 600 megawatts.

5 Now, (inaudible) the thought of displacing,  
6 replacing the need for RPS-eligible resources as you add  
7 more and more net-metered PV. But it's really a temporary  
8 effect because more and more will continue to grow and  
9 that 600 megawatts will be needed at some point.

10 And that's another assertion that Mr. Powers  
11 make that somehow the fact that because we set a record,  
12 an all-time record peak under the hottest weather we've  
13 ever experienced in California, in 2006, and we have never  
14 -- and we haven't come back and had peak that's been  
15 higher than that since, that that's somehow evidence that  
16 California's energy load won't continue to grow and that  
17 California's need for the RPS resources, for compliance  
18 with the 33-percent standard won't continue to grow is  
19 really, it's misplaced.

20 And in fact, the Energy Commission's model  
21 efficiency forecast that's used for most of the planning  
22 efforts, for most of the State, has (inaudible) anticipate  
23 continued load growth of 0.4 percent per year, over the  
24 next ten years. So we will continue to need the RPS  
25 resources, even if we add up to the 5,000 megawatts of

1 rooftop PV.

2           What I want to point out about AB 327 is that  
3 this is not (inaudible) as Mr. Powers has indicated in his  
4 testimony, it's not a requirement. It's actually, in  
5 fact, a cap.

6           Now, it may be true that we'll continue to get  
7 more rooftop PV after we hit that cap. But one of the  
8 things that AB 327 directed the CPUC to do was to ensure  
9 that continued growth of rooftop PV didn't have a negative  
10 impact on customers that weren't installing PV.

11           Now, my firm did a study of what that cost shift  
12 would be under current net energy metering rules if we  
13 reach that 5,000-megawatt cap for the CPUC, and we  
14 estimated that cost shift to be approximately a billion  
15 dollars per year, and every year from 2017 out. So under  
16 current rules it's a pretty big shift of costs from the  
17 customers that have rooftop PV to customers that don't.

18           So in order for the Commission -- you know, the  
19 CPUC has just started a docket where they're going to try  
20 and figure out how they can thread that needle between  
21 continuing to allow rooftop PV and allow it to grow  
22 without having, you know, continuing this cost shift to  
23 non-participating customers. But it seems very clear that  
24 somehow the intent is for adding rooftop PV are going to  
25 have to be reduced quite dramatically to avoid having such

1 large cost shifts.

2 HEARING OFFICER CELLI: Anything else,  
3 Mr. Olson?

4 MR. OLSON: No, that's it, thank you.

5 HEARING OFFICER CELLI: Thank you.

6 Anything further Mr. Powers or Ms. Anderson?

7 MR. POWERS: Nothing further.

8 HEARING OFFICER CELLI: Ms. Anderson?

9 MS. ANDERSON: I have nothing further.

10 HEARING OFFICER CELLI: Okay, then with that I'm  
11 going to ask, go around and check with the attorneys and  
12 see if you have any --

13 (Off-Mike Discussion)

14 HEARING OFFICER CELLI: Staff, go ahead.

15 MS. MARTIN: I didn't know if we wanted to give  
16 staff an opportunity, if they had any questions or  
17 comments on Bill Powers' testimony.

18 HEARING OFFICER CELLI: Staff, do you have any  
19 comments on anybody's testimony that we've heard so far  
20 about alternatives, any of the members of staff on the  
21 phone?

22 MR. VIDAVER: Absent any specific questions, I  
23 have no comments. This is David Vidaver.

24 HEARING OFFICER CELLI: Thank you, Mr. Vidaver.

25 Mr. Hester or Ms. Hinde?

1 MR. HESTER: This is Mark Hester. I don't have  
2 any comments.

3 MS. HINDE: This is Janine Hinde. I don't have  
4 any comments.

5 HEARING OFFICER CELLI: Commissioner Douglas?

6 COMMISSIONER DOUGLAS: I just have a couple  
7 questions for Mr. Olson.

8 Mr. Olson, could you tell us more about the cost  
9 differential between ground-mounted PV and rooftop PV,  
10 both in terms of magnitude and in terms of the reasons for  
11 the differential?

12 MR. OLSON: Yeah, I was kind of cutting out  
13 there right in the middle of that question. Can you  
14 repeat it for me, please?

15 COMMISSIONER DOUGLAS: The cost differential  
16 between ground-mounted PV and rooftop PV, like what's the  
17 general magnitude, what are the reasons for that?

18 MR. OLSON: With regard to the general  
19 magnitude, you know, from numbers that I've seen, the  
20 number that Mr. Powers cited in his testimony of \$2,000 a  
21 kilowatt for ground-mounted PV, that's very much at the  
22 low end of numbers that I've seen, but it certainly is not  
23 outside the realm of, you know, what's generally out  
24 there.

25 So similarly, how the (inaudible) whether it's

1 DC or AC, and sometimes a few PPA prices quoted versus the  
2 first year, and the long-term stream, and the rest  
3 sometimes are levelized. So it's hard to take these kinds  
4 of numbers that you see in the press and know how to make  
5 sense of them.

6 But some of the numbers that we've produced for  
7 the Western Electric Coordinating Council and other  
8 entities like that, we have rooftop -- in our view,  
9 ground-mounted PV, you know, on the range of \$2,500 to  
10 \$3,000 a kilowatt. And rooftop PV on the order of, you  
11 know, closer to \$4,000 a kilowatt for commercial.

12 And, you know, the most recent numbers, which I  
13 did quote in my testimony, from the CSI database have even  
14 the larger systems at over \$5.00 a watt, or \$5,000 a  
15 kilowatt, still.

16 Now, there certainly is evidence that those are  
17 coming down. And I would have expected that 2014 number  
18 to be lower than it was, when we polled it just a month  
19 ago. But there is still quite a significant difference in  
20 the cost of ground-mounted versus rooftop PV systems.

21 And I think the difference is largely, you know,  
22 one of scale, and staging, and land acquisition. You  
23 know, it's just much easier to move all of the panels into  
24 a large, a larger area. It's much easier to work on the  
25 ground. Staging is very difficult for a retrofit,

1 essentially, retrofit projects even on commercial  
2 buildings that have large flat roof surfaces. You know,  
3 building owner negotiations, building, everything's more  
4 expensive in the urban areas where you're trying to build  
5 a rooftop system.

6           Balance those systems, the racking, it needs to  
7 be -- you know, it doesn't need to be, you know, hotter in  
8 urban areas.

9           The orientation in urban areas is less optimal.  
10 Still, on flat roofs you really can't much above 10  
11 percent tilt, which reduces the capacity factor that you  
12 get out of those systems. If you're on the ground, they  
13 can be placed on trackers. You know, that's kind of the  
14 most common mode, now, is the system, at least, is to have  
15 trackers. And those can reach much higher capacity  
16 factors than rooftop systems.

17           And then you have all the issues around  
18 maintenance, and shading, and the fact that rooftop  
19 systems tend to be located closer to the coast, where the  
20 resources isn't nearly of the same quality as it is out in  
21 areas like where PSEGS would be located.

22           COMMISSIONER DOUGLAS: All right, thank you for  
23 that. I just have one more question and then we should  
24 see if your response has triggered any specific response  
25 to my question.

1           In your testimony, you say it would take some  
2 number, I think it's 1,500 to 2,500 kilowatt commercial  
3 rooftop projects to equal the energy production of PSEGS.

4           And I just wondered, as I read that, is 500  
5 kilowatts a reasonably representative number for the size  
6 of commercial rooftop systems? I imagine it must vary a  
7 lot, but I was curious at your choice of that number.

8           MR. OLSON: Well, yeah, I mean I used the  
9 500-kilowatt number because that's what Mr. Powers was  
10 referring to in his testimony. And it's on page 10, where  
11 he makes some statements that say 20 50-kilowatt rooftop  
12 projects can be bundled as a single 10-megawatt project or  
13 80 500-kilowatt rooftop projects can be bundled as a  
14 single 40-megawatt project to achieve the same economies  
15 of scale necessary to achieve this low capital cost price  
16 point, which he quotes from the ground-mounted system in  
17 New Mexico.

18           And So I just think that's not really the case,  
19 that these rooftop projects are much more expensive than  
20 ground-mounted projects. Rooftop projects in Los Angeles  
21 are much more expensive than a ground-mounted project in  
22 New Mexico.

23           And now, certainly, there's a big range of  
24 different types of rooftop projects. It might be that 500  
25 kilowatts is towards the larger end. And you tend to see

1 a lot of projects in the kind of the 200- and 100-kilowatt  
2 range. But there certainly are projects out there at 500  
3 kilowatts. You don't see a lot at a megawatt or 2  
4 megawatts, or above that.

5 COMMISSIONER DOUGLAS: Okay, thanks. Those are  
6 my questions.

7 Mr. Powers, do you have any answers you'd like  
8 to provide to those questions?

9 MR. POWERS: Yeah, well, just a clarification is  
10 that, one, I appreciate Mr. Olson identifying that E3,  
11 itself, had identified ground-mounted PV at \$2,500 to  
12 \$3,000 a watt, given the intensity of the cost.

13 In Mr. Olson's testimony, he's basically  
14 identifying cutting edge, ground-mounted PV in the same  
15 range that I am, that it is in that \$2,500 range. So  
16 we're not in disagreement on the fact that solar PV is in  
17 that range. And the issue of bundling rooftop projects to  
18 meet the economies of scale work is actually an idea  
19 that's been coming from the solar installer community,  
20 themselves because it makes sense.

21 Instead of doing a thousand one-off projects,  
22 why not get the economies of scale by bundling 20, 40, 60,  
23 80, 100 projects together. And So the fact that it  
24 doesn't, in this moment, a typical business model for  
25 commercial rooftop projects bundling it makes perfect



1 sense. And if developers were actually looking and had  
2 the opportunity to reduce those costs they could take  
3 advantage of that.

4           And just one final point is, you know, in my  
5 testimony I talked about the Public Utilities Commission's  
6 treatment of SCE's 500-megawatt warehouse rooftop project  
7 back in 2009. And for a number of reasons they didn't go  
8 all the way in completing that 500-megawatt rooftop  
9 project, one of which had to do with technology. But the  
10 SCE said, look, we've got enough warehouse rooftops lined  
11 up that we could do several times the 500-megawatt project  
12 that we proposed and they're working with a handful of  
13 large commercial building numbers. There are not a  
14 thousand or 10,000 owners of 100,000 square foot  
15 warehouse. And SCE, itself, had demonstrated the  
16 facility with which such a program could be carried out.

17           That's all I have.

18           COMMISSIONER DOUGLAS: Thank you.

19           HEARING OFFICER CELLI: Okay, then, let's go  
20 first with staff, any questions of any of the witnesses?

21           MS. MARTIN: I have no questions.

22           HEARING OFFICER CELLI: I'm going to come around  
23 this way. Basin and Range Watch, any questions of any of  
24 these witnesses?

25           MS. CUNNINGHAM: I do have a question, a quick

1 question for Mr. Powers since we're talking about all  
2 these ancillary costs for installing rooftops and  
3 retrofitting roofs. For a ground-mount remote,  
4 large-scale PV project, what's some of the costs for  
5 building new transmission?

6 MR. POWERS: That's a good question because one  
7 of the carrots in these large, remote solar projects is  
8 typically the utility also having to prepare a major  
9 transmission upgrade project, which, to me, really hides  
10 the total cost of the project.

11 The Ivanpah Project started as Ivanpah, but  
12 along with that was a major Ivanpah upgrade project. I  
13 think it was Ivanpah El Dorado that SCE got approved, and  
14 which I think was close to a half a billion dollars.

15 In the case of Imperial County, they had a \$2  
16 billion transmission line approved in the San Diego area  
17 precisely to pull in PV panels, the same panels that could  
18 be in rooftops, from Imperial County. They include what  
19 is very typically a major transmission cost, but it's  
20 somewhat hidden since they're handled in different  
21 proceedings.

22 It really drives up the true cost of the remote,  
23 large-scale projects.

24 MS. CUNNINGHAM: Okay, thanks. I just had  
25 another question for the Petitioner witnesses on, say, you

1 have an Exhibit 1150 that a PPA would take quite a while  
2 to renegotiate for, say, a PV project, 24 months.

3           Would that be similar to how you say a thermal  
4 power tower would be an alternative? Would you have to  
5 renegotiate a PPA in a similarly long period of time or  
6 would that be easier, if that's an alternative?

7           MR. TURLINSKI: I believe the answer's yes. Any  
8 negotiation with the utility for a PPA and then,  
9 subsequently, to have it PUC approved, whether it's for  
10 thermal energy with storage, whether it's for fossil  
11 energy, or whether it's for other alternatives, like PV it  
12 would take a long time and have to go through a very  
13 specified procurement process.

14           MS. CUNNINGHAM: Okay, thanks, that's it.

15           HEARING OFFICER CELLI: Thank you,  
16 Ms. Cunningham.

17           Ms. Belenky?

18           MS. BELENKY: Yes, thank you, I have a few  
19 questions. My first question is for, I think it's both  
20 staff and the Applicant.

21           There was a question about PPA milestones that  
22 was asked by the Committee. And I understood there was  
23 going to be more information about that and I haven't seen  
24 it. So I would just like to ask if there's any more that  
25 can be provided on that topic?

1 HEARING OFFICER CELLI: Mr. Stucky, go ahead.

2 MR. STUCKY: Yes, this is Matt Stucky with the  
3 Petitioner. As we said at the pre-hearing conference, we  
4 are under a confidentiality agreement with PG&E, and we  
5 have initiated discussions with them to determine whether  
6 we can provide or satisfy that request of the Committee.  
7 Discussions are still underway.

8 What we've heard is that it would need to remain  
9 confidential and so I think we're still working on if  
10 there's a way to share that with the Committee. We'll  
11 continue to pursue that.

12 I don't have a further update than that, at this  
13 time.

14 MS. BELENKY: Thank you. And then another, I  
15 think, somewhat related, you have sponsored testimony that  
16 also discusses the cost. Is the Petitioner going to  
17 provide us the cost of your PPA in this hearing?

18 MR. GALATI: I would like -- objection, if she  
19 could specify which testimony she's referring to, we can  
20 determine whether we provided on cost.

21 MS. BELENKY: Mr. Olson discusses the cost and  
22 he specifically says that -- well, I don't have his  
23 testimony in front of me right here. But he discusses  
24 the cost of the various types of projects. And if there  
25 is going to be a discussion, a further discussion of cost,

1 we would like to know what the cost of this project is.

2 MR. GALATI: I'll withdraw the objection and let  
3 them answer if they're going to provide the costs of this  
4 project.

5 HEARING OFFICER CELLI: Go ahead.

6 MR. STUCKY: The cost of the electricity to be  
7 sold is confidential.

8 MR. GALATI: Just to clarify were you talking  
9 about the cost of building the project?

10 MS. BELENKY: I was actually talking about the  
11 cost of the electricity.

12 MR. GALATI: Okay, right.

13 MS. BELENKY: So he answered my question, thank  
14 you.

15 MR. GALATI: And that is a PG&E requirement, I  
16 mean, and CPUC.

17 MS. BELENKY: This is for Mr. Turlinski. You  
18 testified --

19 MR. OLSON: I'm sorry, this is Arne Olson. Can  
20 I just make a quick statement here? It relates to the  
21 last, Ms. Belenky's last question.

22 HEARING OFFICER CELLI: Sure.

23 MR. OLSON: And I just wanted to clarify that in  
24 my testimony I'm not bringing any independent information  
25 about the cost of a solar power tower relative to

1 rooftops.

2           What I did in Section 4 of my testimony was  
3 rebut some specific assertions that Mr. Powers had made  
4 regarding that cost comparison. And showed that, really,  
5 numbers combined with, I guess, (inaudible) piece of  
6 information then, which is the most recent CSI cost  
7 numbers that were reported in 2014 in rooftop systems.

8           I mean, and that number, using Mr. Powers'  
9 numbers on the cost of storage to show that his  
10 comparisons are misleading and not appropriate. But it's  
11 not intended to be any independent new testimony about the  
12 relative cost of different types of renewable resources.

13           MS. BELENKY: Okay, so my next question, for  
14 Mr. Turlinski, you testified that as someone working with  
15 utilities, you said they do not lightly issue PPAs. So is  
16 it your testimony -- I guess I'm trying to understand do  
17 you have an estimate or a prediction on the likelihood  
18 that a PPA can be obtained for your tower two?

19           MR. TURLINSKI: No, I don't have an estimate for  
20 that.

21           MS. BELENKY: And do you have any time frame in  
22 which you believe that a PPA could be obtained for your  
23 new tower two, that has not yet been designed, as far as I  
24 understand it?

25           MR. TURLINSKI: No, I don't have any estimate

1 for that.

2 MS. BELENKY: And do you have any estimate for  
3 what the cost of energy in that PPA would be in order to  
4 determine whether it would be economically feasible for  
5 you?

6 MR. TURLINSKI: No, I don't have any granular  
7 estimates. We have general thoughts as to what might be  
8 viable and what might now be viable. Our question, our  
9 concern, our thought for the future is what will policy  
10 drive power prices to be to make something like that  
11 economically viable.

12 So I guess my answer should be, no, I don't have  
13 any estimate.

14 MS. BELENKY: Thank you. Just along that same  
15 line, would you say that now tower two is economically  
16 feasible?

17 MR. TURLINSKI: Tower two being the southeast,  
18 we're talking about the southeast unit. Tower two is an  
19 economically feasible project except that both of the  
20 units right now, it depends on where you're talking about  
21 economic feasibility, both units don't have a permit.  
22 Both units don't have a license. At this moment in time  
23 they are not financeable and that's how I would define  
24 economic feasibility.

25 Were they financed -- or I'm sorry, were they

1 fully licensed at this moment, as proposed, yes, they are  
2 both economically feasible.

3 MS. BELENKY: And what if they were fully  
4 licensed in December of this year?

5 MR. TURLINSKI: Yes, they would both be  
6 economically feasible.

7 MS. BELENKY: I'm now actually confused as to  
8 the testimony that was submitted by the Applicant, saying  
9 that tower two was no longer feasible because you couldn't  
10 meet your PPA.

11 MR. TURLINSKI: That's correct. That's a timing  
12 and a duration question. So feasible under the PPA, if  
13 you took it right now and you licensed the project, and it  
14 had a PPA, it would be economically feasible. And if you  
15 licensed it right now and it does not have a PPA, I can't  
16 speak to it.

17 MS. BELENKY: And just to clarify, tower two  
18 with storage, which is what you're now proposing as the  
19 new project description, has the --

20 MR. GALATI: Objection, mischaracterizes the  
21 testimony. We're proposing a future amendment for  
22 storage. The project description is two towers with a  
23 phasing plan and a condition.

24 HEARING OFFICER CELLI: I'm not sure, but maybe  
25 you should ask your question again because I'm not sure



1 that she was saying that.

2 MS. BELENKY: Tower two, as proposed, with the  
3 condition that storage must be added, is it your testimony  
4 that that is currently, today, economically feasible?

5 MR. TURLINSKI: No, it is not my testimony that  
6 that is economically feasible because that is -- it's been  
7 our testimony and I think something we've been trying to  
8 emphasize to the Commission that the currently proposed  
9 project, two units, non-storage, 500 megawatts, is what is  
10 proposed, and thermal energy storage for CSP is  
11 fundamentally an advantage for CSP because it enables, in  
12 line with some of the testimony we've heard earlier, it  
13 enables thermal energy storage to be plugged in, in a more  
14 accommodating manner.

15 And it is our expectation that the policy  
16 direction of California and the market direction of the  
17 power system is going to drive a need for energy storage,  
18 and that will drive the economics. But at this moment,  
19 we're not making testimony that thermal energy storage is  
20 economically feasible.

21 MS. BELENKY: Thank you. I just would like to  
22 look at your exhibit, I forgot what it is, 1150, is that  
23 right?

24 HEARING OFFICER CELLI: Which one are you  
25 looking at?

1 MS. BELENKY: The one you have up on the screen,  
2 1150.

3 HEARING OFFICER CELLI: Yeah, that's Exhibit  
4 1150.

5 MS. BELENKY: Yes, in the last bullet point it  
6 says that "the solar trough alternative would need to be  
7 redesigned from the original trough because it's  
8 proprietary and unavailable".

9 First, I guess I would say wasn't that true when  
10 you got this permit?

11 MR. TURLINSKI: Yes.

12 MS. BELENKY: So it was always your position  
13 that the permit, as existing at the time you began this  
14 request for an amendment, the permit itself, could not be  
15 built by you?

16 MR. TURLINSKI: Yes, it's always been our  
17 position that the solar trough, as originally licensed,  
18 was not a feasible alternative for us, as a Petitioner,  
19 hence the need to make the amendment as we have.

20 MS. BELENKY: And earlier we heard testimony  
21 from the company, I think Mr. Kelly, regarding both  
22 Crescent Dunes, which is a power tower with storage that I  
23 believe is still in the end of its construction phase, and  
24 another power project, also I believe solar reserve, that  
25 is in Arizona, called Solana, or something like that,

1 which also is a trough with storage.

2           Do you know, if you know, whether those are also  
3 proprietary technologies and do you know -- well, that's  
4 my second question, sorry -- if they're proprietary  
5 technologies?

6           MR. TURLINSKI: Yes, I believe that they are.

7           MS. BELENKY: And at this time do you have  
8 access to those proprietary technologies?

9           MR. TURLINSKI: No, I don't believe so. I'm  
10 trying to understand, maybe, where you're going with the  
11 question. But if I were to try to answer specifically,  
12 no, Palen Solar Holdings does not have access to that  
13 technology.

14           I think it is worth noting, and I think this is  
15 maybe where you're going with the question, Abengoa, a  
16 partner in the Palen Solar Holdings Partnership is the  
17 owner of Solana and, therefore, there is access to that  
18 technology. But that is not -- it is fundamentally a  
19 different structure than is Palen Solar Holdings.

20           So I think we could answer more in detail, if  
21 need be, on that, but it gets into legal aspects of the  
22 joint venture agreement between two partners that own  
23 Palen Solar Holdings.

24           MS. BELENKY: I'm just trying to understand, so  
25 Abengoa, which is a part owner of this, and I thought was

1 part of this process does have access to solar trough  
2 technology and, in fact, solar trough technology with  
3 storage. Is that correct?

4 MR. STUCKY: That is correct. The  
5 differentiation here is that the license for this project  
6 that we're amending was for Solar Millennium Trough  
7 Technology.

8 MS. BELENKY: So would you say that a solar  
9 trough technology -- a solar trough is feasible if it was  
10 the technology that you have access to?

11 MR. STUCKY: No, I don't believe so.

12 MS. BELENKY: And why would you state that it is  
13 infeasible, on what basis?

14 MR. STUCKY: For the reasons described in  
15 Exhibit 1150, the PPA, the LGIA, the time to re-permit  
16 things.

17 MS. BELENKY: But not based on the lack of  
18 availability of proprietary technology?

19 MR. TURLINSKI: Just to be clear, the point was  
20 made that in this particular -- I think you're talking  
21 about that bullet point, the proprietary technology is not  
22 available. It was a proprietary technology owned by a  
23 company called Solar Millennium that has subsequently gone  
24 bankrupt, that the rights to that technology and the  
25 availability to procure it do not exist.

1 MS. BELENKY: But other solar trough technology  
2 is available and in fact this company, Abengoa, has the  
3 rights to it. Is that correct?

4 MR. TURLINSKI: Other solar trough technology is  
5 available.

6 MS. BELENKY: With storage?

7 MR. TURLINSKI: Yes.

8 MS. BELENKY: Thank you. I would like to just  
9 go back to this question, is it your testimony that any  
10 alternative for which you, the Applicant, does not have a  
11 PPA is infeasible, per se?

12 MR. TURLINSKI: No. I don't -- could you  
13 restate the question and let me just re-think about how I  
14 want to say that?

15 MS. BELENKY: Well, I'm trying to understand  
16 your testimony that alternatives are infeasible because  
17 they would require either an amendment or a new PPA. And  
18 as far as I can tell from your testimony, every other  
19 alternative is infeasible under that rubric or metric.

20 MR. TURLINSKI: Yes, that's reasonable.

21 MS. BELENKY: So it is your testimony, I just  
22 want to be clear, that any other alternative except the  
23 one that is your proposal is infeasible?

24 MR. TURLINSKI: Yes, any other alternative that  
25 has been proposed is infeasible relative to the project

1 that is being proposed.

2 MS. BELENKY: Because there is no PPA; is that  
3 correct?

4 MR. TURLINSKI: Amongst the other reasons  
5 highlighted.

6 MS. BELENKY: And I'm asking specifically about  
7 the PPA. Is there an alternative -- let me ask it another  
8 way, is there an alternative that would be feasible  
9 besides your power tower technology for which you have a  
10 PPA?

11 MR. TURLINSKI: No.

12 MS. BELENKY: Thank you. I would think that a  
13 lot of our questions overlap with the Bio section and so  
14 we would like to reserve the ability to discuss some of  
15 the alternative issues, for example, what Ms. Anderson  
16 raised about whether the percentage of impact is just  
17 based on the footprint or, et cetera, with the --

18 HEARING OFFICER CELLI: So your question is  
19 going to the availability of the witnesses while we're  
20 taking testimony on Biology, as it relates to  
21 alternatives.

22 MS. BELENKY: Well, I think we will want to ask  
23 some questions about how the different alternatives affect  
24 the biology, which I could ask now, but we are moving into  
25 Biology and the siloing of the sections get a little

1 confusing.

2 HEARING OFFICER CELLI: Well, let's put it this  
3 way. I would keep your witnesses under oath. They're not  
4 going anywhere, are they, Mr. Galati?

5 MR. GALATI: No.

6 HEARING OFFICER CELLI: All right, so we will --  
7 I think that's a good idea. Let's keep the bio with the  
8 Bio and the alternatives with the alternatives, if we can.

9 So is that all we have from Center for  
10 Biological Diversity at this moment?

11 MS. BELENKY: I think so. I think so at this  
12 time.

13 HEARING OFFICER CELLI: Thank you.

14 CRIT, go ahead, Ms. Clark.

15 MS. CLARK: Thank you, I just have a few  
16 questions.

17 My question is for Mr. Turlinski. And I  
18 apologize, I'm confused because you said one of the  
19 reasons, the benefit to this current project is that it is  
20 available now. And then in response to Ms. Belenky's  
21 questions you said that -- and correct me if I'm wrong --  
22 that if tower two was permitted by December, it would be  
23 feasible.

24 But in exhibit, I think it's 1166, you said that  
25 the second tower is improbable to meet the commercial

1 operation date for the PPA and it's, therefore,  
2 infeasible.

3           So can you clarify where we are on the  
4 feasibility of tower two? And I'm talking not about the  
5 feasibility of it with storage, I'm talking about the  
6 currently proposed, if we didn't go with the project  
7 condition one condition.

8           MR. TURLINSKI: I'm sorry to be so confusing,  
9 that wasn't my intent. I'm just trying to stick with the  
10 way I categorize things as it pertains to titles, and  
11 project description the way I understand it.

12           We are proposing a two-unit project, a  
13 500-megawatt project. We have all of the pieces partially  
14 described in some of our testimony, in this slide,  
15 including a PPA, including transmission capacity for 500  
16 megawatts.

17           And I'm trying to think of any other -- well,  
18 including project design, et cetera, that enables that  
19 project, 500 megawatts, two units to be what we propose to  
20 be economically viable.

21           Now, we have added, for purposes of phasing,  
22 which enable us to speed up, essentially -- I don't know  
23 if speed up is the right word, but to bring one unit to  
24 commercial operation date within the time frame that we  
25 think is viable to achieve commercial operation in



1 compliance with our PPA. That is why we've proposed one  
2 of these is we've proposed a phasing plan.

3           Now, we can't speak to what the future might  
4 take, but we have heard guidance from the Committee that  
5 storage is an important mechanism to be thinking about.  
6 And we have made testimony that solar thermal, CSP, power  
7 tower in particular, is uniquely accommodated to --  
8 uniquely set up to accommodate storage without substantial  
9 change or any change, really, to the baseline project  
10 equipment pieces.

11           So getting back to your question, hoping that  
12 I'm clarifying, we believe that a 500-megawatt project,  
13 two-unit project, the way we've designed it, is  
14 economically viable and that's why we've proposed it.  
15 Time has gotten in the way, so we believe that a phasing  
16 approach, as proposed, is economically viable to enable us  
17 to build a single unit.

18           That puts a question on the second unit and we  
19 can speak to, but we are willing to put it in there based  
20 on guidance we've gotten from the Committee, and internal  
21 deliberation, and a goal of the company's to be able to  
22 accommodate thermal storage in the future a condition. A  
23 condition that obligates us to either amend a future  
24 permit, you know, either in the form of you take out the  
25 condition, and that's ultimately the question of the

1 Committee, or you amend the potential license to have some  
2 design of energy storage in compliance with whatever  
3 commercial agreement might come along.

4 And that's where there is, obviously, some level  
5 of uncertainty.

6 MS. CLARK: So that helps clarify, but I do want  
7 to ask a follow-up question, which is; if we assume, just  
8 for the sake of this question, that you don't get the  
9 phasing plan and you don't get the thermal condition, and  
10 we're just moving forward with the project as we all  
11 understood it as of last week, is that feasible?

12 Assuming that the Committee grants your petition  
13 in the time frame that you've asked for, and that BLM  
14 makes the necessary record or, you know, decision in the  
15 time frame, is it feasible to build tower two with your  
16 current PPA?

17 MR. TURLINSKI: I'm sorry, I was listening, but  
18 also --

19 MS. CLARK: I understand.

20 MR. TURLINSKI: -- because this is an issue that  
21 we have deliberated on internally, whether it was viable  
22 to go forward with one, let me just point out that there's  
23 economies of scale that accrue to a two-unit project that  
24 make it more viable with two PPAs, than with one. There  
25 is less risk because of those economies of scale and that

1 enables something to potentially be project financed.

2 I do want to point out there is a fully licensed  
3 solar thermal power tower with storage project that was  
4 recently -- I don't know what the right word is,  
5 abandoned. The Rice project, just north of this project,  
6 had all of the pieces that we are talking about to make  
7 something feasible, a PPA, interconnection, and a fully  
8 licensed project. They couldn't finance that.

9 I can't speak for what the reasons were that  
10 Solar Reserve abandoned it or not, but it's an indication  
11 from a resource diversity mix, just from an industry mix  
12 that it's never a slam dunk, ever, that we can just take a  
13 license and finance a project.

14 These are newer technologies. This is a second  
15 generation from Ivanpah. And so as such, when we have  
16 proposed what we have proposed, what we have done  
17 essentially is add some risk to the Petitioner -- that's  
18 not me -- some risk to the Petitioner to be able to get it  
19 done.

20 We have weighed the costs and the benefits of  
21 that in terms of timing, in terms of economic cost, and we  
22 believe that we can get one unit financed in lieu of two  
23 units and, therefore, constructed. And, therefore, that  
24 might enable the ability to construct a second unit at  
25 some point in the future that is in line with the

1 objectives of the California policy.

2 MS. CLARK: So would it be accurate to  
3 summarize, then, that you don't believe that it -- rather  
4 than use the word feasibility, it is a prudent decision to  
5 move forward with just one because of financial  
6 uncertainty of moving forward with two towers. But you're  
7 not going so far as to say that it would be completely  
8 infeasible to build two under the project as proposed last  
9 week? Is that what I'm hearing you say, I'm sorry?

10 MR. TURLINSKI: Yeah, I believe that's fair. I  
11 was just trying to digest it. I believe that that's a  
12 reasonable thing to say, with one caveat.

13 The project does propose and I want to, I think  
14 I want to make this clear to the extent that it's  
15 possible, because it keeps coming around to what is being  
16 proposed. And again, I apologize if I'm being confusing,  
17 but want to go back to we're proposing a 500-megawatt  
18 project. We have added a phasing plan, and that phasing  
19 plan includes a project description, a condition that  
20 obligates the Petitioner to identifying, and then  
21 engineering, and then bringing to the Committee a proposal  
22 to add storage to the second unit.

23 But we are looking for and we are better off, as  
24 a Petitioner, we are asking the Committee to approve the  
25 project as proposed, two units, 500 megawatts because for

1 a variety of reasons. It's within a solar energy zone.  
2 It's within the DRECP. So having some approval enables --  
3 there's an origination process, and approved project that  
4 is a second unit, if you will.

5           We keep talking about origination of getting  
6 another, a second PPA to enable thermal energy storage.  
7 One of the big deals that utilities look for and the PUC  
8 looks for is project viability. And project viability is  
9 significantly enhanced if the project that we are  
10 proposing is approved, as opposed to some other  
11 alternative.

12           There's also continuity. And continuity gets to  
13 timing, which gets to what are -- as a Petitioner, our  
14 ultimate concerns are, amongst many other things, risk.  
15 We don't want to be in a situation where something gets  
16 licensed and we can't execute on that license. So we're  
17 being very careful around that. But the continuity  
18 issue is there's another permitting process going on  
19 around this and that's the NEPA process. And the NEPA  
20 process has very specific procedures, as you all know,  
21 that you go through.

22           And this is on BLM land. As such, it's being  
23 proposed as a two-unit process. That is just as  
24 important to the permitting of this project, the licensing  
25 of this project as is the CEC license.

1           So as we walk it through, we need to -- we are  
2 looking for them to approve a two-unit project that is 500  
3 megawatts that enables all of the things that we are  
4 proposing. I hope that's more clear.

5           MS. CLARK: Yeah, thank you, that does clarify.  
6 I want to ask a question about something you said, not in  
7 this last statement, but in your just prior one.

8           You said you could either come to the Commission  
9 in the future to get storage, thermal storage approved or  
10 from relief from the condition. Is that correct that  
11 that's what I heard you say?

12           MR. TURLINSKI: I don't think I used the word  
13 "relief". I wouldn't have thought of using that word.

14           MS. CLARK: Well, can you clarify what you did  
15 say, then? You said there were two options and so the  
16 first was satisfying the condition and then the second one  
17 was?

18           MR. TURLINSKI: Yeah, well, the way I look at  
19 it, the way I understand the CEC process is you have a  
20 condition and you either satisfy that condition, and in  
21 this case the project description's condition requires us  
22 to bring an amendment. Or you don't satisfy the condition  
23 and you ask the Committee for the opportunity to amend the  
24 project so that that is still viable.

25           But under the proposal that we are making, the

1 only way we could comply with the project is to have the  
2 Commission provide some amendment, either in the form of  
3 one or the other.

4 I didn't want to introduce the other as some  
5 alternative that we are thinking about, but that's my  
6 understanding of the decision tree.

7 MS. CLARK: Okay, thank you. Sorry, I know  
8 everyone wants lunch and I just have a few more questions.

9 Can you explain what your estimate, timing  
10 estimate is for when you would start working on the second  
11 tower, assuming that this gets approved with the phasing  
12 plan and the condition?

13 MR. TURLINSKI: No, we can't.

14 MS. CLARK: Okay, so we can't assume that it  
15 would happen right away, it could be some time in the  
16 future?

17 MR. TURLINSKI: That's correct.

18 MS. CLARK: Okay. And then I have two questions  
19 for Mr. Olson, who I hope is still on the phone?

20 MR. OLSON: Yes, I'm on.

21 MS. CLARK: Okay, so in your testimony you  
22 stated that the -- and I believe I heard this correctly,  
23 that the pressing need for storage is storage in the six-  
24 to ten-hour capacity. Is that correct?

25 MR. OLSON: Well, pressing need is not the right

1 term.

2 MS. CLARK: Well, long-term storage --

3 MR. OLSON: No, I guess, I think I said this  
4 earlier that there's a lot of uncertainty right now about  
5 exactly what kind of storage makes sense to build, in what  
6 location, at what timing, at what level of renewable  
7 energy penetration.

8 You know, you also have to understand that at  
9 some level of thermal solar penetration, because of the  
10 variable nature of the resource that some kind of storage  
11 makes sense.

12 And there's been lots of interest, and lots of  
13 investigation, lots of development activities around  
14 different kinds of storage. You know, pump storage, rail  
15 car storage, all different kinds of battery technologies.  
16 There's lots of really interesting technologies out there.

17 But not a strong economic case being made for,  
18 you know, unless you got into specific circumstances, this  
19 type of storage at this location is cost effective. It's  
20 been very, very difficult to make a case that any  
21 particular storage installation is cost effective.

22 Now, there are many interesting things that's  
23 coming out of studies that my firm has done, and others as  
24 well, of higher models of wind and solar penetration is  
25 that it appears -- it's beginning to appear that the



1 concern on renewable integration is not what happens  
2 inside the operating hour. You know, this viability that  
3 you might get when a cloud passes over the solar array or  
4 when, you know, a micro-burst happens and you get a big  
5 burst of wind, and then it goes away.

6           You know, it looks like the largest issue is on  
7 the generation. As you get to high levels of the total --  
8 the logical portions of the total energy on the system  
9 being provided by wind sources that are dependent on  
10 either the wind or the sun, you get concentrations of  
11 energy being produced during some hours of the year and  
12 none being produced during other hours of the year.

13           And it happens that for summer there's a very  
14 strong buy-in of power to the resource. It comes online,  
15 you know, every morning as the sun rises, you know, 6:00  
16 or 8:00 a.m., depending on the time of the year, and it  
17 goes offline between 6:00 and 8:00 p.m. depending on the  
18 time of the year.

19           But you have, you know, 10, to 12, to 14 hours  
20 of production. And if you have a lot of solar, which some  
21 indications that we looked at did have a lot solar, you're  
22 looking 40 to 50 percent, then you have a lot of hours  
23 where you might have over-generation conditions.

24           So you know, again it looks like, you know,  
25 again, this is very early, I would say, but it looks like

1 storage of wind generation, six to ten hours is what's  
2 warranted to soak up all that over-generation.

3           And by the way, once you procure storage of that  
4 longer generation, that helps with the (inaudible)  
5 relations as well. You know, pump type of storage,  
6 compressed air, molten salt, other kinds of long duration  
7 storage, those can be used to address needs on mixed  
8 amount of time scales. You know, quite as effective as  
9 some battery technologies can on the very short duration,  
10 you know, seconds to moments types of fluctuations.

11           But it really looks like it's not the seconds or  
12 minutes that's the big constraint on higher levels of  
13 renewables. It's a much longer duration, the three-hour  
14 ramps, the eight-hour over-generation events that are the  
15 most consequential in terms of overall power system  
16 economics.

17           MS. CLARK: Thank you. And as a follow-up  
18 question to that then, is it your opinion that the type of  
19 storage that is being proposed here, which we heard  
20 testimony is sort of the 15-minute to perhaps 4-hour  
21 length, is less useful than the 6- to 10-hour variety?

22           MR. OLSON: Well, what I think, and I'm not  
23 directly familiar with the exact configuration of the  
24 storage that's being proposed.

25           But what I heard the witness say earlier is that

1 the storage could be used to store not just 15 minutes of  
2 energy, but it could be used to store several hours' worth  
3 of energy production. That would effectively allow the  
4 facility to produce during the middle hours, before the  
5 sun gets up to the highest level in the sky, and before  
6 solar penetration maximizes.

7           So in the morning there's typically a ramp, and  
8 a long ramp that needs to be met. And so this type of  
9 project could be online in the morning to help meet that  
10 load. It could then switch into charge mode during the  
11 middle of the day, you know, and whether it's three hours,  
12 or four hours, or six hours, I don't know that level of  
13 detail.

14           Certainly, the longer it is the better. But my  
15 understanding is that it can charge during several hours  
16 during the middle of the day, aim that energy, begin to  
17 produce again at 2:00 in the afternoon or 3:00 in the  
18 afternoon.

19           And then use that stored energy to extend the  
20 operating hours of the project after dark, so now from,  
21 you know, 6:00 p.m. or 8:00 p.m. when the sun goes down to  
22 10:00 p.m., or possibly midnight, when in the southwest  
23 loads continue to be relatively high just due to the heat  
24 buildup.

25           So the way the project was described, that type

1 of storage would certainly be valuable at higher levels of  
2 penetration. Longer is better. And for a solar-dominated  
3 system, you know, six, to eight, ten hours, as I've said,  
4 is probably ideal. But then, you know, storage is very  
5 expensive and what type of storage specifically is the  
6 most cost effective and the best combination of low cost  
7 and high benefit I think is still yet to be determined.

8           And this idea of pairing thermal storage with a  
9 solar thermal resources is very appealing and attractive  
10 because it does seem to offer economies of scale and, in  
11 some installations, a possibility of achieving a higher  
12 capacity factor on the resource.

13           MS. CLARK: Okay, that's it, thank you.

14           HEARING OFFICER CELLI: Thank you, Ms. Clark.

15           Any questions, Mr. Figueroa?

16           MR. FIGUEROA: No questions.

17           HEARING OFFICER CELLI: Ms. Gulesserian?

18           MS. GULESSERIAN: No questions.

19           HEARING OFFICER CELLI: Okay, what I'd like to  
20 do right now is first of all acknowledge and apologize to  
21 the members of the public. We said we'd have a noon  
22 public comment.

23           If you look at that clock in the back, we're way  
24 late. But my watch says that it's 20 after. Here's the  
25 way we would like to proceed. In a minute I think what

1 we'll do is we're finished with testimony and we'll start  
2 taking people's exhibits, right.

3 We'll take some -- we will take in the last, and  
4 see if we can't finish off alternatives now, break for  
5 lunch. So we'll break for a half an hour for lunch. And  
6 then so let's say if we can finish by 12:30 and we break  
7 for lunch until 1:00, at 1:00 we'll take public comment.  
8 And, hopefully, we can get through that public comment  
9 within, let's say, a half an hour so we can get started on  
10 the -- we have Overrides and a lot of biology to do today.

11 Right, we are going to have a 5:00 comment  
12 period. If you're going to stay all day, then we can hear  
13 it at 5:00.

14 For those of you who have to leave at noon, let  
15 us know or -- well, sorry, it's past noon. But who have  
16 to leave early, let us know and we'll try to call you  
17 first, okay, so let's not break.

18 Anything further, Mr. Galati?

19 MR. GALATI: No, just to move my exhibits.

20 HEARING OFFICER CELLI: Okay, then let's start  
21 with the Petitioner. What's your motion with regard to  
22 alternatives?

23 MR. GALATI: I'd like to move in Exhibit 1124,  
24 1150, 1151, 1179.

25 HEARING OFFICER CELLI: Any objection from CURE?

1 MS. GULESSERIAN: No objection.

2 HEARING OFFICER CELLI: Mr. Figueroa?

3 MR. FIGUEROA: No objection.

4 HEARING OFFICER CELLI: CRIT?

5 MS. CLARK: No objection.

6 HEARING OFFICER CELLI: CBD?

7 MS. BELENKY: No objection.

8 HEARING OFFICER CELLI: Basin and Range Watch?

9 MR. EMMERICH: No.

10 HEARING OFFICER CELLI: Staff?

11 MS. MARTIN: No objection.

12 HEARING OFFICER CELLI: Okay, there being no  
13 objection, Exhibits 1124, 1150, 1151, and 1179 are  
14 received into evidence.

15 Staff, your exhibit?

16 MS. MARTIN: Only because they were sworn in,  
17 I'll move in the resumes of David Vidaver and Mark Hester,  
18 2030 for David Vidaver, and 2031 for Mark Hester.

19 HEARING OFFICER CELLI: Any objection to the  
20 admission of Exhibit 2030 and 2031?

21 Petitioner?

22 MR. GALATI: No.

23 HEARING OFFICER CELLI: CURE?

24 MS. GULESSERIAN: No.

25 HEARING OFFICER CELLI: CARE?

1 MR. FIGUEROA: No.

2 HEARING OFFICER CELLI: CRIT?

3 MS. CLARK: No.

4 HEARING OFFICER CELLI: CBD?

5 MS. BELENKY: No.

6 HEARING OFFICER CELLI: Basin and Range Watch?

7 MR. EMMERICH: No objection.

8 HEARING OFFICER CELLI: Those Exhibits 2030 and  
9 2031 are received into evidence.

10 CURE, I don't think you have any.

11 Mr. Figueroa, you don't have any.

12 MR. FIGUEROA: No.

13 HEARING OFFICER CELLI: The Colorado River  
14 Indian Tribes has no exhibits on alternatives.

15 MS. CLARK: No.

16 HEARING OFFICER CELLI: CBD?

17 MS. BELENKY: There's one exhibit that for some  
18 reason on your list is listed as only identified. It's  
19 3091. And this is actually from the previous hearings.  
20 It was a map produced by the applicant showing the private  
21 parcels that they were either in negotiations for, et  
22 cetera, and that was related to our Alternative. And I  
23 don't know why it still says only identified. I believe  
24 it was admitted.

25 HEARING OFFICER CELLI: If you put in a new

1 number, on an old exhibit, then it would show as  
2 identified.

3 MS. BELENKY: This was done in last year. So I  
4 would like to just clarify on the record that that is an  
5 exhibit, 3091.

6 HEARING OFFICER CELLI: Okay, let me ask. Is  
7 there any objection to the admission of 3091, Basin and  
8 Range Watch?

9 MR. EMMERICH: No objection?

10 HEARING OFFICER CELLI: Staff?

11 MS. MARTIN: No objection.

12 HEARING OFFICER CELLI: Petitioner?

13 MR. GALATI: No objection.

14 HEARING OFFICER CELLI: CURE?

15 MS. GULESSERIAN: No.

16 MR. FIGUEROA: No objection.

17 HEARING OFFICER CELLI: Thank you, Mr. Figueroa.  
18 And CRIT?

19 MS. CLARK: No.

20 HEARING OFFICER CELLI: Okay, then 3091 will be  
21 admitted.

22 Anything further, any other exhibits from CBD?

23 MS. BELENKY: No.

24 HEARING OFFICER CELLI: Basin and Range Watch?

25 MR. EMMERICH: We don't have any.



1 HEARING OFFICER CELLI: Okay, then thank you,  
2 everybody, that will close the topic of alternatives.

3 It's now just about 12:30 by my watch. We will  
4 break until 1:00. So we will go off the record until  
5 1:00, at which time we will resume with public comment.  
6 And then after we finish public comment, we will launch  
7 right into the next topic, which is Overrides, followed by  
8 Biology. So we'll see everyone at 1:00 p.m.

9 (Off the record at 12:30 p.m. until 1:06 p.m.)

10 HEARING OFFICER CELLI: Okay. It's a little  
11 after 1:00 o'clock by my watch, so let's start getting  
12 settled in. Ladies and gentlemen, if you can hear out in  
13 the lobby area, it's time for public comment. This is the  
14 public comment that we were supposed to take or that we  
15 suggested we would take at noon. It's 1:00 o'clock. We  
16 appreciate everybody's flexibility. These hearings tend  
17 to be a little elastic as far as time goes. So is Frank  
18 Beals here?

19 Frank Beals, are you here?

20 All right. David Vasquez from Blythe. David, hi,  
21 come on down. Here's what I want people to do in terms of  
22 giving your comments: Come on over to the podium, speak  
23 directly into the mic as I am right now, sort of from this  
24 distance, please.

25 Okay. Go ahead, Mr. Vasquez.

1 MR. VASQUEZ: My name is David Vasquez. I'm a  
2 resident from Blythe --

3 HEARING OFFICER CELLI: Your mic doesn't seem to  
4 be on. Let's try it now.

5 MR. VASQUEZ: Hello.

6 HEARING OFFICER CELLI: Better. Thank you.

7 MR. VASQUEZ: Yes. My name is David Vasquez. I'm  
8 a resident from Blythe. I grew up in Blythe. I've been  
9 here 37 years. I went to college here. I was able to  
10 graduate high school a year early.

11 After high school, I fought professionally. I'm  
12 an ex-champion. I know what it takes to go the distance.

13 And then joining a union, the laborer's union, I  
14 was able to work out at the Genesis Project. So this is  
15 something I could show for my kids. I'm a single father;  
16 and I enjoy spending time with my kids every day, working  
17 close to home. I have worked out of town. It makes it a  
18 little harder on the family. I'm looking forward for this  
19 job to get going, so I'll be able to spend more time with  
20 my family. I'm a single father of three, three kids; and  
21 it's definitely about raising -- I'm raising soldiers,  
22 soldiers of God, because we're always in church. We're  
23 speaking with Father Andrew. He helps me out  
24 through life. Other than that, I just try to stay busy  
25 working. Thank you.

1 HEARING OFFICER CELLI: Thank you, Mr. Vasquez.

2 Mike Dea.

3 MR. DEA: Good afternoon, Commissioner. Thank you  
4 for the opportunity to speak today.

5 On behalf of LIUNA and Local 1184  
6 Riverside/Imperial County, we're here in support of the  
7 project. We think it will be good for the local  
8 communities, the churches, and the college apprenticeship  
9 programs.

10 In addition to that, we officially submitted, and  
11 I don't know if the commission has been aware, we  
12 submitted a request to withdraw on our intervention. And  
13 I don't know if that's been put on the record yet, so I  
14 did want to inform the board of that here today.

15 HEARING OFFICER CELLI: I was not aware that there  
16 was a request to withdraw. The thing about being an  
17 intervenor is you don't have to participate. It buys you  
18 certain rights, but it doesn't obligate you to do  
19 anything. So I think in this case, rather than bring a  
20 motion or anything, I think that you've just basically  
21 opted out of participating. So it's not a black mark or  
22 anything like that.

23 MR. DEA: Thank you. Thank you. Well, again, I  
24 would like reiterate, we're in full support of  
25 BrightSource and the project and their partner with

1 Abengoa.

2 I thank you for your time.

3 HEARING OFFICER CELLI: Thank you for being here,  
4 sir.

5 Is Larry McLaughlin here? Oh, I'm sorry. I will  
6 call him last. Andy Schwartz.

7 MR. SCHWARTZ: Thank you. My name is Andrew  
8 Schwartz. I've been an operating engineer for 30 years  
9 now. My family's been operating engineers since the  
10 1930s. We're in full support of this project. We think  
11 it will bring good jobs for the apprentices; they'll able  
12 to work with good, skilled craftsmen and learn a good  
13 trade out there. So we're in full support. Thank you.

14 HEARING OFFICER CELLI: Thank you for your  
15 comments, Mr. Schwartz. Is Arlene Kingery still here?  
16 Hi, Ms. Kingery, come on up. This isn't a leftover from  
17 yesterday, is it? This is today's comment that you want  
18 to make?

19 MS. KINGERY: I don't think you want to hear it  
20 again or --

21 HEARING OFFICER CELLI: Come on down. We love  
22 hearing from you.

23 MS. KINGERY: Or I can test you to see if you  
24 remember what I said. No, this is on the, let's see, what  
25 we did first was on the alternatives. And then I wanted

1 to kind of remind you, I was at the workshop that was in  
2 Sacramento where the applicant was explaining the  
3 alternative for storage. And it seems like now they don't  
4 have as much information as they provided in the workshop  
5 because, originally, they said they would have, I thought,  
6 2, \$2.5 million -- 2.5 million gallon tanks and they said  
7 that they didn't think they would do any modifications to  
8 the project. But when your staff engineers were  
9 questioning them and asked them if they would need more  
10 natural gas or they would need more mirrors or heliostats,  
11 they conferred with their engineer on the phone, and they  
12 said, yes, they would.

13           They didn't really have enough information at the  
14 workshop for you because they were doing it more as a  
15 "what if," and they said they would have to amend the  
16 project. So they really didn't provide the information  
17 that you had requested. And so now they're coming back  
18 again and they're still not providing any information, you  
19 know, upon the storage, and not even what they had done  
20 before. So I'm wondering if they've done their  
21 calculations and decided that they still don't know what  
22 they're doing. It's hard for me to understand that you're  
23 going to approve a project when one major consideration,  
24 you don't have the information on it.

25           And then on the alternatives, I had the question

1 about why they really didn't provide a lot of information  
2 or just a basic costing information for photovoltaic or  
3 also the solar trough, because it seems like, even if they  
4 didn't provide it, maybe your engineers would have done  
5 some calculations. I realize that the original was for  
6 solar trough, and they could have continued with that, but  
7 they chose not to. And now, you know, they've really  
8 narrowed their range of alternatives. They listed  
9 alternatives, but say they can't be considered because  
10 they're infeasible. And I think that more information  
11 should have been provided on this. Thank you.

12 HEARING OFFICER CELLI: Thank you for your  
13 comments. Is Frank Beals here?

14 MR. BEALS: Yes.

15 HEARING OFFICER CELLI: Go ahead, Mr. Beals.

16 MR. BEALS: Good afternoon. My name is Frank  
17 Beals. I'm a Vietnam vet and a union member of IBEW 440.  
18 Our local had what they call a Hardhat to Helmets -- or  
19 Helmets to Hardhats program, where they take veterans and  
20 they put them in the workplace, thus giving them a way to  
21 go from military to a viable work force. And this  
22 project, the Palen project, will give us a place to place  
23 these people, to give them a solid work platform.

24 Also, I -- if the Palen job goes off, our crews  
25 will money to the local economy. We'll bring housing.

1 We'll bring our families out, because most of us live far  
2 away. So all in all, the community will benefit from the  
3 Palen job, as well as putting money in our pockets. And  
4 so it's a win/win situation. Thank you.

5 HEARING OFFICER CELLI: Thank you, sir. Gabriel  
6 Villarreal or Villarreal.

7 MR. VILLARREAL: Close enough.

8 HEARING OFFICER CELLI: Sorry.

9 MR. VILLARREAL: How you doing? I'm obviously in  
10 support of the project. I've heard a lot of comments and  
11 read articles in the press that the majority of these jobs  
12 created by these projects are temporary jobs. As a line  
13 worker for 24 years, I've been amazed at the complete lack  
14 of understanding of the construction industry by those  
15 making the claims.

16 The average construction career lasts 30 to  
17 35 years. Again, I've been doing for 24 years. We build  
18 these jobs, and then we move on to the next job. That's  
19 the nature of the industry. And from project to project,  
20 we pick up a lot of the new kids from the community, help  
21 them out, especially from the military. And that's how I  
22 started 24 years ago at age 19 in South Central L.A.

23 And the question that always comes up, rarely  
24 these projects last more than a year. This project, like  
25 other projects, can last anywhere between two and

1 three years. Ivanpah has been going on for almost  
2 four years, and the Genesis three years. We had workers  
3 out there for three years.

4 The construction career, like most other careers,  
5 is for a lifetime. You know, we have members that work  
6 for 30, 40 years, 50 years. As long as they are willing  
7 and physically able to perform the work, they stayed  
8 because they love it. They love building stuff.

9 The suggestion that a single project over the  
10 course of 35 years in a construction career is simply a  
11 temporary job, and that's not the case. You know, just  
12 like the other employees that work on these projects, the  
13 engineers, the inspectors, the site managers, the safety  
14 personnel, they also travel from job to job. And this is  
15 the way construction works.

16 This is a much needed project in the area. Like  
17 was said earlier, it's going to boost the economy out here  
18 and help local residents start a career. And if they  
19 choose to follow the path, just like we all did, just  
20 continue working from project to project. There is a lot  
21 of work in the area, in the old mecca, you know, in this  
22 whole county, and that's the best part. That's all I  
23 have. Thanks.

24 HEARING OFFICER CELLI: Thank you, sir. Is Kathy  
25 Snow still here?



1 MS. SNOW: Good afternoon. My name is Kathy Snow.  
2 I'm Director of Labor Relations for --

3 HEARING OFFICER CELLI: Right. Thank you. Talk  
4 right into that microphone.

5 MS. SNOW: Okay. Good afternoon. My name is  
6 Kathy Snow. I'm Director of Labor Relations for Abengoa,  
7 specifically Aviencia (phonetic) EPC. I work closely with  
8 the team, be it the labor team, as well as management, at  
9 Mojave. And I want to speak specifically on the social  
10 responsibility that that company did when the project came  
11 to the Mojave area, the Hinkley area. And I'll do a  
12 snapshot of the work for community that was done, because  
13 it was a very large --

14 With the Hinkley donation, the Mojave -- it's  
15 called the Carousel for Kids. \$2,500 went to repair a  
16 playground. Some of the employees went and actually read  
17 stories to the children. They built toolboxes there at  
18 the playground with the children. There was a Haley  
19 house, where clothing was donated to women and children in  
20 the Barstow area. There's recycling that's done on Earth  
21 Day. And this brings in the local-to-global  
22 responsibility that came with the project. Pet donation  
23 week, which food was delivered to a pet shelter. A  
24 back-to-school drive. This is an ongoing social  
25 responsibility where employees will put backpacks together

1 and donate them to the schools.

2 A Hinkley activity, another \$3,000 donation for  
3 what's called the STEM project: Science, technology,  
4 engineering and mathematics. Ongoing food drives and Toys  
5 for Tots holiday drives. And let me see. A blood drive  
6 has been an ongoing thing.

7 Something that I was not personally involved with,  
8 but it does include the local other project which the  
9 owner, BrightSource, was involved with. I was made aware  
10 of some of the social responsibility issues that were  
11 looked into there, and there was a partnership, and a very  
12 good partnership, in which they did blood drives; the Toys  
13 for Tots; the Saint Jude's project, which -- where money  
14 was donated to children there in the local area; autism;  
15 and the homeless veterans.

16 So the list is much more expansive, but I just  
17 wanted to give a snapshot of the social responsibilities.  
18 Thank you.

19 HEARING OFFICER CELLI: Thank you very much. Is  
20 Robert Frost here?

21 MR. FROST: Hi. I'm Robert Frost. I represent  
22 IBEW Local 440 here in Riverside County. And I'd like to  
23 talk a little bit about some different aspects of what  
24 these jobs bring to the area. What they do is, thousands  
25 of craft workers have been through the Workers'

1 Environmental Awareness Program. It's called WEAP. Many  
2 have been trained numerous times through Ivanpah, Genesis,  
3 the Abengoa project, and the Desert Sunlight project, as  
4 well as other smaller solar projects.

5 We have seen evolution in the trades from  
6 environmental awareness to environmental practice on these  
7 jobs. At first, they would see an animal or a certain  
8 plant or anything else on the job, they would just do  
9 their job, if that got in the way, they would take care of  
10 it. Now, they're aware of the aspects of what they need  
11 to do on those jobs to protect the environment. And it's  
12 really reached out to a lot of the different jobs that  
13 we're doing, not only the solar projects, because our  
14 private jobs away from here, they're now implementing some  
15 of these programs to help take care of the environmental  
16 issues, and when they do find artifacts from ages past.

17 One thing about these projects is they do create a  
18 lot of jobs for the local community, which is mandated in  
19 many of our projects. Palen is one of those for local  
20 area hire. The apprenticeship programs putting the  
21 students that are graduating to work. And also the  
22 Helmets to Hardhats, that's a building trades' issue that  
23 we are very proud of because it does give them a lifelong  
24 career in the trade they want to be a part of. Thank you.

25 HEARING OFFICER CELLI: Thank you, Mr. Frost. Is

1 James Schlueter, I'm sorry if I'm mispronouncing the name,  
2 but please come forward.

3 MR. SCHLUETER: Hi, everybody. My name is James  
4 Schlueter. I'm with the local International Laborers'  
5 Union of North America. I grew up here in Blythe. I've  
6 lived here all my life. Moved for seven years to try to  
7 find an opportunity. I found that opportunity in  
8 construction in the laborer's union while I was in Fresno.

9 And after being gone for seven years, decided to  
10 come back because of all this solar work that we're  
11 getting here. And the fact that it's my hometown, to be  
12 able to work and live in my hometown is, you know, a  
13 benefit for anybody. I'm sure we all would love to do  
14 that. So this is an opportunity for me to do that; work  
15 hard for my family, instead of being far away. That's why  
16 I support this job so much. I think that opportunity is  
17 the big word here that we all need to think about. This  
18 job provides opportunity, not only just for the people  
19 that are going to build it, but also for the long-term  
20 jobs that it will produce.

21 Anyway, it's a big opportunity for the community,  
22 the Blythe community in particular, and also the Coachella  
23 Valley. So I hope we move this project forward and get it  
24 going. Thank you very much.

25 HEARING OFFICER CELLI: Thank you, Mr. Schlueter.

1 Is Glenn Cross still here?

2 MR. CROSS: Hi, everyone. My name is Glenn Cross.  
3 I'm with the Local 1184 Laborers' Union. I've been with  
4 them 12 years. I'm a local, a native of Blythe for  
5 43 years. I'm married. I have five kids. I worked on  
6 the last project, on the Solar Genesis. I'm in support of  
7 the program. I attended local schools here. I think it  
8 would help Blythe in employment, it would help local  
9 businesses, and it would also help the people who is  
10 unemployed who is looking for employment or a career. It  
11 would help the economy. It would help a lot of things in  
12 Blythe. Blythe needs this. We need stuff like this. You  
13 know, it's this big thing for Blythe, you know. We really  
14 need it. Thank you.

15 HEARING OFFICER CELLI: Thank you, Mr. Cross. Is  
16 Larry McLaughlin here? Okay.

17 (Off-Mike Discussion)

18 So we have one more person who was having to take  
19 a telephone call into the lobby here and asked to go last.  
20 Is there anyone else who would like to make a public  
21 comment? And if you would like, we need you to see Alana  
22 Mathews over there at the table, fill out a blue card,  
23 she'll bring it over to us, and we'll call your name. So  
24 if anyone wishes to make a comment. Otherwise, is there  
25 anyone on the telephone at this time who would like to

1 make a public comment?

2 MR. BUDLONG: Tom Budlong here.

3 HEARING OFFICER CELLI: Oh, Mr. Budlong, how are  
4 you? It's Ken Celli here.

5 MR. BUDLONG: Good. How you doing?

6 HEARING OFFICER CELLI: Good. I remember you from  
7 the -- I think it was the Beacon case. Boy, you're a --

8 MR. BUDLONG: You know, I (inaudible) on Genesis  
9 and the (inaudible) both of those.

10 HEARING OFFICER CELLI: That's right.

11 MR. BUDLONG: (Inaudible)

12 HEARING OFFICER CELLI: Go ahead.

13 MR. BUDLONG: I'm stuck on the alternative of PV  
14 and the

15 HEARING OFFICER CELLI: Absolutely, or you can  
16 make your comments now.

17 MR. BUDLONG: (Inaudible)

18 HEARING OFFICER CELLI: Thank you, Mr. Budlong,  
19 and thank you for your comments and for your participation  
20 in this and in other projects. It's great to have you.  
21 Is there anyone else on the phone who would like to make a  
22 comment? Please speak up now. If you want to make a  
23 public comment to the committee, please speak up now on  
24 the phone. Okay. Hearing none, then you had a comment or  
25 a question? Go ahead, Commission Douglas?

1           COMMISSIONER DOUGLAS: I wanted to see -- is  
2 Mr. Laughlin (sic) --

3           HEARING OFFICER CELLI: Oh, is Mr. McLaughlin  
4 back? Did he finish his telephone call? Okay.

5           COMMISSIONER DOUGLAS: Okay. Well, so last night  
6 in public comment -- and I'll just take a minute and do  
7 this now, since we're giving Mr. Laughlin a chance to come  
8 back.

9           HEARING OFFICER CELLI: McLaughlin.

10          COMMISSIONER DOUGLAS: McLaughlin. I'm sorry.  
11 I've met him, too, I know. I've been by and visited the  
12 community college where he helps lead the training  
13 program.

14          So we had a question about closure and  
15 decommissioning requirements in the staff analysis and the  
16 PMPD, and I was wondering if staff could just help answer  
17 that question.

18          MS. STORA: This is Christine Stora. Yes, we'd be  
19 happy to answer that question. We do have a set of  
20 general conditions that appear on every project, and those  
21 projects include a facility closure plan. This project  
22 has one of those as well. It's called CON-15. And our  
23 closure plan requires a number of things that we have to  
24 review and approve before a project can be closed. That  
25 includes a scope of work and budget items, closure plan

1 development costs, dismantling and demolition, recycling  
2 and site cleanup, mitigation and monitoring direct --  
3 indirect and cumulative impacts, site remediation and/or  
4 restoration, interim operation and post-closure monitoring  
5 maintenance including long-term equipment replacement  
6 costs -- hold on while I scroll down here. Contingencies.

7           Anyway, the computer is kind of messing up on here  
8 for me, but, needless to say, it covers a lot of topics.  
9 And it will cover things like whether or not the towers  
10 can remain in place, if they're going to get dismantled,  
11 how they will be dismantled. I also would like to add  
12 that during our decommissioning process that we also have  
13 those processes overseen by a CBO, which is a Certified  
14 Building Official, who will make sure that everything is  
15 done to code.

16           So we treat decommissioning much like we treat  
17 building a project. And so it will go through the same  
18 kind of process that you would see for actually building a  
19 project, but only instead of doing a license, they would  
20 submit this facility closure plan, which would start that  
21 process.

22           Let me know if I didn't completely answer that.

23           COMMISSIONER DOUGLAS: Thank you. Well, if  
24 they're additional questions, maybe we can hear them in  
25 public comment or maybe people can ask staff offline or



1 look up the relevant condition. Okay. So why don't we  
2 call witnesses.

3 HEARING OFFICER CELLI: Okay. We're on to  
4 overrides. And if we can have -- now, I have  
5 Mr. Turlinski and Mr. Stucky. Do you have any other  
6 override witnesses, Mr. Galati?

7 MR. GALATI: Yes, we also have Bruce Kelly, who if  
8 he could, use the podium.

9 HEARING OFFICER CELLI: Bruce Kelly, if you would  
10 take the podium, please. And this is Mr.

11 MR. GALATI: Mr. Schlosberg. He's been -- he's  
12 been sworn.

13 HEARING OFFICER CELLI: He's sworn?

14 MR. GALATI: Actually, they've all been sworn.

15 HEARING OFFICER CELLI: Okay. Staff, do you have  
16 any witnesses on override?

17 MS. MARTIN: We had just mentioned David Vidaver  
18 and Mark Hester for both alternatives and overrides.

19 HEARING OFFICER CELLI: Okay. Mr. Vidaver and  
20 Mr. Hester, are you still on the phone, please?

21 MR. VIDAVER: Yes, we are.

22 MR. HESTER: Yup.

23 HEARING OFFICER CELLI: Okay. You're still under  
24 oath. Overrides. Witnesses from the intervenors, if we  
25 could have your witnesses sit over next to petitioner's

1 witnesses.

2 MS. GULESSERIAN: Yes, this is Tanya Gulesserian.  
3 I'm with California Unions for Reliable Energy. We have a  
4 witness, William Perez.

5 HEARING OFFICER CELLI: Is he here or on the  
6 phone?

7 MS. GULESSERIAN: He's here.

8 HEARING OFFICER CELLI: Okay. Mr. Perez, come on  
9 down and have a seat next to Mr. Schlosberg.

10 HEARING OFFICER CELLI: And do we have any  
11 witnesses from the Center for Biological Diversity on  
12 overrides?

13 MS. BELENKY: Bill Powers has provided testimony  
14 on the question of benefits. I'm not sure if he's still  
15 on the phone or not or available this late in the day.

16 HEARING OFFICER CELLI: Mr. Powers, are you there?  
17 Bill Powers? Please un-mute; let us know that you're  
18 here.

19 Did you want to, Ms. Belenky, call him on your  
20 cell and tell him to get back on the line?

21 MS. BELENKY: Yeah, we can do that. I'm not sure  
22 there's a lot of factual -- additional actual factual  
23 information needed at this point, which is something I  
24 think we'd like to raise at the beginning of this section  
25 as well.

1 HEARING OFFICER CELLI: Okay. Mr. Lerimer, do you  
2 know, was Mr. Powers identifying himself as a call-in user  
3 or as a computer user?

4 MR. LERIMER: He left a while ago.

5 HEARING OFFICER CELLI: Okay. And he didn't even  
6 say goodbye. Okay. Well, maybe we'll get him back. But  
7 he was on the computer? I just want to know that we can  
8 mute everybody and have him identify himself on entry.  
9 Okay. That's good. And, CRIT, did you have any  
10 witnesses?

11 MS. CLARK: We do not.

12 HEARING OFFICER CELLI: Okay. Let me -- so then  
13 Mr. Turlinski, Mr. Stucky, Mr. Schlosberg, Mr. Kelly are  
14 under oath, as are Mr. Vidaver and Mr. Hester. So  
15 Mr. Perez, if you would please rise to be sworn.

16 THE CLERK: Do you solemnly attest or affirm that  
17 the testimony you are about to give in these proceedings  
18 are the truth, the whole truth, and nothing but the truth?

19 MR. PEREZ: I do.

20 HEARING OFFICER CELLI: So we are talking about  
21 overrides, and let's hear from the petitioner's witness  
22 first, please.

23 MR. TURLINSKI: This is Charley Turlinski with  
24 petitioner. Is this on?

25 COMMISSIONER DOUGLAS: It sounds good.

1 MR. TURLINSKI: It sounds okay? Okay.

2 We've got a slide up there, it's Exhibit 1143, and  
3 it's a slide walking through a subject I think we were  
4 just talking about to a certain extent, it's a comparison  
5 of the operational benefits of PSEGS as proposed, CSP  
6 tower, as you'll be referring to it, and the PV  
7 alternative.

8 MS. BELENKY: Excuse me. I'm sorry. I need to  
9 object. I'm not sure this is an override discussion, and  
10 I'm not sure it's factual. So I'm just trying to make  
11 sure what we're talking about now is something that's  
12 necessary to be heard at hearing and that isn't just  
13 argument.

14 HEARING OFFICER CELLI: That's an interesting  
15 point. Mr. Galati?

16 MR. GALATI: The commission specifically asked for  
17 a discussion of why the applicant, who has the burden of  
18 showing you, why we need an override. All the parties  
19 have had an opportunity to file. Remember, our first  
20 override testimony was filed February 10th reopen  
21 evidentiary hearings.

22 HEARING OFFICER CELLI: Actually, let me just get  
23 to this, just to respond to the objection. It's fair. We  
24 did ask for benefits. It's fair to describe the benefits  
25 in relation to the alternatives. So I think to that

1 extent they're talking about the benefits here. And  
2 they're just using the alternatives in order to contrast.  
3 So we aren't talking about alternatives as we did in the  
4 feasibility anymore, we're not talking about the benefits  
5 of the PSEGS. So let's stay on that track. So I'm going  
6 to overrule the objection.

7 MR. TURLINSKI: Will do. And, yes, I'm trying to  
8 focus here on the operational benefits of a certain  
9 technology versus another technology, and that's the  
10 purpose of the slide.

11 We proposed this particular technology, not just  
12 because, it was a technology within the PPA, but because  
13 it was basically for the same reasons that the PUC  
14 originally approved those PPAs.

15 Resource Diversity. We were aware of that as a  
16 path, and we proposed it, the technology, because it  
17 provides a path towards resource diversity for the power  
18 system and operational benefits. Specifically,  
19 operational benefits, and this is what I'll walk through  
20 right here, inherent to CSP tower application relative to  
21 PV. And it happens to be representative to wind and other  
22 intermittent technologies as well. But I'll focus on PV  
23 versus CSP tower.

24 First, is, and we talked about it a bit, the  
25 ability to accommodate storage. And I think we've made an

1 effort through the proceeding thus far to demonstrate how  
2 this technology, CSP tower, solar thermal tower  
3 technology, is uniquely suited to accommodate the add on  
4 of a thermal storage.

5 Next, and this gets to operational benefits that  
6 accrue to the power system from a synchronous generator.  
7 So it's not unique to CSP, but it is unique to CSP  
8 relative to PV and other intermittent technologies.

9 A couple of them include, as you can see on the  
10 side there, there's sort of a table of reactive support.  
11 And reactive support is essentially necessary to the  
12 proper functioning of the grid. CSP, with CSP, solar  
13 thermal, I should say. Solar thermal power tower provides  
14 it. Photovoltaic projects typically don't -- actually,  
15 neither do wind projects, at their base.

16 Initial response. Initial response is  
17 essentially -- it's essentially a buffer that comes from  
18 synchronous generators that allows the power system to  
19 more easily walk through fault events. That's something  
20 that comes from CSP tower, something that does not accrue  
21 from a photovoltaic project.

22 And frequently response, which they somewhat  
23 overlap. There's primary. There's secondary frequency.  
24 There are value streams showing primary being basically  
25 here in the duration of seconds and below and secondary

1 being minutes. These products, energy products, that can  
2 be provided by CSP and typically not by photovoltaic.

3 Well, I'll just skip to the last one, transmission  
4 reliability. The practical effects of those things that I  
5 just went over, is essentially enhanced transmission power  
6 system reliability. Those are things that otherwise have  
7 to be contracted or added in some way, shape, or form to  
8 other technologies. Interestingly enough, and I think it  
9 is worth noting, those operational benefits that I just  
10 walked through relative to PV that accrue to CSP, they  
11 also happen to offer the power system the ability to  
12 enhance transfer capability, which is essentially  
13 additional capacity.

14 And in a system that is somewhat stressed, and as  
15 a developer that is always looking for opportunities and  
16 pockets for capacity opportunity, CSP's ability to offer  
17 the potential for enhanced transfer capability, more  
18 capacity, on a particular system is a real benefit to the  
19 power system as we try to achieve 33 percent objectives.  
20 So that's essentially our operational benefits discussion  
21 of CSP power tower versus PV. As the next slide, and that  
22 is Exhibit 1144. Exhibit 1144. But for the same reasons,  
23 we wanted to walk through operational benefits of CSP  
24 tower versus trough because, A, it's an alternative, B, it  
25 was originally permitted as a trough project. So I want

1 to address these issues. The same exact issues as they  
2 pertain to trough itself.

3 Trough is endowed with a synchronous generator.  
4 It is solar thermal. So it offers many of the similar  
5 benefits that tower does, insofar that a synchronous  
6 generator would; the potential for initial response,  
7 frequency response. But it's not exactly equal, and  
8 that's what we walk through on the slide. The main  
9 difference, I would say, is controllability and the  
10 ability to accommodate -- well, let me start. First, the  
11 main difference is storage. The ability to accommodate  
12 storage. Solar trough can accommodate storage in a  
13 plug-and-play way. That solar power tower, it does not  
14 have the constraint of Therminol. So there's an  
15 efficiency question here. There's a temperature question.

16 And our goal, ultimately, is, as a developer, to  
17 build a project, and we know that we can't build a project  
18 unless we can satisfy the PUC and the utilities objectives  
19 to provide the (inaudible) with the best product. So the  
20 way to get there with storage is to eliminate some of  
21 the steps. When you have to heat Therminol or you are  
22 constrained by Therminol, you can't achieve a temperature  
23 that you might otherwise achieve to plug storage in at the  
24 most efficient level. That's one. So that's a difference  
25 between trough and power tower.



1           Another one is the controllability. And this gets  
2 to, again, the power system. It gets to the ideas of  
3 frequency response, inertia response, et cetera. All  
4 things that accrue from a synchronous generator, but the  
5 difference of controllability for a power tower system  
6 versus trough is primarily one of computing power. When  
7 you think about it, a trough project is a single-access  
8 tracking project. And when you think about a solar field,  
9 the power tower solar field is a dual-access track, each  
10 heliostat is dual-access tracking independently operated.

11           If you were to go back in history to the original  
12 trough projects that were originally proposed, they  
13 were -- they were proposed because there was essentially a  
14 lack of computing power, an inability to manage the entire  
15 solar field, control it the way one could control it, and  
16 it is that controllability, that computing power, that  
17 enables the solar power tower relative to trough to manage  
18 events like clouding events, and develop -- and basically,  
19 ultimately, deliver a superior energy product relative to  
20 what a single-access tracking parabolic trough could  
21 provide.

22           So let's see. I think that walks through that  
23 second slide. Oh, well, yeah, I think cost reduction  
24 headroom is the second line there. That's a significant  
25 advantage. Basically, I think, as the petitioner, our

1 position is solar trough as it pertains to solar terminal,  
2 I'm sorry, solar power tower as it pertains to solar  
3 thermal is the future for the reasons I've just explained  
4 as pertains to accommodating storage and for the reasons,  
5 basically, for reasons of greater potential for maximum  
6 efficiency. Eliminating Therminol, a constraint, or any  
7 sort of heat transfer fluid, is a benefit and allows for  
8 cost headroom, which means that one can potentially bid it  
9 in at a more aggressive price.

10 I wanted to walk through any other detailed  
11 technical aspects as to why we think solar power tower is  
12 superior relative to solar trough. I think that pretty  
13 much wraps up our introduction testimony on these two  
14 slides. I think it kind of points out that the benefit,  
15 operational benefits, of CSP tower relative to trough  
16 relative to PV somewhat stand on their own. We do have  
17 another slide, it's 1145. I'll give it to Matt, or David.

18 MR. SCHLOSBERG: So yes, on 1145.

19 This is David Schlosberg with the petitioner.  
20 Charley was just talking about these important and  
21 differentiating attributes --

22 HEARING OFFICER CELLI: Bring that -- our court  
23 reporter can't hear you. She hears through that thing, so  
24 if you brought it close to --

25 MR. SCHLOSBERG: Mr. Turlinski was just discussing

1 these important and differentiating benefits and  
2 attributes of the solar thermal technology. And these are  
3 the very types of attributes which contribute to our  
4 future electricity system in California that the CEC  
5 itself has called for in its 2012 integrated energy policy  
6 report update.

7           And this report calls for current processes for  
8 infrastructure planning and resource procurement, should  
9 do a better job of maximizing portfolio value and  
10 diversifying risk.

11           And examples of areas where removable benefits can  
12 be further realized, probably among other things,  
13 developing a variety of technologies can create more  
14 attribute-based diversified portfolios to minimize risk  
15 and realize co-benefits. It goes on to say that,  
16 procurement decisions should consider an expanded suite of  
17 renewable energy benefits including RPS eligible  
18 facilities that can provide integration benefits and  
19 reduce transmission and distribution costs. It goes on to  
20 say that, more broadly to the extent RAPAR (phonetic)  
21 benefits can be identified, the valuation of individual  
22 RPS projects by the CPC and publicly-owned utilities  
23 should consider, among other things, integration benefits,  
24 the capability of the project to provide other services  
25 needed for reliability, integration costs, and technology

1 diversity.

2           So the IPER speaks to the need for this diversity  
3 to provide the desired benefits, and the RPS program was  
4 intended to catalyze a diversity of technologies and  
5 generation resources, not a sequence of homogenous  
6 outcomes intentionally or unintentionally produced by  
7 procurement and permitting decisions and processes.

8           So the solar thermal technology to be employed at  
9 the Palen project assists utilities and grid operators to  
10 address integration challenges by delivering a firmer,  
11 more reliable, and more controllable renewable power  
12 source as we've discussed in these previous slides. And  
13 the project promotes broader integration and higher  
14 penetration of renewable resources in California by means  
15 of its synchronous generator, providing significant  
16 benefits such as grid reliability services, including  
17 reactive power, voltage support, frequency control,  
18 inertia response, and controllability.

19           MR. STUCKY: Next exhibit, please.

20           This is Matt Stucky with the petitioner. This  
21 slide addresses both reasons that tower projects may be  
22 considered to have benefits greater than comparable trough  
23 projects and also provides an elaboration of project  
24 benefits specific to the PSEGS alternative that should be  
25 considered by the committee and all override decisions

1 that must be made for the project.

2           While solar thermal electric projects, or CSP,  
3 have several benefits over PV projects, the potential for  
4 inclusion of thermal energy storage increasingly stands  
5 out as the most important differentiator. In comparison  
6 to other energy storage technologies, thermal energy  
7 storage is both proven and cost effective at large scale.

8           If thermal energy storage separates CSP from PV,  
9 does it separate towers from troughs? Yes, it does. As  
10 Mr. Turlinski pointed out, while both trough and tower  
11 technologies allow the inclusion of thermal energy  
12 storage, tower technologies generate higher temperatures.  
13 This allows for more efficient and thus more cost  
14 effective energy storage.

15           Now, even without storage included in Phase 1 at  
16 this time, PSEGS would advance tower technology by  
17 installing a larger heliostat field than is currently  
18 operating anywhere, operating that solar field wirelessly,  
19 and generating the higher temperatures just discussed.

20           Furthermore, as projects such as Palen are  
21 constructed and operated, they'll continue to prove that  
22 tower technology can operate reliably and efficiently at  
23 large scale. More projects constructed and more and more  
24 aggregated hours of tower technology operation will drive  
25 down project financing costs.

1           Now, lenders and investors will always demand  
2 interest rates and rates of return that, in their minds,  
3 properly reward the risks they're willing to take with  
4 their capital. As the technology's proven over time, that  
5 risk is seen as declining, and, therefore, the financing  
6 cost that the project must bear go down.

7           Financing costs add to the ultimate cost of the  
8 electricity generated and sold. Reducing these and other  
9 project costs will allow future projects to be constructed  
10 at lower costs. Driving down the cost of CSP with storage  
11 will allow California to meets its renewable energy goals  
12 of tomorrow.

13           And that's a phrase that's kind of thrown around  
14 loosely, but I do mean something specific there. You  
15 know, that the legislature and other policymaking bodies  
16 in the State of California are talking about what comes  
17 after 33 percent power PS. And they're looking for more  
18 aggressive carbon reduction goals.

19           Now, eliminating the use of fossil fuels for the  
20 generation of electricity is technically possible now. We  
21 could build a lot of CSP projects with storage and operate  
22 them as base load, peakers, whatever is needed. But the  
23 solution can become more and more economically feasible by  
24 integrally building and improving the technology at  
25 projects such as Palen.

1           So given the importance of energy storage to the  
2 state, given the inherent energy storage advantages of  
3 tower versus trough technology, and given the importance  
4 of incrementally improving tower technology and making it  
5 less expensive, the proposed project has some very strong  
6 alternative specific benefits. And I just described a  
7 progression of building CSP projects, improving them  
8 technically and economically and helping meet California's  
9 future goals. Of all the alternatives considered, PSEGS  
10 advances that progression best.

11           MR. SCHLOSBERG: So moving to the following  
12 exhibit. I think there was an original question from the  
13 commission about why not build storage now. I think we've  
14 hit on a variety of these, so I'll be quick on this slide.

15           But the current power purchase agreements limit  
16 our ability to incorporate thermal energy storage today,  
17 specifically, into Phase 1. The PPAs specify the  
18 technology to be deployed by name and with description,  
19 and this is described in Exhibit 1151. Thermal energy  
20 storage is not included in that technology description so,  
21 therefore, the addition of thermal energy storage would  
22 require new PPAs, as we've discussed. And it would be  
23 impossible to finance the project incorporating energy  
24 storage without approved PPAs in the first place that  
25 prescribe and compensate for that storage.

1           However, as we've discussed, the Palen site could  
2 host thermal energy storage in the future at Phase 1 after  
3 initial construction, or during Phase 2 after such an  
4 amendment is approved, if approved.

5           Moving on to Exhibit 1148. We talked a lot about  
6 the market policy and regulatory conditions that still  
7 need to evolve in order to make a CSP tower with thermal  
8 energy storage compelling to the utilities to procure.  
9 And I wanted to touch upon those here. Many of these  
10 conditions are evolving, which we believe, and may very  
11 well, increase the commercial value of CSP projects with  
12 storage, including at Phase 1 in the future or at Phase 2  
13 upon amendment. And these considerations involved, here  
14 on the slide, highlight the importance and relevance of  
15 the CSP technology to California and the fight against  
16 claimant globally.

17           And those specific California dynamics are, the  
18 establishment of -- the potential establishment of 2030  
19 greenhouse gas emission renewable energy policy goals,  
20 secondly, changes in the pattern and magnitude of the  
21 wholesale energy market prices, which you've heard  
22 Mr. Olson and Mr. Powers discuss earlier. The revision to  
23 resource adequacy value for solar generators, and more  
24 flexible capacity requirements, resource adequacy  
25 procurement requirements, and the implementation of an



1 integration cost data for renewable generation.

2           So I'm going to touch on each of those in more  
3 detail. So with regard to GHG goals, or greenhouse gas  
4 goals for 2030 -- and this is on the path in order to  
5 achieve the 2050 goals that the governor's office has  
6 stated for an 80-percent reduction from the 1990 levels.  
7 If California enacts future policies and legislation to  
8 achieve significant greenhouse gas reductions,  
9 specifically through the electricity sector,  
10 decarbonization, it can result in greater demand for a  
11 flexible, dispatchable, and carbon-free generation  
12 resources such as CSP with storage.

13           In order to integrate greater penetrations of  
14 non-dispatchable and/or intermittent resources, flexible  
15 carbon-free resources have increasingly higher value  
16 relative, higher relative value and the least-cost  
17 best-fit evaluation framework that the California  
18 utilities use.

19           So flexible generators, such as these, will  
20 also will provide critical reliability services that are  
21 currently provided by GHG, or greenhouse, gas emitting  
22 natural gas generators.

23           So we submitted Exhibit 1189, which is a recent  
24 report issued by the National Renewable Energy Laboratory,  
25 or NREL, which found that in a future scenario in

1 California where 40 percent of the wholesale energy supply  
2 is provided by renewables, CSP with storage power plants  
3 have a \$62 to \$64 per megawatt hour superior value when  
4 compared to solar photovoltaic.

5 In the same report, as well in a prior report,  
6 that's Exhibit 1190, NREL performed similar analysis in  
7 the typical 33 percent RPS scenario. Where, in this case,  
8 CSP with storage had a \$30 to \$50 greater per megawatt  
9 hour value than alternative renewable energy options,  
10 depending on the assumptions they made.

11 These studies show that the effect I mentioned  
12 were higher levels of renewable energy result in greater  
13 value for CSP with storage. And we'll touch upon some of  
14 these sources of differentiated value in these subsequent  
15 bullets.

16 So shifting peak pricing. As an increasing share  
17 of electricity is generated during daylight hours is  
18 provided by zero marginal cost generators, such as solar  
19 plants without storage, wholesale energy prices are likely  
20 to be depressed during these periods of the day. When  
21 customer loads are still significant just before sunrise  
22 and especially after sundown, wholesale energy market  
23 prices may be higher for generators which can deliver  
24 energy during these periods of time.

25 Resource adequacy evaluation methodology. So the

1 assessment of RA, as I'll call, value for wind and solar  
2 resources using a new methodology called the effective low  
3 carrying capacity, or ELCC, has been mandated actually by  
4 California Law Senate Bill 2(1X). This requirement is in  
5 the process of being implemented by the PUC. And the  
6 impact of this methodology will be likely to attribute  
7 higher resource adequacy value to resources that can  
8 deliver electricity more reliably and more hours of the  
9 year.

10 Flexible resource adequacy, capacity. The CPUC  
11 and the California Independent System Operator, or the  
12 CISO, are implementing a new flexible capacity product  
13 that utilities in the CISO balancing authority are  
14 required to procure on an annual basis. The primary  
15 purpose of this new product is to ensure that there are  
16 enough generators available to the system operator to meet  
17 the largest three-hour system ramp event in any given  
18 month, and that ramp event is the increase or decrease in  
19 demand for dispatchable generation over that time period.

20 This could well be well over 10 gigawatt hours, or  
21 10 gigawatts, I apologize, in some cases as we get closer  
22 to 2020. This new product is explicitly considered  
23 interim, which is a challenge for valuing a twenty-year  
24 project, or twenty-five-, thirty-year project. It's  
25 interim until the regulators can better understand the

1 system need and the rules for participation by generators,  
2 like CSP with storage, are able to be appropriately  
3 defined.

4           And then, finally, the integration cost data. In  
5 the current proceeding, in fact, I think there are  
6 comments due today for the renewable portfolio standards  
7 and procurement in 2014. The PUC is soliciting feedback  
8 and recommendations from stakeholders on how integration  
9 costs can be calculated and assigned to different types of  
10 generators for the purpose of comparing PPA bids. In  
11 addition, legislation is being considered in the  
12 California Assembly that would require integration costs  
13 to be calculated by a date certain.

14           So integration costs are the indirect costs to the  
15 power system as a result of the production characteristics  
16 of a particular generator or generators and the ability to  
17 avoid imparting these costs or even providing integration  
18 services like CSP with storage does, is relevant when  
19 considering the relative value of competing generators.

20           So finally, as we mentioned this morning,  
21 Exhibit 1149 is the CAISO duck curve. The CAISO projects  
22 the shape of the net load curve in this slide through  
23 2020. And each year when more solar generation, as it may  
24 be, without storage comes online, it reduces in the middle  
25 of the day net load requirements. And the net load, for

1 folks, is defined as the total customer demand minus the  
2 generation from wind and solar generators. And the CSP  
3 with storage that we've discussed as a potential in the  
4 future to Phase 1, or as well as amendment after Phase 2,  
5 would specifically address and assist with the challenges  
6 created by the duck curve.

7           So if you look at the callouts for each of the  
8 sections of the day, and this was discussed with Mr. Kelly  
9 earlier, in the morning, the ability of a CSP plant to  
10 reduce its output as more solar generation, such as solar  
11 photovoltaics or CSP without storage comes online, you can  
12 reduce your output, which avoids exacerbating situations  
13 of over-generation. At this point in time, the CSP with  
14 storage plant would store thermal energy. Then, as the  
15 sun is going down and most solar generators are coming  
16 offline, the CSP with storage plant would increase or ramp  
17 up output through sundown and potentially provide that  
18 flexible capacity product that I discussed earlier.

19           And then, finally, when the sun is down and  
20 typical solar plants aren't operating, the CSP plant with  
21 storage would produce a full output from storage when  
22 energy prices are still peaking given the changes in the  
23 system and just the natural fact that there's still high  
24 loads after the end of the day. So that concludes my  
25 testimony.

1 HEARING OFFICER CELLI: Thank you, Mr. Schlosberg.  
2 Did -- did you expect Mr. Kelly to add anything?

3 MR. GALATI: Mr. Kelly is going to answer any  
4 questions regarding terminal energy storage.

5 HEARING OFFICER CELLI: Okay. So we've heard from  
6 all the petitioner's witnesses on the issue of override at  
7 this time.

8 MR. GALATI: That's correct.

9 HEARING OFFICER CELLI: Staff, do we have any  
10 statements coming from Mr. Hesters (sic) or Mr. Vidaver?

11 MS. MARTIN: Just only if the committee had  
12 questions for them. There was also a filing made on  
13 Monday, just a public comment from Roger Johnson, and he  
14 is available by telephone if the committee has any  
15 questions. If they'd like it entered into evidence, I can  
16 try to give him a call and lay foundation. But I don't  
17 know what your desires are on that.

18 HEARING OFFICER CELLI: I don't know. If we can  
19 have a minute.

20 MR. GALATI: Just for the committee's benefit, I  
21 do intend to try to move that in as an exhibit.

22 HEARING OFFICER CELLI: Okay. Well, let's cross  
23 that bridge when we get to it. Okay? Let's hear -- are  
24 we ready for Mr. Perez, Ms. Belenky?

25 MS. BELENKY: I'm going to make the same

1 objection. I thought that at these hearings we were not  
2 just having people repeat their testimony that's already  
3 in the record. I thought there was supposed to be just  
4 summaries and then we would go into any factual disputes.  
5 What I just heard, and we spent quite a bit of time on,  
6 was people repeating their testimony that's already in the  
7 record. And I do object to that.

8 I also object that this was scheduled for the  
9 morning, you knew that my expert couldn't be here in the  
10 afternoon, and so I reserve our right to rebut any of this  
11 testimony.

12 HEARING OFFICER CELLI: Yes, it has all been  
13 filed. So your objection is preserved for the record.  
14 Mr. Perez, let's hear your response to the testimony  
15 you've heard so far on the overrides, please.

16 MS. GULESSERIAN: Mr. Perez is here. He's  
17 submitted testimony in writing, Exhibit 6000, for CURE,  
18 and he is available to answer any questions if anybody has  
19 any.

20 HEARING OFFICER CELLI: My mistake. I'm sorry. I  
21 was misattributing Mr. Perez to CBD, not CURE. Okay. Go  
22 ahead, Mr. Perez. And I need you to speak into that  
23 microphone, please.

24 MR. PEREZ: Just a very brief summary then. The  
25 testimony I provided --

1 HEARING OFFICER CELLI: One moment. You're not  
2 coming through very well on that mic.

3 MR. PEREZ: Is that better?

4 HEARING OFFICER CELLI: Yeah, but not that much.  
5 If you could bring up his level a little bit, Rob.

6 MR. PEREZ: Is that better? I've switched out  
7 mics. Can you hear me now?

8 HEARING OFFICER CELLI: That's better. That's  
9 good.

10 MR. PEREZ: Okay. Thank you very much.

11 It's not often to have a soft-spoken construction  
12 person, however. The testimony I had provided was to show  
13 the construction economic benefits relative to the various  
14 power plant technologies.

15 HEARING OFFICER CELLI: Anything from staff's  
16 witnesses, Mr. Vidaver, Mr. Hester?

17 MR. HESTER: Not at this time.

18 HEARING OFFICER CELLI: That was Mr. Hesters  
19 (sic).

20 MR. VIDAVER: Not at this time from me either.

21 HEARING OFFICER CELLI: Okay. Thank you.

22 MR. HESTER: That was Mr. Vidaver.

23 HEARING OFFICER CELLI: Okay. Then let's have the  
24 attorneys, I'll go around the room and?

25 (Hearing Officer Celli and Commissioners confer.)



1           Ms. Gulesserian, any questions for any of the  
2 witnesses?

3           MS. GULESSERIAN: No, thank you.

4           HEARING OFFICER CELLI: Mr. Figueroa?

5           MR. FIGUEROA: No.

6           HEARING OFFICER CELLI: Ms. Clark?

7           MS. CLARK: Yes. Just a very brief question for  
8 the Palen team.

9           So Mr. Stucky, you mentioned that the thermal  
10 energy storage is the key, really, to most of the benefits  
11 that we just heard discussion about. And I'm curious if  
12 you can provide any facts in your evidence assuring that  
13 this project will actually offer any ETS benefits in the  
14 future.

15           MR. STUCKY: I'm not sure the words you used, but  
16 I don't think they were the words I used. But, let's see,  
17 that was my first point. I think I had an actual response  
18 for you. Well, I think the point of the slide was that  
19 the project, as we proposed, has some benefits. And part  
20 of those benefits are the fact that it is a tower project  
21 that can incorporate future storage. And even if it does  
22 not incorporate future storage, it further proves the  
23 tower's technology. And that will help bring down  
24 financing costs and march this progression forward that I  
25 was trying to describe.

1 MS. CLARK: Okay. Thank you. And then I also  
2 have questions about the public comments that Roger  
3 Johnson has submitted. I don't know if that's right. I  
4 think you called it a comment.

5 MS. MARTIN: I called it a comment.

6 MS. CLARK: I had questions about it if we are  
7 actually entering into evidence, so maybe we should cross  
8 that bridge.

9 HEARING OFFICER CELLI: You know, maybe we deal  
10 with it now, because we know it's coming. Go ahead.

11 MR. GALATI: Just for the record purposes, I'm the  
12 one that wants to move it into the record. How about if I  
13 identify it as 1206, which is my next in line.

14 HEARING OFFICER CELLI: Well, it's already got a  
15 transaction number and has been identified as  
16 somebody's --

17 MS. MARTIN: It's not been identified --

18 MR. GALATI: No.

19 MS. MARTIN: -- as an exhibit.

20 HEARING OFFICER CELLI: Oh, okay. So that exhibit  
21 is -- what's your next in order, Mr. Galati?

22 MR. GALATI: Well, it depends on if you're going  
23 to let me move in what I did on Friday or not.

24 HEARING OFFICER CELLI: Well, they're all  
25 identified.

1 MR. GALATI: They're all identified. It would be  
2 1206, is the next in order as identified.

3 HEARING OFFICER CELLI: Okay. You know what?  
4 Commissioner Douglas makes a good point; let's finish the  
5 testimony and then get to the evidentiary prong. So did  
6 you have any other questions of these witnesses as it  
7 related to overrides?

8 MS. CLARK: I have questions about that document  
9 if it becomes testimony.

10 HEARING OFFICER CELLI: You know, that document, I  
11 think we all know is a bit of hearsay. I'm not really  
12 sure --

13 MS. MARTIN: It's comment.

14 HEARING OFFICER CELLI: It is comment. But I  
15 mean, I don't understand how, you know, the parties intend  
16 to use it yet. I don't know whether it's worthy of the  
17 time it's going to get. But, in any event, hold on to the  
18 objection, we'll come around to the petitioner. The  
19 petitioner is probably going to move it in, and then  
20 you're going to have an objection to the exhibit. And  
21 we'll --

22 MS. CLARK: Yes. But if it is admitted, I do have  
23 a question for Mr. Johnson about it.

24 HEARING OFFICER CELLI: Okay. But he's not -- is  
25 he on phone?

1 MS. MARTIN: I notified him. He's in a mandatory  
2 training right now. And so he's told me that he's  
3 checking his messages, and I've notified him.

4 HEARING OFFICER CELLI: We are just going to take  
5 the moment here. We're still on the record, but I want to  
6 have a quick little conference.

7 (Hearing Officer Celli and Commissioners confer.)

8 MS. MARTIN: Hearing Officer Celli, he is calling  
9 in just so you know. Thank you.

10 (Hearing Officer Celli and Commissioners confer.)

11 HEARING OFFICER CELLI: Okay. We're with CRIT and  
12 Ms. Clark. And I guess it sounds like this is the -- you  
13 should go ahead and ask your questions about this comment  
14 because I guess we're going to have to do it.

15 MS. CLARK: I just have one short question.

16 UNIDENTIFIED SPEAKER: I can't hear you.

17 HEARING OFFICER CELLI: Was that you couldn't hear  
18 me?

19 UNIDENTIFIED SPEAKER: No, we heard you.

20 HEARING OFFICER CELLI: Oh, Ms. Clark, how is your  
21 mic doing there?

22 MS. CLARK: I just have one short comment, so --

23 HEARING OFFICER CELLI: Go ahead.

24 MS. MARTIN: Let's make sure he's on the phone.

25 MS. CLARK: -- once he's here.

1 MS. MARTIN: Is he here? Roger, are you on the  
2 phone?

3 HEARING OFFICER CELLI: Well, I think when he  
4 calls in, it will show up. So you're saying you just have  
5 one question for Roger.

6 MS. CLARK: Yes.

7 HEARING OFFICER CELLI: Okay. Hold your question.  
8 Remind me when we come around because, as you've seen, my  
9 short-term memory isn't what it used to be.

10 MS. MARTIN: All call-in users are muted.

11 HEARING OFFICER CELLI: When he calls in, we'll go  
12 back to CRIT. CBD, did you have any questions with regard  
13 to the overrides of these witnesses including the  
14 witnesses on the phone?

15 MS. BELENKY: We will have a question for Roger  
16 Johnson if he is allowed to testify, although he was never  
17 identified as a testifying witness. We reserve the right  
18 to, and would ask that this area be kept open, because my  
19 expert was not able to attend. So I reserve the right to  
20 question all of the testimony that's been given, to review  
21 the transcript, and to provide later testimony. We had  
22 three days of hearings that were noticed. He is available  
23 tomorrow morning, that was when we assumed we could get  
24 him through. I feel that we are at a complete  
25 disadvantage today having this testimony come in without

1 my expert being able to be here.

2 HEARING OFFICER CELLI: Okay. So the objection is  
3 noted. The committee would state that at the pre-hearing  
4 conference, we did everything, we moved all of the topics  
5 around in the order that we have today in order to  
6 accommodate Mr. Powers. And so it was understood that the  
7 topics were going to proceed in the order that we have  
8 them in.

9 I would also note that these hearings were noticed  
10 back in June. And the parties have had a lot of notice  
11 and plenty of time to make the scheduling work. I would  
12 like to have Mr. Powers on the phone right now. I'm sorry  
13 that he's not available. But at this point, if you look  
14 around the room and the number of people who are here who  
15 have worked their calendars and made it work so that they  
16 can participate in these hearings, I'm not going to  
17 disadvantage these people and these parties because one  
18 witness couldn't make it today for whatever reason we  
19 don't know.

20 So that objection is noted. You've preserved it,  
21 but I'm going to overrule it, and I'm not going to grant  
22 the motion that we reopen override tomorrow or at some  
23 later date. So that's the ruling on that.

24 MS. BELENKY: I did not yet make that motion. I  
25 asked that it be kept open. I will make a formal motion

1 if we determine it's required.

2 HEARING OFFICER CELLI: Okay.

3 MR. GALATI: Mr. Celli, may I --

4 MS. BELENKY: I would like to just state --

5 MR. GALATI: -- add something to that?

6 HEARING OFFICER CELLI: No. Wait one moment,  
7 Mr. Galati. Go ahead, Ms. Belenky.

8 MS. BELENKY: Again, this goes back to the  
9 pre-hearing conference, and it is important. The  
10 pre-hearing conference is the time at which we schedule  
11 the hearings and what will happen at what time. You did  
12 not rearrange something that had already been set in stone  
13 in order to accommodate my witnesses. In fact, that was  
14 the time at which everyone was coming forward with the  
15 times at which their witnesses could and not be there.  
16 And, in fact, yesterday was scheduled around one of  
17 staff's witnesses.

18 So it is not as though only the Center is somehow  
19 asking that it be scheduled at a time that their witness  
20 could make it. And, in fact, another of my witnesses  
21 changed their entire schedule for the week in order to be  
22 here today for biology, as you well know.

23 So I just want to clear on the record that it is  
24 not that there was a schedule that was changed. That is  
25 incorrect.

1 HEARING OFFICER CELLI: Anything further?

2 MS. BELENKY: Yes, we would like to question  
3 Mr. Johnson if he is available on the phone and being put  
4 forward as a witness.

5 HEARING OFFICER CELLI: Is Mr. Johnson on the  
6 phone?

7 MR. JOHNSON: Mr. Johnson is on the phone.

8 HEARING OFFICER CELLI: Okay. Now, who was  
9 calling Mr. Johnson?

10 FEMALE: I would be happy to sponsor him if staff  
11 won't.

12 MS. MARTIN: No, I'm happy to. I just need to --  
13 I will lay a foundation. All right.

14 HEARING OFFICER CELLI: Okay. I think the first  
15 thing you're going to have to explain is why Mr. Johnson  
16 wasn't listed in your pre-hearing conference statement,  
17 why this comment wasn't part of your pre-hearing  
18 conference statement, and why this committee should even  
19 allow it to come in.

20 MS. MARTIN: Staff will just note that Mr. Johnson  
21 had reviewed their rebuttal testimony provided that  
22 outlined the project description 1 and the revised phasing  
23 plan, and in the time that he was allowed, provided his  
24 statement on that.

25 As I stated, this is a comment, and it was



1 docketed on Monday. And it is Mr. Galati who would like  
2 to use it as an exhibit.

3 HEARING OFFICER CELLI: So why should we bring it  
4 in as an exhibit rather than leave it as a comment,  
5 Mr. Galati?

6 MR. GALATI: Well, I just want to put it in  
7 perspective. You will take in articles from KCET, but you  
8 will not take in the written opinion of the Chief of the  
9 Siting Division on an important question --

10 HEARING OFFICER CELLI: If the article was in your  
11 pre-hearing conference statement, then everybody was on  
12 notice and had it and seen it.

13 MR. GALATI: Remember as we moved back to last  
14 hearing how many exhibits came in at the last hearing.  
15 When staff came in Cultural and put up their exhibits, and  
16 I objected, you let them in, because they weren't in their  
17 pre-hearing conference statement.

18 I get a statement that is beneficial to the  
19 project, and now everybody wants to enforce the rules.  
20 When they have a statement that's not beneficial to the  
21 project, then they come in. Here's a statement that is  
22 beneficial to the project specifically on point to  
23 something the commission is struggling with. I would like  
24 to swear Roger in and get him to authenticate it and make  
25 it his testimony.

1 HEARING OFFICER CELLI: Let me hear from the other  
2 parties. CURE?

3 MS. GULESSERIAN: I have no comments.

4 HEARING OFFICER CELLI: Mr. Figueroa?

5 MR. FIGUEROA: No comments.

6 HEARING OFFICER CELLI: CRIT?

7 MS. CLARK: We would object as the witness was not  
8 provided for in the pre-hearing conference statement, it  
9 was provided by one party and now it's being used by a  
10 second party, and we've had no chance to respond to them.

11 MR. GALATI: I would remind the commission of  
12 Mr. Cachora. Remember when he was allowed to testify with  
13 no prewritten testimony? And this is directly on point.

14 HEARING OFFICER CELLI: Okay. CBD?

15 MS. BELENKY: We object on several bases, but if  
16 it is allowed in, as far as I know, Mr. Johnson has not  
17 established his credentials as a biological expert and he  
18 made statements about the biology as a visual resources  
19 expert and he makes statements about visual resources --  
20 or a cultural resources expert, and he makes statements  
21 about cultural resources.

22 So I'm not sure, without laying a foundation, why  
23 he is testifying, what he's specifically -- which issue  
24 he's specifically testifying to, because override is not  
25 normally one of the issue areas. So he's testifying on

1 multiple issues without foundation, and we didn't have a  
2 chance to rebut it, to review or rebut it. So we would  
3 object at this time. But if it's allowed in, we would  
4 like to cross-examine him.

5 HEARING OFFICER CELLI: Okay. Basin and Range  
6 Watch?

7 MR. EMMERICH: We're going to back up what CRIT  
8 and CBD just said.

9 MR. GALATI: Okay. So if I could just have five  
10 more seconds.

11 HEARING OFFICER CELLI: Take your five seconds,  
12 Mr. Galati.

13 MR. GALATI: The original Palen project, Terry  
14 O'Brien filed this exact paperwork. This project, Roger  
15 Johnson filed something in their brief. It was important  
16 to the committee. This is exactly what we've done in  
17 almost every renewable project I've been involved with it.  
18 The Head of Siting actually takes the view on overrides.  
19 We've done it every time.

20 HEARING OFFICER CELLI: Okay.

21 (Hearing Officer Celli and Commissioners confer.)

22 So what the committee's decided to do is, we will  
23 allow Mr. Johnson to make a statement or respond to  
24 questions from all of the attorneys; but as to whether the  
25 written statement is admissible, we're going to hold that

1 in abeyance depending on what direction the testimony goes  
2 and whether the committee thinks it's useful to the  
3 committee to make it part of the record.

4 So I'm not ruling on the admissibility of  
5 Exhibit 1206, but we'll allow Roger Johnson to be sworn.  
6 So Mr. Johnson, are you on the phone?

7 MR. JOHNSON: I am.

8 HEARING OFFICER CELLI: Okay. Please stand and be  
9 sworn.

10 THE CLERK: Do you solemnly attest and affirm that  
11 the testimony you are about to give in this proceeding  
12 shall be the truth, the whole truth, and nothing but the  
13 truth?

14 MR. JOHNSON: I do.

15 THE CLERK: Thank you.

16 HEARING OFFICER CELLI: Okay. Ms. Martin.

17 MS. MARTIN: Good afternoon, Roger. Would you  
18 please state your full name for the record?

19 MR. JOHNSON: Roger Johnson.

20 MS. MARTIN: And what is your position at the  
21 energy commission?

22 MR. JOHNSON: I'm a deputy director for the  
23 siting, transition, and environmental protection division.

24 MS. MARTIN: And what are you responsible for in  
25 that position?

1 MR. JOHNSON: I'm responsible for the staff's  
2 contribution to developing an analyses for the (inaudible)  
3 project.

4 MS. MARTIN: And you've -- go ahead.

5 MR. JOHNSON: Did you get that?

6 MS. MARTIN: I did. And are you familiar with  
7 each of the technical areas and subject matters that are  
8 involved in the Palen project specifically?

9 MR. JOHNSON: I am.

10 MS. MARTIN: Have you reviewed the documents, such  
11 as the final staff assessment of staff for the prior  
12 evidentiary hearings?

13 MR. JOHNSON: I have.

14 MS. MARTIN: And have you reviewed all of the  
15 testimony that staff has provided in these overriding  
16 proceedings?

17 MR. JOHNSON: Yes, I have.

18 MS. MARTIN: I think that's all I have.

19 HEARING OFFICER CELLI: Mr. Galati.

20 MR. GALATI: Mr. Johnson, this is Scott Galati.  
21 Did you prepare what is now marked as Exhibit 1205, which  
22 is the comment on -- excuse me 1206, which is your comment  
23 regarding override?

24 MR. JOHNSON: Yes, I did.

25 MR. GALATI: And does it reflect your opinion?

1 MR. JOHNSON: Yes, it does.

2 MR. GALATI: No further questions.

3 HEARING OFFICER CELLI: Ms. Gulesserian.

4 MS. GULESSERIAN: I have no questions.

5 HEARING OFFICER CELLI: Mr. Figueroa?

6 MR. FIGUEROA: No questions.

7 HEARING OFFICER CELLI: Ms. Clark.

8 MS. CLARK: Good afternoon, Mr. Johnson. This is  
9 Sara Clark from the Colorado River Indian Tribes. I have  
10 one question I think for you, unless we get into  
11 follow-up. As I read your comment, you provide two  
12 reasons for your eventual recommendation that staff is  
13 taking a neutral position on the question of override.

14 And the two reasons that I see -- and this is in  
15 the second to last paragraph -- are that there's the  
16 potential for a storage component, which you say you would  
17 agree would be a significant project benefit, and then  
18 that there's the potential to collect additional  
19 information from Ivanpah and from PSEGS that could be used  
20 to study how to modify tower 2. Both of these opinions  
21 appear to be potential, if the project moves through on  
22 the phasing plan.

23 Can you confirm that those are the two reasons  
24 that you have provided for this change in override and  
25 whether there are any additional reasons that you are

1 giving at this time that are not set forth in this  
2 testimony -- or in this comment.

3 MR. JOHNSON: Yes, I can confirm those are two of  
4 the reasons. But the other reasons were -- that I also  
5 indicated that, with the implementation of all the  
6 conditions of certification that staff was recommending  
7 for cultural and biology, then we would no longer have a  
8 recommendation on override. So it's with the project  
9 modification, but also with the compensation that was  
10 being recommended by staff.

11 MS. CLARK: And if the project modification was  
12 not to occur, would your position remain the same?

13 MR. JOHNSON: It would not.

14 MS. CLARK: Thank you.

15 HEARING OFFICER CELLI: Ms. Belenky.

16 MS. BELENKY: Yes. Mr. Johnson, do you have a  
17 background as a biological expert?

18 MR. JOHNSON: Yes, I do. I have a degree in Fish  
19 and Wildlife Management.

20 MS. BELENKY: And is your opinion -- you give an  
21 opinion here that the impacts to biological resources  
22 would be reduced by roughly one-half. Was that based on  
23 an analysis going back that assumes that only one tower  
24 will be built?

25 MR. JOHNSON: Well, if only one tower is built, it

1 will be reduced in half. If the second tower is proposed  
2 in the future with storage, then there would be -- you  
3 know, it wouldn't be a half, but by then with the work  
4 that we're doing at Ivanpah, understanding what kind of  
5 mitigation measures might be successful there, it's not  
6 determined -- we can't determine at this time what the  
7 reduction would be.

8 MS. BELENKY: But you are assuming that only one  
9 tower might be built; is that correct?

10 MR. JOHNSON: That would be the assumption for  
11 half the impact, yes.

12 MS. BELENKY: And did you hear this morning's  
13 testimony from the applicant, or petitioner in this case,  
14 that they actually intend to build two towers regardless  
15 and that they may come back to the commission and ask them  
16 to remove the condition for thermal storage?

17 MR. JOHNSON: No, I did not hear that testimony  
18 this morning.

19 MS. BELENKY: Would that change your view on your  
20 conclusion?

21 MR. JOHNSON: You know, I guess I can't answer  
22 that at this time. Depending on what happens between now  
23 and then, how long that is and what mitigation is done  
24 with the first tower, it's hard to say right now if that  
25 would change my position.



1 MS. BELENKY: Thank you. Also I had a question,  
2 back to the biology being roughly one-half. Did you  
3 consider the impacts that may not be purely linear when  
4 you made that assertion and do you have an analysis that  
5 you could provide to us that supports this statement?

6 MR. JOHNSON: No, I have no analysis to support  
7 that statement.

8 MS. BELENKY: Thank you. Nothing further at this  
9 time.

10 HEARING OFFICER CELLI: Okay. Ms. Belenky, before  
11 I leave you, if you had any other questions for any of the  
12 other witnesses, because we had gotten to Ms. Clark and  
13 then she had raised the issue with Mr. Johnson, we brought  
14 in Mr. Johnson, but I just want to give you the  
15 opportunity if you had any questions for the whole of the  
16 override panel that this is that opportunity as well.

17 MS. BELENKY: Our expert did put in rebuttal on  
18 several of these points, because most of this was already  
19 written testimony that was already in the record, so we  
20 would provide that -- we would stand by that rebuttal in  
21 the record. I really don't have any other specific  
22 questions at this time.

23 HEARING OFFICER CELLI: Thank you. Mr. Emmerich  
24 or Ms. Cunningham.

25 MR. EMMERICH: I just have a couple things, and

1 then Laura had something. And we won't be long here.  
2 Number 1, I'm going to go back to what Lisa said, we just  
3 saw a whole override lecture. We got a very big talk on  
4 thermal storage. And a lot of us here respect the opinion  
5 of Bill Powers, and we want to hear what he has to say.  
6 And I found that very incomplete because he wasn't here,  
7 and I don't think you should have let that go on as long  
8 as you did without having him available. That's just my  
9 first impression. That's my opinion on it.

10 And furthermore, you know, we're hearing that this  
11 thermal storage addition and a second tower that might be  
12 built, they're making it sound it's almost like something  
13 you can plug into this new design and just add it, you  
14 know, as if it were just a brand new attachment. But what  
15 I'm hearing, it's a lot more complicated, and I'm confused  
16 as to why you're covering this in the override instead of  
17 alternatives. And I believe that should be an  
18 alternative, and I believe, again, that we should have the  
19 opportunity to examine this thermal storage option as an  
20 alternative in a supplemental staff assessment. Now Laura  
21 has a question.

22 MS. CUNNINGHAM: I just had a problem with going  
23 through all the charts of the benefits of thermal storage  
24 without, again, knowing anything about the thermal  
25 storage. For instance, Crescent Dunes has molten salt as

1 their thermal fluid, and Ivanpah has water, superheated  
2 steam. So this all just seems very theoretical to me. I  
3 mean, I guess I could ask a question to the panel: Will  
4 it be molten salt in the power tower or water? I mean,  
5 there's just questions like that that make all of the  
6 benefits seem like it's very theoretical. Thank you.

7 HEARING OFFICER CELLI: That's a good question.  
8 Who can answer that question?

9 MR. GALATI: Bruce. Would you describe what  
10 you're contemplating from storage from our Exhibit 1124?

11 MR. KELLY: In the exhibit they're discussing  
12 storing heat in thermal -- in nitrate salt. It would be a  
13 cold tank, and also a hot tank. And the concept would  
14 work by basically taking superheated steam from the  
15 receiver, condensing that steam, transferring the heat to  
16 the salt, and moving salt from the cold tank to the hot  
17 tank, removing the heat from the condensing steam, and  
18 basically storing heat in the hot salt tank.

19 To discharge the steam, they just reverse the  
20 process: Remove salt from the hot tank to the cold tank,  
21 run it through a separate steam generator, make steam,  
22 deliver that to the turbine.

23 This concept's been done before at the  
24 ten-megawatt Solar 1 power plant that was done in Barstow  
25 financed by DUE back in the 1970s. They had a superheated

1 steam receiver that also had this de-superheating  
2 condensing heat exchanger to transfer heat from the steam  
3 to a different fluid and then reverse the process for  
4 discharging the thermal storage system, producing steam at  
5 slightly different conditions, but the same kind of  
6 (inaudible). So this concept has been done before back in  
7 the 70s, and it was shown to be technically feasible.

8 MR. GALATI: If I could just correct the record  
9 for the transcript, I meant Exhibit 1125 when I referred  
10 to that, not 1124.

11 COMMISSIONER DOUGLAS: Thank you. More questions?  
12 Basin and Range Watch?

13 MR. EMMERICH: No.

14 COMMISSIONER DOUGLAS: I have a couple questions  
15 I'll just tag onto that one. So could you elaborate,  
16 please, on the benefits that you see to using molten salt  
17 as a heat transfer fluid as opposed to Therminol? Could  
18 you just help me understand, you know, we have testimony  
19 that Therminol is more limiting, but I don't have a sense  
20 of how much more limiting.

21 MR. KELLY: Therminol is a synthetic oil. It has  
22 an upper temperature level of about 390c. Above that  
23 temperature starts -- Therminol decomposes into fluids  
24 which are toxic in some cases. It's also very expensive.  
25 Nitrate salt, in contrast, is basically, one component is

1 mind in Chile. It just shows up as a natural compound in  
2 the soil. They basically just strip it out from the soil.  
3 The other compound in nitrate salt, it's a mixture of  
4 sodium nitrate and potassium nitrate. Potassium nitrate  
5 is manufactured starting from the sodium nitrate, and they  
6 ship that actually to Israel and it's converted from  
7 sodium nitrate to potassium nitrate there.

8           The big advantages to nitrate is it's very firmly  
9 stable in temperatures up to about 600 degrees centigrade.  
10 It's also believed that in regarding its use as a thermal  
11 storage fluid, its vapor pressure is extremely low. It  
12 doesn't boil until very high temperatures, and so you can  
13 start it in tanks run at basically atmospheric pressure.  
14 That winds up being a much less expensive approach than  
15 trying to store -- and to Therminol, which is a vapor  
16 pressure of about 10 bar at 390.

17           And so if you have to store it at 10 bar, you have  
18 to start in the pressure vessel and costs go up  
19 dramatically by the storage in the pressure vessel as  
20 opposed to say nitrate salt in an atmospheric tank.

21           The other advantage is nitrate salt is very  
22 inexpensive. It's only about a dollar a kilogram. And so  
23 it's probably about 1/20th of the price of Therminol. So  
24 just based on kilojoules per kilogram basis -- actually,  
25 kilojoules per dollar basis, it's much, much less

1 expensive than Therminol.

2           The other advantage to nitrate salt is it's  
3 basically inert. It's used as a fertilizer. And so if  
4 there's a spill, then it contacts the ground and generally  
5 freezes. And the freezing point is pretty high, it's  
6 about 220c. So if it does spill, it basically freezes  
7 once it hits the ground, forms almost like a self-sealing  
8 kind of a deal.

9           Therminol, on the other hand, its freezing point  
10 is about 12 degrees. And it will soak into the ground,  
11 and there has to be a viral mediation program to remove  
12 the soil that's contaminated with Therminol and let  
13 organisms basically decompose the Therminol, so it becomes  
14 a safe -- safe (inaudible).

15           Nitrate salt, once it's frozen can be just picked  
16 up, basically broken up, reintroduced back into the  
17 storage tanks. So in that sense, it's a much more benign  
18 fluid than Therminol is.

19           COMMISSIONER DOUGLAS: So one follow-up on that,  
20 too. If you have a project -- a tower project using  
21 molted salt storage, does that affect restart times or  
22 operational flexibility? In other words, does keeping  
23 temperature longer make it easier to restart, quicker to  
24 restart?

25           MR. KELLY: The big advantage to a tower plant, at

1 least -- are you speaking to the plant design solar that's  
2 being proposed for Palen, or something similar to the  
3 Crescent Dunes project?

4 COMMISSIONER DOUGLAS: Maybe you could answer for  
5 both. I mean, I guess, I phrase the question in a general  
6 sense, as in what's possible. But I would be interested  
7 in the answer for both.

8 MR. KELLY: In the more general sense, that's the  
9 Crescent Dunes' approach, where they take -- the salt is  
10 actually heated up to its whole temperature and they  
11 receive it. The salt is pumped from a cold tank through a  
12 receiver into a hot tank. That whole loop is completely  
13 separate from the power generation side. That can  
14 continue on irrespective of what the turbine is doing. To  
15 run the turbine, they take salt from the hot tank, run it  
16 through a steam generator, and bring it back to the cold  
17 tank. That operation is completely independent of  
18 whatever is going on regarding the salt radiation. So you  
19 can collect during the day, generate at night. And it has  
20 been demonstrated before.

21 So in terms of flexibility, that gives you the  
22 ultimate in terms of flexibility because you can respond  
23 by the electric power generation side completely  
24 independently of going on -- what's going on in terms of  
25 the other side.

1           COMMISSIONER DOUGLAS:   Okay.

2           MR. KELLY:   The Palen project is a little bit  
3 more -- a couple more constraints in the sense that  
4 there's a solar receiver, there's a small temperature  
5 decay going from the conditions from the solar receiver in  
6 the storage back out again.  You have to make sure that  
7 your turbine is designed to tolerate this drop in  
8 temperature.  There's also some constraints on how quickly  
9 you can change the temperatures.  But, generally, though,  
10 this basic concept using a tower with storage allows you,  
11 to a large degree, to separate solar energy collection  
12 from electric power production.  So it provides  
13 flexibility, regarding the operator, is to responding to  
14 needs that may or may not match the salt radiation  
15 conditions.

16           COMMISSIONER DOUGLAS:   Okay.  Thanks.  Related  
17 question:  We've got some testimony that the higher  
18 temperatures that are possible with thermal storage in  
19 towers versus solar troughs make the thermal energy  
20 storage with towers more efficient.  And I'd be interested  
21 in hearing you elaborate on what you mean by more  
22 efficient, whether it be less costly or more hours of  
23 storage or, you know, how might this greater efficiency or  
24 this benefit of higher temperatures manifest?

25           MR. KELLY:   In a trough plant, you're -- in



1 Solano, they use thermal storage systems there. The cold  
2 tank runs at about 285c, the hot tank runs about 385c plus  
3 or minus. It's a hundred degree delta-T between the cold  
4 tank and the hot tank.

5 For a typical tower project, like in Crescent  
6 Dunes, the delta-T is not a hundred degrees, it's  
7 275 degrees. So to first store -- the amount of the  
8 energy you can store are given quantity of salts based on  
9 the temperature rise by the cold tank and the hot tank.  
10 If your temperature rise is three times as much, you need  
11 a third of the mass. So to a first order, cost of  
12 storage, like at Crescent Dunes, is roughly a third the  
13 cost of storage as Solano. That's the principle benefit,  
14 is that your upper temperature for the tower project is  
15 much, much higher than it is with a trough project. The  
16 trough project is limited to temperatures of roughly 390c  
17 because of the thermal decomposition point of the  
18 Therminol.

19 Nitrate salt, you can run the temperatures up to  
20 600, 610. So if you a much higher temperature at the  
21 upper end, you can make for a larger temperature  
22 difference between the cold tank and the hot tank. And  
23 the temperature difference is what drives the price.

24 COMMISSIONER DOUGLAS: Okay. So I've got one more  
25 question, and it really goes back to the comment -- and

1 now I've forgotten which of petitioner's witnesses -- oh,  
2 it was from Mr. Olson. Part of his testimony, he said  
3 that with thermal energy projects with, you know --  
4 thermal energy storage projects from towers, they can  
5 potentially store enough energy to assist in ramping. And  
6 I might be misremembering it. I'll just ask it this way:  
7 They might be able -- you know, they can store enough  
8 energy to assist in ramping. Of course, the State of  
9 California has renewable integration needs. Those are  
10 both kind of minute-to-minute type needs and longer terms  
11 such as I think what applicant was trying to show with  
12 putting up the duck chart. How does the performance of  
13 solar towers with thermal energy storage compare to the  
14 gas plant in terms -- for example, in terms of just being  
15 able to run up, integrate?

16 MR. KELLY: On a steam turbine plant like you have  
17 in like the Palen project, you can typically increase the  
18 load at 10 percent better. So if you're running the  
19 turbine at minimum load, which is like 10 percent,  
20 15 percent, it takes you roughly 8 minutes to go from  
21 there to whole load. Gas turbines, again, that's based on  
22 primarily because steam turbines are higher pressure  
23 devices, they're usually lots of metal in there. You  
24 can't increase the metal temperature too quickly,  
25 otherwise you'll run into fatigue problems.

1           Gas turbines can lower much faster. Just, you  
2 know, basically stop to full load in only like a couple of  
3 minutes. They're much lower mass devices in terms of how  
4 much metal is in there, so you can heat them up pretty  
5 quickly. So gas turbines respond more quickly than, say,  
6 the steam turbine would.

7           But for loading ramps like this, the steam turbine  
8 could accommodate that. The gas turbine would do a little  
9 bit better job, but whether or not you need the extra  
10 capabilities of a gas turbine is sort of an open question.

11           COMMISSIONER DOUGLAS: Got it. One more question.  
12 I thought I had my last question, but I've got one more.  
13 Is there a difference between trough and tower  
14 technologies with storage in terms of being able to  
15 accommodate, you know, very long-term storage, for  
16 example, I don't know, 15 hours?

17           THE WITNESS: It's an optical problem. For trough  
18 plants, typically, the collectors are arranged in such a  
19 way that the summer performance is good, but they  
20 sacrifice winter performance. So if you're not collecting  
21 very much energy in the winter, it's not an economic  
22 choice to put in large thermal storage systems. Tower  
23 plants have a different optical characteristic. Their  
24 performance in the summer is very similar to their  
25 performance in the winter if you discount the fact that

1 the days are shorter in the winter than they are in the  
2 summer. But, optically, they do well in the winter.

3 And so you can justify much larger thermal storage  
4 capacities with a tower plant than you can with a trough  
5 plant. Typically, a trough plant is -- six hours is about  
6 your -- the upper cutoff for joining what might be  
7 considered an economic amount of storage. For tower  
8 plants, it's about 18 hours. Abengoa is pursuing a  
9 project in Chile, they sent -- right now, it's under  
10 design. They have financing. It's a tower plant using  
11 salt with 17-and-a-half hours of storage, because the  
12 client has a 24-hour demand for electricity. This plant,  
13 once it's running, will run probably in the summer months,  
14 maybe for six months out of the year, 24 hours a day full  
15 load. The turbine just won't stop running.

16 And this has been proved before, in Solar 2, which  
17 was (inaudible). Solar 1, they had a three-hour thermal  
18 storage capacity there. And sort of like a demonstration,  
19 they ran the turbine for three days continuously, it never  
20 stopped. The load at night went down very low to try to  
21 take advantage of the limited capacity of the storage  
22 system. But, conceptually, it's a straightforward -- it's  
23 a straightforward concept and a visionary exercise to  
24 design a plant that runs 24 hours a day.

25 HEARING OFFICER CELLI: Thank you. Let's see if

1 there's any follow-up to the questions that Commissioner  
2 Douglas asked. Staff, any follow-up of Mr. Kelly?

3 MS. MARTIN: I do not.

4 HEARING OFFICER CELLI: Mr. Emmerich or  
5 Ms. Cunningham?

6 MR. EMMERICH: No.

7 HEARING OFFICER CELLI: Any Belenky?

8 MS. BELENKY: Not at this time.

9 HEARING OFFICER CELLI: Ms. Clark?

10 MS. CLARK: No.

11 HEARING OFFICER CELLI: Mr. Figueroa?

12 MR. FIGUEROA: No.

13 HEARING OFFICER CELLI: Ms. Gulesserian?

14 MS. GULESSERIAN: No questions.

15 HEARING OFFICER CELLI: Mr. Galati?

16 MR. GALATI: No questions.

17 HEARING OFFICER CELLI: Okay. Then, we've now  
18 completely been around the question of benefits and  
19 overrides except, Mr. Galati, I think we need to take care  
20 of this question of Exhibit 1206. So at this time, why  
21 don't you move in all of your evidence, and then we'll  
22 talk about that which -- we'll take the objections.

23 MR. GALATI: I would like to move in Exhibit 1125,  
24 29, 43 through 49, 1181 through 1193. I'll treat a second  
25 motion for the Exhibit 1206.

1 HEARING OFFICER CELLI: Well, what I'm thinking is  
2 we'll do this: Why don't you move in 1209 now, and then  
3 we'll go around and take whatever objections to whatever  
4 exhibits that we'll get objections to and then we'll ask  
5 in order.

6 MR. GALATI: And I would also amend the motion to  
7 include Exhibit 1206, the comment of Roger Johnson.

8 HEARING OFFICER CELLI: Okay. Ms. Gulesserian,  
9 any objection to the admission of Exhibits 1125, 1129,  
10 1143 through 1149 inclusive, 1181, 1193, and 1206?

11 MS. GULESSERIAN: No objection.

12 MR. GALATI: Excuse me. It's 1181 through 1193  
13 inclusive.

14 HEARING OFFICER CELLI: Any objection to --

15 MS. GULESSERIAN: No objections to that either.

16 HEARING OFFICER CELLI: Okay. Thank you.

17 Mr. Figueroa, any --

18 MR. FIGUEROA: No objection.

19 HEARING OFFICER CELLI: No objection. Ms. Clark.

20 MS. CLARK: Just the previous objection to 1206.

21 HEARING OFFICER CELLI: Okay. CBD?

22 MS. BELENKY: No objection except for 1206; we do  
23 object.

24 HEARING OFFICER CELLI: And Basin and Range Watch?

25 MR. EMMERICH: No.

1 HEARING OFFICER CELLI: No objection to any of the  
2 exhibits?

3 MR. EMMERICH: No, we don't.

4 HEARING OFFICER CELLI: Okay. Staff?

5 MS. MARTIN: No objections.

6 HEARING OFFICER CELLI: Okay. Then at this time,  
7 the committee would receive into evidence exhibits 1125,  
8 1129, Exhibit 1143 through 1149 inclusive, Exhibit 1181  
9 through 1193 inclusive. We have an objection to  
10 Exhibit 1206. We've now heard the live testimony under  
11 oath from Roger Johnson with regard to that opinion,  
12 comment. Mr. Galati?

13 MR. GALATI: Yeah, I would say that we laid a  
14 proper foundation. He established that that was his  
15 opinion. It was prepared by him. He has qualifications  
16 as the head of the Chief Site and Division to make such an  
17 opinion. And I believe that you should treat it as sworn  
18 testimony.

19 HEARING OFFICER CELLI: And Ms. Clark?

20 MS. CLARK: We've already objected for the reasons  
21 I stated, but I would also add that he expressed today  
22 that he had done no analysis to support his opinion. And  
23 so I'd object on lack of foundation as well.

24 HEARING OFFICER CELLI: Okay. And Ms. Belenky.

25 MS. BELENKY: Yes, we continue to object because

1 we just didn't have a chance to properly rebut it, we  
2 didn't have a chance to provide testimony in rebuttal.  
3 And Mr. Johnson did not apparently -- it seems quite clear  
4 to me, mistook the project description in a way that  
5 doesn't track with what we heard this morning. And by him  
6 not being here and not being able to cross-examine him  
7 that also puts us at a prejudicial disadvantage if his  
8 testimony comes in.

9 HEARING OFFICER CELLI: Okay. But we're just  
10 talking about the comment letter now, because there was no  
11 objection to his testimony coming in, his live testimony  
12 coming in.

13 MS. BELENKY: He stated that he had not heard the  
14 discussion this morning about the project description,  
15 that he assumed there would only be one tower when he made  
16 his statement regarding the biological resources, and that  
17 he made no analysis as the basis of his testimony  
18 regarding the biology.

19 We did not have a chance to rebut his testimony,  
20 he is not sitting on the panel for biology, and we do  
21 object.

22 HEARING OFFICER CELLI: Staff, anything?

23 MS. MARTIN: We have nothing.

24 HEARING OFFICER CELLI: Okay. One moment.

25 (Off-Mike Discussion)



1 I hope this isn't going to be more complicated  
2 than it needs to be. The committee will accept the  
3 comment as comment, but the committee is going to allow  
4 and admit the evidence which is the document itself which  
5 has been identified as Exhibit 1206.

6 The committee acknowledges the arguments made with  
7 regard to the absence of analysis, as to the point that  
8 Ms. Belenky made, the lack of foundation that Ms. Clark  
9 made, that goes to the weight of the comment rather than  
10 its admissibility.

11 But, again, we'd make the point that it's coming  
12 in as comment but we're allowing it in as an exhibit. So  
13 it is now part of the record and will be received into the  
14 record. Is there anything else, Commissioner?

15 COMMISSIONER DOUGLAS: I'll just make a brief  
16 statement at this point, and the question sometimes comes  
17 up in our proceedings about what it means to make public  
18 comment and how a commission might use public comment as  
19 opposed to evidence and the difference between comment and  
20 evidence.

21 Of course, what we're doing here today is, for the  
22 most, part taking evidence. We're also taking public  
23 comment. We did it around lunch time, and we'll do it  
24 again at 5:00 o'clock. And we've just done it right now,  
25 we've taken some comment in from Mr. Johnson.

1 Evidence comes in this proceeding as factual  
2 information. It comes in from sworn witnesses. We have  
3 the very process we're going through, and it information  
4 the committee as to facts that form the basis of our  
5 analysis and our decisions.

6 Comment is also very relevant, and in many cases  
7 can be factual by the commission as well. For example,  
8 comment may inform the committee on how we weigh evidence.  
9 It may certainly inform the committee -- and many public  
10 commenters are here today because they would like to  
11 inform the committee on how we should consider issues such  
12 as project benefits, project costs, benefits or costs to  
13 particular constituencies from particular points of view.  
14 And those comments, all of those comments, are things that  
15 the committee can take into account and does take into  
16 account, particularly when we're called upon to consider  
17 questions of override.

18 Comments can be quoted. They can be used  
19 persuasively and in argument. And certainly a comment by  
20 the head of the Energy Commission Siting Division has  
21 meaning to the commission. So it's important that we  
22 enable the parties to be able to talk about this document.  
23 And so we are giving it an exhibit number so that it can  
24 be conveniently cited to and talked about. But we're not  
25 admitting it as fact, as evidence. And so that's where we

1 are with that.

2 HEARING OFFICER CELLI: Thank you, Commissioner  
3 Douglas. Staff do you have a motion with regard to  
4 evidence?

5 MS. MARTIN: I do. Just exhibits 2017, 2018, and  
6 2019.

7 HEARING OFFICER CELLI: Any objection from the  
8 petitioner to the admission of Exhibit 2017, 2018, or  
9 2019?

10 MR. GALATI: No objection.

11 HEARING OFFICER CELLI: CURE?

12 MS. GULESSERIAN: No objections.

13 HEARING OFFICER CELLI: Mr. Figueroa?

14 MR. FIGUEROA: No objection.

15 HEARING OFFICER CELLI: CRIT?

16 MS. CLARK: No objections.

17 HEARING OFFICER CELLI: CBD?

18 MS. BELENKY: No objections.

19 HEARING OFFICER CELLI: Basin and Range Watch?

20 MR. EMMERICH: No objections.

21 HEARING OFFICER CELLI: Exhibits 2017, 2018, and  
22 2019 are received into evidence. CURE, did you have an  
23 exhibit?

24 MS. GULESSERIAN: Yes. CURE wishes to move  
25 Exhibit 6000 into the record.

1 HEARING OFFICER CELLI: The motion to move into  
2 evidence Exhibit 6000, any objection from CRIT?

3 MS. CLARK: No objection.

4 HEARING OFFICER CELLI: Center for Biological  
5 Diversity -- oh, I'm sorry, Californians for Renewable  
6 Energy.

7 MR. FIGUEROA: No objection.

8 HEARING OFFICER CELLI: Thank you.

9 MS. BELENKY: No objection.

10 HEARING OFFICER CELLI: No objection from CBD.  
11 Basin and Range Watch?

12 MR. EMMERICH: No objection.

13 HEARING OFFICER CELLI: Staff?

14 MS. MARTIN: No objection.

15 HEARING OFFICER CELLI: Petitioner?

16 MR. GALATI: No objection.

17 HEARING OFFICER CELLI: Okay. Exhibit 6000 is  
18 received into evidence. There was no evidence from  
19 Mr. Figueroa. CRIT, you had no evidence, or did you?

20 MS. CLARK: No.

21 HEARING OFFICER CELLI: CBD evidence on override.

22 MS. BELENKY: Our evidence has already been put in  
23 the record. It's the same testimony from Bill Powers  
24 that's already in the record.

25 HEARING OFFICER CELLI: Okay. And Basin and Range

1 Watch?

2 MR. EMMERICH: We have no evidence.

3 HEARING OFFICER CELLI: Okay, then. We've  
4 received, and we'll close the record then on overrides.  
5 The witnesses on overrides are excused. Okay. We'll take  
6 a 15-minute break.

7 Is Larry McLaughlin here? Larry McLaughlin, did  
8 you wish to make a comment?

9 MR. MCLAUGHLIN: (Inaudible)

10 HEARING OFFICER CELLI: Oh, you'll be here for the  
11 later -- for the 5 o'clock. Okay. Thank you. Let's get  
12 started on bio at 3:15. We're off the record.

13 (Recess taken from 3:02 p.m. to 3:21 p.m.)

14 HEARING OFFICER CELLI: Okay, so by my watch  
15 it's about 3:16, 3:17, something like that. And the last  
16 topic area is Bio, which we're finally at. But I  
17 understand we have different witnesses for different areas  
18 within Bio.

19 What we're going to do today is we're going to  
20 talk about the impacts. The focus of the impacts today  
21 was the solar flux. So we've limited the testimony to  
22 solar flux as it related to birds, bats and insects. And  
23 then we also have mitigation for solar flux, either by  
24 curtailment or deterrents. And that's the way I've broken  
25 it down in here.

1           And I understand we have an awful lot of experts  
2 who are here to testify today. And I'm thinking that what  
3 I would do -- would it make a difference if I separate out  
4 the mitigation, and I mean the curtailment and deterrents  
5 as a separate issue and then keep the avian, bat and  
6 insect people. Will that make for a better logistical  
7 flow here?

8           MR. GALATI: I think that works for us. We'd  
9 also like to do avian right away. We do have a witness  
10 who is in Israel, and I think it's 1:00 or 2:00 in the  
11 morning.

12           HEARING OFFICER CELLI: So is that Mr. Franc?

13           MR. GALATI: No, Binyamin Koretz.

14           HEARING OFFICER CELLI: All right, then the  
15 people who are sitting at the table -- and then do we have  
16 more witnesses sitting behind the people who are sitting  
17 at the witness table? Is that the situation I've got  
18 going here?

19           Okay, let's start from right here then. Your  
20 name, sir?

21           MR. LEVENSTEIN: Dr. Ken Levenstein.

22           HEARING OFFICER CELLI: Is it Ken?

23           MR. LEVENSTEIN: Yes.

24           HEARING OFFICER CELLI: Levenstein.

25           And next to Dr. Levenstein is Matt Stucky. And

1 next to Mr. Stucky?

2 MR. ERICKSON: Wally Erickson.

3 HEARING OFFICER CELLI: Wally Anderson (sic).

4 MR. ERICKSON: Erickson.

5 HEARING OFFICER CELLI: Erickson. I'm sorry,  
6 Erickson.

7 Mr. Lesh.

8 MR. LESH: Geoff Lesh.

9 HEARING OFFICER CELLI: Mr. Lesh, that mic  
10 didn't sound very good, let's hear you. Can you give me a  
11 1-2-3?

12 MR. LESH: This is Geoff Lesh.

13 HEARING OFFICER CELLI: That's better. Please  
14 pull it up close to you.

15 And Mr. Huntley is next to Mr. Lesh.

16 MR. HUNTLEY: Yes, sir.

17 HEARING OFFICER CELLI: Mr. Huntley, I'm trying  
18 to remember your first name.

19 MR. HUNTLEY: Chris.

20 HEARING OFFICER CELLI: Chris. I'm hoping that  
21 everybody has or at least will give your business cards to  
22 the court reporter so that she knows the proper spelling  
23 of your name.

24 Next to Mr. Huntley we have?

25 MR. PRATT: Dr. Gordon Pratt.

1 HEARING OFFICER CELLI: Gordon Pratt.

2 Next to Dr. Pratt is?

3 DR. SMALLWOOD: Shawn Smallwood.

4 HEARING OFFICER CELLI: Shawn Smallwood.

5 Next to Mr. Smallwood?

6 MR. HARPER: Dave Harper. And you're the  
7 spokesman for CRIT, as I recall.

8 And Ilene Anderson next to Mr. Harper.

9 MS. ANDERSON: Yes, thank you.

10 HEARING OFFICER CELLI: And next to  
11 Ms. Anderson are you testifying as to Biology,  
12 Mr. Figueroa?

13 MR. FIGUEROA: I'm not.

14 HEARING OFFICER CELLI: No, okay. And then the  
15 row, the next row, and let me get the names. Sir, I'm  
16 going to need -- I think the best way to go about doing  
17 this is if we had a hand mic for people in the second row  
18 to pass.

19 Is that the best way to do it or should I have  
20 people pop up and go to the podium.

21 MR. GALATI: I can probably identify them for  
22 you.

23 HEARING OFFICER CELLI: Okay, would you do that,  
24 please, from --

25 MR. GALATI: First, I want to make sure that you



1 get Andrea Grenier on the Panel.

2 HEARING OFFICER CELLI: Andrea Grenier.

3 As you identify these individuals, if they would  
4 please your hand so that the court reporter knows who you  
5 are?

6 Okay, Andrea Grenier is sitting at counsel table  
7 and then next?

8 MR. GALATI: Dr. Karen Voltura.

9 HEARING OFFICER CELLI: Who is Dr. Karen --  
10 okay. How do I spell that last name?

11 MS. VOLTURA: V-o-l-t-u-r-a.

12 MR. GALATI: V-o-l-t-u-r-a.

13 HEARING OFFICER CELLI: Thank you.

14 Next to Dr. Voltura?

15 MR. GALATI: Dr. Richard Kaae, K-a-a-e.

16 HEARING OFFICER CELLI: Next to Dr. Kaae?

17 MR. GALATI: Then we have Elwood Norris.

18 HEARING OFFICER CELLI: Elwood Norris.

19 Next to Elwood Norris?

20 MR. GALATI: And Chris Morris.

21 HEARING OFFICER CELLI: Chris, is that Morse or  
22 Morris?

23 MR. MORRIS: Morris, M-o-r-r-i-s.

24 HEARING OFFICER CELLI: Thank you.

25 MR. GALATI: And Charlie Turlinski is officially

1 on the panel as well, and you might want to write down his  
2 name.

3 HEARING OFFICER CELLI: I have that.

4 And do I have a second tier over here?

5 MR. FIGUEROA: Excuse me. I didn't understand  
6 too good right now, but yes I'll give some witness  
7 testimony on that.

8 HEARING OFFICER CELLI: Okay. I know who you  
9 are, Mr. Alfred Figueroa.

10 Now, do I have a second row of experts? I do,  
11 so let me start from your right, my left, Adelaize  
12 (phonetic), are you the --

13 ADELAIZE: I am not a witness.

14 HEARING OFFICER CELLI: You're not. Okay, next  
15 to Matt?

16 MR. FOOKS: Brett Fooks.

17 HEARING OFFICER CELLI: Is that Brent,  
18 B-r-e-n-t?

19 MR. FOOKS: I'm sorry, Brett.

20 HEARING OFFICER CELLI: B-r-e-t-t.

21 MR. FOOKS: F-o-o-k-s.

22 HEARING OFFICER CELLI: Mr. Fooks.

23 And next to Mr. Fooks is?

24 MS. WATSON: Carol Watson.

25 HEARING OFFICER CELLI: Carol Watson.

1 Yes, so Mr. Fooks you're with staff?

2 MR. FOOKS: Yes.

3 HEARING OFFICER CELLI: And so, do I have a  
4 nice, neat break up to Mr. Lesh that the people to  
5 Mr. Lesh's right are all Petitioner's witnesses?

6 MR. GALATI: I have one more to add that I  
7 missed from my vision.

8 HEARING OFFICER CELLI: Oh, who's that?

9 MR. GALATI: Gustavo Buhacoff.

10 HEARING OFFICER CELLI: Mr. Buhacoff, okay.

11 Well, but these are for all of the Bios, but  
12 we're really going to be dealing sort of sectionally,  
13 first, with the avian and the insects, and then after that  
14 we'll get to the deterrents, the mitigation. So I'm  
15 thinking that in terms of impacts first and mitigation  
16 second. Any other witnesses in the room who I haven't  
17 identified?

18 Okay, hearing none, does anyone have telephonic  
19 witnesses? Staff, any telephonic witnesses for Bio?

20 MS. MARTIN: Nope, everyone's here.

21 HEARING OFFICER CELLI: Petitioner, is anyone on  
22 the phone?

23 MR. GALATI: Yes, we have Binyamin Koretz.

24 HEARING OFFICER CELLI: Binyamin K-o-r-e-t-z?

25 MR. GALATI: I believe that's correct.

1 HEARING OFFICER CELLI: Koretz, Binyamin Koretz.  
2 Any other Interveners have any witnesses on the  
3 telephone?

4 MS. BELENKY: No.

5 HEARING OFFICER CELLI: Okay, no. So other than  
6 Binyamin Koretz, the gang's all here.

7 So I'm going to, at this time, have the  
8 witnesses sworn in that are in the room. So if you would  
9 all please rise, even if you've been sworn before, raise  
10 your right hand and be sworn.

11 (Panel Sworn)

12 HEARING OFFICER CELLI: Thank you. I want to  
13 reiterate, because we just got a chat on WebEx asking that  
14 everybody please scrupulously re-identify yourself every  
15 time you're about to speak so that we know who the speaker  
16 is, because people are trying to follow closely on the  
17 phone and they can't.

18 Now, we need to swear in Binyamin Koretz.  
19 Mr. Koretz, are you on the telephone?

20 MR. KORETZ: I am, yes.

21 (Witness Sworn)

22 HEARING OFFICER CELLI: Have you identified  
23 Mr. Koretz? Okay, good. Very good, thank you. Okay,  
24 we'll begin with the Petitioner.

25 MR. GALATI: Mr. Celli, just to try to put this

1 in perspective, this is a lot of information, what we're  
2 having him do is have Mr. Stucky summarize it for you and  
3 then go into the detail with each individual witness.

4 But we thought it might be helpful for the  
5 Committee to hear our positions, quickly, and read into  
6 where the disputes are, and then we can go into the  
7 individual witnesses. I didn't know how to manage it any  
8 other way. Would that be okay?

9 HEARING OFFICER CELLI: That sounds fine. I  
10 just ask that you don't try to, you know, explain other  
11 parties' positions. Just tell us what the hot points are,  
12 if you would, where the issues are.

13 MR. GALATI: Understood, thank you.

14 MR. STUCKY: As you can see, there are several  
15 members of the Petitioner's team who will be providing  
16 testimony on the topic of avian impacts. I'd like to  
17 quickly provide an overview of that testimony.

18 In general, the Petitioner has provided  
19 additional evidence that was unavailable to the Committee  
20 when it deliberated last fall. This information is  
21 sufficient to assess impacts and make a final decision on  
22 the proposed amendment.

23 The evidence we submitted was pursuant to the  
24 Committee direction in the PMPD and provided at the PMPD  
25 conference. And we've organized the additional evidence

1 in the following manner. First and foremost, we've  
2 provided a lot of evidence to give the Committee a frame  
3 of reference for potential avian impacts from the proposed  
4 project.

5 We've provided a table comparing publically  
6 available avian fatality data from the Genesis Project,  
7 the Ivanpah Project, and the Desert Sunlight PV Project.  
8 We acknowledge this data is imperfect, but that doesn't  
9 mean that it does not help provide a broad frame of  
10 reference. And we've provided an exhibit that compares  
11 the amount of acres for those three projects to help  
12 further put that comparison in perspective.

13 We also provided an exhibit showing that  
14 incidental discoveries of bird carcasses is related to the  
15 number of workers a project has onsite.

16 We also provided an estimate of avian impacts at  
17 similarly sized wind farms.

18 We've also provided a summary of other sources  
19 of bird mortality. And this information is valuable not  
20 only to provide a frame of reference, but to identify  
21 mitigation opportunities where the mitigation funds of  
22 BIO-16A could be directed to provide real and valuable  
23 mitigation.

24 We've provided an avian risk assessment and a  
25 draft bird and bat conservation strategy. And this

1 assessment is specific to the proposed tower technology  
2 deployed at the proposed project site, and uses avian  
3 surveys conducted at the proposed site. Information that  
4 meets this criteria has not been produced by any other  
5 applicant for a utility scale solar plant that I'm  
6 aware of.

7 I would like to take this opportunity to state  
8 that we do disagree with staff's criticism of our risk  
9 assessment and we disagree with staff's recent risk  
10 assessment approach outlined in an attachment to their  
11 rebuttal testimony. We believe that there is a  
12 fundamental misunderstanding on the part of staff with  
13 respect to the difference between solar irradiance and  
14 heat energy. This mistake and others have led some to  
15 conclude that the Petitioner's assumption of critical  
16 solar flux thresholds are too conservative and that the  
17 zone of flux that poses a risk to avian species is several  
18 times greater at Palen, on a tower-by-tower basis than  
19 Ivanpah. Both of these conclusions are incorrect and  
20 we'll provide additional testimony supporting this.

21 However, I should point out that Exhibit 1205  
22 shows that even using staff's approach, the avian impacts  
23 estimated by staff and the Petitioner are not  
24 significantly different.

25 And, finally, we detailed our disagreement with

1 the estimates provided by Dr. Smallwood, as he's using a  
2 flawed scale-up approach to estimate avian fatalities of  
3 solar power tower projects. Detailed testimony on all the  
4 above will be provided by Wally Erickson and Ken  
5 Levenstein, who are here today. And Binyamin Koretz,  
6 who's on the phone, will be providing supporting testimony  
7 in certain technical areas that are germane to staff's  
8 estimate of relative risk to avian species between ISEG's  
9 and the PSEG's projects.

10 So everything I just mentioned relates to the  
11 frame of reference requested by the Committee to evaluate  
12 avian impacts of the proposed projects.

13 Another topic previously raised by the Committee  
14 was performance standards. We believe that any  
15 performance standards should be considered by the  
16 Technical Advisory Committee prescribed for the project  
17 and ask the TAC assist with the implementation of the  
18 BBCS. We've proposed modifications to Condition of  
19 Certification BIO-16B to ensure that the BBCS addresses  
20 and that the TAC considers performance standards.

21 We oppose any specific mortality thresholds.

22 A final subtopic that permeates our avian  
23 testimony is the issue of mitigation. We've provided  
24 detailed reasons why curtailment is not only infeasible,  
25 but by itself should not be relied upon to provide



1 meaningful mortality avoidance. The most important point  
2 for us is that the imposition of curtailment would render  
3 the project un-financeable. But we will be providing  
4 additional testimony on this topic later today.

5           We've provided a draft BBCS so that the  
6 Committee could see how Condition of Certification BIO-16B  
7 ensures a comprehensive monitoring and adaptive management  
8 approach. The BBCS is not due until some number of months  
9 prior to COD, but we've prepared a draft so that the  
10 Committee could see firsthand that BIO-16B results in real  
11 commitments and obligations on the part of the project  
12 owner.

13           While the BBCS is not finalized, it was  
14 developed using the information used at ISEGS and will  
15 continue to be developed with the agencies before it's  
16 implemented.

17           We've also provided examples of how the funding  
18 provided by Condition of Certification BIO-16A could be  
19 directed by the TAC to achieve real mitigation.

20           We've provided exhibits describing pros and cons  
21 of deterrent methodologies. And you'll hear today  
22 testimony from an established commercial technology and an  
23 emerging technology. One has a proven track record of  
24 achieving actual deterrents at large-scale projects. The  
25 other is exemplary of the fact that ideas and technologies

1 for avian deterrents continue to evolve. The Petitioner  
2 has made a commitment to study and implement avian  
3 deterrent technologies at the project.

4 So that summarizes much of the testimony that  
5 will be provided by the rest of the Petitioner's panel.

6 And before I conclude my introductory remarks,  
7 however, I do need to take the opportunity to address  
8 staff's proposed changes to Condition of Certification  
9 BIO-16B. Because these changes were submitted in rebuttal  
10 testimony, we've not had the chance to respond in writing,  
11 so I'd like to respond orally.

12 While the Petitioner and staff have found many  
13 areas of agreement throughout this proceeding, the  
14 Petitioner needs to enter into the record the fact that we  
15 absolutely disagree with staff's most recent proposed  
16 changes to Condition of Certification BIO-16B. Staff has  
17 arbitrarily increased the monitoring time frame from three  
18 years to five years. I've personally reviewed approved  
19 avian plans for various wind and solar energy projects and  
20 the majority of all post-construction monitoring that's  
21 been required at all the projects I've reviewed has been  
22 for a period of two years.

23 We, the Petitioner, have already agreed to three  
24 years of post-construction monitoring at the PSEGS  
25 project. Furthermore, the TAC is authorized to increase

1 the monitoring term if, at the end of three years, they  
2 think it's warranted. This is memorialized in BIO-16B and  
3 in the BVCS.

4 So what exactly is the point of deciding today  
5 that three years is insufficient and five years is the  
6 correct duration? All it does for certain is add  
7 significant additional cost to the project.

8 If the Committee wants to add additional cost to  
9 the project, I think they should weigh those costs against  
10 the perceived benefits. There are no benefits measurable  
11 today that would arise from the arbitrary increase of the  
12 monitoring duration.

13 We also agree with the monitoring requirements  
14 added by staff for insects. Staff agrees that there are  
15 no significant impacts to insects, even though there will  
16 be mortality.

17 What's the authority under which the CEC would  
18 compel this type of monitoring?

19 And, furthermore, someone who has personally  
20 been responsible for implementing and complying with  
21 CEC-mandated conditions of certification on another  
22 project, I have firsthand knowledge of how some  
23 well-intentioned words written by staff into a condition  
24 can have vast consequences during the construction and  
25 operation of a project.

1           For instance, consider the BIO-16B as currently  
2 proposed by staff that would require an insect behavior  
3 and mortality monitoring program implemented during  
4 construction and operation of the project. If you read  
5 that literally, that language would require monitoring  
6 insect behavior during construction of the project  
7 covering nearly 4,000 acres. I don't know how you do  
8 that. We believe that that and other insect monitoring  
9 requirements are unwarranted and we'll be addressing that  
10 topic of insects in more detail later today.

11           So that concludes my introductory remarks. And  
12 with that, I'd like to hand this over to Mr. Wally  
13 Erickson.

14           HEARING OFFICER CELLI: Thank you, Mr. Stucky.  
15 Go ahead, Mr. Erickson.

16           MR. ERICKSON: Wally Erickson with West. Thank  
17 you, Commissioners, thank you Hearing Officer. I'm going  
18 to start by discussing a little bit about the frame of  
19 reference. So if you could pull up Exhibit 1157. This is  
20 a table we put together that summarizes sources of avian  
21 mortality throughout the United States. You know, it's a  
22 way to understand what things are impacting birds across  
23 the nation. And these numbers, what's interesting about  
24 some of these numbers, there's some recent publications  
25 that have updated several of these sources.

1           A recent publication by Scott Floss (phonetic),  
2 estimated about 1.4 to 3 and a half billion birds are  
3 taken by cats every year. Now, buildings are a big --

4           MS. BELENKY: Excuse me, I'm sorry to interrupt,  
5 but I do want to check if what we are doing now is having  
6 everybody repeat the testimony that is in the record or if  
7 we are going to have a panel discussion about the  
8 differences? And that is a big question. It's already  
9 3:30. I know that the Committee has said they don't want  
10 to go into tomorrow. And I would just like to get some  
11 clarity on what we are doing now.

12           HEARING OFFICER CELLI: Yes, actually,  
13 Mr. Galati, and all of the witnesses, we will receive  
14 everybody's opening testimony and rebuttal testimony. And  
15 I do recall looking at all of the charts and tables.

16           I'm okay with a summary of the testimony in, you  
17 know, a high level summary. But we don't want to get into  
18 the weeds and we don't want to have to rehash what's  
19 already in the record. What we're really interested in  
20 hearing about is where the parties differ so we can hear  
21 the parties explain the merits of their positions in  
22 opposition to each other so we can have an informed  
23 decision. So really, let's see if we can't avoid the  
24 rehash of the evidence that's already in the record.

25           Mr. Galati?

1           MR. GALATI: My only concern is that I bear the  
2 burden of proof. We sat here with witnesses at the last  
3 evidentiary hearing and there wasn't that dialogue. And  
4 there were lots of questions that could be answered if we  
5 knew what they were. So unfortunately, I've instructed  
6 all these witnesses to not leave anything out this time  
7 because I'm terrified that there is not an appropriate  
8 record made.

9           So if maybe the Committee could give us -- I can  
10 actually have Wally say the headings of the things he was  
11 going to talk about, are you interested in learning or  
12 understanding how we did our risk assessment versus the  
13 way the staff did their risk assessment.

14           COMMISSIONER DOUGLAS: So that would be exactly  
15 the kind of testimony that would be useful. Reading  
16 through this exhibit and going over the, you know, number  
17 of birds killed by cats, we've got it right here. We've  
18 read it before, we don't need that.

19           MR. ERICKSON: Okay. I think it fits well when  
20 we talk about mitigation because there is some differences  
21 in opinion regarding the mitigation piece, but we'll wait  
22 until we talk about that at the end.

23           COMMISSIONER DOUGLAS: Perfect.

24           MR. ERICKSON: So I'll start with walking  
25 through we have exhibits. Ken, Dr. Levenstein, do you

1 want to just briefly summarize?

2 HEARING OFFICER CELLI: And allow me just to say  
3 that your objection is sustained, Ms. Belenky, just to  
4 keep the record tidy.

5 MR. LEVENSTEIN: Sure. Ken Levenstein with  
6 West. The company that I work for, West, has been at the  
7 forefront of renewable energy wildlife interaction  
8 research for many years. Originally, this meant assessing  
9 the potential impacts that the development of wind energy  
10 facility might pose to birds and bats. More recently, we  
11 have been involved in similar work relative to various  
12 solar facilities.

13 The work that I do consists largely of  
14 conducting well-designed pre- and post-construction  
15 surveys and analyzing the results of those studies in an  
16 attempt to predict and assess potential impacts posed by  
17 the facilities to birds and bats whose activities might  
18 put them at risk. West differs from most consulting firms  
19 in that in addition to wildlife biologists, we have a  
20 large team of highly skilled biometricians and  
21 statisticians to ensure that the design of our studies and  
22 the analysis of the results of our research are robust and  
23 scientifically defensible.

24 In the summer of 2000 West was contracted to  
25 take over a series of tasks, pre-construction surveys, and

1 other associated studies in preparation of the BBCS, et  
2 cetera, associated with this project.

3           Prior to West taking over the work, a great deal  
4 of effort had already gone in to numerous studies  
5 conducted for iterations of the project by several other  
6 firms.

7           The BBCS includes the methods and results of all  
8 avian and bat related baseline studies conducted to date  
9 at the project site and provides a risk assessment for  
10 various avian species groups based on the results of the  
11 baseline studies. A large number of studies have been and  
12 continue to be conducted at the site far exceeding efforts  
13 at other solar projects.

14           In fact, I believe the pre-construction surveys  
15 provide more comprehensive baseline information on avian  
16 use for any solar energy project considered by the  
17 Commission and it surpasses the work done for many wind  
18 projects.

19           If you could display Exhibit 1158, please?

20           MR. GALATI: I think let's, based on what the  
21 Committee just said, let's dispense with that.

22           MR. LEVENSTEIN: Okay.

23           MR. GALATI: I think, Ken, that you've made the  
24 -- I'm sorry for interrupting. I'm trying to be  
25 responsive.



1 MR. LEVENSTEIN: Yeah.

2 MR. GALATI: Forget about my direction. And  
3 just get to the main point of what you want them to hear  
4 today. So I apologize for that.

5 HEARING OFFICER CELLI: We appreciate that. We  
6 have your other evidence.

7 MR. LEVENSTEIN: All right, I'm going to give  
8 this back to Wally, then. And we're going to focus on the  
9 risk assessment because that's where some of the  
10 difference exist amongst the experts.

11 HEARING OFFICER CELLI: Thank you.  
12 Mr. Erickson, go ahead.

13 MR. ERICKSON: Yes. Exhibit 1134, which you  
14 don't have to put up, does contain our risk assessment, as  
15 the draft BBCS. And we used one of two approach to  
16 predict impacts of birds from highly concentrated solar  
17 flux.

18 We used a model approach that the Fish and  
19 Wildlife Service has used for Golden Eagles at wind  
20 projects, very similar, to develop an exposure metric for,  
21 in the case of wind, collision with turbines, but in this  
22 case, passing through the highly concentrated solar flux.

23 We started with a solar flux map and I want to  
24 talk about this because it relates to the CEC staff's  
25 model for solar flux. We considered an area of 100 meters

1 from the receiver as the zone of highly concentrated flux.  
2 And this captures all of the 50 kW per meter-squared area,  
3 nearly all of the 25 kW per meter-squared area and some of  
4 the 10 kW per meter-squared area, as well as some lower  
5 levels above and below this cylinder that we used. And  
6 effectively, we looked at the bird use data from the  
7 preconstruction studies for about four to five months in  
8 the fall, and early winter, and estimate how many flight  
9 paths we'd anticipate flying through a similar-sized area  
10 based on that data.

11 Now, we separated out large birds because  
12 detection rates for large birds are better than small  
13 birds. So we did a large birds using these large birds  
14 view shed counts.

15 And then we looked at data from small bird  
16 counts. We had a large series of small bird counts that  
17 were collected throughout the project area during that  
18 time. And those were 100-meter view sheds, so we feel a  
19 lot better about detection for small birds in that  
20 scenario. And, ultimately, what we did is taking this  
21 volume of area we estimated the number of flight paths  
22 that would potentially pass through there, assuming no  
23 avoidance or no attraction.

24 So basically, an exposure model similar to the  
25 wind exposure model. They have a model that says how many

1 eagles may potentially pass through this zone of risk of a  
2 wind farm. We did it for two towers. We did it for one  
3 and multiplied it by two, okay, to come up with the  
4 overall numbers.

5           Ultimately, the results of our risk assessment,  
6 so we took the data we had in the fall and we extrapolated  
7 it to the whole year. So we used a whole 12-month period.  
8 And we came up with an estimate of around 600 to 1,200  
9 potential exposures with solar flux, highly concentrated  
10 solar flux in a year, without any avoidance, without any  
11 attraction.

12           And we also looked at different taxonomic  
13 groups. And it happens that turkey vultures, we had a  
14 fair number of turkey vultures flying at that elevation  
15 during the study, and that was the most common exposure, I  
16 guess, that we estimate from this model. And then they're  
17 very common, probably the most common large, carnivorous  
18 bird in North America. It's a very common bird.

19           And then we also estimated that song birds,  
20 Passerines, smaller birds as a group were probably the  
21 other most at risk taxonomic group, which is pretty much  
22 consistent with what we've seen for data at Ivanpah. They  
23 are the house finches, yellow warblers were the most  
24 common carcass found, showing signs of singeing.

25           One thing I'd like to do, should we ask Binyamin

1 to provide a little bit of background on the difference  
2 between solar radiance, and radiant energy, and the  
3 electromagnetic spectrum. I think it gives some  
4 perspective on and differences between thermal and radiant  
5 energy. And I think it's important in understanding the  
6 differences.

7 HEARING OFFICER CELLI: One moment,  
8 Mr. Erickson.

9 (Off-Mike Discussion )

10 HEARING OFFICER CELLI: So Mr. Erickson, I'm  
11 sorry for the interruption. We're just trying to work  
12 efficiently here. We would ask that, because we have  
13 heard, this particular Committee has heard an awful lot.  
14 You're sitting next to Mr. Lesh and we've heard testimony  
15 about the quality of the solar flux a lot. So the request  
16 would be that you keep that in a very high level, outline  
17 level, if you would, rather than again getting into too  
18 much detail on that, because we'll be getting your  
19 testimony. Correct, or Mr. Koretz's testimony?

20 MR. GALATI: Yeah, I think he was just asking  
21 Binyamin to go.

22 HEARING OFFICER CELLI: Okay, go ahead. Go  
23 ahead, Mr. Koretz.

24 MR. KORETZ: Thanks. Could you put up Exhibit  
25 1201 while I'm starting to talk?

1           MR. GALATI: We're having a little trouble  
2 pulling it up quick enough with the computer here, but the  
3 Committee has 1201 in its packets and so do the parties.  
4 I could direct you to it, as I notice that it's not marked  
5 as 1201. If you just give me a moment.

6           MR. KORETZ: Yeah, I notice that Wally's exhibit  
7 came up on the WebEx about three minutes after he was told  
8 to stop using it, so I realize there's a delay.

9           MR. GALATI: For those people in the room, 1201  
10 is the colored spectrum that Binyamin would like to speak  
11 to. And the 1202 is the second graph that is in red and  
12 blue for you.

13          MR. KORETZ: Yeah.

14          MR. GALATI: Go ahead, Binyamin.

15          MR. KORETZ: So this is Binyamin Koretz from  
16 Brightsource.

17                 (Inaudible) to document the differences on the  
18 (inaudible) exposure to solar flux and the right level of  
19 solar flux. Can understand what the basic or fairly look  
20 of the physics of light and heat, and take a little from  
21 biology and explain some physics behind it.

22                 So electromagnetic radiation is a form of  
23 energy. It's often called light energy. The way  
24 physicists explain it, it's kind of a complicated form of  
25 energy because it's made up of particles, called photons,

1 that (inaudible) a variety of particles in waves.

2 Now, if you can look at Exhibit 1201, this shows  
3 electromagnetic radiation spectrum. On the top it says  
4 quantum of photon energy level and then below that is a  
5 access of wave length. So if you're going from left to  
6 right on the graph, decreasing wave lengths of  
7 electromagnetic radiation and, correspondently, an  
8 increase in energy levels.

9 So those (inaudible) are kinds of  
10 electromagnetic radiation differentiated by the  
11 (inaudible) and, of course, other frequency, but we won't  
12 talk about frequency because that's already too much.

13 So how can the main (inaudible) of the graph in  
14 the middle, again going from left to right, you can see  
15 the different portions of bands of electromagnetic  
16 spectrum, which have very familiar names, like nanowaves,  
17 microwaves (inaudible) it says on the graph intro, useable  
18 light, ultraviolet, lots of forms of light, x-rays. So  
19 these different kinds of electromagnetic radiation are  
20 (inaudible)

21 So energy into a form of radiant energy, and we  
22 can see it in 1201, and electromagnetic energy in the full  
23 band of electromagnetic spectrum, or simply the full  
24 spectrum.

25 So now I'd like to look at the solar, what's

1 called solar spectrum, which is in Exhibit 1202.

2 (Inaudible) to anybody who works in solar  
3 energy, the top column on the graph is (inaudible) at the  
4 top of the atmosphere, before it's taken up in the earth's  
5 atmosphere, it's from the rays of the sun. And the bottom  
6 curve is a choppy line that makes it down to sea level.  
7 And the specific one relates to what's called, it's an  
8 ASTM standard G17303, refers to air mass 1.5, which in  
9 layman's terms is when the sun is directly overhead, let's  
10 say, at the closest point.

11 So looking at (inaudible) we can see that  
12 thermal radiance or the fair spectrum power of the  
13 electromagnetic spectrum is approximately about no more  
14 than 200 nanometers (inaudible) 2,000 nanometers. Or,  
15 actually, this graph talks about microns, so it's from  
16 about .2 microns to 3 microns.

17 Now, most of the energy is around 500 nanometers  
18 and that's more granulite, as we know it. And in fact, 90  
19 percent of all the energy in the fair spectrum that comes  
20 from the sun is in white lines between 250 nanometers and  
21 1,800 nanometers. And that's when the (inaudible) of the  
22 infrared light.

23 Okay, so how can does energy gets to earth  
24 through the atmosphere and how it's distributed by  
25 different wave lengths. Now, thermal flux is a measure of

1 how much light energy is radiated on a given area. Right,  
2 we can characterize thermal flux by the familiar watts per  
3 square meter or kilowatts per square meter. Thermal  
4 energy is what we call heat. It's a different form of  
5 energy. It's (inaudible) to understand physically than  
6 light energy because it's just most of those subatomic  
7 particles moving excitedly inside the mass of an object.  
8 Thermal energy is the form of energy that's internal to an  
9 object.

10           That's different from electromagnetic radiation  
11 or radiant energy, which is something that travels from  
12 point A to point B, or from one object to another, like  
13 from the sun to the earth, or from a heliostat to a  
14 boiler.

15           Thermal energy or heat can be transferred from  
16 one object to another. In fact, it can be transferred in  
17 any one of three different ways, conduction, convection  
18 and radiation. We'll get back to that in a minute, the  
19 radiation part.

20           Conduction is heat transferred directly from one  
21 object to another in contact with it, like you touch a hot  
22 stove and the heat goes from the stove to your finger  
23 through conduction.

24           Convection is when thermal energy is conducted  
25 (inaudible) such as microwaves or gases, which then carry



1 the heat away. (Inaudible) is convecting the heat away  
2 from the soup.

3 And not to confuse you, but this round of heat  
4 transfer can also be measured in elementric watts per  
5 square meter. In the same way we use for solar flux. And  
6 that heat is called solar flux.

7 So flux, in terms of watts per square meter is a  
8 way of transferring energy and it can apply in different  
9 kinds of energy, light energy, or radiant energy, and  
10 thermal energy. (Inaudible) transfer mechanism is  
11 radiation. It makes its round into our discussion of  
12 solar flux. It brings us back to where we started talking  
13 about electromagnetic radiation. When objects get hot  
14 they (inaudible) electromagnetic energy in the infrared  
15 portion of the spectrum. All objects or all objects above  
16 optimum (inaudible) but for all practical purposes all  
17 objects. The hotter the object, the more energy it  
18 radiates. That's we get our heat from the sun through  
19 radioactive heat transfer.

20 That's also how so-called thermal energy works,  
21 infrared (inaudible) they can't run on low temperatures.  
22 They have the radiant energy or infrared light and  
23 (inaudible) the temperature based on its built-in  
24 software. But light energy and even infrared energy is  
25 not heat.

1           Only when light energy is absorbed by an object  
2 that it hits it is converted to solar energy. (Inaudible)  
3 dark colors absorb more, light colors absorb less. That's  
4 why light-colored clothes are more comfortably in a sunny  
5 environment. And transparent objects absorb basically  
6 nothing. The glass in your heliostat varies, for example.  
7 It's imperfectly transparent so it absorbs (inaudible) the  
8 solar spectrum, with the ultraviolet. None of the  
9 infrared and some ultraviolet.

10           Air, transparent, absorbs for all practical  
11 purposes nothing. Small particles in the air can scatter  
12 or absorb, depending on their color or reflectivity. But  
13 the air absorbs nothing because it's transparent. And  
14 that's why the air in the solar field does not get hot  
15 from solar flux. It can't absorb the flux and convert it  
16 to thermal energy. And most of that they call conflation,  
17 and conflation is when identities of thermal conflux is  
18 showing some characteristics of one another seem to be a  
19 similar identity.

20           Flux works with (inaudible) and the differences  
21 appear to become lost. But that's in addition to the  
22 evidence which we can provide, as time allows, and  
23 statements in the record we can show that influx has been  
24 conflated like light flux. (Inaudible) and  
25 misunderstandings we get in estimates of avian impacts due

1 to solar flux.

2 And I'm going to stop here in the interest of  
3 time.

4 MR. ERICKSON: Wally Erickson, I'm going to --  
5 oh, go ahead, Commissioner.

6 COMMISSIONER DOUGLAS: So I have a quick  
7 question before we go on. I feel like I need to ask  
8 questions as they come to me, or I might never get around  
9 and back to asking them.

10 So you just said that heat flux can be conflated  
11 with light flux and that has led to some errors or, you  
12 know, disagreements in terms of more analysis and that,  
13 and critiques of your analysis or the analyses of others.  
14 Could you point out specifically to us where that  
15 conflation has occurred that's caused differences of  
16 opinion?

17 MR. KORETZ: Yeah, I think the simplest example  
18 is a recent report by Fish and Wildlife expecting to see  
19 damage from by breathing hot air. There is no hot air  
20 because the light flux doesn't heat the air, so, looking  
21 at it as if it's thermal flux and not light flux.

22 COMMISSIONER DOUGLAS: Got it, okay. In terms  
23 of -- well, never mind, okay, that's good, thank you.

24 MR. ERICKSON: All right, I'm going to talk a  
25 little bit -- Wally Erickson, again. Talk a little bit

1 about some other concerns we have regarding the model that  
2 suggests that the area of risk to solar flux is much  
3 larger for birds. And we think the staff was probably a  
4 little overly conservative with their threshold, and size  
5 of the flux area, and risk assessment. And one of the  
6 primary pieces of data that they used was the observation  
7 of unknown carcasses at Ivanpah that the cause of death  
8 could not be determined. And I want to first point out  
9 that any of the unknown carcasses were looked at under  
10 microscope and had no evidence of singeing on the feathers  
11 and parts that were there.

12 In addition, the consultant, I've talked with  
13 the consultant who's doing the work at Ivanpah and they  
14 also look at a dissecting scope. So any of the feather  
15 spots or partial carcasses do not show any kinds of  
16 singeing on the feathers.

17 Now, I would also point out that one of the  
18 other pieces of evidence that staff was suggesting  
19 indicates that a lot of the unknowns or some of the  
20 unknowns might be related to solar flux was the density  
21 distribution of unknowns away from the tower, that there  
22 was a gradient in the number of birds closer to the tower  
23 with unknown cause of death.

24 And I would say that very close to the tower  
25 there are unknowns and maybe at a higher density, but I

1 would also point out that when you're building a tower and  
2 when you're maintaining and operating a tower like that  
3 you have a lot more activity.

4 I know the TAC even mentioned in their meeting  
5 notes of concern over the number of incidentals being  
6 reported by maintenance and other folks, and not part of  
7 the actual study. You know, so somebody picks it up and  
8 the searchers didn't have a chance to pick it up.

9 And so, seeing more unknown carcasses near the  
10 tower doesn't necessarily mean it's flux related. It  
11 could mean that it's collision related, for example, but  
12 it got predated upon and you're unable to determine the  
13 cause of death.

14 Another reason why you might see more really  
15 close to the tower, of unknowns, is searcher efficiency.  
16 I've been to Ivanpah. The area around the tower is  
17 cleared and out to quite a ways. And so, it's much higher  
18 searcher efficiency, so you'd expect to find more things  
19 because they're more detectable and more observable. And  
20 so, and then I believe after you get out a little ways  
21 into the heliostats, you don't see this difference in  
22 density.

23 There could be other factors related to that  
24 gradient, as well. For example, the heliostats aren't of  
25 uniform density across the facility, and I think we have

1 an exhibit that shows that.

2 Now, I just want to be clear, too, and unknown  
3 carcass means an unknown cause of death could be from  
4 predation, could be from collision, could be from, you  
5 know, a bird dies. We saw some numbers earlier, I  
6 mentioned earlier of causes of death, you know, it could  
7 be of other causes, potentially.

8 And remember that these are big areas. They're  
9 really large areas being sampled. So you're sampling 100  
10 percent of the area close to the tower and then you're  
11 sampling, at Ivanpah, they sampled about 24 percent of the  
12 heliostats, 24 percent of over 3,000 acres is a very large  
13 area. So you're sampling over 600 acres. You'd expect to  
14 find things that maybe are unrelated to the heliostats or  
15 to flux.

16 I wanted to also point out that unknown  
17 carcasses, so carcasses with unknown cause of death is  
18 pretty common at carcass search studies, at wind projects,  
19 as well as at solar projects. So I think in the OE report  
20 there's a table at the beginning that shows carcasses that  
21 could be determined in terms of cause of death. And it  
22 ranges from 34 percent of the carcasses at Ivanpah to over  
23 75 percent, or 75 percent carcasses being unknown cause at  
24 genesis. So it is fairly common to pick up carcasses of  
25 unknown cause.

1           And if you actually look at the density of  
2 unknown-cased fatalities, say in the heliostat area, did a  
3 calculation on a per-acre basis, it's less, it's like .3  
4 per acre. So you know, a relatively low number. I have a  
5 five-acre -- my house is on five acres and I'm guessing I  
6 find a feather spot a year in that five acres, if not  
7 more, for various reasons.

8           I want to point out just one additional error, I  
9 think, in Figure 1A and B, between pages 30 and 31 of the  
10 Biological Resource assessment, there is a bird that's  
11 identified as 1.2 miles north of the tower, and it's tower  
12 three, and it's identified as being singed or scorched.  
13 But that is an error. It's my understanding the CEC staff  
14 is aware of that. The database has been changed. The  
15 contractor at Ivanpah verified that with me. But I think  
16 it is an error. And the error, I guess, was a data entry  
17 error in terms of the coordinates.

18           MR. GALATI: If we could break there just for a  
19 minute so I could get the Committee -- we're having a  
20 little difficulty with the -- I just wanted to show that  
21 Mr. Erickson was talking about this map.

22           HEARING OFFICER CELLI: 2018, down at the bottom  
23 of the page?

24           MR. GALATI: Correct, it's Staff's Exhibit 2018.  
25 And he's talking about the red dot at the top that shows a

1 flux damaged carcass outside the facility. I'll let the  
2 witness say that.

3 MR. ERICKSON: Yeah, I mean it was just a data  
4 entry error. So for these reasons, again, higher  
5 searcher efficiency close to the tower, more activity  
6 closer to the tower, and I think incidentals were included  
7 in the assessment of whether there might be more carcasses  
8 of unknown cause closer to the tower, as well as finding  
9 unknowns is pretty common. And they did search a hundred  
10 percent of the area and we'd sort of expect that you might  
11 see a little bit higher density of unknowns in that area.

12 Now, I'm going to get back to our risk  
13 assessment, okay, our second approach.

14 First, I'm just going to make a comment about  
15 our risk assessment. I gave you the numbers, the 600 to  
16 1,200 flight paths through the zone of risk that we  
17 identified. We know there's uncertainties in that  
18 analysis and how they will, and we will eventually compare  
19 that to post-construction studies. But they do provide a  
20 baseline estimate for exposure based on local site data.  
21 And I also think this model provides a powerful  
22 opportunity and that post-construction data can help to  
23 validate the model and actually be potentially useful for  
24 future projects, such as the second phase.

25 Now, I'm going to talk about our second approach



1 to predicting impacts. I'm going to try to go as quickly  
2 as possible on this to point out some differences because  
3 you'll see a lot of different mortality estimates that  
4 were provided in the various testimonies.

5 We took an approach where we used the Ivanpah  
6 data, standardized searches at the Ivanpah facility. The  
7 winter report, that Exhibit 1174, they provided some  
8 estimates for the wintertime, okay. And we took that  
9 information from there and the spring, April and May data,  
10 and made our own estimate for Ivanpah, basically, and then  
11 expanded it to the entire year.

12 Now, we used the correction factors from the  
13 winter period. And if you'll look at the TAC notes, you  
14 can look at the TAC notes which we have filed, and they  
15 talk about seeing actually increased searcher efficiency  
16 in the spring. They're using dogs for some of the sample  
17 lots. And they also searched more frequently in the  
18 spring. They actually searched weekly, whereas in the  
19 wintertime they weren't searching as frequently. So we  
20 used the correction factor assuming, basically, it was a  
21 search less frequently, every 21 days, when in fact they  
22 did seven.

23 So the point is I think our estimates may be  
24 conservative, but I think they're a reasonable approach.  
25 So let's bring up the table and it's kind of hard to see.

1           MR. GALATI: Commissioners and parties, it's the  
2 second-to-last or the last in your packet for Biology, if  
3 you can't see the screen.

4           MR. ERICKSON: So basically, there's two parts  
5 of this table. The one on the top is using the Ivanpah  
6 data and effectively estimating annual mortality for  
7 Ivanpah. And if we wanted to assume Palen was going to  
8 be like Ivanpah, those would be numbers. That's the first  
9 column, okay. It says, "Petitioner PSEG data only". And  
10 the table below -- I'm going to change the order a little  
11 bit. I apologize for being a little bit scattered here.  
12 The table below, the first column, is our risk assessment  
13 approach using the preconstruction data at Palen and our  
14 risk model. So flying, effectively looking at flight  
15 paths through solar flux. That's where we see the 1,228  
16 number, which I gave earlier. It's the upper end of that  
17 exposure number. And then we also just calculated what  
18 the number would be under the assumption of one tower.  
19 Okay, so divide it by two in this case. This is solar  
20 flux mortality estimates.

21           Now that was, again, our model using data from  
22 the preconstruction use of Palen. We then calculated what  
23 mortality would be at Ivanpah for a year, using the seven  
24 months' or so data that they've already collected. And  
25 that's where you see this range of 571 to 898. Now,

1 that's for their months expanded to a year, okay, so  
2 that's an annual estimate. And then we did per tower,  
3 there's three towers at Ivanpah, per tower. So our risk  
4 assessment gives us this 1,228 number.

5 We took the Ivanpah data, in addition, so we  
6 could say if Palen is like Ivanpah, those would be  
7 reasonable estimates for the flux-related mortality.  
8 These are using the singed birds, only, okay.

9 Now, if we go to the bottom table, in the second  
10 column, that's taking the numbers from ISEGS and scaling  
11 up from a 377-megawatt project to 500, assuming that the  
12 risk is proportional to the amount of megawatts that are  
13 being produced.

14 This is a pretty standard approach in wind. A  
15 little bit different, it's a standard approach in wind and  
16 we did the same thing. In fact, I think Dr. Smallwood did  
17 something similar when he took the solar one data from a  
18 10-megawatt project and brought it up to a 500-megawatt  
19 project.

20 I want to point out that we also put in some  
21 numbers just for a frame of reference on the far right,  
22 which is the, we labeled it "Staff's Dos Response Risk  
23 Model".

24 Effectively what we did is took our  
25 site-specific Ivanpah estimates and used this correction

1 factor that they suggested, which was I believe 3.7 per  
2 tower. They thought Palen would be riskier than Ivanpah.

3           And again, you know, we've brought in some  
4 reasons why we think that's probably not -- it's a very  
5 overly conservative estimate. But we did that just for a  
6 frame of reference. So if you look at our exposure risk  
7 assessment, we say about 1,200 or so birds exposed. Our  
8 estimate using the empirical data from ISEG, 700 to 1,200  
9 and then if we scale it up, based on the CEC assumption,  
10 we get 1,400 to 2,200.

11           I guess the point is we're not talking, at least  
12 with those models, not tens of thousands of birds related  
13 from flux.

14           Let me get organized here. Now, we also report  
15 Dr. Smallwood's estimates in this table. I want to just  
16 give some reasons why we think they're probably very, very  
17 conservative and an over-estimate of mortality.

18           At least using the ISEGS data, he did make a --  
19 I think it called it a back-of-the-napkin calculation  
20 using the ISEGS data, and he used April and May data,  
21 okay, just the two months. And, one, he expanded that  
22 data for the whole year. So he took the spring migration  
23 period, which probably is a higher risk period, and  
24 applied it to the whole year. He also made an assumption  
25 that the correction factors for availability and

1 detection, so you have what you find and then you've got  
2 to adjust for what might have been removed by scavengers,  
3 and what might have been missed by searcher efficiencies  
4 was 20 percent overall. And I believe, well, that's what  
5 he ended up using there.

6 I think the bigger, you know, issue maybe with  
7 his extrapolation and scaling up is that he assumed that  
8 20 percent of the whole facility was searched.

9 And, in fact, we have 100 percent of the  
10 interior 260 meters were searched, where there's the  
11 highest carcass density, okay, and then 24 percent of the  
12 heliostats.

13 So ultimately, and what we did is take roughly  
14 four times the estimate we have in the heliostats for  
15 flux-related birds. And, you know, you wouldn't multiply  
16 anything for what's in the circle, except for searcher  
17 efficiency and scavenging estimates. So I think that's  
18 part of the potential over-estimate in that case.

19 And then we also did add in Dr. Smallwood's  
20 extrapolations using the 10-megawatt data from Solar One.  
21 That was a project that I believe the tower was about 86  
22 meters tall. I think the heliostat densities are there  
23 was more heliostats on a per-megawatt basis there, which  
24 we characterize in our testimony.

25 And he also used -- McClury (phonetic) said that

1 he had, you know, he didn't make any adjustments for  
2 searcher efficiency. And probably, that's probably a  
3 little bit of an under-estimate. But, you know, given  
4 what I've seen at the tower of Ivanpah, I'm assuming that  
5 they had pretty good detection and that's why he made that  
6 assumption that the area may be cleared close to the  
7 tower.

8           And then Dr. Smallwood used national estimates  
9 for his carcass removal and searcher efficiency to  
10 extrapolate that out. And then, you know, for us to get a  
11 flux number we used Dr. Smallwood's assumption that about  
12 30 percent of the mortality was flux-related at Solar One,  
13 and 70 percent was heliostat. So that's where he got  
14 those numbers.

15           We do think they're overly conservative numbers,  
16 but this gives you some summary of the various estimates.

17           I think the point here is that our estimates and  
18 our data extrapolated from Ivanpah to Palen we think is a  
19 valid approach. It uses the site-specific data, it takes  
20 into account 100 percent search area near the tower, 24  
21 percent of the heliostat, and we come up to this number  
22 that's pretty close to what our risk assessment says.

23           I'm just going to briefly talk about monitoring.  
24 Matt, I think, pretty much covered, you know, the  
25 Petitioner's concerns.

1           I would say that the standard, the wind turbine  
2 guidelines, for example, says one year, but maybe two  
3 years if you have some uncertainty. And then, in a lot of  
4 cases there may be more monitoring depending on what a TAC  
5 might say relative to what you see in the data. You know,  
6 take a look at the data. Some cases, if you're dealing  
7 with lower levels of mortality, maybe it's not a concern  
8 to sample more.

9           In this case they've agreed to sample three  
10 years and I think the TAC has the flexibility, the TAC has  
11 the flexibility to make decisions on monitoring after  
12 that. And part of the -- I think there was some concern  
13 that there wasn't enough detail in monitoring. That was  
14 pretty much by design.

15           You have Ivanpah that's going on now, they're  
16 going to learn from Ivanpah how you might do things  
17 differently. I'm also aware that the Fish and Wildlife  
18 Service has put together a team of scientists to develop a  
19 monitoring approach. And I suspect that will come out  
20 here in the next four to six months, and that might be  
21 useful in providing more detail on how you might do the  
22 monitoring, individual monitoring at the project.

23           All right, okay, I'm going to talk briefly about  
24 mitigation. If you could bring up Exhibit 1173?

25           MS. BELENKY: Excuse me, I'm sorry to break in,

1 but I thought that we were going to parse the mitigation  
2 and the deterrents from this discussion about --

3 MR. ERICKSON: Yeah, so this is the compensatory  
4 mitigation as opposed to methods to deter. I'm fine  
5 talking about it later, it's up to the Commissioners.

6 HEARING OFFICER CELLI: One moment.

7 (Off-Mike Discussion)

8 HEARING OFFICER CELLI: Yeah, Mr. Erickson can  
9 you give us -- I'm not really sure of the distinction  
10 because we did want to separate out mitigation from  
11 impacts.

12 MR. ERICKSON: Okay. Well, this is compensatory  
13 mitigation, so it gets to the \$1.8 million fund that the  
14 Petitioners have agreed to put together for --

15 HEARING OFFICER CELLI: That's Bio-16A.

16 MR. ERICKSON: Yeah.

17 HEARING OFFICER CELLI: Can you give me the  
18 heart of it?

19 MR. GALATI: To show you how money might be  
20 spent by the TAC in a manner in which it might get real  
21 mitigation for you. We hadn't had a chance to discuss  
22 that. It's been in our testimony, both opening and  
23 rebuttal.

24 HEARING OFFICER CELLI: Okay, let's see if we  
25 can keep that at a very high level.



1 MR. ERICKSON: Okay, I would point out that  
2 although I didn't spend any time on the original table,  
3 that original table of mortality sources, I think, is a  
4 good way to -- is a good direction to think about some of  
5 the activities that might be beneficial to birds, okay.

6 We've put in one of the exhibits a cat resource  
7 equivalency analysis, which might sound funny, but feral  
8 cats are a big issue with birds. And we've done some  
9 models that suggest if you took a certain number of cats  
10 out of the population, feral cats, not people's house  
11 cats, feral cats, that you could have a strong benefit to  
12 birds. And we also point out that power pole retrofits,  
13 for example, which the service has agreed to for eagles,  
14 in wind, does benefit raptors.

15 HEARING OFFICER CELLI: Okay, we don't need to  
16 go through this whole table.

17 MR. ERICKSON: Okay, sounds good. And so I  
18 think the point is we think that money, that \$1.8 million,  
19 if the TAC spends it wisely and uses the data that's  
20 collected at the facility in monitoring, can compensate  
21 for the flux mortality.

22 HEARING OFFICER CELLI: One moment.

23 (Off-Mike Discussion)

24 HEARING OFFICER CELLI: Okay, so we are going to  
25 keep that separate, distinguish impacts from mitigation,

1 and CUL-1A and 1B as mitigation. I'm sorry, BIO-16A  
2 and --

3 MR. GALATI: We'd be happy to combine them all  
4 into one CUL/BIO-1.

5 HEARING OFFICER CELLI: So let's keep the  
6 mitigation distinct, if we can. So anything further on  
7 avian, insect or bat impacts?

8 MR. GALATI: I tell you what, in the interest of  
9 time, we have our insect expert, our entomologist here. I  
10 don't know if you want to hear his rebuttal testimony. He  
11 filed it. We can just wait for questions. He filed  
12 rebuttal testimony to Dr. Pratt. That was all it is.

13 HEARING OFFICER CELLI: Okay. You know what, I  
14 think that we would all probably benefit most by having  
15 the experts talk amongst themselves and deal with each  
16 point, rather than hearing long monologues which has been  
17 useful, but I'm just saying it's --

18 MR. GALATI: That is about as short and sweet as  
19 you can make this subject. I think Wally deserves a hand.

20 HEARING OFFICER CELLI: But, really, what we  
21 want to do is I think it's best if the experts get into  
22 the fine points and they would show us in their testimony  
23 and in their discussions amongst themselves where the  
24 disagreements are and what facts support their positions.

25 MR. GALATI: We have our entomologist here.

1 Maybe I can have Dr. Kaae, you want to go to insects now  
2 from us?

3 HEARING OFFICER CELLI: Well, if his evidence is  
4 rebuttal to Dr. Pratt --

5 MR. GALATI: Correct, and he already filed it in  
6 writing.

7 HEARING OFFICER CELLI: That's right. So let's  
8 hold off on that. We might want to hear an introductory  
9 from Dr. Pratt on the insects and then we can hear  
10 discussion about where the disagreements are with regard  
11 to the impacts to insects.

12 So anything else from the Petitioner's side with  
13 regard to the impacts?

14 MR. GALATI: Nope. I would also just ask if the  
15 parties could organize their cross-examination questions  
16 for Binyamin first, it would be helpful. He is in Israel,  
17 and I don't know if it's 2:30, 3:00 now.

18 But his issues are very distinct.

19 HEARING OFFICER CELLI: They are. Let me ask,  
20 do any of the -- well, I guess I'll go around and ask each  
21 Intervener whether you or your expert, because we'd really  
22 rather hear from the experts, take any issue with Dr.  
23 Koretz testified to. So I'm going to start with -- by the  
24 way, CURE left. Their issue was just having to do with  
25 the overrides, so they're no longer here.

1           So starting with you, Mr. Figueroa, any question  
2 to Dr. Koretz?

3           MR. FIGUEROA: No questions.

4           HEARING OFFICER CELLI: Okay, Ms. Clark?

5           MS. CLARK: No questions.

6           HEARING OFFICER CELLI: Ms. Belenky?

7           MS. BELENKY: We have just one question. And  
8 that is that I believe there was earlier testimony, it may  
9 have been over a year ago, that once you get close enough  
10 to the tower that there would be some combined effect at  
11 which the air would heat up. I'm pretty sure that we  
12 heard that testimony. And what I hear this testimony  
13 saying is that will never happen. The air will never get  
14 hot at any point. And so, I would like clarification on  
15 that.

16           HEARING OFFICER CELLI: Dr. Koretz, did you hear  
17 the question?

18           MR. KORETZ: I'll clarify that. You can hear  
19 me?

20           HEARING OFFICER CELLI: Yes.

21           MR. KORETZ: Okay, I didn't know if I was muted  
22 or not.

23           Okay, so from flux the air will not heat up.  
24 Well, technically, there will be a rise of merely one  
25 degree from flux at that concentration.

1           So with that said, there will seem hot air  
2 (inaudible) you recall I talked before about convective  
3 heat transfer. There's convective heat transfer from the  
4 face of the receiver, essentially wind heating the  
5 receiver. And within a few moments (inaudible) we seemed  
6 diagrams of computational flow dynamics of the air flow.  
7 But within a few moments the high (inaudible) dissipates.  
8 (Inaudible) it talks about a few meters, less than ten.

9           And but it dissipates any time it's on the  
10 downwind side of the receiver. But it's not from flux.  
11 I'm not contradicting myself. I'm just clarifying that  
12 there is a little bit of hot air near the receiver.

13           MS. BELENKY: Thank you.

14           HEARING OFFICER CELLI: Basin and Range Watch?

15           MS. CUNNINGHAM: Yeah, a follow-up question on  
16 that. How hot is the air right next to the receiver  
17 there, that convective heat, would you estimate for a  
18 large receiver?

19           MR. KORETZ: Oh, I haven't looked at the numbers  
20 in over a year. But like I said, it dissipates very  
21 quickly. So wind, you know, will (inaudible) it might  
22 still be a couple hundred degrees. But again, you know,  
23 that's a maximum flux. The hot air's not going to be --  
24 and that's heat that a creature can feel as opposed to  
25 flux, which is really absorbed in, for example, feathers

1 and may or may not conduct into the body.

2 But again, commonly, the rule of -- a couple of  
3 meters it might be. I'm not sure of the numbers because I  
4 haven't looked at it in a long time. But it dissipates  
5 very quickly.

6 MS. CUNNINGHAM: Like a couple of hundred --

7 MR. KORETZ: In terms of short distance.

8 MS. CUNNINGHAM: A couple hundred degrees  
9 Celsius, you mean?

10 MR. KORETZ: I'm sorry?

11 MS. CUNNINGHAM: Is that Celsius?

12 MR. KORETZ: Now, again, I'm saying this from  
13 memory. I remember the skin on the receiver (inaudible)  
14 is about 600 degrees Celsius, you know, because the  
15 (inaudible) is going to be -- or in the case of Ivanpah,  
16 560 to 570 degrees, the hottest part. Not in all of it,  
17 in about 40 percent of it or 50 percent of it. So that's  
18 from temperature of the receiver to a few meters away.

19 MS. CUNNINGHAM: Okay, thank you.

20 HEARING OFFICER CELLI: I wonder if staff, we'd  
21 love to hear from your witnesses on this.

22 MS. MARTIN: I'll let you speak for yourself,  
23 Geoff.

24

25 MR. LESH: Is there a question?

1 MS. MARTIN: Well, it's my understanding that --  
2 sure, I will make it a question.

3 Do you have any disagreements with what you  
4 heard stated by --

5 MR. LESH: I do not disagree.

6 MS. MARTIN: Okay.

7 HEARING OFFICER CELLI: No disagreement, thank  
8 you.

9 MS. BELENKY: I'm not sure what the subject  
10 matter was. Was it every single thing that had been said  
11 before?

12 HEARING OFFICER CELLI: No, this was just the  
13 flux.

14 MS. BELENKY: Oh, okay.

15 MS. MARTIN: And I'm sorry because I felt bad  
16 for forgetting Mr. Koretz's last name, so that's what I  
17 was referring to.

18 MS. BELENKY: Okay, just on the flux.

19 MR. LESH: I can elaborate.

20 MS. BELENKY: No, you don't need to elaborate.

21 MR. LESH: Okay.

22 MS. BELENKY: I just wanted to make sure I knew  
23 the scope of what you were agreeing to from staff.

24 HEARING OFFICER CELLI: Okay, but we may want to  
25 hear some elaboration on that, you know. I got that

1 wrong. I got that wrong.

2 Okay, so then let's -- staff, do you have any  
3 rebuttal testimony to what we've heard so far from  
4 Petitioners with regard to avian impacts from solar flux?

5 MS. MARTIN: Well, let me clarify, are you  
6 asking for staff's opening testimony? Are you asking for  
7 --

8 HEARING OFFICER CELLI: Yes, opening testimony.  
9 And if you can relate it back to what's been testified to  
10 already, that would be great.

11 MR. HUNTLEY: Certainly, thank you.

12 HEARING OFFICER CELLI: One moment. Should we  
13 let Mr. Koretz go to sleep?

14 MR. GALATI: Binyamin, this is Scott Galati.  
15 I'm going to ask you to hang in there just a little bit in  
16 case we get into details that, hopefully, the Committee  
17 does not want to get into. But if we get into those  
18 details, I may need you.

19 MR. KORETZ: No problem. I don't want it show  
20 up in the transcript in a couple weeks that I went to  
21 sleep.

22 HEARING OFFICER CELLI: Okay, we were trying to  
23 be merciful.

24 Okay, so staff, we do want your opening  
25 testimony now. Again, if we can keep it pretty high



1 level, go ahead, Mr. Huntley.

2 MR. HUNTLEY: I'll keep it very brief, thank  
3 you. Commissioner Douglas, Commissioner Hochschild,  
4 Hearing Officer Celli, thank you. My name is Chris  
5 Huntley. I'm a biologist working on the Palen project  
6 with my colleagues, Carol Watson and Chris from the  
7 engineering staff.

8 We contend that the operation of the PSEGS will  
9 result in significant and potentially unmitigated impacts  
10 to birds. We've been fairly consistent through our  
11 testimony on this issue. And it's based on a number of  
12 factors that we've already provided in previous testimony.

13 We contend the project's located in an area with  
14 a broad diversity of birds, both resident and migratory  
15 species, and including rare species such as Bank Swallow,  
16 Gila Woodpeckers, Swainson's Hawks, and fully protected  
17 species such as the Golden Eagle and Peregrine Falcon.

18 I believe the Petitioner has documented up to  
19 185 different species of birds at the project site. We  
20 believe the risk to birds from exposure to solar flux has  
21 been documented and that sensitive species, such as the  
22 Bank Swallow and the Peregrine Falcon have been killed at  
23 the ISEGS facility.

24 We believe that shorter exposures to  
25 high-intensity solar flux would cause tissue or feather

1 damage, impair flight or vision, or cause physiological  
2 effects that ultimate cause or contribute to mortality  
3 from other causes, such as inability to forage, or escape  
4 from predators or thermo-regulate.

5           We believe longer doses to lower-intensity solar  
6 flux are also likely to cause feather damage or  
7 physiological effects.

8           Staff also asserts that birds suffer mortality  
9 from exposure to solar flux that do not exhibit visual  
10 evidence of feather damage or feather singeing and that  
11 that's not accounted for in mortality estimates.

12           We believe that the flux field's also larger  
13 than previously thought. And based on modeling completed  
14 by our engineering staff, Geoff will speak to this in just  
15 a moment, we believe the risk area at the tower is 3.8  
16 times larger than the tower. That's not that there's  
17 mortality increase of 3.8 times, it's just a risk area.  
18 The volume at risk is 3.8 times larger compared to ISEGS.

19           I'm going to let Geoff speak a little bit on the  
20 engineering right now.

21           MR. LESH: I won't elaborate. I'm Geoff Lesh  
22 from the Commission's Engineering Department, and I'd just  
23 like to deliver the engineering opening statement that  
24 will just summarize our key points and conclusions from  
25 our testimony. So I'll go through several points here.

1 The first questions, I'm going to go through a series of  
2 questions just to answer, anticipating that these might be  
3 of interest to you.

4 The first one is why do we create this risk  
5 assessment? Because the Petitioner filed draft burden  
6 back conservation strategy, the BBCS, with their opening  
7 testimony that contained their risk assessment.

8 The Petitioner stated that a solar flux density  
9 of 25 kilowatts per meter squared was a conservative  
10 threshold for dangerous flux levels. Staff questions that  
11 risk assessment and conclusion.

12 Previously, staff developed an exposure model  
13 that calculated an expected safe flux range for avian  
14 species about three to five kilowatts per meter squared  
15 before the onset of feather damage. Further, staff has  
16 used mortality data, recently from ISEGS, to validate that  
17 model and has used this and has used this, combined with  
18 our newly developed flux model to calculate the relative  
19 risk for a Palen tower compared to an Ivanpah tower.

20 The data we used to do this risk assessment, it  
21 came from the reported avian mortalities at Ivanpah SEGS,  
22 as shown in staff's rebuttal testimony for biological  
23 resources.

24 What approach did we take? Rather than trying  
25 to produce a number for the expected annual mortality at

1 PSEGS, staff felt it was more reasonable to provide a  
2 relative risk assessment. Whatever the number and trends  
3 turn out to be at ISEGS, we would have at least a  
4 comparison for the relative hazard presented by PSEGS.

5 By confining staff's analysis to the DOS  
6 response model that was fitted to actual field data and  
7 estimating only a relative risk, staff has been able to  
8 focus instead on distribution patterns in the mortality  
9 data collected through the ISEGS field surveys and  
10 determining what might be likely scenarios for exposure  
11 leading to mortality.

12 Staff has not tried to predict absolute  
13 mortality numbers, either from the short-term, less than a  
14 year operational data from ISEGS, nor from -- or also not  
15 because it's a potential that for PSEGS the avian usage  
16 will be very different. So the numbers then would also be  
17 different. Factors that are common to both tower designs,  
18 whether strictly accurate or not, drop out of this kind of  
19 analysis when the two designs are taken as a ratio, thus  
20 requiring us to make fewer assumptions and reducing the  
21 likelihood of the resulting conclusion we make being  
22 misled by unjustified assumptions.

23 What was our goal in this? The goal was to  
24 provide information to inform the Bio staff about the  
25 validity of the assumptions that were made in the BBCS,

1 and to provide assistance in the determination of what  
2 monitoring deterrents and mitigation measures to recommend  
3 for inclusion in the BBCS.

4           From our risk assessment we had three main  
5 findings. Number one, staff created a new flux model that  
6 can compare the flux, the solar flux fields between ISEGS  
7 and PSEGS.

8           The comparison revealed that the PSEGS flux  
9 field would occupy 3.8 times the volume of the ISEGS flux  
10 field on a per-tower basis.

11           Number two, graphs which plot the mortality data  
12 show that the mortality per unit of field area, again, per  
13 unit area of both the singed and all non-singed birds  
14 increase as the tower is approached, indicating probably  
15 flux-related mortality causation even in non-singed birds.

16           Staff now believes that feather singeing, in and  
17 of itself, is not a separate or distinct mechanism of  
18 caused mortality but is, instead, just a more severe form  
19 of heat-induced impairment, which happens to be easily  
20 identifiable through visual means. This means that the  
21 key survival issue for birds is thermal regulation of  
22 their physiology when in a flux field.

23           Finding number three, calibrating staff's  
24 continuous DOS response model to match the ISEGS' data,  
25 then applying the same model to a tower design similar to

1 the proposed PSEGS tower allowed staff to estimate the  
2 relative risk to avian populations.

3 Staff's estimate is that a 250-megawatt solar  
4 tower, at 240 meters height, such as is proposed for  
5 PSEGS, would present a risk that is 3.7 times higher per  
6 tower than that presented by 125-megawatt solar tower of  
7 120 meters height.

8 In other words, presented with the identical  
9 population of avian species in its vicinity, staff would  
10 expect the PSEGS tower to produce 3.7 times more avian  
11 mortalities than would an ISEGS' tower. This comes about  
12 because a bird in the area of a PSEGS tower would be 3.7  
13 times more likely to find itself in the flux field and to  
14 incur a mortal flux dose.

15 Finally, and most importantly, the model allows  
16 evaluation of mitigation measures. If one wants to reduce  
17 avian mortality at a site like ISEGS by, for example, 50  
18 percent, avian deterrents would cover out to about 500  
19 meters because if you look at the mortality curve, half  
20 the mortalities occur between zero and 500 meters.

21 At PSEGS, that limit would be closer to 700  
22 meters.

23 Of course, this would be adjusted for the  
24 efficacy of the deterrent method or methods. If a suite  
25 of methods only deterred some fraction of the birds

1 entering the protected part of the field, the deterrent  
2 barrier would need to be moved further out to achieve the  
3 desired 50 percent reduction in mortality, in this  
4 example.

5 Thank you.

6 HEARING OFFICER CELLI: Thank you.

7 MR. HUNTLEY: I just wanted to do a quick  
8 conclusion, wrapping up Geoff's comments.

9 Again, considering the presence of sensitive  
10 birds, including many non-migrants, the scale of the risk  
11 area, the fact that the project would go on for 30 years,  
12 the uncertainty of the effectiveness of deterrents, staff  
13 has no changed its position on the significance conclusion  
14 at this time. You know, the bottom line is ISEGS provided  
15 new data that staff used to confirm its prior  
16 determination on significance. And in light of this  
17 information, we recommended changes to the BBCS, and  
18 changes to condition BIO-16, some of which the Applicant  
19 raised concerns about. We felt that was warranted based  
20 on in our perceived larger risk. And I know you wanted to  
21 talk about that more later, so I won't run on about that.

22 In conclusion, thank you for letting us talk  
23 about this.

24 HEARING OFFICER CELLI: Thank you, Mr. Huntley.

25 Dr. Pratt?

1 MR. PRATT: I'm Dr. Gordon Pratt.

2 HEARING OFFICER CELLI: Please speak right into  
3 that mic.

4 MR. PRATT: Oh, sorry.

5 HEARING OFFICER CELLI: We need to get that --

6 MR. PRATT: Does this work? Can you hear it?

7 HEARING OFFICER CELLI: I hear you because you  
8 have a big voice, but I'm not sure it's coming through the  
9 microphones.

10 MR. PRATT: Hello. Can everybody hear me now?

11 Okay, I'm Dr. Gordon Pratt. I'm interested in  
12 the insects or the little organisms that make the world go  
13 around, like the annoying black flies that suck the blood  
14 off your face, the bees that pollinate your fruit trees,  
15 or the ladybugs that eat the aphids off your vegetables,  
16 or the flies, the sarcophagic (phonetic) flies that speed  
17 up the process of decomposition.

18 The Palen area is probably a pretty diverse area  
19 compared to a lot of other areas in the desert and that's  
20 because of the Palen sand dunes. There was a study done  
21 by Andrews, and Giuliani, and I've forgotten the other  
22 guy, on the actual beetles. This is only the beetles of  
23 the sand dunes. And they only went up there four times  
24 and they still got over 130 species. That suggests that  
25 this is a pretty diverse area.



1           Now, a lot of the information that I've provided  
2 in my document is kind of speculative based on a lot of  
3 the work that I've done with the Mercury vapor lights. I  
4 work with the 175- and the 250-watt Mercury vapor light  
5 out in the desert. And it seems to me that I get a lot  
6 more insects with the 250-watt than I do with the  
7 175-watt. And I'm thinking this is due to the attraction  
8 by the light.

9           Now, that may be what's attracting the insects  
10 to these solar towers. I don't know.

11           And one of the things that bothers me is that by  
12 doing no monitoring, we don't learn anything. And when  
13 you don't learn anything, we continue to think, well,  
14 insects no problem. I think we should be doing some sort  
15 of monitoring.

16           But I heard them talk about insects. They made  
17 the decision that they should not have to do any form of  
18 monitoring. There are simple ways that they could go out  
19 and do some monitoring. They could put out malaise traps,  
20 which will randomly collect insects in the area and you  
21 can actually monitor and see if there's any changes that  
22 are occurring in the insect populations out there. And I  
23 think that's very, very important. If we're losing a lot  
24 of insects, we ought to know because this will have an  
25 effect on agricultural, on the number of mosquitos out

1 there or, you know, a large number of insects that could  
2 be effected by these solar towers.

3 And, well, that's what I think. I mean there  
4 hasn't been much research on insects so far. And I've  
5 been told by a number of people that have gone to these  
6 towers that they see insects dropping down. There are  
7 butterflies dropping down from the actual towers.

8 I mean, what's causing them to go up there?  
9 Because these towers are way, way up there, why would they  
10 fly all the way up to the tops of those towers? That's  
11 what I'm thinking, it's the light.

12 Well, I'm going to keep that brief, I've got a  
13 dog waiting for me at home.

14 HEARING OFFICER CELLI: Thank you, Dr. Pratt.

15 Dr. Smallwood, please.

16 MR. KAAE: Can I respond to that?

17 HEARING OFFICER CELLI: Okay, but I would need  
18 you to go up to the podium, please, and speak right into  
19 that microphone.

20 One moment, Dr. Smallwood, let's hear this  
21 rebuttal and then we'll move on.

22 MR. KAAE: Okay, I --

23 HEARING OFFICER CELLI: Your name, please?

24 MR. KAAE: Oh, Richard Kaae, and it's spelled  
25 K-a-a-e. I didn't have a business card because I don't

1 want that much business.

2 MR. KAAE: I teach at Cal Poly. I've been there  
3 43 years. I, too, have done a lot of insect trapping, as  
4 Mr. Pratt has done, with the same types of lights.

5 You know, based on his testimony, one of the  
6 things that he indicated is that insects fly, the  
7 night-flying insects fly to lights. Night-flying insects  
8 fly to lights at sunset, they fly to lights later in the  
9 day, they fly to lights at midnight, and then they also  
10 fly to lights at twilight. I love insects. Okay, I'm a  
11 lover of insects, as he does. But the problem I have with  
12 it is based on how the towers work, okay.

13 I talked to a person from Brightsource, their  
14 expert, I'm sorry, their expert, and he indicated that the  
15 towers at sunset basically set off or are no longer  
16 producing light, maybe 15 to 20 minutes prior to sunset,  
17 okay. And also, he indicated that the tower also does not  
18 produce light that you can visibly see maybe 15 to 20  
19 minutes after twilight or when the sun comes up. And  
20 based on that, we know that insects aren't flying to power  
21 at night, okay.

22 And what I've seen as far as insects are  
23 concerned is most of them do fly later in the night. You  
24 know, a few may fly right at sunset, but the towers are  
25 going to be turned off at that time. And a few may fly at

1 twilight, but the towers are going to be turned off at  
2 that time, maybe 15, 20 minutes past that.

3 Okay, I need to finish my statement. Okay, so  
4 that's where I'm coming from on that end of it.

5 And also, you know, if an insect was attracted  
6 to -- even if they were attracted from, say it's sunset,  
7 the problem would be that they have to fly to the tower  
8 and it takes time for an insect to fly, okay. And maybe  
9 an insect flies an average of two miles an hour, or  
10 something like that, so that's more time that's involved  
11 in it.

12 So I just don't see how the insects can reach  
13 the tower based on the time when the tower works. I don't  
14 think anybody thinks insects would fly to the tower during  
15 daylight. If they did, they'd fly to the sun. You know,  
16 it's the same. Basically, they would fly to the sun and  
17 nobody thinks that.

18 You know, during the middle of the day the sun  
19 is competing with the tower as far as attractiveness and,  
20 obviously, the sun is a much brighter source.

21 So that's basically my opinions on it. They're  
22 not going to fly that far, you know, when they're being  
23 attracted to it because they don't have time to do it.  
24 And that's where I'm coming from on that.

25 HEARING OFFICER CELLI: Thank you, Mr. Kaae.

1 Mr. Pratt, you had a response?

2 MR. PRATT: Yeah, why don't insects fly at the  
3 moon then?

4 MR. KAAE: I'm not saying they don't. No, I'm  
5 saying they don't, either. I'm not saying they fly to the  
6 sun. I'm saying they shouldn't fly to the sun and they  
7 shouldn't fly to the moon.

8 MR. PRATT: Yeah, but that's --

9 COMMISSIONER DOUGLAS: You've got to talk into  
10 the microphone.

11 HEARING OFFICER CELLI: Dr. Pratt, you --

12 COMMISSIONER DOUGLAS: Excuse me, Dr. Pratt.

13 HEARING OFFICER CELLI: None of that's making  
14 the record. I need you to speak into the microphone.

15 MR. PRATT: Oh, sorry. If insects are flying  
16 around, they will notice that they're getting closer and  
17 closer to the actual light. Whereas the sun, it stays the  
18 same. What is it, 82 million miles away.

19 HEARING OFFICER CELLI: 93 million.

20 MR. KAAE: It's still a bright source.

21 MR. PRATT: It's a bright source, but they're  
22 not going to perceive getting closer to it.

23 MR. KAAE: So you're saying that the insects  
24 are --

25 MR. PRATT: I'm saying that they're using it for

1 navigation purposes, they're not using it to -- you know,  
2 we're seeing these, we're seeing insects that are  
3 attracted to light, that are diurnal. They have the  
4 ability, for some reason they've showed that they have an  
5 ability to be attracted toward light, to fly towards light  
6 even during the daytime, the artificial light.

7 HEARING OFFICER CELLI: I would have to -- I  
8 just want to ask Dr. Kaae is it?

9 MR. KAAE: Yes.

10 HEARING OFFICER CELLI: Just if you go play, go  
11 to a baseball night game in the summer, and those lights  
12 are blazing, there are insects crawling all over those  
13 lights.

14 MR. KAAE: Yeah, but the point is that the  
15 heliostat is not on at that time?

16 HEARING OFFICER CELLI: Say it again, yeah,  
17 speak into that microphone.

18 MR. KAAE: The apparatus is not on at that time,  
19 it's not on at night. I'm not saying insects don't fly to  
20 lights, they do. Okay, but the operation or the apparatus  
21 is not on at that time of night so how are flying insects  
22 going to fly to it.

23 HEARING OFFICER CELLI: And so the testimony, if  
24 I heard Dr. Pratt say, he didn't know whether there was  
25 insects are attracted to light. He couldn't say that?

1           MR. KAAE: No, basically, his testimony was that  
2 insects fly to the light, okay. He said that some fly at  
3 twilight. Okay, in my estimation, most of them fly when  
4 it gets really, really dark. He also indicated that they  
5 will fly to light in the very, very early morning. But my  
6 point is both of those times the thing's turned off, so  
7 how are they going to fly to it?

8           As soon as the light hits the mirror, the  
9 apparatus turns off. And I spoke to an expert from one of  
10 their experts from Brightsource, and he indicated there's  
11 a 20-minute period prior to when the thing turns off,  
12 prior to sunset, okay, and there's a 20-minute period  
13 prior to when it turns on at twilight. So we have a  
14 period in there that Dr. Pratt, in his deposition,  
15 indicated, or in his testimony indicated that there's some  
16 insects that fly at sunset and there's some insects that  
17 fly at twilight to light. That's basically what he said.

18           What I'm saying is it's 20 minutes after those  
19 periods, based on the expert's opinion, that that things  
20 going to be turned off, so they're not going to be flying  
21 to it.

22           I mean everybody admits there are some insects  
23 that are going to be killed by it, you know. It happens.  
24 I don't know how they get there, nobody really does. But,  
25 certainly, they're not going to be flying to the light

1 during the day, or they're not going to be flying to it at  
2 twilight, or they're not going to be flying to it at  
3 sunset based on when the thing turns on and off.

4 HEARING OFFICER CELLI: One moment.

5 (Off-Mike Discussion)

6 COMMISSIONER DOUGLAS: So I'll just ask another  
7 question then. So is it your contention and, I'm sorry,  
8 I'm never going to keep the names completely straight.

9 MR. KAAE: Richard Kaae.

10 COMMISSIONER DOUGLAS: Mr. Kaae, Dr. Kaae. So  
11 what you're saying is that during the day, when the tower  
12 is on, those insects are not attracted to light?

13 MR. KAAE: Definitely.

14 COMMISSIONER DOUGLAS: Definitely not.

15 MR. KAAE: You have a competing source, you have  
16 sunlight.

17 COMMISSIONER DOUGLAS: Okay, and Dr. Pratt,  
18 you're saying?

19 MR. PRATT: I'm saying these towers, they're  
20 producing a very, very strong light, much stronger than  
21 other lights that we have out there. And I'm saying they  
22 could be attracted to those lights. And as they fly  
23 closer and closer they'll see the light getting stronger  
24 and stronger.

25 The sun, they won't see the light getting



1 stronger and stronger, it's 93 million miles away.

2 MR. KAAE: And my opinion is --

3 MR. PRATT: But this is the whole idea of why we  
4 should be doing some sort of monitoring, to figure out  
5 whether this is actually happening.

6 MS. MARTIN: Excuse me, can I have staff have an  
7 opportunity to speak to these issues?

8 HEARING OFFICER CELLI: Yes, I just -- Dr. Kaae  
9 had one more point you wanted to make and then we can go  
10 to staff's. Go ahead.

11 MR. KAAE: Well, I'm saying that the sun is a  
12 competing source. I mean it's obviously brighter.  
13 Obviously, they don't fly to the sun. But, basically, it  
14 -- I believe he whispered in my ear.

15 HEARING OFFICER CELLI: Well, please don't  
16 whisper to the witnesses.

17 MR. KAAE: Yes.

18 HEARING OFFICER CELLI: Let the witnesses  
19 testify. Go ahead.

20 MR. KAAE: Anyway, you've got a brighter source  
21 out there so why would they fly to a less bright source?

22 HEARING OFFICER CELLI: Okay, staff,  
23 Mr. Huntley.

24 MR. HUNTLEY: Yes, thank you, Chris Huntley.

25 Dr. Kaae, forgive me, I'm going to talk this way

1 and not talk to you.

2 MR. KAAE: That's okay.

3 MR. HUNTLEY: Preliminary evidence from ISEGS  
4 shows insects are getting killed during the time and  
5 sometimes large concentrations.

6 We acknowledge we don't know whether those  
7 insects are being wind-blown in there or they're being  
8 attracted to the light. But we've been talking to other  
9 insect experts, as well, and they say we don't know if  
10 they're attracted to the light, but you should be doing a  
11 study to see if those are light-attracted insects. That  
12 was one of the driving factors which caused us to, you  
13 know, suggest we should be doing some monitoring to figure  
14 out what's going on in these facilities.

15 I haven't heard anything compelling, any  
16 scientific evidence or even a citation, or a paper that  
17 says insects won't be attracted to a bright light even  
18 during the day.

19 Are you telling me there's no body of literature  
20 out there that will say that?

21 MR. KAAE: Nobody's tested it.

22 MR. PRATT: Yeah, that's the problem.

23 MR. HUNTLEY: Okay.

24 MR. KAAE: But it makes sense. I'm trying to  
25 make sense out of it, okay. I'm working with logic, I'm

1 not working -- you know, I love insects. I'm trying to  
2 make a logical approach to this. You've got two bright  
3 sources out there. They don't fly to the sun, obviously.  
4 Nobody thinks that. Why are they going to fly to  
5 something that's reflecting the sun?

6 HEARING OFFICER CELLI: Well, just so I can -- I  
7 think we can cap this right now because is the issue  
8 whether to monitor or not to monitor the insects at the  
9 PSEGS?

10 MR. GALATI: Yeah, the staff made a finding of  
11 no significance and yet has a very wide open requirement  
12 to do monitoring that we have no idea what it means, and  
13 could be extremely expensive and a long-term study for a  
14 no finding of significance.

15 HEARING OFFICER CELLI: Okay, then I think we've  
16 heard enough about the insects for now. So I want to  
17 thank you, Dr. Kaae. I don't mean to keep you up at that  
18 podium, you can go ahead and have a seat.

19 MS. BELENKY: I'm sorry, could I just --

20 HEARING OFFICER CELLI: Ms. Belenky?

21 MS. BELENKY: Yeah. I just wanted to say, we  
22 did have testimony earlier on insects. This isn't the  
23 first time in these proceedings we've had testimony on  
24 insects. So I just wanted to remind the Committee of  
25 that. We did have an expert, Pat Fronigan (phonetic), who

1 actually did surveys at the Solar One site and testified  
2 on insects, as well as documentation.

3 HEARING OFFICER CELLI: That's right.

4 MS. BELENKY: So that's in the record.

5 HEARING OFFICER CELLI: And as is, isn't  
6 McCrary's study in the record?

7 MS. BELENKY: Yeah.

8 HEARING OFFICER CELLI: Okay, because I remember  
9 in that study there was like one day of 93, and then there  
10 was a day of 5,000 insects. So anyway, let's, I think we  
11 understand what the issue is there.

12 I'm going to move on to Dr. Smallwood at this  
13 time, regarding impacts, avian impacts.

14 DR. SMALLWOOD: Hello, Shawn Smallwood. I'm  
15 here to answer questions and to respond to testimony from  
16 others. So I'd like to start with Mr. Wally Erickson's  
17 testimony when he characterized my study or  
18 mischaracterized it. I know he didn't mean to, but I need  
19 to correct a few things.

20 There's this table he referenced. I don't know  
21 what the exhibit number is. I think it must have been  
22 submitted maybe a day or two ago.

23 HEARING OFFICER CELLI: Mr. Galati, what is this  
24 exhibit number?

25 MR. GALATI: Yeah, Dr. Smallwood, we submitted

1 it on Friday in accordance with the pre-hearing conference  
2 discussion.

3 DR. SMALLWOOD: Okay, well, I'm just seeing it.  
4 The numbers here are -- what's the exhibit number so I can  
5 reference it properly?

6 MR. GALATI: It's 1205.

7 DR. SMALLWOOD: 1205, thank you.

8 Okay, well, the numbers here, some of them are  
9 backwards, some of them I don't recognize. For example,  
10 there's a number 3236 under Smallwood Solar One that's the  
11 various assumptions.

12 Well, I didn't make that estimate.

13 There's per-tower estimates. I didn't make  
14 those and I wouldn't do that because I do not assume that  
15 there's a proportional relationship between the tallies  
16 and number of towers. I would argue that we don't know,  
17 yet, so I wouldn't do that. There's also  
18 mischaracterization of my extrapolations or my adjustment  
19 factor. Before I say that, though, I want to point out  
20 that there is a difference in our methodology and he had  
21 the time to point out some difference, and I want to point  
22 out a difference, too. One of the differences is that I  
23 provide foundation and explanation for all my methods, all  
24 my conclusions are all in the document. Okay, so anybody  
25 can criticize it, or agree with it, whatever, it's all

1 there.

2           Second, I tend to err on the side of caution,  
3 which I think is appropriate for a risk assessment  
4 involving rare and previous resources, like birds and  
5 bats. I don't rely on wishful thinking or hopeful  
6 thinking. I rely on a good dose of caution.

7           With that said, sometimes I take a conservative  
8 approach and I did here, too.

9           Now, there's an allegation that I extrapolated  
10 from Solar One right to Palen and I didn't do that. I  
11 made an extrapolation, first, from Solar One to Ivanpah  
12 because I had nothing else to do work with before Ivanpah.  
13 And in fact, when I did that, I got it wrong. I actually,  
14 usually hit the mark pretty effectively and consistently.  
15 I usually make pretty good predictions about impacts at  
16 wind farms or other human endeavors. This one I got  
17 wrong. I was way short at what's being found at Ivanpah.  
18 So I think there's a lesson there and I like to learn from  
19 my mistakes.

20           I think the problem with my estimates is, for  
21 Ivanpah, or my estimate for Ivanpah was I used the  
22 national average for adjustment factors. And the national  
23 average doesn't do justice to small birds or bats, very  
24 small birds. In fact, the national average, I published  
25 last year a paper based on peer research, public interest

1 research funded research.

2 I have had -- I've since looked at that estimate  
3 more closely and I've found that for small birds and for  
4 bats -- actually even in that paper I published last year,  
5 the *Journal of Wildlife Management*, I did point out a  
6 graph, provide a graph of bat impacts across wind farms  
7 that showed that with decreasing search interval, or short  
8 search intervals, the adjusted fatalities for bats goes  
9 up, which means our adjustments for scat removal and  
10 search and (inaudible) have not been working properly,  
11 they're missing their mark.

12 And I think I know why. I also found the same  
13 thing since then and I've done more research on small  
14 birds and, sure enough, with shorter search intervals you  
15 get much higher fatality rates, you know, that were also  
16 adjusted. And I think that's where I missed it with  
17 Ivanpah. I didn't use the appropriate adjustment factor.

18 So now, for Palen, you know, I've worked with  
19 what's been found at Ivanpah for the first couple of  
20 months of scientific monitoring. I understand there's  
21 been a third month, but I haven't received the results  
22 yet, they're not posted on the Energy Commission's  
23 website. At least time I checked they weren't, which was  
24 yesterday. So I worked with what's available there. I  
25 didn't track from Solar One at all. I worked with what's

1 been found at Ivanpah.

2           And what I saw at Ivanpah is that, you know,  
3 most of the birds that are being found are tiny. They're  
4 warblers, hummingbirds, and these are tiny birds. And so,  
5 the adjustment factor's going to be huge, okay, much  
6 bigger than the one I used.

7           I used an adjustment factor of .2, which means  
8 you take the number you found divided by .2. This is the  
9 fivefold factor, but I think it's going to be bigger when  
10 you actually do some on-site, proper on-site carcass  
11 persistence -- well, I call it detection trials.

12           I think you'll find that the search retention is  
13 very low and the scatter normal rate is very high.

14           And by the way, this error also goes to some of  
15 what Wally testified to. It goes to the cleared search  
16 area between the power tower and the heliostat mirrors.

17           Yes, it's a much more open area and easier to  
18 find birds. But, I'll tell you what, when you do searches  
19 like that in a similar environment in parts of the  
20 Altamont pass, again under PIER funding, we search areas  
21 that are a bowling ball most of the year. I mean, it's  
22 just really easy to see things in the ground, relatively  
23 easy.

24           The average number of searches per detected bird  
25 is four, which means we missed them an awful lot. Even



1 though they're out in the open and easy to see, we miss  
2 them repeatedly before they're found, and those are the  
3 ones we find. Most of the tiny birds I put out in these  
4 detection trials have been entirely missed, never found.

5           Now, I'll point something else out about these  
6 cleared areas is that the scavengers know they're clear,  
7 too, and are very quick to remove birds and bats from the  
8 most visible ground. All right, so your scavenge will be  
9 very high in the cleared area between the power tower and  
10 the heliostat mirrors. So my value point, too, as an  
11 adjustment factor I would regard as pretty conservative.  
12 I think it's going to be worse down the road.

13           And I also just want to make a big picture  
14 statement, and that is before I stop talking and let you  
15 guys ask questions of us, I just want to make a big  
16 picture statement that, you know, what I'm seeing there in  
17 just the first couple months of scientific monitoring of  
18 Ivanpah, and I want to say also that there's no foundation  
19 for concluding that the spring months are the worst months  
20 at Ivanpah. We will see. At least after a year of  
21 monitoring we will see. But it wouldn't be consistent  
22 with what we find at wind farms. At wind farms the spring  
23 months are boring months for the searchers. They don't  
24 find much.

25           And it's also species-specific. So now, some

1 species are killed more often in August and September, and  
2 some are killed more often in winter. So we need to  
3 avoid, you know, in particular broad statements.

4 But anyway, what I want to see is that what I'm  
5 seeing, these numbers that are coming out of Ivanpah, will  
6 dwarf what we've seen at the Altamont Pass. The numbers  
7 are much bigger. That's all I have to say.

8 HEARING OFFICER CELLI: Thank you, Dr.  
9 Smallwood.

10 Mr. Harper?

11 MR. HARPER: Good afternoon. I just want to say  
12 as a native person, this has been a very interesting and  
13 learning experience. And I never thought, for sure, the  
14 argument of insects, but it was enlightening. There's  
15 some good cross-cultural teaching to me.

16 I do want to say my name's Dave Harper. I'm a  
17 tribal member of the Colorado River Indian Tribes. I'm  
18 the traditional spokesman for the Mojave Elders Committee  
19 for the past 25 years. I just want to say something about  
20 the insects. In our creation story they talk about the  
21 bug named Nanjaha (phonetic), it's Nanjaha is what they  
22 call it. And it's very important because the Nanjaha bug  
23 goes into the ground, into the spirit world of the dead,  
24 when it comes, and it's the only bug that can go between  
25 both worlds.

1           And so, we know it's out in the desert, it's the  
2 yellow and gold bug that comes in between the worlds. It  
3 has a very significant part of the dark side of the world  
4 that is practiced by some of our people. And so, the  
5 significance of some of the insects are very deeply a part  
6 in our spiritual existence and who we are as Mojave  
7 people.

8           And I think that's what I want to touch on  
9 today. I'm the spokesman on behalf of the Colorado River  
10 Indian Tribe's Mojave Elders. And I offer this statement  
11 to document the importance of the birds to the Mojave  
12 people and the impact of the proposed amendment to the  
13 Palen project, which will have an effect on our  
14 traditional Mojave believes.

15           The Mojave people have a well-documented history  
16 of occupation of the subject land and practice their  
17 religion, beliefs even today. And the Mojave people have  
18 a traditional and spiritual tie to the land that is  
19 reflected in their adamant refusal to allow the land to be  
20 desecrated. Traditional landscapes, trails and landmarks  
21 are reflected in the Mojave songs, stories and beliefs,  
22 which are directly tied to the origins of the Mojave  
23 people.

24           Birds play a role in the existence of the Mojave  
25 people in their creation story. Now, the Mojave creation

1 story tells the importance of bird population and the  
2 impact of their existence in the daily life of the Mojave  
3 people.

4           Ironically, the phrase "cradle to death" is a  
5 statement that is well within the Mojave people's  
6 tradition and culture. And it's in the Mojave creation  
7 story that is the creator's son, Mastonho (non-English  
8 word), who changes from a spiritual being to a Sea Eagle  
9 after creating the plants, animals and all beings.

10           The Mojave clans have been identified in the  
11 earth, desert, mountain, plant, animals and the  
12 long-impacted people of the Mojave people.

13           The following Mojave clans play an important  
14 role in the Mojave tradition and culture and they have  
15 been given specific (inaudible) within the tribes'  
16 relation.

17           The quail is a Mojave clan. It's called Masepa  
18 (non-English word). Night Bird, or in the Mojave  
19 language, Mothinka (non-English word), that's a clan. And  
20 a small-flying bird, Maja (non-English word) is a clan of  
21 the Mojave people. And these clans still exist today and  
22 are well within the defined traditional clan realms of our  
23 people.

24           I do want to say on that point, when we talk  
25 about plants and animals, and I don't know when we're

1 going to get there, my clan is called the Moose Clan.  
2 It's a tobacco root and it has a specific purpose in the  
3 cleansing and spirituality of our people that we use when  
4 we are either at funerals, or we're having nightmares,  
5 dreams, when we're looking for the future. These animals,  
6 these plans, they all have a significant impact to our  
7 people.

8           So when you say there's collateral damage or  
9 there's a carcass, it kind of stinks because the carcass  
10 could be a Red-Tailed Hawk.     And so what I'll say about  
11 the Hawk is the most significant and important bird is the  
12 Red-Tailed Hawk, or in the Mojave language, Secura  
13 (non-English word). This bird has great significance and  
14 value to the Mojave people. Now, the Secura is a  
15 spiritual and sacred landmark and the clan representing  
16 the Warrior Clan of the Mojave people.

17           The Warrior Clan was first to step into battle  
18 and sacrifice their life for their people. When in battle  
19 or in day-to-day life, members of the Warrior Clan wore  
20 the Red-Tailed Hawk feathers to identify their membership  
21 in the group.

22           Warriors were taught at a young age to fight out  
23 of existence, not anger, and to understand that they have  
24 committed their life to ensure the tribe's survival and  
25 sustainability. The Mojave Warrior staff was taken into

1 battle and it is still used to honor the Warrior Clan  
2 descendants at funerals, or tribal distinguished leaders.  
3 And the staff is adorned with Red-Tailed Hawk feathers,  
4 which represent the clan with the color red, black and  
5 white.

6           It is believed that the white signifies life.  
7 Black represents death. And white represents the  
8 integrity of the person who the staff has been made for.

9           The Roadrunner, or in the Mojave language,  
10 Dapoulo (non-English word), is the kind that has long been  
11 respected for communication amongst the tribes, clans and  
12 enemies. The Roadrunner signifies the runners of the  
13 Mojave people. It is well documented that runners could  
14 run up to 100 miles per day and would easily run in a day  
15 to the Cochang (non-English word) people well over 100  
16 miles, even on a day like this. And the runners would be  
17 the messenger of death, ceremonies or celebration for the  
18 Mojave people. Most often the runner would return home  
19 the next day at the same rate of speed and distance.  
20 Without the runners, many of the Mojave villages and  
21 people would not be warned of attacks of other people and  
22 enemies who would put them in harm's way.

23           Once returning from battle, the runners were  
24 going back and forth at a high rate of speed for many  
25 hours to remove any bad spirits which may have accompanied

1 them on their journey.

2           It is well-documented in stories that our chief,  
3 our most famous chief, Chief Aracabo (non-English word)  
4 was a chief for the people. He established, in 1863, the  
5 Colorado River Indian Reservation. Because at the time  
6 the Mojave people were in battle with the U.S. Government,  
7 and the Chief made several trips back east to Washington,  
8 D.C., to meet with the president. And at the time, he  
9 would take the steamboat along the Colorado River down to  
10 the Gulf of Mexico. From the Gulf of Mexico the steamboat  
11 would come around to the Port of San Francisco. At the  
12 port of San Francisco is then that he rode the boat to  
13 Washington, D.C., coming around the other side.

14           But the thing about Chief Aracabo was before he  
15 became chief of the Mojave people, he was a medicine man,  
16 a chief medicine man. And at the time of battle, and I'll  
17 tell the story because these areas are really significant  
18 spiritual. At the time of battle, the Mojave people had  
19 50 warriors and Chief Aracabo and they were fighting the  
20 Pena (non-English word) people, and the Pena people had  
21 between 500 and 750 warriors.

22           Because Chief Aracabo was a medicine man and he  
23 wore the hawk feathers, but he was one of very few people  
24 who wore a Roadrunner feather, a hawk feather and an eagle  
25 feather. And at the time of battle, Chief Aracabo would

1 run 50 miles in three-quarters of a day at a half run.  
2 And if he was running to go to battle, and he really  
3 wanted to fight and had an intent, he would do the 100  
4 miles a day, also. But with this battle where they were  
5 fighting Pima people, there were 750 warriors of the Pimas  
6 and the Mojaves had 50. He knew they were outnumbered,  
7 but he was a leader. And Chief Aracaba's primary purpose  
8 was not to let our people die. That's why he established  
9 the reservation because he felt that if we went to war  
10 with the United States, we would have more death.

11 At the time of this battle, Chief Aracaba  
12 suspended time because he was a medicine person. And he  
13 distanced himself 50 miles in a half a day before he let  
14 time be unsuspected. That was the power of the chief, of  
15 that chief at that time.

16 And these areas are significant. But as we go  
17 back to the variation of the birds, it was Chief Aracaba  
18 who was the only one, that I know I've ever read that wore  
19 those three feathers. And that's how important the birds  
20 are to us because they represent these abilities, and  
21 these capabilities, and these next world realms of our  
22 existence and sustainability.

23 The eagle, or in the Mojave language, Aspar  
24 (non-English word), is an important bird. Now, in this  
25 testimony I wrote that I couldn't write anything more



1 because the elders didn't give me direction on it. But  
2 I'm told the eagle was worn by who we call the Butahan  
3 (non-English word) people, the Butahan. And what that  
4 was, was the Butahan people were the advisors to the  
5 chief. They were generally older people, a lot older  
6 people. And their significance in the role were impacted  
7 in the survival and sustainability of the Mojave people  
8 through the direction of the chief. So the chief never  
9 acted upon himself, he had advisors and those were the  
10 Butahan people.

11           And the Butahan people took care of the people.  
12 They were the people who were not on the road when there  
13 was death, they would come to these people that had lost  
14 somebody and they would take care of them. They would  
15 feed them, they would cook for them and they would take  
16 care of the body and set up the cremation ceremonies. So  
17 the Butahan people wore the eagle feathers. They were far  
18 more important, some say, even far more important than the  
19 chief because they took care of the people directly.

20           I'm sorry if I'm boring you. The owl, or in the  
21 Mojave language, papete (non-English word), is another  
22 bird who I had to ask the elders who I can talk about  
23 because this, again, is another bird that is sacred. A  
24 lot of people say, oh, that's the signal of death. That's  
25 the owl, if we hear the owl, in our belief, if you see an

1 owl dancing, and if you've ever seen an owl, and this is  
2 why they call it the bird dancing, if you ever see an owl  
3 dance and you see some of our people dancing, you will see  
4 them dancing like a bird. And some of these owls are  
5 huge, they're about this big and they'll dance. And if  
6 you see our people, they'll wear their cape and they'll  
7 dance, and that's why it's called the bird dance.

8           And the bird dance sometimes, most of the time  
9 is a social dance. The Mojave bird songs are part of the  
10 Mojave culture and play a significant role in the  
11 migration of the Mojave people. Those songs reflect the  
12 areas in which the Mojave people have been to, almost like  
13 a map in tracing the Mojave people's land and experience.  
14 So if you hear a bird song, the song that they're talking  
15 about in the southern area, and the best way I can  
16 describe it to non-Native people is if I said there was an  
17 oval rock, and the song says there's an oval rock, there's  
18 an oval rock, here is the oval rock. It doesn't go that  
19 way but I'm trying to explain it in a way you can  
20 understand it. That song talks about where the oval rock  
21 where we know is, and it's like a map. The bird song, it  
22 will tell about the significant areas in the songs.

23           For others of the Mojave people say if you go to  
24 the sacred mountain of Encomay (non-English word), you  
25 will dream the songs and it will come to you like a river

1 flowing. It is there you will receive your gift of being  
2 a Mojave bird singer.

3           And so, I think, you know, well when we talk  
4 about the X factor of so many of these birds and so many  
5 of these things, we automatically believe that, well,  
6 there's a factor of 10 percent of them will be killed.

7           Well, 10 percent means something to us. It  
8 isn't just a bird. And like I just told, these birds have  
9 significance to our people. They still, today, play that  
10 important part for how we interact with the animals, and  
11 the plants, and the spirit live and how it goes.

12           And I think Joe Ontiveres said, that's yesterday  
13 when he said, "you can't separate the boat because this is  
14 culture".

15           And so, our being of who we are, our culture,  
16 cultural landscapes of Asucura (non-English word),  
17 Red-Tail Mountain, and there's a Warrior Mountain. And  
18 the Warrior Mountain is a landscape that is part of our  
19 culture and has significance in our spiritual being.

20           So when you say, explain X, Y and Z in several  
21 boxes, it's hard for us to fit the box because we are  
22 inclusive. And isn't just inclusive in name, but it's a  
23 spiritual inclusiveness because each of it has a  
24 significant spiritual realm to it. And at each point is  
25 no less or no greater.

1           If our people pass, nobody gets more or gets  
2 less when we do our cremation, it's all the same. Since  
3 time immemorial, since our creator taught us how to  
4 cremate, everybody's the same because we're all equal.  
5 Thank you.

6           HEARING OFFICER CELLI: Thank you, Mr. Harper.  
7           Ms. Anderson?

8           MS. ANDERSON: Hi, this Ilene Anderson. And  
9 Mr. Harper's a hard act to follow, but I'll try and I'll  
10 keep it brief.

11           So I have a number of remaining concerns about  
12 impacts to avian species that really remain unaddressed.  
13 One of those is the potential disruption to the migratory  
14 pathways for birds if the project is built. And, you  
15 know, this north/south, this is east/west. We have grave  
16 concerns about the migration between Salton Sea and  
17 Colorado River.

18           I'm also concerned about the project actually  
19 attracting birds to the site and putting them into harm's  
20 way. I see two ways that this could occur. First, the  
21 birds could be attracted to the site by mirrors mimicking  
22 water features, the famous lake effect that I know we've  
23 talked about and, therefore, being killed or injured by  
24 collision, as reported in the literature.

25           And secondly, birds being attracted to the

1 flying insects that are being attracted to the super  
2 bright light of the concentrated solar and, therefore,  
3 being killed or injured by being burned. Also, that's  
4 been reported in recent literature. Both of these would  
5 be deadly attractions created by the project.

6 I also remain concerned about the lack of key  
7 final avian plans that are available to the public. These  
8 plans purportedly will avoid and minimize impacts. But  
9 without seeing them and knowing what's actually in the  
10 final plans, there's no way to evaluate the adequacy of  
11 these plans.

12 We still have grave concerns about the proposed  
13 TAC. And while we support having technical experts be  
14 advising, the problem is that it's all done behind closed  
15 doors, and so there's no opportunity for the public to  
16 actually engage in this. And for those of us that are  
17 interested in these issues, we think this is a really key  
18 issue.

19 So that concludes my statements at this time,  
20 thank you.

21 HEARING OFFICER CELLI: Thank you, Ms. Anderson.

22 Mr. Figueroa, did you wish to make a statement  
23 at this time?

24 MR. FIGUEROA: Yes, I'm of the Chemehuevi Tribe,  
25 and I monitor the sacred sites. And like Chuckwalla, this

1 is the most sacred place for (inaudible) like research at  
2 (inaudible) and stating how important it is.

3           So one of the things that they forgot to mention  
4 here is about the Poor Will Bird. The Poor Will Bird is  
5 one of the few birds that hibernates. And one of its  
6 favorite places is right there at the northeast side of  
7 the Chuckwallas in the big wash that comes out of the  
8 springs. And the springs is Tula (non-English word), and  
9 this right there, that's just right in the entrance, the  
10 Palen project is right to the entrance of Tula springs.  
11 So it's also one of the most sacred birds of the Coastal  
12 when they hibernates over there. (Inaudible) so maybe  
13 you're familiar with Chuckwalla. As a matter of fact, as  
14 soon as you get the (inaudible) also from there, that's  
15 part of the Chuckwalla there. So it's going to be really  
16 devastating to have that project there. It's the wish of  
17 the people that have already testified of the effect it  
18 will have on the majority.

19           Also what we can see is the Horny Toad. The  
20 Horny Toad, like we said yesterday, is what we call  
21 elcocoo (non-English word).

22           So right now, at the Visala and the Mcoi  
23 (non-English words), they're being devastated. They're  
24 being devastated. The Horny Toad is just being plowed  
25 under right now. So also, this is a big issue of these

1 animals that are being destroyed without any kind of  
2 justification why and how can they be saved? You cannot  
3 avoid trying to save them and not destroy them. So we're  
4 totally against that project because of all this  
5 devastation that's happening. Right now, I think that is  
6 my major point was the Poor Will Bird.

7 HEARING OFFICER CELLI: Thank you, Mr. Figueroa.

8 We've now heard everybody's opening statement  
9 with regard to biology. We did tell people that we  
10 would have at 5:00 and I just want to acknowledge that  
11 it's 5:25.

12 Jeff Ogata is filling in for Alana Mathews as  
13 our public adviser. If anyone wishes to make a public  
14 comment, then please see Jeff, who's standing there and he  
15 has the blue cards.

16 Jeff, if I could have the blue cards now.

17 Larry McLaughlin, you're on. This is your  
18 long-awaited moment, because you wanted to speak earlier,  
19 but you had to take a phone call, so --

20 MR. MCLAUGHLIN: Thank you very much. I  
21 apologize for not being here --

22 HEARING OFFICER CELLI: Go ahead.

23 MR. MCLAUGHLIN: -- when my name was called  
24 earlier. My name is Larry McLaughlin. I'm the Regional  
25 Director for the Inland Empire Desert Region Community

1 Colleges. I work with 12 community colleges on programs  
2 related to advanced transportation and renewable energy.  
3 And my main concern is bringing the economic opportunity  
4 that the jobs created by this project and other projects  
5 to the communities that are nearest to the projects.

6 I think it's important that the desert  
7 communities close by get an opportunity to receive some of  
8 the employment. And we're working with several colleges  
9 in the desert region to help prepare workers for the  
10 employment opportunities. We have been coordinating with  
11 the industry, with the workforce development system, and  
12 the state, with organized labor to make sure that we're  
13 doing it right.

14 We've been conducting a series of advisory  
15 committees that involve all the stakeholders. We've been  
16 having meetings over the months to make sure that we're  
17 developing the right programs, including the training  
18 that's needed. In fact, Palo Verde Community College here  
19 is currently conducting training. They just wrapped a  
20 program this summer, and we're conducting another training  
21 program during the fall in preparation for the project  
22 which is expected to start construction sometime later  
23 fall. And we're doing that specifically for the Utility  
24 Skills industry. There are several colleges that are  
25 focusing on the Utility Skills industry's workforce needs.



1 And we are standing ready. I think it's safe to say that  
2 the community colleges are here for the community and  
3 they're here for the growing industry, the growing energy  
4 industry.

5           The training that we've been developing has not  
6 been directed just for construction, but we also are  
7 developing programs for the operators that are going in  
8 these plants, have long-term jobs, and, you know, the  
9 higher paying career-type positions later on. In fact,  
10 I'm working with a group of educators right now to develop  
11 a curriculum for the operations and maintenance of  
12 large-scale renewable energy power generation projects  
13 that would include, not just solar thermal projects like  
14 the Central Receiver projects in the area, but also the  
15 geothermal projects that are down on the Salton Sea and  
16 others.

17           We're going to continue to work with the project  
18 developers, with their contractors, with the workforce  
19 development system, with labor unions in the area to  
20 ensure that a workforce is prepared properly. We identify  
21 good candidates for employment and, when necessary,  
22 provide the training to get them prepared to make sure  
23 that the jobs are benefiting the communities where there  
24 are projects. Thank you very much.

25           COMMISSIONER DOUGLAS: Thank you,

1 Mr. McLaughlin. I am familiar with a lot of the work that  
2 your program is doing and definitely appreciate it.

3 MR. MCLAUGHLIN: Thank you.

4 HEARING OFFICER CELLI: Forgive me if I  
5 mispronounce names. Stacia or Stacia Bailey. Is it  
6 Stacia?

7 MS. EDDY: I'm speaking for Stacia Bailey over  
8 there. She recently lost her hearing, but it has come  
9 back. If she did come up here, she wouldn't need a mic  
10 because she'd be yelling at you guys. So she just wanted  
11 to let you know that she is against the Palen. Thank you.

12 HEARING OFFICER CELLI: Opposes the project.  
13 Thank you, ma'am. Ma'am, what was your name? Okay.  
14 We'll catch her when she comes around.

15 MS. EDDY: Neva Eddy.

16 COMMISSIONER DOUGLAS: Thank you.

17 HEARING OFFICER CELLI: Neva Eddy, why don't you  
18 stay right there and let's get your public comment right  
19 now. Neva, please.

20 MS. EDDY: Okay. Yeah, let me get my paper.

21 HEARING OFFICER CELLI: We are going to hear  
22 from Neva Eddy, N-E-V-A E-D-D-Y.

23 MS. EDDY: (Non-English word) Neva Eddy. My  
24 clan name is (non-English word). And I just would like to  
25 say also (non-English word), which means my heart hurts or

1 heavy, for several reasons. Because I'm full blooded  
2 Mojave and I'm one of the families who take the Mojave  
3 beliefs very serious. I have been taught many things the  
4 old way, practices.

5 All these solars coming up is taking away a lot  
6 of these birds, plants out there. I use, we use, my  
7 family, we use a lot of these things like, for instance,  
8 the dove. The dove for me in the summer is like a watch.  
9 It tells me what type of day during the summer, how hot  
10 it's going to be. And I listen to its cries; and however  
11 long they call, it's going to be super hot. So that's my  
12 belief. This is what I believe.

13 And another thing, too, is what David had talked  
14 about, is the red-tailed hawk, the eagles, and the owl;  
15 all these things I still believe, I believe in. And, now,  
16 I am teaching my kids and my grandkids same thing. I'm  
17 passing it on to them.

18 But from the red-tailed hawk and the eagle, we  
19 have a family there in Parker who uses a lot of these  
20 feathers to make their stuff. And they're used for the  
21 funerals because that's, I guess, this family clan's,  
22 that's their way for their journey. And they also use it  
23 for special people. It would be like any ancestor of our  
24 Chief, Mojave runners who run, you know, because we  
25 don't -- no phones, no nothing like that. So they would

1 run, Yuma, Needles, to deliver messages. And however long  
2 it took them, you know, the message would get there. And  
3 it was especially about death in the families. So that's  
4 why the importance of these birds, these type of birds.

5           And for the owl, like Dave said, this is an omen  
6 for us. This is what I was taught. And I remember my  
7 father telling me that the owl would talk. Sometimes this  
8 owl will talk in Mojave. He would tell you who was going  
9 to go. And so it just kind of like prepared whoever this  
10 owl would talk to. That was the time to prepare.

11           So many plants out there, particularly the sage.  
12 After a funeral, we believe that spirits are still in the  
13 house. So we use sage to burn. We put them in cans and  
14 we burn them inside the house so that the smoke in this  
15 can, you know, float around in there and do that. And we  
16 also use that for what we call smoking our bodies, which  
17 is a cleansing thing for us.

18           So what I'm talking about is, I practice all of  
19 these things in my home. And, you know, I'm going to  
20 continue; as long as I'm on this earth, I want to continue  
21 to do this and, as I said, teach my kids and my grandkids.  
22 But, you know, with all these solars going up, it seems  
23 like, you know, we have no control over, you know, all the  
24 animals, birds, whatever. Nobody can control where they  
25 can fly, when to fly, you know. It's just like you and

1 like people, they're like people. You know, when you see  
2 something burning, sometimes I call these nosy people,  
3 that, you know, everybody's right there wanting to see  
4 what's burning. So these projects will do that, you know,  
5 the animals, birds, whatever, they'll do the same thing.  
6 They're going to fly right to something bright.

7           So all in all, I just would want to say that I  
8 am against the Palen project going up and, you know,  
9 that's where I stand. Thank you.

10           COMMISSIONER DOUGLAS: Thank you very much.  
11 Cheryl Harper Escara, please. Just so you can be ready,  
12 followed by Manfred Scott.

13           MS. ESCARIA: Good afternoon. My name is Cheryl  
14 Harper Escara. I'm from the Colorado River Indian Tribes.  
15 I also am a full blooded Mojave. I was raised a  
16 traditional way on the reservation for many years, and I  
17 still teach my children the traditional way.

18           And like many of us have said and we have  
19 testified, that animals, plants, the earth, the water, the  
20 mountains are traditional to us. So when you come onto  
21 our reservation or our land, you're destroying these  
22 things that are meaningful to us. You know? But also I  
23 want to say is that I, too, am a descendant of Aratega  
24 (phonetic) Chief Aratega. I come from his people. They  
25 healed my great grandfather. And I am considered a

1 princess.

2           And so with all these things, the traditional,  
3 the medicine, the animals, the plants, the birds, all  
4 those things mean much more to me. And there are pros and  
5 cons about these solar plants. Sure, it will create jobs  
6 for people, local people, a long list of people who need  
7 jobs today. They're under this economy. You know, I,  
8 too, am struggling. I've been working since I was in the  
9 seventh grade, and I just resigned my position two years  
10 ago. And I don't mind saying it, I'm 61 years old. And  
11 these traditional plants and medicine keep me healthy,  
12 keep me going. I go and plant my own plants. I take my  
13 own Aloe Vera. You know, those things are very special.

14           But the thing is, and I do not like to put  
15 labels on people, that's not my way, that's not how I was  
16 raised, because I live in a world of rainbows. Many  
17 people, it doesn't matter, you people have labels, you're  
18 French, Italian, or whatever, Dutch. But I don't see  
19 that. I was never raised to put labels on people. And  
20 I'm fortunate to be here to express myself and my  
21 concerns. But all our Indian people, like we said, four  
22 tribes, Navajo, Hopi, Chemehuevi, Mojaves, I don't see  
23 them as tribes, I see them as relatives because we all  
24 grew up in the same reservation. So we all fight for the  
25 same reason, and we can't stand here today and make that

1 decision for them. We have to come together and stand  
2 together for what we know is right and what is  
3 traditionally ours.

4           Like you've heard before, this land is owned by  
5 the earth, she nurtures us. And the father upstairs gives  
6 us the generation we don't have to get from these power  
7 plants. It's nature. It comes out. It doesn't have a  
8 price on it. But it also provides those economic  
9 abilities for us to farm our lands naturally from water,  
10 from the air, from the climates, from the animals.

11           I live in a place where there's fields. I wake  
12 up every morning and I thank God for giving me the day to  
13 look at the green fields and all the different crops. And  
14 they're all there for a reason. And I just looked at the  
15 solar, the Ivanpah. I sat there with a few tears in my  
16 eyes and thought "How could you do this to us? How could  
17 you do it to anyone?" Put a price on this land, put a  
18 price on nature. We need to go back the old way, the  
19 natural way. And you people are just a moneymaking  
20 business. You know?

21           Sure, we adopt those businesses on our  
22 reservation, like the lady said, it's good for business,  
23 donations, contributions. You know? It's true, but as  
24 Indian people on a reservation, we also live the white man  
25 way. But yet we also believe in our natural native

1 traditions.

2           So don't argue pros and cons here. But please  
3 think about what is necessary with your heart, not with  
4 your wallet. And I want to thank you for inviting us, and  
5 I speak for all the tribes with the Colorado River Indian  
6 Tribes, and respecting us to stand here and do our  
7 testimony. Thank you.

8           HEARING OFFICER CELLI: Thank you, Ms. Harper  
9 Escara.

10           COMMISSIONER DOUGLAS: Thank you.

11           HEARING OFFICER CELLI: We're going to --

12                               (Off-Mike Discussion)

13           I'm just going to interrupt for a second because  
14 we got a note here that Tom Dietsch from the U.S. Fish and  
15 Wildlife Service is on the phone and has to leave and  
16 wanted to make a comment. So if you can hear me,  
17 Mr. Dietsch on the phone. Tom Dietsch?

18           MR. DIETSCH: Can you hear me?

19           HEARING OFFICER CELLI: Yes, go ahead, sir.

20           MR. DIETSCH: I'm going to have to drop off the  
21 call here shortly. I just wanted to let you know that  
22 U.S. Fish and Wildlife Service has some concerns with the  
23 (inaudible). I just wanted to add a couple of facts.  
24 I've listened to the testimony thus far. First of all, I  
25 have concern that the (inaudible). Thank you very much



1 for the opportunity to offer some additional comments.

2 COMMISSIONER DOUGLAS: Thank you, Mr. Dietsch.  
3 We look forward to receiving your letter. I just want to  
4 make a brief announcement, and then we'll go on to Manfred  
5 Scott. The petitioner's providing dinner, which will be  
6 ready at 6:00; is that correct?

7 MS. GRENIER: Yes.

8 COMMISSIONER DOUGLAS: Okay. The dinner will be  
9 ready at 6:00, and that's fine. At 6:00 o'clock, we'll  
10 take a half hour break and we'll let everyone get their  
11 dinner and hopefully have a chance to eat your dinner.  
12 We'll resume public comment at 6:30. We offered  
13 Mr. Dietsch an opportunity to speak because he had to drop  
14 off the phone in a relatively short order.

15 We do want to offer that same opportunity to  
16 those of you in the room, so if you have pressing time  
17 constraints and you would be inconvenienced by resuming at  
18 6:30, please let Jeff Ogata know and we'll make sure to  
19 take you up before we break for dinner. So with that,  
20 Mr. Scott.

21 HEARING OFFICER CELLI: Manfred Scott.

22 MS. MARTIN: May I just interject and suggest  
23 that we ask if other folks on the phone have that same  
24 kind of -- I don't know if there's other --

25 COMMISSIONER DOUGLAS: Thank you. We'll hear

1 from Mr. Scott, and if you are on the phone and do have  
2 that kind of constraint, please send a chat. Thanks for  
3 that.

4 HEARING OFFICER CELLI: Go ahead, Mr. Scott.

5 MR. SCOTT: My name is Manfred Scott. Good  
6 afternoon. I just wanted to say that it's good to see my  
7 relatives here from the Mojave tribe. And we're talking  
8 about insects and I imagine bugs. I haven't heard bugs,  
9 but anyhow.

10 Like they were talking about in their creation  
11 story, we do have -- you know, they do mention the name of  
12 insects and bugs and all other animals and so forth. I  
13 have two children, two daughters. One of them is named  
14 (non-English word). That's her middle name. That means  
15 carry the insect. And (non-English word). Now, on the  
16 Mojave side, we say (non-English word). Some say  
17 (non-English word). And have (non-English word). That  
18 means behind the mountain. So when you put those two  
19 together, it's carry the insect behind the mountain. And  
20 that's a clan name that's been carried on for many years  
21 in my family.

22 And so with that -- and during some time the  
23 Americans changed the names to American names like Bill,  
24 John, George, Laura, Sarah, so forth. So we carry those  
25 names now. And so we still try to carry some of our clan

1 names, some still do today. But then again, with this new  
2 modern technology, we try to teach our kids about the past  
3 and about what's going on. But then again, with this new  
4 technology that's coming about, they're into the TVs,  
5 they're in to cellphones. Now if you look, you'll see  
6 they carry a cellphone. They won't even look at the  
7 desert; they won't look at the plants; they wouldn't look  
8 at anything else. They're on the cellphone. Everybody is  
9 on that cellphone. Even in the vehicles you see people.  
10 They don't have time for nature anymore. They don't even  
11 go out and cook anything. They go out and have fast  
12 foods. You try to keep your kids about the desert life,  
13 about the nature, but they only want to sit there and  
14 watch TV. And if they want to eat something, they put  
15 something in the microwave oven, they nuke it, and then  
16 they sit back in front of the TV and play games.

17           It's really hard when you have these  
18 technologies to try to teach them about, you know, the  
19 outside life. You might not like what I'm about to say,  
20 but then again, I call the tower, I call it a monster  
21 tower. I call it the Palen monster tower because it  
22 destroys and it's been destroying, like we heard before,  
23 like I've been hearing here, that it's been killing a lot  
24 of birds and animals and so forth, things that are in  
25 Ivanpah. And then one here is going to be 750-foot tall.

1 It's going to be even more destructive than Ivanpah.  
2 That's the way I feel. We talked about the glare. We  
3 talked about the flux. We talked about all the other  
4 things. And it seems like we still don't have enough data  
5 to even, you know, build this thing. There is still a lot  
6 of analysis that needs to be done. And we still haven't  
7 done that.

8           And I feel that this tower shouldn't even be  
9 built, this monster tower, because it's going to create a  
10 big problem. And if you heard from the tribal people, you  
11 know, we have a lot of culture out there. We talk about  
12 the animals. Animals can't speak for themselves. Insects  
13 can't speak for themselves. So we have to be there to  
14 take care of them. Which I hear about Chuckwalla. It's  
15 not only just Chuckwalla or McCoy Springs. We got Eagle  
16 Mountain. We got (inaudible). We got Eagle Mountain. We  
17 got Palen. We got all these surrounding mountains that  
18 are all of our culture materials out there. Not just the  
19 (inaudible), but other tribes that travelled through this  
20 area and lived out in this area. And it's very sad  
21 because it's being destroyed.

22           And I seem like a broken record sometime,  
23 because it seems like I keep saying over and over again in  
24 different places. And we say consult with the tribes.  
25 They do consult. The tribe is also a government, and they

1 should be on the high level as well as any government, BLM  
2 or whomever. We should be on the high level. But it  
3 seems like they still put us in the low portion of that.  
4 And we should be just up there right along with them. And  
5 I think that needs to change.

6           We talk about entomology is already a complex  
7 science, your science. The science requires strong  
8 backgrounds in biology, physiology, chemistry, and  
9 mathematics. Working with insects also requires tolerance  
10 for conditions and subjects that already are unusual or  
11 which may be harmful. The application of science spans  
12 many disciplines. Molecule systematics, environmental  
13 science, medicine, public health, and many, many others,  
14 all the have stakes in science.

15           Today, many legislators, environmentalists,  
16 organizations, naturalists, teachers are involved in a  
17 race to protect natural history, including the unique  
18 ecosystem and biology of California insects because of  
19 their diversity, abundance, and articulations into every  
20 habitat and niche are important to understand and record.  
21 Hopefully, this will aid in the preservation of  
22 California's unique ecosystem and in the preservation of  
23 the California biodiversity questions. And Exploring  
24 California Insects program have been contacted in this  
25 project. And let's do the right thing and not let us be

1 politically influenced. Thank you.

2 HEARING OFFICER CELLI: Thank you, Mr. Scott.

3 COMMISSIONER DOUGLAS: Thank you.

4 HEARING OFFICER CELLI: So now it's time to  
5 break for dinner. It's 6:00 o'clock. When we come back,  
6 all of the witnesses are under oath still, so I'm going to  
7 ask you to come back and sit in the same place that you're  
8 sitting now. I'm talking about the witnesses. The rest  
9 of the public can sit where you want, but witnesses please  
10 resume your seats at 6:30 and we will finish taking public  
11 comment.

12 COMMISSIONER DOUGLAS: Ms. Martin.

13 MS. MARTIN: Yes, I just wanted to say, did we  
14 want to open the phone lines in case anybody who has to go  
15 needs to make a statement?

16 HEARING OFFICER CELLI: Is there anyone who is  
17 on the phone line that can't continue to be on the line  
18 after 6:30? Hearing none, then we'll resume at 6:30 for  
19 public comment.

20 MALE VOICE: Do you think that at 6:30 we could  
21 let Binyamin respond to a couple of things, points that  
22 were made, just because he's off.

23 HEARING OFFICER CELLI: He's gone. Probably for  
24 some well-deserved sleep. Okay, then, we'll see you all  
25 at 6:30. We're off the record.

1 (Dinner Break from 6:00 p.m. to 6:30 p.m.)

2 HEARING OFFICER CELLI: Are we on? Okay. I  
3 want to say a few things on the record right now. For  
4 starters, Basin and Range Watch is only here for a little  
5 while. I thought you'd already left, but I'm glad you're  
6 still here, Mr. Emmerich. Did Gordon Pratt leave?

7 MR. EMMERICH: Yes.

8 HEARING OFFICER CELLI: Okay. Who's witnesses,  
9 seeing that Mr. Pratt left.

10 MS. BELENKY: Mr. Pratt had to leave, I'm sorry.  
11 If there's more on invertebrates, we will have to  
12 hopefully find a way to address that.

13 HEARING OFFICER CELLI: I actually think we  
14 covered it.

15 MR. GALATI: Right. Dr. Kaae left too, I  
16 thought we were done with that, so I --

17 HEARING OFFICER CELLI: Okay. We are, so that's  
18 fine. That narrows things. I wanted to let everybody  
19 know, parties, that we no longer have the capability on  
20 WebEx to put up exhibits. So we're not going to be  
21 putting exhibits up on WebEx anymore, because for  
22 technical reasons we just can't do it. So I'm sorry about  
23 that, but it's the position we find ourselves in right  
24 now. I don't think we have any more, so and I think you  
25 have hard copies of any of the ones we do refer to and may

1 refer during the rebuttal.

2           So what we're about to do is complete the public  
3 comments. But before we do I want to say to the expert  
4 witnesses that now we've heard everybody's -- we've looked  
5 at everybody's testimony up until today. We've heard what  
6 you had to say. While the public is making comment,  
7 because we have a couple left here, experts I want you to  
8 organize your thoughts. And in two sentences or less, if  
9 there is something that some other expert said that you  
10 want to rebut, then we wanted you to tell us that,  
11 "Whatever that expert said, I disagree with it. The  
12 reason I disagree with it is because of this, this, this  
13 and this. The reason I think my numbers are right or my  
14 evidence is correct is because of this and that's my  
15 position." So I'm going to ask you to do that.

16           And the reason we're --

17           FEMALE VOICE: (Inaudible)

18           HEARING OFFICER CELLI: Basically we have to  
19 keep this short. We're considering this the risk  
20 assessment section of the two-part bird, avian and solar  
21 flux (inaudible). So that's the first thing I'm going to  
22 ask all of you expert witnesses to do.

23           Then attorneys, I'm going to ask you all to  
24 please organize your thoughts and your questions, because  
25 we really don't -- we want to get to the heart of it,



1 because really we're eager to get on to the mitigation,  
2 which I think is very, very important that we get to that.  
3 So attorneys, if you want to cross, know who you want to  
4 cross, know the questions you want to ask and please get  
5 right to it. And be able to tell us when we call on you  
6 how many questions you have, okay?

7 So with that, let's hear from Amanda Barrera.

8 MS. CLARK: Can I ask a quick logistical  
9 question before we start?

10 HEARING OFFICER CELLI: Just one.

11 MS. CLARK: I'm just wondering if we have to be  
12 out at 8:00 and the likelihood of us going into tomorrow  
13 or what's happening with that?

14 HEARING OFFICER CELLI: We need to be out of  
15 here, Andrea it was?

16 MS. GRENIER: We need to be out of this room at  
17 9:30 tonight.

18 HEARING OFFICER CELLI: 9:30.

19 MS. GRENIER: Literally, everybody out.

20 HEARING OFFICER CELLI: Okay. You heard the  
21 lady.

22 MS. CLARK: So you are hoping to finish  
23 everything by 9:30 tonight?

24 HEARING OFFICER CELLI: Well, in my wildest  
25 dreams. It's not looking that way, but I did want to

1 finish everything tonight, but we will see how we do.  
2 That's why I'm asking the parties to be efficient, because  
3 if we can we will, if we can't we spill into tomorrow.

4 MS. CLARK: That's fine. I just wanted to know  
5 where we were, thank.

6 COMMISSIONER DOUGLAS: That's right, but so  
7 everyone knows we're looking at going to about 9:15. And  
8 that gives us plenty of time to pick up our things and  
9 vacate the building, and as we've been asked to do, before  
10 9:30.

11 MS. GRENIER: They want us out at 9:45, so  
12 that's (inaudible) 9:30.

13 COMMISSIONER DOUGLAS: Oh, 9:45? So then 9:30.

14 HEARING OFFICER CELLI: And public commenters,  
15 I'm going to ask that you see if you can't keep your  
16 comments to about three minutes each? Just keep it down  
17 into a nice compact sentence or paragraph or whatever, so  
18 that we can take the testimonies, because that's what  
19 we're here to do along taking public comments.

20 Amanda Barrera, it's good to see you again.

21 MS. BARRERA: Good afternoon, is this on?

22 HEARING OFFICER CELLI: Yes.

23 MS. BARRERA: Good afternoon, Amanda Barrera,  
24 Tribal Council Member from the Colorado River Indian  
25 Tribes, Chemehuevi Indian. And welcome to Indian country,

1 you want to do three minutes? Indians take ten to  
2 fifteen, so you're going to be late. We'll train each and  
3 every one of you.

4           Basically what I want to say in regards to the  
5 meetings today is that in my upbringing and my education  
6 when we as a people here of this land, and we lived  
7 together with the animals and we talked. We had the  
8 ability to talk until things happened, Creator made  
9 choices that gave them the inability to talk to us. They  
10 still talk to us, but we have to listen. We have to see  
11 it with our eyes and we have to listen with our heart and  
12 our mind to be able to understand it.

13           The ants tell us when a storm is going to come  
14 and you've heard other stories. The owls tell us when  
15 something's going to happen. Even my belief, we know that  
16 it's not going to be good, but we know that as a creature  
17 of the Creator they're preparing us. It's up to us how we  
18 handle it as a human being. So these animals that you  
19 talk about and the impacts that it has goes back to when  
20 we talk about we can't decipher one from the other,  
21 because we all function as one. Without them, we're  
22 unprepared for what can happen. Without them our life  
23 doesn't go on. We depend on them for our food. We depend  
24 on them to tell us and to live by those stories that have  
25 been passed on. So that I hope that you don't take to

1 heart in that.

2           And I also realize that in today's technology,  
3 today's advancement as far as its learned it's too bad  
4 that as Indian people we continue to be the victims within  
5 our own countries and within our own nations. But that's  
6 society and it's not up to us to judge or to question.  
7 That's in the hands of the Creator and those around us and  
8 how we deal with it from there forward. And I know with  
9 the way that everything is fast-tracked might not be  
10 decisions we like, we'll have to adjust. But remember  
11 too, in those it hinders what we as Indian people have  
12 been taught and how we balance ourself out well here.

13           But, you know, the animals they are a part of  
14 us. When we go in the old ways that I was taught, when we  
15 took an animal we also gave blessing, because we took that  
16 life so that we could have life. So that we could use  
17 very bit and piece of it, because we needed it to sustain  
18 ourselves out here in this area. We needed the rabbit  
19 fur. We needed the antlers. We needed the gut part of it  
20 for carrying waters and, you know, just all those things,  
21 those medicinal uses that we have for them. They served  
22 us, we served them, we were one. And we still are one.  
23 And so in that regard, you know, we just remember that  
24 when we're making a decision. Because I am going to pray  
25 hard for you, I would not want to be in your body to be

1 able to have to think and to make these decisions.

2           But I pray that you make the right choice and  
3 you remember what we've brought before you, because a lot  
4 has been shared that has never been shared, because of  
5 what it means to us and what we're looking at losing or  
6 the impact that it's going to have for generations to  
7 come. They'll never be able to go out to those mountains  
8 to pick the medicines, to go on a journey, to be taken out  
9 there for a vision. When you have this big tower  
10 hindering that connection between you and the Creator of  
11 what you're out there for. That'll never happen when you  
12 put that out there, because we won't be able to do it  
13 anymore.

14           And, you know, the non-Indians, when they put  
15 our tribes out here they thought they'd put us in a desert  
16 and we couldn't live. The joke was on them. For the  
17 Mojave people it's their indigenous lands. For the  
18 Chemehuevis, we wandered freely through here. That land  
19 took care of us as we had been taught to take care of it,  
20 as I have been taught that river is my bloodline. If it  
21 stops I stop. If this land goes whatever it reduces from  
22 it stops me from going on, stops my grandchildren.

23           So I really from as a leader, and this is from  
24 me only, I appreciate the fact that we've been able to  
25 come before you. It's still a little late, but we're

1 getting there and we're learning and I thank you.

2 HEARING OFFICER CELLI: Thank you, Ms. Barrera.

3 Is Ivy Ledezma still here, Ivy Ledezma? And  
4 after Ivy Ledezma we're going to here from George? I'll  
5 figure this one out in a minute, but Ivy Ledezma, please  
6 go ahead.

7 MS. LEDEZMA: Hello. My name is Ivy Ledezma. I  
8 am a CRIT tribal member and my grandparents are of  
9 full-blood Mojave descent. I am also a Mojave bird dancer  
10 and I oppose the Palen Solar Project.

11 I reach 3,800 tribal members with our newspaper  
12 and I reach over 5,000 CRIT supporters every day on our  
13 Facebook sites that I administer. And my statement is  
14 this. We have been victims of expansion and trespassing  
15 since we were discovered here. And I'd like to leave you  
16 with this thought. We were the first caretakers of this  
17 land you call America, remember that. Think of that when  
18 you make your decision. I oppose this project, so do my  
19 people. Thank you.

20 HEARING OFFICER CELLI: Thank you, Ms. Ledezma.

21 Joyce Dick? And after Joyce Dick, we're going  
22 to be calling Jermaine Fisher.

23 MS. DICK: Hello. My name is Joyce Dick. I'm  
24 from the Colorado River Indian Tribes. And I want to cut  
25 this short, because I want to get on home. I want to say

1 that my people have said it all in what I would like to  
2 say. But I would be going over the same thing, but I am a  
3 bird dancer and I am out there with helping people through  
4 (inaudible) and things like that. I like to help people  
5 and I oppose this. Thank you.

6 HEARING OFFICER CELLI: Thank you, Ms. Dick.

7 Jermaine Fisher, please come forward? And after  
8 Mr. Fisher, we're going to hear from Daphne Hill-Poolaw.

9 MR. FISHER: Hello, good afternoon. My name is  
10 Jermaine Fisher and I am a member of the Colorado River  
11 Indian Tribes. I am Chemehuevi (inaudible) and I am  
12 Mojave. As my elders said that they are, I am opposed to  
13 this as well. And this is coming from a younger  
14 generation's version, so don't think I'm an elder; I'm a  
15 younger generation representing the younger reservation of  
16 my tribe.

17 But yeah, I am also representing an elder and  
18 her name is Gertrude B. Van Fleet. (phonetic) And she  
19 will be turning 90 years old and to be honest, she's  
20 outlived some of the elders that have gone on. And the  
21 stories that she told me about our land is so -- it's very  
22 wonderful for what our tribal members have done and what  
23 they left behind for us, as a younger generation to do.  
24 When you see an elder cry, knowing that my land is being  
25 taken from you and that your ancestors fought hard for

1 this land. And she turned to me and said, "Now, you have  
2 to fight, I can't do it no more. I taught you everything  
3 that I've learned and I'm passing it on to you." And  
4 that's how the traditions always pass. They look at the  
5 younger generation and say, "You have to fight for our  
6 land now. We can't do it for you anymore."

7 Just like how your mother said, "You have to  
8 grow up." Mothers can't do it for you all the time and  
9 look where you guys stand now. You guys have accomplished  
10 so much, because your mother said it's time for you to  
11 grow up. So the same with us, we've got to learn to fight  
12 and say no.

13 I am opposed to this and the main reason too is  
14 like I said, my grandmother. I took her to see the  
15 Genesis Project the first time and she couldn't get out of  
16 her wheelchair, but she managed to get into the van. But  
17 she sat in the van and just (inaudible) her heart went.  
18 She said, "I don't need to see it. I already know it. I  
19 feel it." And plus, her family, my ancestors, are  
20 medicine men coming and descended from a medicine man. So  
21 sometimes you don't need to see it, you just feel it. As  
22 some of the elders said you can just feel it. You don't  
23 have to go see it.

24 So I am saying that, you know, I'm opposed.  
25 That I also look at this as well, as a good sign, this is



1 part of history as well. We are all part of history now.  
2 We are all at the table, you know, and I understand that  
3 yes, we do need clean energy, don't get me wrong. But  
4 also you've got to look at it this way too, but this is  
5 our land though. You know, in other countries we would be  
6 fighting you guys right now. We wouldn't even be talking.  
7 As you see and you look at the world now, as I say you  
8 look at the wars that are going on now, they're fighting.

9           You know, luckily for us we don't believe in  
10 fighting. We believe in sitting down together as one and  
11 talking this through. But if you decide to go this way to  
12 approve the Palen then we're going to come back here again  
13 and say the same thing over, we're against it. Well,  
14 there's a solar project coming up and you're going to make  
15 them cry again. And as a younger generation it's really  
16 sad to see an elder crying. That's like seeing your  
17 mother crying as in, "They're taking my house away. Fight  
18 for me, help me. I can't do it, I'm too old. Now it's up  
19 to you to take care of me. I had all my life to take care  
20 of you, now you take care of me."

21           And don't forget, these younger ones are sitting  
22 right here now. This, like I said is part of history.  
23 Learn from what's going to happen. Please do not vote,  
24 please? I understand yeah, it's good. But there's also  
25 other places you can go build a solar project. It's not

1 just one small, small place, small desert or small land.  
2 Like Christopher Columbus once said until he proved the  
3 world wrong, "No, the world is round, it's not flat. It's  
4 not just one place." Look at the history and then think  
5 about this.

6 This is part of history right now. You and me  
7 are all part of it now, so in one way I'm kind of honored  
8 to be here. I'd like to thank my elders for inviting me.  
9 And for you people as well, the CEC, it's an honor for me  
10 to be here. Actually I've never really seen so many  
11 educated people in my life except for me and my family.  
12 I'm talking to educated people, just now I feel kind of  
13 good. But yet, in short I'm just saying I'm opposed to  
14 it. And my grandmother is opposed to it definitely  
15 because she said, "You need to speak what you have to say  
16 and that is it." She said, "For me, I'm against it and  
17 that's it." Because my grandmother is really hard, she's  
18 straight to the point, and that's how we learn to say what  
19 you've got to say and that's it. And leave it at that.

20 But I'm saying that for my grandmother, but I'm  
21 saying please I beg, please do not vote for the Palen  
22 Project. Please? And for you people, I'm not against you  
23 as well, because these are times of change we're learning  
24 to come together. And I respect what you guys have done,  
25 your research. It is very impressive too. So for the

1 bugs, you know, a lot of (inaudible) but I'm just glad we  
2 all got together to do this. This is part of history.  
3 Thank you.

4 HEARING OFFICER CELLI: Thank you, Mr. Fisher.

5 Daphne Hill-Poolaw and after that we will hear  
6 Arlene Kingery, you'll be after Ms. Hill-Poolaw. Go  
7 ahead.

8 MS. HILL-POOLAW: Good afternoon. First of all,  
9 I want to say a thank you for the meals that you've served  
10 us for the last two days.

11 I just want to say this, the first thing that  
12 I'm hearing my younger relative talk, talking about the  
13 laws of the land and the land here, the thought that came  
14 to my mind is knowledge apart from experience will always  
15 dwell in the realm of doubt. Native American people live  
16 amongst nature. We have the knowledge, we have the  
17 experience. They have the intellect. For a Native  
18 American to tell the white man where we live and how we  
19 live you will never, ever understand. Ma Ava. (phonetic)  
20 You understand that's what that means, Ma Ava. You will  
21 never know. We are taught from experience. We've lived  
22 it, been there.

23 I come from a family, my mother is the second  
24 eldest of 13 and I am the eldest of all the grandchildren  
25 and there's probably about almost close to 65

1 grandchildren, great-great grandchildren. So I come from  
2 a large, large family. I am of Mojave descent. My mother  
3 is full-blooded Mojave. My dad is a Chemehuevi. So I  
4 know both sides. I was raised with the animals; my dad  
5 was one of the hunters on the reservation. I only lived  
6 off the land. Believe it not, we also learned to eat the  
7 locusts, the hanavas. (phonetic) I ate those. And when I  
8 get a hold of them -- they're out this season. I've heard  
9 them, I'm ready to go collect them and eat them. They're  
10 good.

11           You talk about the light that's so bright it  
12 draws. And if you look in it today, even the Good Book  
13 says, the scripture says that when you're supposed to be  
14 the light of the world it draws people. Light speaking in  
15 the karmal realm brings light, and it brings bugs. And  
16 that's how we've lived. I never ate beef or a hotdog  
17 until I was at the age of 13. Never knew what beef -- and  
18 I hated it. I was raised on deer, elk, the dove, the  
19 quail. We ate all that. The grasshoppers we ate. And  
20 I've learned all this.

21           My grandmother was full-blood Chemehuevi. Mary  
22 Smith, that was her English name that was given to her,  
23 knew no English. She raised coyotes. That my grandmother  
24 that Mr. Harper had mentioned about, the late Fanu.  
25 (phonetic) My grandmother, she raised coyotes. She also

1 had deer as pets. I know, I stayed there with her. And  
2 to allow this project to rise up here, and I'm so glad  
3 that Ivy had stated what she stated as American Natives,  
4 we as Native Americans have learned and have adjusted by  
5 force to live the Anglo way.

6 We have been forced to live with the light. And  
7 we've become, America has become so spoiled to the point  
8 now when it's time to eat we want to hurry up and go to  
9 the fast food, now has become so unhealthy to the  
10 Americans. And yet, we lived off the lands. I say this  
11 because America is headed for disaster and I look at it,  
12 the way things are going, the fighting and the bickering,  
13 this is what's happening.

14 Every time I've heard my grandparents say,  
15 "Never trust a hipoli. (phonetic) Never." And when you  
16 talk to a hipoli, look at them in their eyes. Make sure  
17 that they're telling the truth, because you can tell and  
18 sense it in the inner-being that they're lying to you.  
19 They have broken treaties after treaties after treaties  
20 and especially when they shake the hands. Be careful,  
21 because they stab you in the back. I found that true.  
22 I've learned that. Although I have learned by going to  
23 college, believe it or not, but I've also learned the  
24 white man's way. But I've also learned to live, we were  
25 okay, we survived. By the water and the fowls of the land

1 we made it. Now, I see what's happening, what's coming  
2 our way.

3 I am, and I stand firm as the Mojave Elders  
4 Chairman of the Committee, the elders here, I've been the  
5 Mojave Elders Chairman for several years now. And I have  
6 learned and I have watched and I have seen and I'm very  
7 cautious any time I shake hands with any white person.  
8 That's how I was taught. Mr. Boya (phonetic) is correct.  
9 You be careful, be careful. And that's how we are, we're  
10 very careful. We want to sit down. The Good Book says,  
11 "Reason together." We have been victims. Our tribe has  
12 been a victim. We have never sat at the table way in  
13 advance to talk and strategize what was going to happen.  
14 Of all the ground that we live in here, in the United  
15 States of America, of all places you want to come to  
16 Indian land and build, the enemy, dangerous.

17 I heard a medicine man tell us, tell me when I  
18 was young, "The Good Book says that wisdom and knowledge  
19 will increase, but one day that wisdom and knowledge will  
20 become so sharp in the white man it's going to backfire on  
21 them. And they're going to wonder what's happening."  
22 They're right, he's right, and I see it. It's going to  
23 backfire. We're in for a economic breakdown. I see it.

24 I take this quote with me and I read it and I  
25 try to understand the things that are happening in our

1 land here, but I want to read it. This is a quote from an  
2 individual, from Ayn Rand. And it says here, "When you  
3 see that trading is done," and I've quoted this before,  
4 "Not by consent, but by compulsion," and this is exactly  
5 what has happened. "And when you see that in order to  
6 produce, you need to obtain permission from men who  
7 produce nothing. When you see money flowing," and that's  
8 exactly what is happening, a fast-track, because money is  
9 flowing out there, billions of dollars to structure up  
10 this Palen and any kind of solar or wind power. "When you  
11 see that money is flowing to those who deal not in goods,  
12 but in favors, and when you see men that get richer by  
13 grafts, by pulls and by works of your laws don't protect  
14 you," but those laws protect you against the Native  
15 people. "And when you see corruption being rewarded and  
16 honesty becoming self-sacrifice, you may know that your  
17 society is doomed."

18           This is where we're at today. Something is  
19 wrong here, deathly wrong. And if you have a conscious,  
20 if you have a heart, I am speaking from my heart today. I  
21 speak it, not just for me, but I speak it for what I was  
22 learned, what I was taught. But I also speak it for the  
23 3,800 members or 4,000 I believe we have, membership but I  
24 speak it not only for them, but also for the river tribes  
25 all up and down. I stand for them.

1 I've learned the Good Book. I studied the Good  
2 Book. I believe in the Good Book. Mosca homata vi,  
3 (phonetic) God the Creator. I believe in God and I will  
4 stand firm in what I believe. And I am not afraid, no  
5 more. I will fear no man, but I will fear the one who can  
6 destroy both soul and body. I say that and I would hope  
7 those of you that are intellectually sharp with studying  
8 the words, I hope you find it in your heart to say, "No, I  
9 oppose it firmly, definitely oppose it strong." Thank  
10 you.

11 HEARING OFFICER CELLI: Thank you,  
12 Ms. Hill-Poolaw.

13 Arlene Kingery followed by Lorey Cachora.

14 MS. KINGERY: Arlene Kingery, Quechan Indian  
15 Tribe. First, I have some specific comments. The first  
16 one is I really think there should be a little bit better  
17 monitoring at Ivanpah, since you're getting most of the  
18 data from there. A lot of the original counsel say,  
19 "Cause of death unknown." I really think it would be a  
20 good idea to either monitor more closely the sites where  
21 you have higher densities of carcasses found, either with  
22 a person or a camera or something like that, to see what's  
23 happening.

24 The second thing is I think another reason why  
25 birds and insects may be attracted to the area is because



1 of the carcasses, because of the dead animals as well as  
2 attracting other predators. I don't think it's just the  
3 lake effect or the light. I think it also could be that  
4 it's a food source. I'm concerned about why you're doing  
5 the scavenger study where you take a certain percentage of  
6 the dead bird carcasses and put a colored tape on them and  
7 lay them back out to see what happens to them, to see what  
8 scavengers come or how they disappear.

9 I don't know if you've ever looked at any other  
10 power-generating facilities that do not have mirrors, that  
11 are not solar, to see, to compare biological data. I know  
12 like the power plants in the Midwest where I'm from, they  
13 have the lakes that they have to use to re-circulate  
14 cooling water. They've tried to make it like animal  
15 preserves or areas where animals go, so that would be an  
16 attractive area that would bring birds and other animals  
17 in. But I don't know whether they have any mortality  
18 around the building structures, so that would be something  
19 that you might want to look at to compare.

20 And also to think whether putting something like  
21 that, like if you have evaporation ponds and things like  
22 that, of making them more viable. So instead of having to  
23 fish animals out of extremely contaminated and  
24 concentrated water, you actually have something where the  
25 animals would thrive or survive. And you'd be fulfilling

1 two purposes.

2 Another thing is when I looked at the bird  
3 mortality data, it looked like the only bird that hasn't  
4 died is the quail. And I assume that is because it  
5 doesn't fly. So it looks like that the main thing is any  
6 bird that flies is going to, if it goes there it's going  
7 to be injured or die.

8 And a general comment is that when you go out  
9 and you look at the desert, you pretty much see an area  
10 that's just looks desolate or empty. But to tribal  
11 people, and people that love the desert, it's a very rich  
12 and complex ecosystem. And it could be compared, like  
13 when you go out with a tribal person, to like surfing the  
14 Internet. Where you look up one thing and then you see  
15 another thing and another thing. And when you go out to  
16 the desert with an elder, it's like what they've all been  
17 saying. It's one layer upon another layer upon another  
18 layer. You're seeing this rich diversity, but it's  
19 spiritual, it's their ideas, it's their dreams, it's their  
20 history, it's the food they ate, it's all of these things.  
21 And it's a teaching tool for their children. It's their  
22 morals, it's their stories, it's the seasons. It's just  
23 stacked upon stacked upon stacked of all these layers.  
24 And that's what they see when they go out to the desert.  
25 They don't see just a barren, desolate area.

1           When you try to understand that and you look at  
2 how they have this knowledge it's all oral. It's been  
3 passed down for thousands of years. They don't have it  
4 written down. So in their songs if you could hear their  
5 songs it would like verses where they would tell about  
6 something and in their stories and in the dances mimic  
7 animals and their traditions. And all that's been passed  
8 down. If you look at like our book of the Bible, the  
9 Genesis, where you have the creation story? Well, their  
10 creation story actually gives each place and it gives  
11 where each animal was and what they did and how they  
12 participated. So when they go out to the desert, they see  
13 like this whole book, this like 3D image of all these  
14 things that they're seeing. And I don't think you see  
15 that.

16           And that's why when they see the desert and from  
17 all the accounts that they're giving, they're telling  
18 about everything they see, they feel, they remember, they  
19 think, they dream. And that is hard to pass down from  
20 generation to generation, but they have done it no matter  
21 how it's tried to be beaten out of them or forgotten.  
22 They still have it, which is amazing to me. So when you  
23 do something to their landscape or their areas you're  
24 taking that from them. You're destroying a whole part of  
25 their past and their tradition that needs to be passed on.

1 HEARING OFFICER CELLI: Thank you, Ms. Kingery.

2 Lorey Cachora followed by Linda Otero.

3 MR. CACHORA: (Inaudible) Lorey Cachora, Quechan  
4 Tribe. I'm also a tribal consultant and consultant for  
5 Quechan Cultural Committee. And in the last two years I'm  
6 also a member of the Quechan Preservation Group that are a  
7 nonprofit organization. I was inducted in there by them  
8 to help them educate in the culture.

9 And the reason I had signed up to talk up again  
10 today, I was just going to sit this out, but I heard  
11 something that to me that I mentioned the other day. And  
12 to hear something like this again, to me is very  
13 disturbing. But quoting from what I said the other day,  
14 excuse my voice, but I said everything was defective from  
15 the start. It required amendments to documents or  
16 (inaudible) social transformation, an attending system or  
17 written policies, regulations and agreements. And this is  
18 why I said that, whatever earlier from the signs about  
19 birds or insects, the discussion to me was based on  
20 actions and their ability, their performance. And at the  
21 end all that meant to me was that you're saying birds are  
22 birds and bugs are bugs.

23 And nothing credible came out of that and that  
24 made me -- that may come soon. But again I don't think it  
25 should be operated this way, because I know in our world,

1 and I think I've mentioned this before, that we recognize  
2 that missing species that are traditional for us. And we  
3 know this and although we know that, we haven't been able  
4 to fully sit down and document those traditional insects,  
5 birds and animals. But we do know there are some species  
6 that are missing right now, because of everything that  
7 we're doing.

8           And this is something that we have to, so when  
9 you say something like this you make a commitment about  
10 these certain things and you argue over that. From  
11 hereafter I think what we need to do is continue our  
12 education to you, keep pushing you until you realize where  
13 we are coming from. Because it's mainly listening to hear  
14 something about confliction (inaudible) bugs, all of these  
15 and you didn't stop to think why those bugs are being  
16 attracted to the light, even during the daytime. Where  
17 else have you seen such a tower that existed three years  
18 ago, four years ago, five? There was none.

19           And this is a new tower that's been up recently  
20 and bugs have a way or birds have a way also, of knowing  
21 these things that exist. And they know that these things  
22 do exist in the night time such as carports at your home,  
23 headlights, they (inaudible) at night. But I heard the  
24 word that this does not exist, but I was there in Ivanpah  
25 at night. It is true there's nothing, there's silence.

1 But in the daytime, these insects, bugs, they educate  
2 themselves. When they see something bright or that's out  
3 of the ordinary, they are going to see what it is and this  
4 is what they're going to do.

5 But we haven't been around long enough to really  
6 understand it, but for us as I've heard earlier, we come  
7 from this world. We are the animals sometimes. And I  
8 know that you are too, in some ways, and I can pull that  
9 out of you any time that I want. And you will reveal what  
10 you are through your anger, through your silence, all of  
11 this. And this is what we grew up understanding.

12 So rather than to really go over, I know we're  
13 pressed for time, and usually when we get up in something  
14 like this you have your time and we have our time too.  
15 But I'm being lenient today. I think it's because of the  
16 subway sandwiches I'm ready to leave. But anyway, we do  
17 have a philosophy -- as they mentioned here, and that is  
18 true of everything. I'm not going to over it, I have them  
19 also, but that would take awhile to say that. But  
20 everything is based on philosophy, but we act on some of  
21 them. We practice that on some of them. And we actually  
22 employ those things, so that's where we all come from. We  
23 have names for mountains. We have names for insects as  
24 you've heard.

25 And this is I will close, so then like I said

1 the other day, it's a relationship that we are connected  
2 to. It's something that we can never break away from, no  
3 matter how you look at it. So all I can say for this is  
4 that if we don't stop and really think about deterrence or  
5 anything, that all of these things they have like destiny  
6 -- and that is the destruction of some species. And the  
7 problem for me is that if there is such a thing that's  
8 related to us, we're not going to know it until it's too  
9 late, 10 or 12 years from now. That's my concern. We  
10 need to prevent this now and we need to come up with  
11 solutions to do that.

12 So modern technology, that's a lot different  
13 than what I'm used to about 15 years ago. So I just  
14 thought I'd mention that. So think about this bright  
15 light brilliance that we have out in the desert today.  
16 It's a new kid on the block, sort of, for the bugs. So  
17 thank you.

18 HEARING OFFICER CELLI: Thank you, Mr. Cachora.  
19 Linda Otero, please?

20 COMMISSIONER DOUGLAS: And while Linda Otero is  
21 coming up to the microphone, I just wanted to say a couple  
22 of people have brought up the meals and I just want to  
23 make sure that everyone knows that they're supplied by the  
24 Petitioner. The California Energy Commission doesn't have  
25 a budget to do that. And we appreciate the Petitioner

1 making these proceedings easier on everybody and more able  
2 to stay on schedule by providing these.

3 MS. OTERO: Do I turn this on?

4 HEARING OFFICER CELLI: No, it's working  
5 Ms. Otero. Just speak right into it.

6 MS. OTERO: All right, I'll just move it.

7 HEARING OFFICER CELLI: That's good. We can  
8 hear you.

9 MS. OTERO: Linda Otero, member of the Fort  
10 Mojave Indian Tribe, currently the Director of the Aha  
11 Makav Cultural Society. I'll make it short, because I am  
12 just overwhelmed by the voices that I've just recently  
13 heard. That's heartwarming. It just tells me that we  
14 have the spirit within that's coming from all directions  
15 of the mountain that they speak of, of Aqo Men. (phonetic)  
16 It's here, its spirit is here and it's strong. You're not  
17 going to let up on that and that's what you're feeling  
18 within this room here. I can only give thanks and be  
19 humbled by it, by the Creator. And all the things that  
20 the Creator has provided to us, and you've heard in the  
21 last two days and spoken of this natural world, could fill  
22 volumes. It could fill the universe of all of that  
23 knowledge, but yet we don't reveal it in the textbooks.  
24 We don't reveal it in research methods. We don't reveal  
25 it in data points. We don't put it on PowerPoints and do



1 a curve, a bell curve. That might be the ways of the  
2 modern, Western way of thinking, and I've been through  
3 that but it doesn't make a fit.

4           So what you're feeling and you're hearing is  
5 from here and permeating throughout from within and  
6 throughout. That's what is being who we are. And you  
7 cannot replace that by any document that's to be  
8 developed, post a decision, and things that are put before  
9 us that, "We will identify this type of study to  
10 understand what the tribes are trying to say this year."  
11 That doesn't work. It won't work and all that is part of  
12 the methodology of trying to understand us, is obsolete in  
13 a sense. Better find a new way and which new way you're  
14 hearing is what's being discussed right now.

15           The one word that I don't care for, and I've  
16 heard it, when the fast-track of Genesis -- and I heard it  
17 in Washington. They talked about the many lessons  
18 learned. We'll do this, because we've got to learn  
19 lessons learned. I never liked that word. But here I'm  
20 going to use it in a different way, because the audience  
21 here, the Commission here, these are lessons learned today  
22 of what you're hearing. The last two days, take it as a  
23 lesson. The first lesson is life of who we are, it's  
24 about life. And it has so much meaning you're going to  
25 want to know more, but you may not be able to grasp it

1 fully to the depth. But it's already caught you now, it's  
2 caught you, it's caught people here, it's changing their  
3 mindset.

4           We know that there's a project before us and a  
5 determination. There's a method, a process to be  
6 determined, finally upon what will be the outcome. But we  
7 also have to weigh in on that as well. And the  
8 measurements aren't of equal value, as I said yesterday.  
9 There's a supreme value in here versus what it is on the  
10 economics. And I think that's been pretty much made clear  
11 again today and this afternoon, this evening with these  
12 comments. It's very clear. It doesn't take someone  
13 beyond understand that. It's pretty common sense that  
14 draws that, to make that known.

15           Don't get me wrong that, you know, there is  
16 value to some extent of understanding and I think that's  
17 what people build their careers on for the academics and  
18 the understanding. There's methods to that as well, and  
19 it could be helpful. But in this situation in which we're  
20 trying to get a comparison, you need to also understand  
21 there's a value that's not being understood. And it could  
22 be very much neglected out of the ultimate decisions here.

23           So that's the only time you'll hear me on record  
24 use that word "lessons learned" other than that it's been  
25 so worn out and torn apart. When a project's done and we

1 say, "Well, we've got to do lessons learned from here."

2 That's not appropriate here.

3 I was thinking how to make an analogy of what  
4 was talked about earlier. And I'm not quite understanding  
5 the one tower, two tower phrase. I understood the project  
6 was two towers and now you want do one tower, a second  
7 tower with a storage and identifying that there's less  
8 impacts to just doing one first. A couple of analogies  
9 that came to mind was, "Well, I guess I have a full  
10 sandwich. I could eat one half now and then another  
11 later." But do I call it half a sandwich or one sandwich?

12 And then this just struck me right now too.  
13 That I'm Mojave from my mother's side, my mom's  
14 full-blooded Mojave. She's of the Mach Clan. They talked  
15 about that earlier, the small birds. It's my cousin, from  
16 my mom and his dad are direct cousins. His grandmother's  
17 tied in within my grandfather on that line. I'm Santa Ana  
18 Pueblo from my father's side and my folks met in Los  
19 Angeles on a government relocation, if you want to say.  
20 So I always tease, I'm a product of government relocation.  
21 Government's always going to be in my life it seems, I  
22 guess there's a reason why. But nonetheless, it doesn't  
23 make me less Mojave. I grew up Mojave, that's who I am,  
24 and that doesn't mean it's less impact for me as  
25 half-Mojave to understand that one tower makes a

1 difference with two.

2           No, it's the concept of trying to see, as a  
3 whole, the environment as a whole tied in with the  
4 universe, tied in with the facts overall. All of that.  
5 The universe is humongous, and you understand we haven't  
6 even talked about the night light thoroughly, the stars,  
7 the ebony, the direction that give meaning, that speak in  
8 the constellations that guide us. That's being not even  
9 discussed here and not as a topic in terms of  
10 understanding what happens. That night lights stays out  
11 for awhile. I saw the (inaudible) many times, the  
12 brilliance of one, two and then a third tower came up.  
13 Yeah, it's bright and it reflects. And if you ever see  
14 Las Vegas lights when you're coming from I-40 to I-15, you  
15 can see it when the clouds are up and it reflects. And  
16 you can see it for miles and miles. So that's what'll  
17 happen here too. Miles, the clouds stand up and they  
18 start to reflect out. The distance is going to be  
19 traveling far. And some of that stuff is not being  
20 discussed, but it's real. And we haven't spent a lot of  
21 time of the night light and that's important.

22           So we're just compartmentally looking at things  
23 right now and it's not being very well understood. I  
24 heard something earlier this afternoon about some  
25 unknowns. So why go with the unknowns and make a sound

1 decision on things when you don't also understand us as  
2 well? To be making unknowns completely in trying to make  
3 sense of it, but yet those are not unknowns. These have  
4 been existing from time beginning. From the time of  
5 spiritual, the time of the world of the animals, of the  
6 natural, to the time of the people here on earth, where we  
7 are now the stewards of those, or protectors of that.

8           So in short, it's serious, it's our life, it's  
9 more than can be put in a document. Words could be  
10 shallow, but your studies and be volumes and charts and  
11 everything else and that's one thing. But for us here, I  
12 appreciate all the tribes here and the sharing in the  
13 spirit is the only way to make it through to this, because  
14 it's heartfelt. You don't -- you go through so much  
15 emotions at times to collect yourself, to be able to stand  
16 here and be a part of it, sit through all two days, it's  
17 hard. And you wonder and you could think about the past  
18 and you think about the future, but you're here today to  
19 make that stand. So along with everyone else, on behalf  
20 of Fort Mojave Tribe, I oppose this project.

21           HEARING OFFICER CELLI: Thank you, Ms. Otero.

22           At this time we're going to go back on -- we are  
23 on the record, we haven't gotten off the record, but I  
24 want to go back to the expert panel.

25           I'm hoping that during public comment you had a

1 chance to organize your thoughts, as we requested. You  
2 may not have anything that you need to rebut, it's  
3 possible but I don't know, but I'm going to say that we're  
4 not demanding that everybody has to speak up, unless you  
5 have some point that you wish to make.

6 I'm going to go down the row here of experts,  
7 starting with Mr. Levenstein.

8 MR. LEVENSTEIN: I don't have anything.

9 HEARING OFFICER CELLI: I'm sorry, what about  
10 the guy in Israel?

11 MR. GALATI: I don't know. Mr. Binyamin, are  
12 you on the phone?

13 HEARING OFFICER CELLI: I don't think so. Okay,  
14 so I'm going to start with Ms. Grenier.

15 MS. GRENIER: Nothing.

16 HEARING OFFICER CELLI: Mr. Levenstein.

17 MR. LEVENSTEIN: Nothing.

18 HEARING OFFICER CELLI: Mr. Stucky.

19 MR. STUCKY: You might not like this, but I'd  
20 like to hear from staff more about this 3.7 times the risk  
21 for a P-6 tower versus an I-6 tower. I think it's very  
22 unclear how that was derived.

23 HEARING OFFICER CELLI: Okay. When we get down  
24 to staff we'll see.

25 Mr. Erickson.

1 MR. ERICKSON: Yes, I have things to say.

2 HEARING OFFICER CELLI: Go ahead.

3 MR. ERICKSON: I would say Dr. Smallwood  
4 mischaracterized the comparison of Altamont. Altamont's  
5 real issues have been focused on raptors, golden eagles,  
6 burrowing owls, red tail falcons, where it looks like most  
7 of the mortality here is, based on what's been seen at  
8 Ivanpah, songbirds and some raptors, and turkey vultures.

9 Altamont has a very high prey base. *Diurnal*  
10 raptor use. We put graphs in our exhibits that show high  
11 raptor use in the Altamont compared to here.

12 I want to just clarify something that Tom Ditsch  
13 said. Dr. Smallwood did use April and May data. He  
14 mischaracterized, I think Tom suggested that he didn't.  
15 And Tom also said that April and May were high mortality  
16 months compared to the previous months, and so an  
17 extrapolation that Dr. Smallwood did using April and May  
18 from a high period to the whole year should be an  
19 overestimate.

20 He's also in error when he assumed 20 percent  
21 sampling effort across the whole facility. A hundred  
22 percent of the area in high density carcass areas in that  
23 260-meter area were sampled a hundred percent, 24 percent  
24 in the heliostats. He used 20 percent for the whole  
25 facility.

1           You would have taken 100 percent of that area,  
2 scaled it up for \* and scavenging and added it to 4 times  
3 the 24 percent area as opposed to 20 percent times 5  
4 basically times what you found for sampling effort.

5           Carcass removal has not been fast at ISEGS based  
6 on the previous -- on the first period. I think 10 days  
7 for small birds, 21 days on average for larger birds, so  
8 it hasn't been fast. And likely those estimates which we  
9 used, we used the site specific numbers compared to  
10 national numbers. I don't know how his national numbers  
11 compared to those two. And all those factors contribute  
12 to an estimate that's biased high.

13           We used site specific data from ISEGS and  
14 applied over a 7-month period to the whole year.

15           Thank you.

16           HEARING OFFICER CELLI: Thank you, Mr. Erickson,  
17 and appreciate you bottom lining it for us.

18           Mr. Lesh. And please use the microphone.

19           Thanks.

20           MR. LESH: Thank you. I'd like to answer your  
21 question and go on the record that in terms of the risk  
22 assessment methodology, I don't fully understand yours and  
23 I would like a similar comment back to explain to me how  
24 you did it. But first let me go through mine.

25           We started with a hypothesis, we were looking



1 for something simple and straightforward that would  
2 explain all the phenomena that we're seeing on the field.  
3 Trying to explain it in the simplest way we can before we  
4 get more complicated with the limited data that we have.

5           That hypothesis was borrowed from human exposure  
6 to heat radiation, where it's fitted to a dose response  
7 model, meaning that you look at the -- well, before I get  
8 ahead of myself.

9           We started with a flux model. There is a figure  
10 that was in our testimony that shows a profile of the  
11 relatives sizes of the flux field for both the ISEGS and  
12 PSEGS plants.

13           Then we asked the question, how might this  
14 facility impair birds and cause mortalities?

15           Having already looked at the possibility that  
16 thermal regulation for a bird is an issue that can become  
17 overheated. They're running at their limit. They're used  
18 to having sun on their back, but they're not used to  
19 having sun on their bottom. They're designed to so that  
20 they can dump heat through their breath and through their  
21 legs; those are the two main transpiration mechanisms for  
22 dumping heat and their body is basically a heat engine, it  
23 needs to dump heat to the environment to keep flying, as  
24 do all of us.

25           So we took this picture and we said, in the

1 simplest way, assume a flock of birds comes through this  
2 facility, and how do the two facilities compare?

3           Because we have a flux model, we could say if a  
4 bird comes through here at any particular altitude, we can  
5 map the dose it's getting in terms of we assume a constant  
6 speed for a typical bird and we say it flies over at some  
7 flux density in that field before it expires, and that's  
8 where we found it on the ground.

9           So we relate that to a flux level for the birds  
10 that were found on the ground and the time that it was  
11 flying at that constant altitude. This is a simplistic  
12 model that assumes that a bird is flying through a field  
13 on his way somewhere before he expires, from overheat, for  
14 instance.

15           So we fit that data to what they call logistic  
16 curve. We convert it to a *probit curve*, which is really  
17 just a way to look at the dose that would account for a  
18 proportion of a population. And then you have to  
19 redistribute the distribution of birds within the facility  
20 to account for their exposure rates, and when you do that  
21 you come up with a couple of constants that can then be  
22 fitted to, or adjusted to look like the population  
23 accumulation that we had on the facility.

24           And the peculiar thing about it on this facility  
25 was that, as you walk from the outside of the facility to

1 the inside, stepping, say, ten meters at a time, and you  
2 collect all the birds that died on the facility at that  
3 radius. And so you go around in a circle like a racetrack  
4 and you collect that area.

5           You would expect if the mortalities were a  
6 constant per unit area within the field, they would be the  
7 outside ring having more area would have more birds in it.  
8 And as you go in, that ring becomes tiny and there would  
9 be fewer birds in it.

10           And so, when we look at the distribution what we  
11 find is that the mortality per unit area goes up, and then  
12 adjusted the *probit curves* to match that. So that  
13 becomes then a signature for the mortality at a facility  
14 which has a power tower and a flux field of this  
15 particular shape. At that point we could then put into  
16 our model a different height and a different radius and it  
17 would scale using those flight times and those densities.

18           As it turns out, it comes out very closely to  
19 the volume. The common thing in all of it was -- and I  
20 should say that staff realizes that in the wild birds have  
21 to go somewhere to die, so there are going to be birds  
22 dropping out of the sky, probably, just because they get  
23 old, but I don't know how many. But I would expect that  
24 to be relatively random, and what we see on the field data  
25 is that it's not random. More of them are dropping out of

1 the sky towards the middle of the field, regardless of how  
2 we attribute their cause of death.

3           So we figure each bird flew onto the field,  
4 didn't walk. It dropped out of the sky, presumably  
5 through loss of motor control. It was found on the ground  
6 dead.

7           Then it was characterized. Some of them had  
8 visible burns of their feathers. Some of them had broken  
9 bones and some of them didn't have either burned feathers  
10 or broken bones, but they're all dead on the ground. So  
11 how do you explain all of them with one simple theory?

12           We would say they're all exposed to flux. It's  
13 easier to explain the ones with the burned feathers. They  
14 got in so far to the tower that we know that at certain  
15 flux levels you'll start to burn feathers. They got  
16 there.

17           And in human studies where you, say, expose a  
18 person to flux at a level that would ignite their clothing  
19 -- and there are such studies. I don't know how they go  
20 the data, actually. I don't want to go there. But they  
21 find that once your clothing ignites, you're a goner.  
22 It's not a matter of putting them out real fast. By then  
23 you've transferred so much heat through your clothing into  
24 your body that you have a case of hyperthermia, and we  
25 know that you raise your temperature from 98.6 to 105

1 there's a good chance you're never going to see tomorrow,  
2 because the probability of your physiologic processes  
3 working properly and your brain working and your nervous  
4 system and everything that is a temperature-dependent  
5 chemical mechanism continuing to work properly just  
6 doesn't work so well.

7           So the idea that only a bird that has burned  
8 feathers has been flux impaired doesn't sit right with me,  
9 because I think that before that magic threshold there is  
10 a level of impairment where a bird is likely to have lost  
11 motor control. And if you're going to lose motor control,  
12 being in the air flying is not a good place to be. It's  
13 better to be standing on the ground or sitting on a sofa.  
14 So there's only one place to go then, and that's down.

15           So that accounts for maybe the flux birds,  
16 almost all of which are found within 300 meters of the  
17 tower.

18           If you then look at the other birds, for  
19 instance, the ones who had broken bones, and they're found  
20 all over the field, that accounts for a certain proportion  
21 of them. They also go up rapidly towards the middle, more  
22 than you'd expect for random distribution.

23           But there's mirrors filling the field at a  
24 density of about 50 percent of the field area roughly, and  
25 so the probability of a bird dropping out of the sky and

1 hitting a mirror is about 50 percent. And the maps of  
2 those what they call crashed birds goes up rapidly, and  
3 then it gets to the inner row of mirrors and stops. If it  
4 didn't stop you would maybe have another explanation, but  
5 I guess they can't crash into a mirror beyond the inside  
6 of the inner row. So that does explain them.

7           Then there's another batch that goes up also  
8 rapidly towards the middle. They don't have broken bones,  
9 they don't have burned feathers and they continue beyond  
10 the inner row. Those are ones that I would presume fell  
11 out of the sky but didn't hit a mirror, or didn't hit the  
12 ground hard enough to break a bone or to leave something  
13 that was an obvious explanation.

14           So we have one model, which is heat exposure to  
15 birds who have lost their radiator. They have flux on the  
16 bottom side. They're slowly flying around. They can't  
17 thermal regulate. It happens slow enough that they're  
18 still trying to fly or figure out where to go, and they  
19 end up crashing.

20           Thermal regulation is critical for them. It's a  
21 simple matter of physiology and the structure of the field  
22 that causes the distributions we've seen. For a bird the  
23 hazard of being impaired by sunlight in a sun situation  
24 where there's no way they could ever have experienced it  
25 before or understand what's happening to them. They hit

1 the ground.

2 So basically, in staff's opinion, it's the flux.  
3 Flux kills. If there's a threshold, we don't know what it  
4 is yet.

5 For most creatures and certainly for humans,  
6 which I've looked at the most, there's always a trade-off.  
7 You can have a high flux for a short amount of time and  
8 it'll give you a mortal wound. Or you can have a lower  
9 flux level for a longer period of time, and you won't show  
10 significant evidence of what happened to you during the  
11 post mortem.

12 For instance, we all know that there are people  
13 who get overheated mowing their yards. There are sad  
14 stories of children stuck in cars and they overheat just a  
15 little bit. Dogs in kennels and various other things.  
16 They get overheated, they expire. But they're not singed.  
17 The flesh on them is not burned, it's not cooked. They  
18 just got to the point where their physiology stopped  
19 functioning. And once you lose your nervous system  
20 control, you're done.

21 So that's sort of, I think that's the answer to  
22 your question.

23 HEARING OFFICER CELLI: Thank you, Mr. Lesh.

24 MR. LESH: I had -- so for a questions back,  
25 there were a couple things I didn't understand about your

1 model, and that was how you extrapolated to a full year  
2 from just two months of data.

3 And you mentioned that the flux, that your model  
4 for mortality came from an eagle model that was adapted  
5 from a wind model for windmills, and I'm not familiar with  
6 that and I was hoping you could explain it to me.

7 And finally was maybe you could explain why you  
8 don't feel there's any effect of flux until you're seeing  
9 singed feathers.

10 MR. ERICKSON: I'll start with --

11 HEARING OFFICER CELLI: Wait. We don't want to  
12 go there yet. I'm working my way to my right, your left.  
13 I think that the attorneys can rehabilitate their  
14 witnesses later if they need to.

15 MR. GALATI: Mr. Celli, I'd ask the committee to  
16 reconsider. This is a dialog that's going off the two  
17 models.

18 HEARING OFFICER CELLI: Okay.

19 MR. GALATI: The two people involved in modeling  
20 are those two people. I think it would helpful to let  
21 them engage.

22 HEARING OFFICER CELLI: Okay, we will, but, so  
23 I've been overruled and I'm going to allow Mr. Erickson to  
24 answer.

25 But Mr. Emmerich, you had a question.



1           MR. EMMERICH: I'm sorry to interrupt. Just our  
2     circumstance is we have to leave, I just wanted to let you  
3     know that we're going to take off now. If this should  
4     ripple into tomorrow we will call in.

5           HEARING OFFICER CELLI: Thank you very much.  
6     Thank you for letting us know.

7           COMMISSIONER DOUGLAS: Yeah, thank you.

8           MR. EMMERICH: And I would urge you to listen to  
9     the tribes, the river tribes. They know what they're  
10    saying here. Thank you.

11          HEARING OFFICER CELLI: Thank you.

12          Mr. Stucky -- or no, actually, Mr. Erickson,  
13    whoever is going to respond.

14          MR. ERICKSON: Yeah, Wally Erickson. We took  
15    the data for a seven-month period and expanded it to a  
16    year, so it wasn't just April and May, we used a period  
17    before then. I think there's testimony, Gustavo has  
18    testimony that 85 percent of the operating hours had flux  
19    being generated during that time. And so we used more  
20    than just a couple months using the fatality information.  
21    So that's the fatality approach that we used, and we used  
22    singed feathers, birds that showed signs of singed  
23    feathers.

24          Secondly, the wind model is an exposure model  
25    that just looks at estimated number of birds passing

1 through a volume of air, basically, okay. And we took  
2 that and applied it to this facility.

3           So think of a wind turbine as the tower and the  
4 radius equal to the turbine blade length, and the service  
5 has an eagle model that basically estimates exposures,  
6 okay, and then they also have a collision risk component  
7 to that, which is a separate piece, okay. So we just  
8 focused on the exposure piece, which is what is the  
9 exposure, estimated number basically of flight paths that  
10 we expect to pass through that area.

11           And on the -- Matt, do you want to talk?

12           MR. STUCKY: You go ahead.

13           HEARING OFFICER CELLI: Stay on your mike, if  
14 you would Mr. Erickson.

15           MR. LESH: Sorry. Can I clarify one thing for  
16 him?

17           HEARING OFFICER CELLI: Sure.

18           MR. LESH: It sounds like you're assuming  
19 there's no collision with the heliostats? Potential  
20 collision with the heliostats unrelated to --

21           MR. ERICKSON: No. You know, there's the  
22 tabulated birds with broken bones that I think are  
23 attributed to collision with a heliostats, and we allow  
24 that there are some birds who collide with mirrored  
25 surfaces, because we do see some mortalities like that at

1 PV plants and other plants. And we would assume that that  
2 kind of mortality would be uniformly distributed unless  
3 you have an explanation for why it wouldn't be. We would  
4 assume that they would look at a mirror is a mirror is a  
5 mirror as long as they're at a similar density.

6 And what we find is that the curves we have show  
7 that it's not uniformly distributed, so we attribute most  
8 of those deaths to falling out of the sky over the field  
9 and not to the other phenomenon which would have a  
10 different distribution.

11 We did enter an exhibit on Friday that showed  
12 the heliostats density, and it is not uniform across the  
13 facility, it's higher closer, and as you get further away  
14 it is less, so I believe that is one potential explanation  
15 for any sort of gradient.

16 I also mentioned some other ones previously,  
17 right, which was higher searcher efficiency closer to the  
18 tower and several others. Lots of activity going on near  
19 the tower, you're getting more stuff picked up, searcher  
20 efficiency is going to be higher.

21 COMMISSIONER DOUGLAS: So I have a quick  
22 question. I am listening to you, Mr. Lesh, and I find  
23 myself wondering how it is that a bird could overheat  
24 without showing any feather damage or other signs that  
25 might be visible in a necropsy. And I know that there

1 were very detailed necropsies done of the bird carcasses  
2 found at Ivanpah. Could you help me with that?

3 MR. LESH: Could I refer that to my biologist  
4 friend next to me?

5 COMMISSIONER DOUGLAS: Yes, you may. Please do.  
6 And that actually helps us with our movement in that  
7 direction because that's what we're trying to achieve.

8 MR. HUNTLEY: Thank you. We believe that birds  
9 can die from exposure to solar flux without exhibiting  
10 singeing, just for the very reason that we wouldn't expect  
11 most organisms to be able to tolerate seven, eight, nine,  
12 ten suns on them. They're absorbing the heat from those  
13 heliostats, their body temperatures are being raised right  
14 close to their thermal thresholds, and they don't have to  
15 exhibit the burning feathers, they still can expire.

16 Yet this is a question we posed to the Fish and  
17 Wildlife Service forensic lab and we docketed a letter on  
18 that. We actually asked two specific questions, and they  
19 said it would be difficult -- I don't have it in front of  
20 me, but they said it would be difficult to tell without  
21 fresh specimens like dropped out of the sky, picked up,  
22 taken to a lab and taking a look at them because of decay.

23 They didn't find evidence in the (inaudible)  
24 report, the forensic lab report, of singeing type of  
25 things from heat, and this is something we've said before.

1 Staff has never assumed that the birds are flying through  
2 superheated air, it's that they're being exposed to  
3 concentrated light which is absorbing on their feathers  
4 and it reaches a certain temperature and starts to burn.

5 So we have never said that we would expect to  
6 see that in all birds, but we believe it's possible. And  
7 I believe Dr. Espinosa suggested a similar mechanism could  
8 occur. We just don't know.

9 COMMISSIONER DOUGLAS: All right. But you're  
10 saying more than it's possible, you're saying it happens  
11 some reasonable amount given the density of --

12 MR. HUNTLEY: We believe it's happening based on  
13 the distribution of carcasses on the project site and on  
14 basic animal physiology. There's some point where animals  
15 are going to reach a thermal threshold. Same way if we go  
16 stand outside in the sunlight for an extended period of  
17 time.

18 COMMISSIONER DOUGLAS: All right. Let me see if  
19 Petitioner's witnesses have anything to say on that, and  
20 then if we could resume our rightward trajectory, that  
21 would be fabulous.

22 MR. ERICKSON: I again would say that heliostat  
23 density could explain that potentially. So could this  
24 searcher efficiency and potential issues with higher  
25 detection closer to the tower.

1           Another plausible reason why those distributions  
2 are a little bit like that, again, you know, we got some  
3 stuff that was submitted last Monday and we didn't respond  
4 with another graph sort of thing we could have, that  
5 showed that with heliostat density easily could explain it  
6 as well.

7           MR. HUNTLEY: Many of those birds aren't showing  
8 signs of collision, correct?

9           MR. ERICKSON: There are feather spots, so it's  
10 almost -- it's impossible to say that. And I would point  
11 out that we're talking about in the heliostat field about  
12 a third of a bird an acre a year is our estimate, okay,  
13 for unknowns. For unknowns. Okay.

14           Again, I believe there's a decent chance that a  
15 fair number of those are other causes like collision. I  
16 mean, a feather spot you can't tell if it's collision  
17 either.

18           MR. HUNTLEY: (Inaudible)

19           MR. ERICKSON: And you couldn't tell if it was  
20 predated.

21           HEARING OFFICER CELLI: And when you say feather  
22 spot you're saying a little pile of feathers.

23           MR. ERICKSON: You've got some feathers, which  
24 are a lot of the unknowns.

25           MR. STUCKY: To add to that, I would ask, I

1 honestly don't know but I think it's possible that the  
2 dataset that staff has used to show this increase in  
3 density near the tower includes avian fatalities collected  
4 at a point in time when only the near tower area was being  
5 searched. I'm not sure, it's a question.

6 COMMISSIONER DOUGLAS: Staff, can you speak to  
7 that?

8 MR. LESH: Yes. The dataset that we originally  
9 published in our rebuttal testimony had a total of 8 birds  
10 out of, I think, 370; 6 of those were from an early  
11 period. Those were since removed, and you can't tell. We  
12 have submitted a new graph, but it looks like the same  
13 graph. So there were a birds from incidental reports;  
14 those were removed. There was one bird that we removed  
15 because it was attributed to a vehicle strike in the  
16 biologist notes, and one bird that was removed because it  
17 was attributed to an electrocution. So we removed 8 birds  
18 in total and there was no change to our conclusions or any  
19 change whatsoever.

20 MR. ERICKSON: Could I respond to that?  
21 Tell me what period did you use?

22 MR. LESH: I think the period started either  
23 March or April of 2013.

24 MR. ERICKSON: I believe that the standardized  
25 searches for the winter period started October 29th. I'm

1 not sure if the heliostats were being searched, I'd have  
2 to check the winter report, between March and October.  
3 And again, I would point out that I'm guessing a lot of  
4 mortality found near the tower is incidentally reported,  
5 and in the heliostats incidentally reported and not from  
6 standardized searches.

7 MR. LESH: What we used was all from compliance  
8 reports from the facility, but they started, I think in  
9 March or April 2013. I was led to believe that this is  
10 when we started official searches.

11 MR. STUCKY: Yeah, I don't believe that's  
12 correct. We won't belabor the point, but there's one  
13 other thing I wanted to hit. Just this use of human  
14 exposure to thermal flux and the response paper study  
15 based on petroleum based fires or hydrocarbon based fires  
16 and the results on people somehow draw this to solar flux  
17 on birds, is I think problematic, and that's why I wish  
18 Mr. Krets was available to elaborate on the point. This  
19 is why we established the difference between thermal flux  
20 and solar flux. I think it's quite significant here.

21 HEARING OFFICER CELLI: Oh, I think you made  
22 that point very clearly, though.

23 MR. STUCKY: All right, thank you.

24 HEARING OFFICER CELLI: Thank you. So where are  
25 we in our -- Mr. Huntley.



1 MR. HUNTLEY: Yes, sir.

2 HEARING OFFICER CELLI: Did you have any, I want  
3 to say parting shot?

4 MR. HUNTLEY: I think it's clear that staff and  
5 the Petitioner are in disagreement on a lot of issues as  
6 it relates to the risk assessment in the (inaudible), but  
7 there a couple things I wanted to discuss, if I can.

8 The performance standards. Staff did not  
9 include performance standards in a condition of  
10 certification.

11 HEARING OFFICER CELLI: One moment, if I may.

12 Yeah, we really wanted to tackle performance  
13 standards when we spoke about mitigation, which we haven't  
14 gotten to yet. We're still in the risk assessment phase  
15 here.

16 MR. HUNTLEY: Okay. Most of the three points I  
17 had, just so you know, are related to performance  
18 standards, the insect monitoring and the time period for  
19 the monitoring, and that all goes to mitigation  
20 monitoring.

21 HEARING OFFICER CELLI: Go ahead.

22 COMMISSIONER DOUGLAS: No.

23 MR. HUNTLEY: We're going to hold off.

24 HEARING OFFICER CELLI: Okay, we'll hold off on  
25 that until --

1           COMMISSIONER DOUGLAS: No, go ahead and hold  
2 off.

3           MR. HUNTLEY: And I'll hand the microphone down.

4           HEARING OFFICER CELLI: Thank you.

5           MR. LESH: Can I respond to the last comment.

6           HEARING OFFICER CELLI: Okay.

7           MR. LESH: This was regarding the vintage of the  
8 samples and the shape of the curves. I think if I would  
9 invite you to compare our last submitted curve with our  
10 data and compare that to the curve that was submitted by  
11 the Petitioner of their presumably only officially sampled  
12 birds, and I think you'll find that they're virtually  
13 identical.

14           COMMISSIONER DOUGLAS: All right, thank you,  
15 Mr. Lesh. Let's move.

16           MS. WATSON: Nothing further from me, thank you.

17           HEARING OFFICER CELLI: Dr. Smallwood.

18           DR. SMALLWOOD: Shawn Smallwood. Mr. Erickson  
19 alleged that I overestimated fatality rates at Ivanpah and  
20 I just want to respond to that real quick.

21           HEARING OFFICER CELLI: Please.

22           DR. SMALLWOOD: On the seasonal issue I admit  
23 that I could be overestimating fatality rates (inaudible)  
24 from spring 2014. This could be actual estimates or the  
25 ones that we measure throughout a year could be higher or

1 lower, I don't know.

2 But he's referred to some past monitoring that  
3 preceded spring and I didn't use those data, that's true,  
4 because I think the monitoring was quite different. I  
5 think the current monitoring is more rigorous, started in  
6 April. And I also think the operations of the facility  
7 have changed through time, so I think it's apples and  
8 oranges comparing fall or winter to spring. I think we  
9 need to wait and see how this going to go.

10 On the issue of the percentage area sampled, I  
11 got my data from the monitoring report. I mean, the  
12 protocol and that's where I know to get it. I don't know  
13 where he's getting his numbers. Maybe there are slightly  
14 bigger areas being surveyed than I know about. Okay. but  
15 let's put this in perspective.

16 If I'm overestimating by even five percent, so  
17 what? These are huge numbers, absolutely huge numbers.  
18 And what we're doing when we argue over these numbers,  
19 which are based on hugely uncertain adjustment factors,  
20 we're also glossing over all the chicks that were left in  
21 the nests, and these birds died in spring. Glossing over  
22 all the social interactions, all the ecological  
23 interactions. We're just arguing over numbers which  
24 really don't reflect on all the impacts.

25 We'll leave it at thought.

1 HEARING OFFICER CELLI: Thank you,  
2 Dr. Smallwood.

3 Mr. Harper.

4 MR. HARPER: When I was a lot younger, I think  
5 when I was about 19 or 20, I went to school. My  
6 grandmother was still alive and I was sleeping until about  
7 11:00, 12:00, maybe 2:00 o'clock in the afternoon, and as  
8 she was chewing me out -- she was 94 years old at the time  
9 -- she said, "You know, while you're sleeping there are  
10 other people in this world who are thinking and doing  
11 things. Even in the middle of the night, they're still  
12 up, awake, wandering, deciding, conniving, doing  
13 whatever." I think I met them today.

14 These are some real smart guys. I mean, you  
15 guys, I commend you. I'm not saying it (inaudible), I'm  
16 just saying, wow, I mean, gosh. I don't know. Like I  
17 said before, this is a whole different world for me. I  
18 mean, I've probably read about it and probably seen it on  
19 TV, but I've never experienced it, so this is a good  
20 cultural endeavor of cross-cultural. But I'll leave a  
21 couple things.

22 One is our elders need to go. They have to take  
23 insulin. Some of them want to eat more. I know that  
24 we're going to have to get going, but again I want to  
25 thank Palen people for feeding us, you know. And you

1 don't do this for a living but you're doing it for a cause  
2 and you don't have a penny or a nickel or a dime in your  
3 pocket, it's good to sit down and eat something and  
4 appreciate that. Appreciate that. That's very much  
5 something that's good.

6           Last thing I want to say is, you know,  
7 Ms. Otero, my cousin, she was right in regards to  
8 landscape. We talked about the stars. Mojaves believe  
9 that that's how we tell our future and how things happen  
10 to us, so the landscape that Ms. Douglas brought up a  
11 while back, looking at the landscape, we look at the whole  
12 picture of what the landscape is because when do our  
13 cremation in the morning we believe that our spirit goes  
14 up the Milky Way into the next world. And so the  
15 landscape that includes the stars and the universe has a  
16 major effect because we take flight to the next world.  
17 And so I think that somewhere down the road, I don't know  
18 if it's astrology, astronomy or whatever, or even sitting  
19 down again and talking about that and how the affect is to  
20 us and our cultural religious base, it still needs to be  
21 included, and I'd sure hate for it to happen at the  
22 ethnographic study or at the latter part, because again,  
23 like in Genesis, the ethnographic study is not even done  
24 and it's already up and running. I mean, how is it going  
25 to impact us or how is it going to look at it in that

1 perspective when things are done already?

2           And so we're always late, always a dollar short,  
3 but it always impacts us and it is something that's  
4 relevant in the universe because that's us.

5           And you know, I'll say this. When the bird  
6 singers sing at the funerals, and we believe that they  
7 carry the spirit, it takes you on a journey and the  
8 cultural spiritual pathways to the next world, and you're  
9 coming down to these areas for your last time, and then it  
10 takes to our next place is going to be.

11           And to the left there's a rat hole and to the  
12 right is the happy hunting ground, and the song takes you  
13 to that point, but it never tells you which way you go,  
14 because that's based on your integrity and what you've  
15 done when you were alive. That's your fate.

16           And so, you know, I'm not saying you're going to  
17 the rat hole, I'm not saying you're going to the next  
18 world to the happy hunting ground, because that's our  
19 story, but at some point in your life when you're destined  
20 to make decisions that are going to affect people, it's  
21 your conscience and your faith that's going to direct you  
22 into the next world for your life, and I think it's really  
23 important that there's a way of having a livelihood and  
24 there's a way of living, and how you live and the things  
25 you make. Whether they are for everybody or somebody,

1 that's your conscience that you have to live with and the  
2 fate that you develop for yourself. And so I wanted to  
3 leave you with that.

4 Welcome to our land. Go home now, we don't want  
5 you here. No, just kidding. But thank you for your time  
6 and your hospitality. It was great meeting you guys. And  
7 like I said, (inaudible), you know, this is it. We're in  
8 the big league and these are the people who talk about the  
9 birds, the bugs and talk about the grass and the levels  
10 and all this stuff like that, and, you know, it's like  
11 Germaine said earlier, I mean, a bunch of smart people and  
12 here we are in the arena, but at last we're at the table  
13 and that's what counts most for us. We finally got to the  
14 table, and so we said what we said. We talked about our  
15 perspective, our tradition, our spirit, you know, and we  
16 got to the table, and sometimes that's the best. But when  
17 you say no, that could be even better, but I'll leave you  
18 with that. Like I said, the story is your conscience and  
19 fate. Thank you.

20 COMMISSIONER DOUGLAS: Thank you very much.

21 HEARING OFFICER CELLI: Ms. Anderson.

22 MR. HARPER: So I can be excused?

23 HEARING OFFICER CELLI: You are. Thank you,  
24 Mr. Harper.

25 MS. ANDERSON: Another hard act to follow, but

1 at this point I don't have any questions or comments on  
2 this part of the biological discussion. Thank you.

3 HEARING OFFICER CELLI: Thank you.

4 Anything, Mr. Figueroa?

5 MR. FIGUEROA: \*0:38:08 Yes, I just want to  
6 give thanks that you had this meeting here at Palo Verde  
7 College instead of Palm Desert or Sacramento, because this  
8 McCoy Valley (inaudible) I'll Never forget this meeting  
9 that you had today and that you saw our presentation. I  
10 want to thank everybody.

11 COMMISSIONER DOUGLAS: Thank you.

12 HEARING OFFICER CELLI: Thank you, Mr. Figueroa.

13 Now, experts stay here, we're not done. We are  
14 going to now -- we said we would give the attorneys a  
15 chance to do some follow-up and I asked you to try to  
16 organize your thinking so that we could have some  
17 efficient examination here. Ms. Clark, come on down.

18 CURE is gone. And Mr. Figueroa, you had no  
19 further questions. Then Ms. Clark, do you -- no problem.  
20 We kind of want to finish this round. This isn't  
21 finishing Bio, we're just finishing the risk assessment  
22 part of it, so please.

23 MS. CLARK: I am hoping that the parties could  
24 discuss briefly the impact of what we believe is  
25 incomplete data on their analysis. I realize it's a large



1 question for this late in the evening, but it was an  
2 important point that was raised during the motion to  
3 reopen this evidentiary hearing and I feel like I haven't  
4 heard anything about that today. I'm sorry, I know it's a  
5 big one.

6 MR. GALATI: I don't understand the question and  
7 I don't know if my witnesses do.

8 HEARING OFFICER CELLI: And I don't know who  
9 you've directed the question to, so if you would.

10 MS. CLARK: I would like one representative from  
11 the Petitioner and perhaps from staff, and if  
12 Mr. Smallwood has anything to add, to discuss the impact  
13 of, you know, having only a few months of complete survey  
14 data on avian mortality at the ISEGS site on the models  
15 that have been created and the sort of level of certainty  
16 that we can have with regards to the models and the data  
17 that has been presented.

18 COMMISSIONER DOUGLAS: Let me see if I can help  
19 with this just a little bit.

20 Petitioner, how many months of data did you use?

21 MR. ERICKSON: Using ISEGS seven months of data.

22 MS. CLARK: But you said just before that that  
23 wasn't all complete, correct? That was your point?

24 MR. ERICKSON: Hold on. We used seven months of  
25 data for fatality. Not quite complete but you covered a

1 spring migration season, you covered some winter period,  
2 you covered some fall period.

3 In addition, we used our fall, late summer and  
4 fall data in our risk assessment, so almost a different  
5 time period, and if you add them all together it makes up  
6 a year. But we used the fall period for our risk  
7 assessment, the exposure model. Actually, it was August  
8 through December.

9 MR. STUCKY: At Palen, are you differentiating  
10 ISEGS and Palen there?

11 MR. ERICKSON: I'm sorry, I'm sorry. So we used  
12 the ISEGS fatality data and it was seven months worth of  
13 fatality data started last October 29th, went through May,  
14 and we used that and extrapolated that to the year.

15 We also used in our risk assessment for Palen  
16 the exposure model, the flight model for birds. There's  
17 lots of data been collected that way, but we used the  
18 August through December data for that and extrapolated  
19 that to the year.

20 So kind of had a late summer/fall period in the  
21 one risk assessment we extrapolated for the year, and then  
22 we had the fall/spring data for Ivanpah fatality that we  
23 extrapolated for the year to come up with our estimates.

24 COMMISSIONER DOUGLAS: Do you want the same  
25 question of staff, how many months of data did you use?

1 MS. CLARK: No, that's not my question.

2 COMMISSIONER DOUGLAS: Okay. Go ahead.

3 MS. CLARK: I understand how the data would be  
4 used. I would say that earlier you just said that that  
5 seven months of data was incomplete, that there are parts  
6 of it where you're only looking at the interior ring. No,  
7 that's not what you're saying?

8 MR. ERICKSON: No. He said he started in March  
9 and used March data through October.

10 HEARING OFFICER CELLI: For the record, when you  
11 say "he" you mean Mr. Lesh.

12 MR. ERICKSON: I'm sorry. Mr. Lesh, sorry about  
13 that. He started with March data 2013 and it was my  
14 understanding that not everything was being sampled, the  
15 heliostats, 20 percent of everything was being sampled at  
16 that time, and 100 percent of the tower.

17 MS. CLARK: Let me rephrase my question. Do you  
18 think it was appropriate -- and I will ask the Petitioner  
19 and I will ask staff -- to be conservative given the  
20 incomplete data in the estimate of the model?

21 MR. ERICKSON: I think we made some -- this is  
22 Wally. I believe we made some conservative assumptions  
23 when we did the modeling using the Ivanpah data. We used  
24 winter carcass removal rates and we know spring was  
25 better. They used dogs in some cases. So I think we made

1 some conservative assumptions. So yes, I think we made  
2 conservative assumptions and I think it's alright to be  
3 slightly conservative.

4 MR. LESH: For staff's risk assessment, the  
5 relative one, we didn't make a numbers estimate. We  
6 looked at the distribution within the field. We did  
7 correct for the 20 percent sampling on the outer part for  
8 the heliostat field. We don't expect that distribution to  
9 be affected, and so we expect it to look similar  
10 regardless of how many months, but the nuns of birds would  
11 vary with the presentation of population to the site  
12 depending on what's flying through.

13 MS. CLARK: Because it's just a comparative  
14 model.

15 MR. LESH: Yeah. And I guess the other thing is  
16 with regards to the shape of the distributions, you know,  
17 it's noted that the mirror density does increase towards  
18 the middle and it goes up by, I think, approximately five  
19 or ten percent in the inner parts.

20 What we find in the toxicity, though, in the  
21 field, if you look at the death or the mortality per  
22 square meter goes up by a factor of almost ten from the  
23 outside to the inside.

24 MS. CLARK: Mr. Smallwood, could I ask you to  
25 answer that question as well?

1 DR. SMALLWOOD: About the?

2 MS. CLARK: Whether to be conservative in making  
3 models given the incomplete data.

4 DR. SMALLWOOD: Oh. Well, I mean, I wouldn't do  
5 it, because I think they are way too incomplete. You  
6 know, (inaudible) they were used for the exposure index  
7 were only gathered not from August through December but  
8 from late August to early December, as I understand it.  
9 That's not sufficient through the time, you know, that  
10 doesn't represent a year at all.

11 Also, there's no evidence that the exposure  
12 index predicts fatality rates. Nor is there any evidence  
13 that use rates predict fatality rates, believe it or not.

14 I know they have a graph. Wes uses a graph a  
15 lot of times, but the graph is the same graph that we're  
16 using over and over.

17 So 2009 I got a grant from the Commission and I  
18 got it in a big way and I collected use data and fatality  
19 data from across North America. I compared fatality rates  
20 to the use rates in every way I thought possible. I also  
21 have lots and lots of data from the Altamont Pass where  
22 they've been doing use surveys for, what, ten years or  
23 more? And you know, I just didn't find anything that was  
24 useable. I submitted a report last month to the Energy  
25 Commission, a report on all this.

1           But I don't see any consistent pattern or  
2 anything that's a strong pattern that would suggest that  
3 use rates are useable for predicting fatality rates, so I  
4 don't see any value in it, especially when it's only from  
5 one season.

6           As for the fatality data, like I said, I just  
7 don't -- my impression from reading the documents that are  
8 posted on the Energy Commission's website is that the  
9 surveys weren't done the same way and that they're not  
10 comparable. I mean, I keep hearing of these fatality  
11 surveys that were done prior to April. Well, were they  
12 done the same way and was the facility operating at the  
13 same level that it's operating now through April and May?  
14 Are they really comparable?

15           I'm having a hard time getting a sense of that.

16           MR. GALATI: We can answer those questions if  
17 the committee's interested.

18           DR. SMALLWOOD: Oh, one more thing. If they are  
19 available, then how come the data from before April aren't  
20 posted?

21           COMMISSIONER HOCHSCHILD: Yeah, I'm interested  
22 to know what portion of the seven months was the facility  
23 a hundred percent on?

24           HEARING OFFICER CELLI: I would just say that in  
25 the record it shows that we have December --

1           MR. GALATI: I could make an offer of proof, if  
2 you'd like, and I can point to the record, or you can  
3 listen to Gustavo.

4           HEARING OFFICER CELLI: Let's listen to him.

5           MR. BUHACOFF: The facility was not operating at  
6 a hundred percent, but electrical production has no  
7 relation to flux produced. So the solar field was  
8 commissioned and operational, so actually there was more  
9 heliostats and spillby during the early months than during  
10 (inaudible).

11          COMMISSIONER DOUGLAS: More questions?

12          MS. CLARK: No more questions.

13          HEARING OFFICER CELLI: Ms. Belenky.

14          MS. BELENKY: I think most of the questions that  
15 I was going to ask have been touched upon at this point.  
16 I do want to say that this question of comparing the data  
17 and whether the solar field, there was flux throughout the  
18 solar field in those early months has been quite  
19 confusing, and even what Mr. Gustavo just said did not  
20 actually clarify it. That if you look at the records, and  
21 we have looked at these and we have asked how much of the  
22 time the facility was operating, if you look at the  
23 records from Cal ISO, they're all over the place. And I  
24 don't think -- and this is my question for Gustavo -- if  
25 the mirrors are in the standby position, then they're

1 facing away from the tower; is that correct?

2 MR. BUHACOFF: No, that's incorrect.

3 MS. BELENKY: They are --

4 MR. BUHACOFF: They are facing the tower, they  
5 are not tracking the receiver.

6 MS. BELENKY: Okay. So they're in the standby  
7 ring; is that what you're saying?

8 MR. BUHACOFF: That's what standby means, yes.

9 MS. BELENKY: And so at all times from April  
10 until today all mirrors have been either in standby or on  
11 the tower; is that what you're saying?

12 MR. BUHACOFF: As long as the facility is in  
13 operation, yes.

14 MS. BELENKY: My understanding was operation  
15 began in late December.

16 MR. BUHACOFF: No, that's incorrect.

17 MS. BELENKY: When did operation begin?

18 MR. BUHACOFF: From August through the winter  
19 until it was declared successfully complete at the end of  
20 December. All this time the heliostats were either in  
21 tracking or standby.

22 MS. BELENKY: Okay. So your testimony is from  
23 April. I'm sorry, I just want to understand what you're  
24 trying to say.

25 MR. BUHACOFF: I'm trying to answer your



1 question.

2 MS. BELENKY: From April until December, even  
3 though the facility was not technically in operation, the  
4 heliostats were all aimed in such a way that they created  
5 the full amount of flux; is that correct?

6 MR. BUHACOFF: That's correct.

7 MS. BELENKY: Thank you. And then my other  
8 question, going back again, has to do with comparing these  
9 different datasets. In April through late October, what  
10 was the monitoring? Mr. Erickson, can you explain or  
11 point us to where in your testimony or where in the record  
12 it shows exactly what the monitoring regime was during  
13 that period.

14 MR. ERICKSON: When we did our estimates, we  
15 used the seven months of data starting in October, October  
16 29th, I believe, because that's when our understanding  
17 when all the monitoring was being implemented at the  
18 facility, so October 2013 through May of 2014, which is, I  
19 hope, seven months.

20 MS. BELENKY: Okay. So just to clarify, it's  
21 not your testimony that you were using data from April.

22 MR. ERICKSON: April of what year?

23 MS. BELENKY: Of 2013 through October 28th, you  
24 were not using that dataset.

25 MR. ERICKSON: The estimates we made, the

1 seven-month period, was not from that period.

2 MS. BELENKY: Thank you. I have no further  
3 questions on that.

4 HEARING OFFICER CELLI: Okay. Is that all,  
5 Ms. Belenky?

6 MS. BELENKY: Uh-huh.

7 HEARING OFFICER CELLI: Thank you.  
8 Ms. Martin-Gallardo.

9 MS. MARTIN: Staff has no questions on the risk  
10 assessment.

11 HEARING OFFICER CELLI: Mr. Galati.

12 MR. GALATI: Just a few questions. Mr. Huntley.

13 MR. HUNTLEY: Yes, sir.

14 MR. GALATI: You mentioned that staff, it was  
15 either you or Mr. Lesh mentioned that you had not created  
16 an estimate of mortality for Palen; that's correct?

17 MR. HUNTLEY: I believe it is, yes.

18 MR. GALATI: I just want to clear up some  
19 confusion. In the PMPD it looks like it references that  
20 staff had done a previous estimate in Palen for what the  
21 mortality would be. Did you do one?

22 MR. HUNTLEY: We did not prepare a mortality  
23 estimate and publish it anywhere.

24 MR. GALATI: Other than the relative risk  
25 assessment, have you provided anything else that helps

1 provide a frame of reference for the mortality that might  
2 be associated with flux in Palen?

3 MR. HUNTLEY: Are you asking if in the FSA did  
4 we identify target species?

5 MR. GALATI: No --

6 MR. HUNTLEY: The answer to that is yes, and  
7 it's on the record.

8 MR. GALATI: Yeah, I'm not asking that. At the  
9 PMPD conference hearing the Commissioner asked us to  
10 prepare, put these impacts in a frame of reference. I'm  
11 just trying to figure out all the different pieces of  
12 evidence I might need to look at. Is there anything other  
13 than this appendices that provided the relative risk  
14 assessment in which you attempted to provide a frame of  
15 reference of the impacts associated with Palen?

16 MR. HUNTLEY: I don't believe so.

17 MR. GALATI: Okay. Thank you.

18 HEARING OFFICER CELLI: Mr. Galati, what  
19 appendix were you just referring to?

20 MR. GALATI: I'm sorry. I believe that the  
21 rebuttal testimony is 2018 and there was an appendix to  
22 the biology that basically includes this dose response  
23 relationship and this geometric model that they did.

24 HEARING OFFICER CELLI: Thank you.

25 MS. MARTIN: I'll just be super clarifying.

1 It's an attachment, not to be confused with the appendix  
2 that we had attached to our FSA.

3 MR. STUCKY: It's attachment A of staff's  
4 rebuttal testimony most recently filed.

5 HEARING OFFICER CELLI: Thank you.

6 MR. STUCKY: And this is Matt Stucky.

7 HEARING OFFICER CELLI: It sounds like we have  
8 consensus there. Okay. Mr. Galati, go ahead.

9 MR. GALATI: Just to clarify the record, I was  
10 referring to all of those things. I don't have any other  
11 questions other than I would like to ask Dr. Pratt if I  
12 could record his laugh.

13 HEARING OFFICER CELLI: Okay. Then let's move  
14 into mitigation.

15 MR. GALATI: Can I make a request, please? We  
16 have two people who have been here for a long time to try  
17 to tell you about their deter and detect deterrent  
18 methods. Can we take them next so that they can leave and  
19 be sure to not have to come back tomorrow? It's part of  
20 mitigation, it's just the deterrent part first. That's  
21 why, they cannot come back tomorrow and they're here.

22 COMMISSIONER DOUGLAS: So how long do you think  
23 it'll take?

24 MR. GALATI: Dr. Voltura has told me no more  
25 than ten minutes, and I believe that --

1 MALE: Give me three minutes.

2 HEARING OFFICER CELLI: Well, okay, you can have  
3 two, let's do it.

4 MR. GALATI: I think they were sworn.

5 HEARING OFFICER CELLI: Yes. Do we need to make  
6 some room for them?

7 COMMISSIONER DOUGLAS: So were they both sworn?

8 MR. GALATI: They were sworn.

9 COMMISSIONER DOUGLAS: All right.

10 MR. GALATI: Weren't you sworn with the panel?  
11 They were sworn with the panel.

12 HEARING OFFICER CELLI: And I'm sorry, what's  
13 your name, ma'am?

14 DR. VOLTURA: Karen Voltura.

15 HEARING OFFICER CELLI: Okay, that's right,  
16 Karen Voltura, and?

17 MR. NORRIS: Elwood Norris.

18 HEARING OFFICER CELLI: Elwood Norris. You  
19 testified already?

20 MR. NORRIS: No, I'm after her. I'm going to  
21 use the podium for a special reason.

22 HEARING OFFICER CELLI: I need you to go right  
23 now to the podium because everything you just said did not  
24 make its way into the record.

25 MR. GALATI: Okay. So I think we're having some

1 technical difficulties with the slides that Dr. Voltura  
2 was going to use, but --

3 DR. VOLTURA: I can reference, I think it was  
4 1140.

5 MR. GALATI: It's in Exhibit 1140.

6 HEARING OFFICER CELLI: We've seen it, the  
7 picture of the speaker box. There's also the other one  
8 where the guy's shooting at the bridge with the ray gun  
9 thing.

10 MR. GALATI: I don't think we planned any ray  
11 gun testimony, but I would like to see that witness,  
12 please.

13 HEARING OFFICER CELLI: So they were both like  
14 advertisements or that sort of --

15 MR. GALATI: No, this is 1140, it's a  
16 presentation about the detect and deterrent system that's  
17 been used at other locations, so I'll let Dr. Voltura go.  
18 I just, unfortunately, don't have your slides.

19 DR. VOLTURA: That's okay. There's just one or  
20 two layout, like design maps that I can just reference for  
21 people to look through if they want to look at it.

22 Again, I'm not going to go through all the  
23 technology on it, you all have that, but essentially it's,  
24 we call it a detect and deter. It's based on a radar  
25 detection system that automatically detects and tracks

1 moving targets on the site. It records everything in real  
2 time. It can display it, and it also records it to  
3 databases for reference in the future. It really is an  
4 operational mitigation. It's made to minimize the impacts  
5 that we've all just been talking about.

6 So as an operational setting, we've used them a  
7 lot in oil and gas, mining industries and things where  
8 there are risky portions of projects and they want to  
9 mitigate the impacts by keeping birds out of those areas.

10 The two things it does is that it collects the  
11 data to a database and then the real time implications.  
12 By writing to the database it help you collect good data  
13 on the site, so you can see how the birds are using the  
14 site at areas that you might employ something like a  
15 passive mitigation like a habitat modification or  
16 exclusion methods.

17 The more real time applications are, again,  
18 tracking birds on the site and using a focused deterrent.  
19 So as opposed to systems that just randomly set off  
20 deterrents every 20 minutes, you know, all over the site,  
21 it actually takes just where the birds are moving and  
22 targets those deterrents just at that location.

23 So again, it can take -- one of the ones I was  
24 going to mention in terms of layouts is the oil and gas  
25 large pond slide, and here it shows you how we sort of

1 split everything up into zones so that, again, these focus  
2 deterrents.

3           We use a variety of deterrents. One is an  
4 acoustical hailing device, also called an LRAD,  
5 (inaudible) but it's about a 25 to 30 degree beam, so that  
6 instead of just broadcasting over the whole site, you're  
7 broadcasting just that segment, just that zone where you  
8 have bird activity.

9           It does a few things. It minimizes just the  
10 overall noise from the site and it minimizes habituation.  
11 So birds are not hearing these sounds continuously. They  
12 can't habituate to them, and so it promotes that.

13           The system in and of itself is also mobile, so  
14 they're all trailer skid mounted, meaning you can move  
15 them around so if there's an area that's not covered, you  
16 can move them, and it fits very well into an adaptive  
17 mitigation system, so there's a lot of flexibility. You  
18 learn from all the data that's collected, including all  
19 the fatality data and you can make changes to the system  
20 and more target those deterrents.

21           We also use, I think in the presentation it  
22 mentions lasers. Again, your biggest risk for this  
23 situation is during the day, but lasers can help with  
24 roost use. You can target based on the data that the  
25 radar shows you where birds are moving onsite and if



1 there's a roost location that was unknown before, you can  
2 target some mitigation like that again. Probably more  
3 likely not as applicable to solar but it can be used in  
4 certain situations.

5           We have other secondary deterrents such as  
6 propane (inaudible) effigies. Essentially anything with  
7 an on/off switch can be put into the system. Our company  
8 really manufactures the radar technology, but any proven  
9 deterrent in the industry can be incorporated into this  
10 system at any point in time. It can be expanded later and  
11 change that in, so again, as part of that adaptive  
12 mitigation, as new information is learned you can add that  
13 into the system.

14           So I think that's a big part of having, again,  
15 that record of information and use of the site as well as  
16 options to deal with it.

17           It also collects data, one, in the horizontal in  
18 terms of how birds are using the landscape, sort of in a  
19 360 birds eye view, so to speak. But it also has a  
20 vertical component, and I think that's pretty critical  
21 here because we've talked about that risk area for birds  
22 having a vertical component. And these radars can also  
23 give you an altitude profile of how birds use the site.

24           Again, migration especially birds use a variety  
25 of flight heights depending on other conditions, and the

1 radar in real time can tell you that.

2 COMMISSIONER HOCHSCHILD: Can I just ask during  
3 the seven-month period that we're talking about were any  
4 of these deterrent technologies in any form in effect or  
5 not?

6 DR. VOLTURA: No, no, we're not currently  
7 installed in any of these systems.

8 COMMISSIONER HOCHSCHILD: Okay.

9 DR. VOLTURA: They are installed on a lot of oil  
10 and gas and mining facilities, and some of those examples  
11 are in the exhibit, but they are not installed on any  
12 solar facilities currently.

13 COMMISSIONER HOCHSCHILD: Okay.

14 DR. VOLTURA: So there is some extrapolation to  
15 their effectiveness on ponds and hazardous waste sites and  
16 landfills. The issue with those is that that's a very  
17 attractive resource, particularly water. A body of water  
18 along a migratory route for waterfowl is a limiting  
19 factor.

20 We show a site in New Mexico is a salt  
21 evaporation pond. Again, that's a highly attractive  
22 resource. These deterrents are built on a system to keep  
23 them off that resource. Again, if they're just passing  
24 through an area and you're trying to move them out, it  
25 should be even more effective than that, because if

1 they're not attracted to the area but just moving through.

2           One of the questions that came up in some of the  
3 other testimony we got was that the issue of you wouldn't  
4 want the deterrents to push the birds into an area of  
5 higher risk, and the way this is laid out design-wise, you  
6 know, it's a high pressure sound. These aren't just  
7 regular speakers, they're highly directional and highly  
8 very intense sound pressure. Birds naturally move away  
9 from that sound to escape it, just like something is loud,  
10 you move away from it. And these are arranged sort of  
11 around the risk area so that when birds hear it and they  
12 move away from it, they're moving out of the risk zone.  
13 And so it's designed to push them away from that and not  
14 to add to the trouble and actually deter them and push  
15 them into a higher risk zone.

16           In that it's highly flexible. Some of the maps  
17 we have in here show some ponds. Some of these ponds, I  
18 think the map in this one is about three kilometers wide  
19 and about six kilometers long. Some of the largest ponds  
20 that we work are actually about ten kilometers by five  
21 kilometers, so it's extremely large areas that we're  
22 covering with this system and with these deterrents in  
23 terms of range, so that should be more than enough to  
24 cover the risk zones that have been modeled like this.

25           And just to kind of sum up again. It would be

1 setting an exclusion zone, looking for activity and trying  
2 to exclude activity from those high risk zones.

3 It's fully automated so it does all this  
4 processing in real time, and it's built to be very  
5 flexible and adjust to changes either seasonally or over  
6 the years or even as a facility changes or evaluations of  
7 it change.

8 COMMISSIONER DOUGLAS: So quick question. What  
9 size risk zones has your product been installed to deter  
10 birds from?

11 DR. VOLTURA: Well, like I said, there really is  
12 no limit to it because it's modular, we just building  
13 sections onto it. But the ponds, one of the largest ponds  
14 we work is about ten kilometers long by five kilometers  
15 wide. But on that same facility there's about five of  
16 those ponds, so it's segmented out into those sections.

17 COMMISSIONER DOUGLAS: All right, thanks. Sorry  
18 to interrupt, keep going.

19 DR. VOLTURA: That's okay. I think that was  
20 most of my points that we had brought up, just to keep it  
21 brief for you.

22 HEARING OFFICER CELLI: Okay. Mr. Elwood -- or  
23 I'm sorry, Mr. Norris.

24 MR. NORRIS: That's good enough. Elwood Norris.  
25 I live in San Diego and I'm nearing 12 hours of being in

1 this room. I've never been in a meeting this long in my  
2 life.

3 I'm an inventor with about 80 U.S. patents and I  
4 think around 300 corresponding international patents.  
5 I've been very successful as an inventor.

6 I have to say something, by the way. Earlier in  
7 the day I counted how many people were here. About a  
8 hundred people. I think the birds would be really proud  
9 of us for giving them this much attention.

10 Okay. I'm the emerging technology guy. I have  
11 over 40 patents on a technology that I'm going to take the  
12 liberty to show you. It's already hooked up. It's a new  
13 way to make sound. It's not a loud speaker. It emits  
14 ultrasound. Now, I know that there are a lot of companies  
15 that say they can use ultrasound to chase away birds. I'm  
16 not stupid enough to think birds hear ultrasound. A graph  
17 that's in my testimony shows that birds can hear up to  
18 maybe eight kilohertz if they're lucky.

19 By the way, birds have an advantage over humans.  
20 The little hairs in the inner ear of birds, we break them,  
21 we lose that hearing. Like rabbits, birds can regrow  
22 those.

23 The right kind of sound coupled with the  
24 previous testimony can have an impact on all kinds of  
25 animals, including birds. I've got a story about a farmer

1 that had a pasture next to a new airport, and as soon as  
2 the planes started to fly, the cows stopped giving milk.  
3 A couple weeks later they were right back to their regular  
4 schedule. That's the way birds are.

5 So it isn't just predator sounds, it's special  
6 sounds, but it's especially very intense sounds. The nice  
7 thing is birds fly and if they fly into an area, the sound  
8 gets more intense.

9 I'm going to pull out something here real quick.  
10 It runs on battery. I'll say that again.

11 HEARING OFFICER CELLI: Thank you.

12 MR. NORRIS: This is a small version of my  
13 emitter. They can be as large as you like, as thin as two  
14 business cards, very efficient.

15 Oops, don't want to play that one. I want to  
16 play this one. You won't hear it unless I point it at  
17 you. Then you can hear it. This has about a five degree  
18 radius.

19 (Inaudible) we were out back, which I had most  
20 of you earlier, pointed up in the air, there's zero sound.  
21 The sound is in that laser cone.

22 This isn't like just a flashlight, it's like a  
23 laser beam.

24 COMMISSIONER DOUGLAS: Can you make sure that  
25 the microphone's picking you up. I think the background

1 noise might be on the transcript.

2 MR. NORRIS: I said I'd only take about three  
3 minutes. We've proven that this has a couple of  
4 advantages. One is the directionality. Any critters on  
5 the ground that you're concerned about. Foxes, turtles,  
6 snails. If I aim this just slightly upwards, there is  
7 zero sound. It's down below the threshold you can hear.

8 The other is, because the sound is not made on  
9 the face like a regular loudspeaker, it doesn't follow  
10 directly the inverse square law, which says as you double  
11 the distance you lose about two-thirds of the sound. That  
12 means if I'm one meter on axis off the face and the sound  
13 pressure is X, and I go to two meters, I've already lost  
14 two-thirds of that sound. This thing goes about ten times  
15 further than a regular loudspeaker because the sound is  
16 made in front of the speaker in the air here and here and  
17 here and here, etcetera, until the level of the sound it's  
18 riding on top of gets below a threshold. Ultrasound. It  
19 operates at approximately 100,000 cycles. It doesn't  
20 bother pets, birds, most bats.

21 By the way, we think playing the right content  
22 with this could have real impact on windmills and bats and  
23 so on, but that's a different meeting.

24 Questions? That's my speech.

25 COMMISSIONER DOUGLAS: When you say it doesn't

1   bother birds, what do you mean? I mean ...

2               MR. NORRIS: Thanks for catching me on that.  
3   The 100,000 cycle carrier has no impact on birds. What  
4   you were hearing when I swapped it around was regular  
5   audio that was made riding on that carrier, and that's  
6   projectable and that does have an impact on birds.

7               COMMISSIONER DOUGLAS: All right. Thank you,  
8   that helped.

9               MR. NORRIS: Okay.

10              DR. VOLTURA: This is Karen. Can I clarify just  
11   one thing based on one of the questions. You had asked if  
12   we were operating at any solar facilities, and we're not  
13   installed but we did do some testing for five days at  
14   Ivanpah just to make sure that the radar would operate  
15   well under those conditions with the heliostats and with  
16   the highly reflective surfaces, as we do a just brief test  
17   of any new facility type that we work at.

18              So the structure and infrastructure of the  
19   facility, from all of our testing, does not indicate that  
20   it would interfere with the radar operations on site.

21              COMMISSIONER DOUGLAS: Great. And I did have  
22   one more question about your demonstration. How far does  
23   that sound carry, what distance?

24              MR. NORRIS: We've tested with Mr. Desmond and  
25   an associate, wherever he is. He's gone. We can go a



1 half-mile. Very small, very small amount of power. We  
2 could go four or five miles because we have the advantage  
3 that we don't truly follow the inverse square law. The  
4 sound made at this point follows the inverse square law,  
5 starts to die off pretty quickly. But it's reinforced  
6 continually along the column where you get about ten times  
7 the range expected from conventional loudspeakers.

8 COMMISSIONER DOUGLAS: Okay, thank you.

9 COMMISSIONER HOCHSCHILD: I'm just curious, what  
10 is the sound that actually proves most effective in  
11 deterring birds? That sounded like water when you were --

12 MR. NORRIS: I recorded that in my backyard.

13 COMMISSIONER HOCHSCHILD: Yeah.

14 MR. NORRIS: I have a waterfall in my backyard  
15 that cascades down to a swimming pool, and I took a  
16 microphone and I picked it up.

17 MR. GALATI: I think Dr. Voltura might be the  
18 best to answer that.

19 MR. NORRIS: Okay. There you go. Probably  
20 closer to pink noise.

21 DR. VOLTURA: We broadcast these sounds through  
22 these acoustics so they have about a one kilometer range  
23 for the sound, and we use a variety of sounds, any sound  
24 file, but we use sometimes alarm calls. It sort of  
25 depends on the species composition. It's not necessarily

1 targeted toward the group, but if you have a lot of  
2 waterfowl you can pick certain sounds, gunfire, mechanical  
3 sounds that they might respond to. We do use distress  
4 calls sometimes (inaudible) you wouldn't want to do that,  
5 it just calls them in, but starlings react quite well to  
6 distress calls. So predator calls, there's a whole  
7 contingency, we have about 200 sound files per system, and  
8 those can be changed out depending on what your particular  
9 targets are. But it's as much the sound pressure as it is  
10 the sounds themselves, so it's a combination, but we have  
11 all sorts of things. I don't think we've tried the pink  
12 noise, but certainly both calls and mechanical sounds  
13 work.

14 MR. NORRIS: What I was playing earlier was off  
15 of my iPhone, so we can play anything you can record.

16 HEARING OFFICER CELLI: Do you mount this on the  
17 tower?

18 MR. NORRIS: You can track, you can use her  
19 tracking system. I will tell you that we just filed  
20 patents recently on an emitter that is completely  
21 transparent. It could actually lay over the face without  
22 in any way impeding the effectiveness of the mirror. So  
23 that would make it really super cool.

24 HEARING OFFICER CELLI: Oh, I see what you're  
25 saying, in terms of keeping the birds away from the

1 heliostats.

2 MR. NORRIS: The heliostat becomes a speaker.  
3 All of them could be speakers and grab whatever you  
4 wanted. The ones that weren't aimed at the tower could be  
5 aimed at an area where you wanted to catch --

6 MR. STUCKY: We're not necessarily proposing  
7 this.

8 COMMISSIONER DOUGLAS: Thank you, Mr. Stucky.

9 MR. NORRIS: I started out by saying I'm an  
10 inventor.

11 MR. STUCKY: If I could just jump in to provide  
12 a little bit of context here. Dr. Voltura represents  
13 DeTect, a company that commercially provides these avian  
14 radars that they couple with various deterrent  
15 technologies, and they have a very good track record.

16 And I guess I did want to answer Mr. Celli's  
17 question about if this hypersound technology were to be  
18 used at a project like Palen. I think it could be mounted  
19 on the tower. I think it would also work probably better  
20 for maintenance purposes to have it on the ground and aim  
21 it upward, or maybe at 30 degrees upward and have it wrap  
22 around the tower, something like that.

23 But Mr. Norris is here that we're trying to show  
24 that there's evolving technologies that we're very  
25 interested in trying in this field and we want to do some

1 research on this and figure out whether it works and put  
2 it to work at Palen.

3 MR. NORRIS: We've sold thousands of these. We  
4 are in production, but it's for commercial applications.  
5 Thank you.

6 HEARING OFFICER CELLI: Any questions from CRIT?

7 MS. CLARK: Just a brief question. Obviously, I  
8 think this could potentially have impacts on the cultural  
9 resources we've been talking about. I'm just curious if  
10 someone could explain to me whether tribes would be  
11 consulted when this deterrent method is eventually pursued  
12 or chosen?

13 MR. STUCKY: The advantage we see in  
14 Mr. Norris's technology is that it's highly directional.  
15 In this room, a lot of what you were hearing when he was  
16 pointing it away from you was the sound bouncing off the  
17 floor or the wall or the ceiling. If you're outside and  
18 you're pointing it up, nobody will hear it unless they  
19 pass --

20 MR. NORRIS: Absolutely silent.

21 MR. STUCKY: -- in front of this very specific  
22 cone.

23 MS. CLARK: Perhaps my question is more general,  
24 then. You haven't chosen this technology, you could be  
25 using something else, I believe.

1 MR. STUCKY: That's correct.

2 MS. CLARK: Some other radar or some other  
3 purpose, and so I'm just trying to understand in general  
4 whether tribal consultation will occur with regard to  
5 choosing a deterrent method. It doesn't appear so.

6 MR. GALATI: Do you want us to consult with the  
7 tribes on it or you want the staff to consult?

8 MS. CLARK: I would like the staff to consult or  
9 someone seeking input. You know, in the staff's testimony  
10 the cultural resources staff did note the potential for  
11 impacts, and so the potential was noted but there was no  
12 opportunity given to address that.

13 COMMISSIONER DOUGLAS: So do the staff witnesses  
14 who are here right now, are you able to answer that  
15 question? They may not be.

16 MR. HUNTLEY: I'm not certain I can answer that.  
17 Let me look through one of our --

18 COMMISSIONER DOUGLAS: Well, if you can't answer  
19 that you don't need to look to -- you know, whatever the  
20 exhibit says, it says.

21 MS. CLARK: I would just like to note that I  
22 have reviewed the testimony. I do not see any mechanism  
23 for addressing it in what is currently being presented.

24 COMMISSIONER DOUGLAS: Thank you.

25 MS. CLARK: That's all.

1 HEARING OFFICER CELLI: Ms. Belenky?

2 MS. BELENKY: Yes, I also have a question for  
3 staff. Has staff analyzed the potential impacts of this  
4 deterrent method, both the radar and the deterrents that  
5 are now being proposed on (inaudible) including --

6 MS. WATSON: We did. This is Carol Watson  
7 speaking. We did analyze that, that was in our rebuttal  
8 testimony, and if you look through there we also had our  
9 cultural resources and visual resources and I think  
10 traffic and transportation units look at that as well.

11 MS. MARTIN: I can provide some clarification  
12 about what was in the rebuttal testimony. I acknowledge  
13 that staff is absolutely correct, they did analyze the  
14 information that they had in front of them, however, they  
15 do not have a specific plan. They don't have any project  
16 specific information, details. So they did a general  
17 analysis about what the potential impact could be. So  
18 that is the information that we had to go on at the time  
19 to make the analysis that we had. And yes.

20 MS. BELENKY: Okay. So just to be clear, if I  
21 understand you correctly, and I actually think I need one  
22 of your staff to testify to this. Was there any analysis  
23 of likely specific impacts to the birds likely to be found  
24 in this area that may actually be impacted by this?

25 MS. WATSON: We did. (inaudible) already

1 mentioned, we did a more top level kind of view without  
2 having specifics on things like the attenuation rate with  
3 noises or strobe lights or these kinds of effects. It was  
4 very hard for us to make out specific species or groups of  
5 populations that would be at risk first either onsite or  
6 offsite, so we just didn't have a level of information  
7 that allowed us to do that.

8 MS. BELENKY: Thank you.

9 MR. NORRIS: Am I able to step down?

10 HEARING OFFICER CELLI: Yes.

11 MR. NORRIS: Thank you.

12 HEARING OFFICER CELLI: No, actually.

13 COMMISSIONER DOUGLAS: No, there may be more  
14 questions.

15 HEARING OFFICER CELLI: Staff may have questions  
16 of you, Mr. Morris (sic).

17 MS. MARTIN: My staff has been very eager to  
18 talk to these experts about what their deterrents can and  
19 can't do on the project site and I don't think our staff  
20 has been able to ask those questions.

21 HEARING OFFICER CELLI: Go ahead.

22 COMMISSIONER DOUGLAS: Go ahead.

23 HEARING OFFICER CELLI: This is your time.

24 MR. HUNTLEY: Thank you. Chris Huntley. We had  
25 an opportunity to review the paperwork that you gave us

1 and the reports on the oil sands and it's a fascinating  
2 technology, and we see that it can be effective in some  
3 circumstances. But we have never seen demonstrated to us  
4 with any degree of satisfaction is, have these systems  
5 been used to clear airspace like this for extended periods  
6 of time to keep birds away rather than most examples we  
7 see is it prevents birds from landing or it flushes birds  
8 from an airfield so aircraft can land. We would love to  
9 see how you deploy this system to protect a solar flux  
10 field. And if you can tell us that, that would be  
11 wonderful.

12 DR. VOLTURA: This is Karen Voltura. In oil  
13 sands what we do is we're actually targeting the birds as  
14 they approach the pond, so they are all airborne when  
15 we're initially targeting them. So by using the radar we  
16 can choose which areas we're targeting. If we have the  
17 vertical radar we can actually target birds at certain  
18 flight heights that are at risk. But the way we envision  
19 it is that you have that high risk zone of the solar flux  
20 and then some buffer around it to give the birds time to  
21 react and turn away from it.

22 But all of this the radar can certainly detect  
23 birds at those heights and much higher. They can go up to  
24 one nautical mile in height even for small birds.

25 The deterrents themselves, again, they have a



1 fairly long range with a lot of these acoustic ones, and  
2 they're completely mobile so they don't have to be where  
3 the radar is. So we sort of envision this as circling the  
4 risk area from the inside and aimed up and it gets a 30  
5 degree beam and it will certainly, when aimed up, extend  
6 through that risk zone as currently modeled.

7           So it really is kind of creating that bubble  
8 around that risk zone. We already target them in the air.  
9 Even with the oil sands you don't want them to get close  
10 to the ponds, so you're moving them as they approach while  
11 they're flying. It's much easier to deter a bird when  
12 they're flying than when they've already landed or  
13 approached something. So we already target them in the  
14 air. It's just setting that risk zone to include higher  
15 airspace if you need it.

16           MR. HUNTLEY: And help me understand. When the  
17 birds are being targeted as they're coming in to land in  
18 an oil sands area, you're picking them out of some target  
19 elevation, right? Your concern is if you pick them up on  
20 the edge of the solar field and you direct them away, they  
21 have to be directed away so they don't enter, like move  
22 around and then enter another side of the flux field. So  
23 will you envision multiple systems projecting, you know, a  
24 huge airspace around that?

25           DR. VOLTURA: If you look in, I think it's one

1 of the first of the large application sites with the  
2 ponds, it's zoned, so what you would have is, as a bird  
3 moves into this target, that deterrent goes off that would  
4 push them away from it. If they did come around the other  
5 side, that deterrent would fire as it picked them up  
6 entering that zone.

7           So as they're flying, say they're surrounding it  
8 and they're, you know, trying to test each zone, it would  
9 target the deterrent in each zone as they approached that,  
10 and as they're evaluated to be at risk would fire or be  
11 set off.

12           MR. HUNTLEY: Have you implemented this? You  
13 know, I know you're saying you've been keeping the birds  
14 off the oil field. I'm just curious. Maybe I'm just  
15 confused on the issue, because I envision this big flat  
16 area and birds are coming in and they're getting hit by  
17 these waves and they come up, they come back down and  
18 they're getting targeted again.

19           DR. VOLTURA: No, it's targeting them as they  
20 approach the pond. It's sort of an exclusion around the  
21 border of the pond. I mean, it'll still get them as they  
22 fly over, but it really is targeting them as they  
23 approach.

24           MR. HUNTLEY: And how rapidly can they track and  
25 engage these targets?

1 DR. VOLTURA: So say it's spinning 20 rotations  
2 per minute, so it's writing to the database every three to  
3 six seconds depending on the speed, so it's instantaneous.  
4 I mean, it really is picking them up as they move in real  
5 time and processing that data, so it's a very quick  
6 reaction once it has the target kind of acquired and  
7 tracked, and it's instantaneous just sending a signal to  
8 the MP3 player to play that sound through the speaker, so  
9 it is very quick.

10 And I think I see your point about the area you  
11 want them to avoid is down low, but the whole deterrent is  
12 to keep them from ever getting that low. So we are still  
13 approaching them at that risk zone as including the area  
14 over the pond, because if you can exclude them from that,  
15 they aren't even tempted to land. If that helps.

16 MR. HUNTLEY: No, it does. Thank you.

17 DR. VOLTURA: Uh-huh.

18 DR. VOLTURA: I have a question. And forgive  
19 me, I have read so much evidence in this case that I can't  
20 remember where I read this, but I remember reading  
21 somewhere that there were tests done at ISEGS using radar  
22 and that there was one particular instance where the  
23 insects were so dense that the radar could not pick up the  
24 birds.

25 DR. VOLTURA: Depending on the sensor that you

1 use. And I know some of those -- I didn't get into that,  
2 but we use solid state radars and some of the magnetron,  
3 which are the older more marine radars. Particularly the  
4 Xband has a shorter wavelength, so it picks up smaller  
5 targets, and there are situations where it can be -- I  
6 mean, south Texas at noon, you know, it just overwhelms  
7 with insects.

8           There are ways to deal with that in the data.  
9 One is that we use a different type of wavelength, a  
10 longer wavelength, so the smaller things kind of don't  
11 show up as well. You can scale it out with range.

12           What we propose with a lot of these systems is a  
13 combination of sensors, so you have one with a longer  
14 wavelength, one with a shorter wavelength. Because  
15 honestly it sounds like insects are of interest, and radar  
16 could probably be set up.

17           HEARING OFFICER CELLI: They are with the birds,  
18 I'm told.

19           DR. VOLTURA: Exactly. And we use that with  
20 some bat projects if you want to track the food source,  
21 and radar can do that. So most of the time we use a  
22 combination of those two wavelength sensors at various  
23 locations and orientations to try to get a whole picture.  
24 But it can with certain radars.

25           Other radars in the automated systems have

1 algorithms built into them and you can actually filter  
2 that out and consider it clutter. Just like, you know,  
3 weather radar thinks birds are clutter. Well, we think  
4 weather is clutter, so we reverse it and try to pick out  
5 just what you want. But it can be in certain systems but  
6 it can be dealt with with a lot of different strategies  
7 technically.

8 HEARING OFFICER CELLI: Thank you.

9 COMMISSIONER DOUGLAS: And so in terms of the  
10 size of birds, I think you've answered this, but you know,  
11 for very small birds to very large birds, can the radar  
12 pick up the very small birds?

13 DR. VOLTURA: Yes, it can, and a lot of it has  
14 to do with the settings, and if you want small birds, you  
15 just set it that way, use the shorter wavelength, shorter  
16 range. But yes, we can pick up everything from very small  
17 birds to large flocks of birds, and all of that just goes  
18 into how you set it up. And certainly, like I said,  
19 insects for certain wavelengths can be picked up. So if  
20 you're tracking dragonflies, you can track the smallest  
21 bird.

22 COMMISSIONER DOUGLAS: Okay. Other questions by  
23 staff? You got it?

24 MS. WATSON: I had one question, which is with  
25 the capabilities of the system can you detect multiple

1 occurrences such as if there is a flock, a migratory flock  
2 going past at high altitude, could you detect and protrude  
3 sound at that as well as if you had smaller birds at lower  
4 levels in the airspace simultaneously?

5 DR. VOLTURA: Yes, and with the horizontal  
6 sensor, it doesn't tell you, when you're looking at sort  
7 of the 360 view of it, you can't -- it doesn't tell you  
8 the altitude within that 360. The vertical radar does, so  
9 you can have both functioning.

10 And again, it's scanning every, you know, three  
11 to six seconds, and so it can fire in this zone, and then  
12 if it picks up targets back there and it detects them,  
13 that zone deterrent would go off as well. So yeah, it can  
14 be tracking multiple targets and reacting to multiple  
15 targets.

16 There are some things built into the system, a  
17 refractory period to prevent habituation, but it certainly  
18 can fire at multiple zones.

19 Same thing if a bird transitions multiple zones,  
20 it can set off deterrent sort of as it goes to keep it  
21 pushed out of that risk zone, so it doesn't kind of come  
22 around like you said and come in the back door.

23 HEARING OFFICER CELLI: Anything further from  
24 staff?

25 MR. HUNTLEY: Not at this time.

1 HEARING OFFICER CELLI: Mr. Smallwood?

2 DR. SMALLWOOD: I can't really speak to it, I've  
3 never seen any data on the system. I don't know of any  
4 journal article. This just came out of the blue.

5 I'm always a skeptic when I came out of the  
6 (inaudible) damage control lab at UC Davis. When I was  
7 there we had a lot of exclusionary devices, (inaudible)  
8 and whatnot that was proposed. We would test them in the  
9 lab and nothing every worked on birds. It would be great  
10 if it did work. If it did I would imagine it would be all  
11 over the Altamont Pass already.

12 HEARING OFFICER CELLI: Ms. Anderson?  
13 Mr. Figueroa? Okay, let the record reflect that both  
14 Ms. Anderson and Mr. Figueroa shook their heads to  
15 indicate no.

16 Okay. So at this point then, Mr. Galati, any  
17 further questions?

18 MR. GALATI: No.

19 HEARING OFFICER CELLI: What we'd like to  
20 inquire now at this time -- and thank you, Mr. Morris, you  
21 may sit down.

22 MR. NORRIS: Norris.

23 HEARING OFFICER CELLI: Norris. In terms of  
24 witnesses, do we have any witnesses that are here now that  
25 won't be able to be here tomorrow? Okay. Then what we're

1 proposing to do, then, would be to adjourn tonight and --  
2 Ms. Martin-Gallardo.

3 MS. MARTIN: We have a few more minutes. I know  
4 Chris has three points that he'd like to make, but I know  
5 that we can save them for mitigation, but --

6 COMMISSIONER DOUGLAS: What would you like? I  
7 mean, if the parties think that we can get through  
8 mitigation in a half-hour, the committee is happy to try.

9 MS. MARTIN: We can get through three specific  
10 issues that were raised by Matt Stucky in his opening  
11 testimony that I believe could bring a couple of issues at  
12 least as far as specific conflicts between staff and  
13 applicant to a close. As far as all mitigation, I'm not  
14 promising that, but I do think that Chris can address  
15 three specific issues.

16 COMMISSIONER DOUGLAS: We are willing to let  
17 Chris start. Absolutely, go ahead.

18 MR. HUNTLEY: Thank you. I'm more than happy  
19 to discuss this. Three things, the three topics I  
20 wanted to talk about was the performance standards, the  
21 insect monitoring, and the monitoring period change from  
22 three to five years.

23 Starting with the performance standards. As  
24 we said in our testimony, we did not insert performance  
25 standards into a conditional certification. We



1 commented that if they were adopted, they should be  
2 included in the BBCS. Okay? I stand by the idea that  
3 if we are impacting state- or federally-listed species,  
4 we should be providing compensatory mitigation for them.  
5 But I understand your guys' concern. I think we could  
6 adopt language that -- I think Palen Solar Holdings put  
7 in Exhibit 1128, Bio 16B, to allow the TAC to have  
8 greater authority to decide what those performance  
9 structurals are. So I can be flexible on that, I think  
10 we can be.

11 In records to the thee- to five-year period,  
12 again, we have a different opinion on the risk analysis  
13 than you do. We felt that monitoring -- extending the  
14 monitoring to five years would give greater strength for  
15 some statistic al analysis because, at the end of that  
16 period, unless the TAC was going to proceed, that's  
17 pretty much it for the 30-year life of the project. So  
18 we're willing to remove that, put it back down to thee,  
19 and just go back and reference the fact that the TAC  
20 does have the authority to, you know, extend that  
21 monitoring period.

22 MR. GALATI: Right. And that's how the  
23 condition reads now.

24 MR. HUNTLEY: That is. That is. And we  
25 understand your concern with that. As far as insects

1 go, we concluded the impacts to insects were going to be  
2 less than significant based on the uncertainty of we  
3 just didn't know. You know, we did our due diligence.  
4 We tried to find out what was there. But we're not  
5 certain of the impact. But we're now seeing an impact  
6 at Ivanpah.

7 We know that the TAC at Ivanpah is  
8 recommending insect monitoring and that the applicant  
9 out there is implementing some form of insect  
10 monitoring. But when we look at the language, I see  
11 your concern, that it seems like an open-ended, you  
12 know, mitigation question. It was poorly crafted. We  
13 probably could have put it together a little quicker.

14 We would be willing to modify or take that out  
15 of the condition, but reference that the TAC would be  
16 providing guidance on insect monitoring similar to what  
17 they're doing at I-Site. We think it's warranted and  
18 should be done. But I understand the concern with the  
19 language. So you can think about it, and we can talk  
20 about it tomorrow, I guess.

21 COMMISSIONER DOUGLAS: Mr. Stucky?

22 MR. STUCKY: I would like to do that if that's  
23 possible. But I appreciate that, that's great feedback.  
24 And I'd prefer not to, you know, have to answer in  
25 10 seconds. But we can tomorrow, if we're coming back

1 tomorrow.

2 MS. BELENKY: My concern -- can I just break  
3 in here -- is that a lot of this sounds like a workshop  
4 at this point. I thought that was very interesting, but  
5 it sounded more like a workshop than evidentiary  
6 hearings. And so if we can try to finish evidentiary  
7 hearings tonight, that would be preferable. If they  
8 want a workshop conditions language, then that should be  
9 in a workshop.

10 HEARING OFFICER CELLI: Well, if it means that  
11 we remove issues, then I'm in favor of whatever we can  
12 do to be efficient.

13 MR. STUCKY: I think we can say we don't have  
14 a problem with what Mr. Huntley suggested. And the  
15 committee can consider that as they draft the PMPD.

16 COMMISSIONER DOUGLAS: So I'm still thinking  
17 through whether we can finish this tonight.

18 Commissioner, do you have evidence you -- any  
19 summary statements you'd like to present on this issue?

20 MR. GALATI: I think that if I'm allowed to  
21 ask some questions to Mr. Huntley, we probably will not  
22 have to put on any affirmative evidence on mitigation.  
23 The table you already saw -- and all we have now is  
24 curtailment and whether it is feasible or not. And I  
25 think we can do that in about 10 minutes.

1 COMMISSIONER DOUGLAS: Go ahead.

2 MR. STUCKY: Okay. I need to swear in Chris  
3 Morris. And Chris -- oh, everybody was sworn in. Oh, I  
4 see, Mr. Morris was sitting next to Mr. Norris and that  
5 is how I got messed up there. That's funny, you never  
6 confused Andrea and I. So Mr. Morris and Mr. Buhacoff.

7 MR. BUHACOFF: Buhacoff.

8 MR. STUCKY: I have been sworn, as has the  
9 rest of the panel.

10 COMMISSIONER DOUGLAS: Mr. Galati, go ahead --  
11 or Mr. Stucky.

12 MR. STUCKY: This is Matt Stucky, and I just  
13 have, you know, less than a minute of comments here to  
14 set the stage.

15 On the question of curtailment, the petitioner  
16 has filed two sets of testimony in attempting to address  
17 the committee's questions on curtailment. We tried to  
18 consider possible implementation of avian-base  
19 curtailment, basically how would it work in reality.  
20 And we found ourselves thinking in terms of two  
21 categories of curtailment. The first I'll call  
22 event-based short-term curtailment, such as you see with  
23 RADA, or visually birds or something and want to respond  
24 to that to lessen the risk to those birds.

25 The second category I call time- or

1 calendar-based, which would probably be a more long-term  
2 curtailment event. This would be based on a time of  
3 year, a time of day, something like this.

4 So to discuss and consider the first type, the  
5 short-term, we think it's first important that the  
6 committee understand how heliostats are operated, what  
7 the limitations are, particularly --

8 COMMISSIONER DOUGLAS: And the committee  
9 looked very closely at what you put in the record on  
10 that.

11 MR. STUCKY: We've read that testimony, that's  
12 Mr. Buhacoff's testimony.

13 MR. BUHACOFF: Yes.

14 MR. STUCKY: So if you think you don't need to  
15 hear it summarized --

16 COMMISSIONER DOUGLAS: We're happy to have him  
17 here. I just want Mr. Buhacoff to understand that we  
18 looked at it very closely, so you can summarize it  
19 quickly.

20 MR. BUHACOFF: I believe you.

21 MR. STUCKY: Very clear, half an hour to  
22 two hours.

23 MR. BUHACOFF: So to summarize, the movement  
24 of the heliostats is fairly slow, and, therefore, any  
25 immediate curtailment action takes relatively a long

1 time, therefore, we don't believe it's feasible.

2 COMMISSIONER DOUGLAS: Thank you.

3 MR. STUCKY: And then the longer term  
4 calendar, time-base curtailment, we feel it's not  
5 feasible due to the impact it would have on the  
6 petitioner's ability to obtain financing for the  
7 project. And I'd like to ask Mr. Chris Morris to expand  
8 on that.

9 MR. MORRIS: Yeah. I think this was another  
10 issue that was in our testimony, so I can very briefly  
11 explain it, or whatever would be helpful for the  
12 committee, to ask any specific questions --

13 COMMISSIONER DOUGLAS: We looked really  
14 closely at it, but maybe if you want to do a sentence or  
15 two or three for our benefit.

16 MR. MORRIS: Okay. I mean, I think that, as  
17 expressed in the testimony, this is a very challenging  
18 project to finance under the best of circumstances. You  
19 add in some circumstances that, you know, there's the  
20 size, the new technology, so as we go out to the market  
21 to obtain project financing, there has to be a very high  
22 degree of certainty in the cash flows. And my view, and  
23 I think our view, is that the putting any type of  
24 long-term curtailment possibility on that is going to  
25 make it unfinanceable. That concludes our testimony.

1 COMMISSIONER DOUGLAS: Thank you.

2 HEARING OFFICER CELLI: One moment please.

3 (Off-Mike Discussion )

4 COMMISSIONER DOUGLAS: So I have a question  
5 and I'm going to try to frame it in a -- in the most  
6 helpful way. I hear very clearly what both of you have  
7 said and what both of you have testified to. As I think  
8 of it -- and I've also looked very closely at what the  
9 petitioner put into the record in terms of the exact  
10 override finding that the petitioner is asking the  
11 committee to make, which is an override on avian impact,  
12 and I'm quoting, but I'd be hard to pressed to say which  
13 document I'm exactly quoting from: Based solely on the  
14 potential that avian impact will not be mitigated to  
15 levels of less than significance considering the  
16 uncertainty surrounding impacts, the effectiveness of  
17 deterrent methods and the resulting mitigation efforts.  
18 Does that sound about right?

19 MR. GALATI: Sounds like something that I  
20 wrote.

21 COMMISSIONER DOUGLAS: So it's something that  
22 you wrote, Mr. Galati? Thank you for that. You know,  
23 we have talked about performance standards as well. And  
24 staff has raised a concern maybe less about aggregate  
25 number of birds that might be at risk and more about

1 whether the project could have an effect on the  
2 persistence or recovery of maybe a particular avian  
3 population that might be more sensitive, it might be  
4 fewer number, it might be a harder to deter.

5 So I guess my question is, to the extent that  
6 the committee were to be very clear that the applicant  
7 was, or the petitioner was, responsible for not  
8 effecting persistence in recovery of specific species,  
9 in your opinion, is it a feasible project? Is the  
10 financing feasible? I guess that's not the most  
11 artfully worded question, but give it a shot.

12 MR. MORRIS: Let me see if I can repeat it  
13 back to make sure I understand the question. Is the  
14 question that if the curtailment was limited to  
15 situations where there was an impact higher than a  
16 certain threshold on a particular species, would that --

17 COMMISSIONER DOUGLAS: On a particular species  
18 that perhaps over some years of monitoring was found to  
19 be at risk in a particular way based on data and  
20 everything else had been tried first.

21 MR. MORRIS: Yeah. I think my opinion is that  
22 it would, and for the following reason, is I think that  
23 when people are looking at a project like this, the  
24 margins on these projects are not very high. There's  
25 not very much room for variations in cash flows. And



1 when you have where the cash comes out of -- it's purely  
2 supported by the project, the type of investors that you  
3 have that are investing in these projects are looking  
4 for very stable, very risk-free cash returns.

5           When they look at the condition, they look at  
6 it from a worst case scenario. And if you have  
7 something that open-ended or not clearly defined or  
8 something that they cannot put parameters around that  
9 risk and also that those parameters fit within the price  
10 of the PPA and the cash that the project can generate,  
11 they're going to view it from the worst case scenario  
12 and say, "I could be put in a situation where I can have  
13 the project shut down, and then I essentially am in a  
14 bankruptcy type situation."

15           Now we can sit here and say that that's a very  
16 small possibility, that's a two-, three-percent  
17 possibility that would ever happen. But the way people  
18 look at these when they're evaluating it is saying  
19 "What's my worst case down side scenario?"

20           COMMISSIONER DOUGLAS: So in your opinion,  
21 again, just speaking about feasibility, we have  
22 performance standards of course broadly in decisions and  
23 the reality of it is when and if projects are not in  
24 compliance with conditions and, you know, we've worked  
25 through the many things that one works through to try to

1 get in compliance, you know, the energy commission does  
2 have the authority to stop a project from operating.  
3 It's not something that -- you know, it's not a road  
4 that any of us want to go down.

5 I'm trying to understand the difference, but  
6 I'm also just trying to understand -- performance  
7 standards themselves do not seem to present the same  
8 level of issue; is that correct?

9 MR. MORRIS: And, I'm sorry, what do you mean  
10 by performance standards?

11 COMMISSIONER DOUGLAS: We use performance  
12 standards. Performance standards say that a certain  
13 level of performance has to be achieved on --

14 MR. STUCKY: Like the operation of the -- this  
15 is Matt Stucky -- the operation of the project?

16 MR. MORRIS: Like a certain output threshold,  
17 you're saying?

18 MR. GALATI: Commissioner, if I may?

19 COMMISSIONER DOUGLAS: Yes.

20 MR. GALATI: Are you talking about a  
21 performance standard would be an environmental standard  
22 below which something would happen, above which  
23 something else happens. So if you're in compliance with  
24 the performance standard, nothing happens?

25 COMMISSIONER DOUGLAS: Right.

1           MR. GALATI: Our position has been that we  
2 would like any performance standard be directed to how  
3 the mitigation money is spent as opposed to a plant  
4 change, an operational change, knowing that if we don't  
5 make it whole and it's not whole, obviously, ultimately,  
6 the commission always has that one authority that we  
7 don't ever talk about and you don't ever use because  
8 people come into compliance somehow to make them do  
9 that.

10           We'd prefer to have a performance standard  
11 apply towards the mitigation of the impact.

12           HEARING OFFICER CELLI: May I ask a question  
13 on that and, actually, Mr. Morris, it's probably  
14 directed to you. What do your investors do with the  
15 possibilities that your project would be shut down for a  
16 week because of high winds?

17           MR. MORRIS: Well, I think you can go out and  
18 look at the available data and say that -- and do  
19 studies. And, you're right, you can't quantify every  
20 single risk that is out there. But I think for most of  
21 these risks, you can come up with a study based on past  
22 practices, for example, curtailment to the system  
23 emergency or something like that. You know with a  
24 fairly high degree of certainty, you know, based on  
25 what's happened over the last 20, 30 years with the

1 grid, how frequently that's likely to happen.

2           If people can get their hands and get  
3 comfortable with that type of analysis, they can look at  
4 the studies and say, "Okay, we know from based on the  
5 study that this is likely to happen, you know, once  
6 every five years." And they can price that into the  
7 financing. If the PPA price is high enough, you can  
8 take that risk and support the project.

9           What I think is different is when you have a  
10 situation where you have an open-ended type provision  
11 that people can't say what's going to happen because,  
12 you know, you're looking -- for example, this type of  
13 project, I think at the time will be one of the biggest  
14 project financings in the world for that year. And no  
15 one is going to sit there and say, "I'm willing to take  
16 a risk that I'm going to lose all this money on a  
17 condition that I can't control." You know, I will say  
18 that there -- you make a good point that you can't  
19 control every risk, but you get outside that box of  
20 what's a knowable risk, and that's what makes it  
21 unfinanceable.

22           COMMISSIONER DOUGLAS: So let me ask another  
23 follow-up question. You know, what do your investors in  
24 your view do with the thought that potentially down the  
25 road you might need to go to say a federal agency and

1 get a take permit for (inaudible) or that you might have  
2 to at some point get some additional authorization  
3 that's outside of an energy commission license?

4 MR. MORRIS: I'm not sure that someone would  
5 take the risk of an authorization that has not been  
6 obtained at the time that the financing is entered into.  
7 If you're talking about some sort of routine  
8 administrative authorization, then that's possible. But  
9 if there's -- if you're talking about an authorization  
10 where there is some -- a non-administrative type  
11 authorization that if you fail to obtain it you would  
12 cause a shutdown of the project. I don't think that's  
13 the type of risk that an investor would make.

14 MR. GALATI: Commissioner, if I may, because I  
15 do this work as well. Sometimes we provide legal  
16 opinions that assess the risk of getting a discretionary  
17 approval. And we write those opinions. And if the --  
18 it's not only if it's administrative. If it is likely  
19 to be given and under what circumstances, the people  
20 will look at the circumstances and say, "If I can afford  
21 that, if I can do those things, I've mitigated my  
22 risks." So even then, they won't do anything without  
23 someone telling them exactly what the risk is. And we  
24 do an analysis of who gets them and why and where and  
25 under what circumstances.

1           HEARING OFFICER CELLI:  If I may, if you read  
2   the PMPD, and I don't -- I imagine there are people here  
3   who haven't, not many.  One of the biggest stumbling  
4   blocks for this committee vis-à-vis avian mortality was  
5   the inability to quantify and to control in a state of  
6   data which is unknown, and we still seem to have that  
7   problem, because we don't have the year's worth of data  
8   that everybody is asking for.  We've got some data  
9   that's been systematically implemented and some that has  
10  not.  And we're trying to draw conclusions from a lot of  
11  disparate data.

12           And what the committee was looking for in a  
13  performance standard was a way to cap that.  And this is  
14  something that I look to the parties to be able to come  
15  up with some language in the form of a performance  
16  standard so that there is -- there isn't this  
17  possibility of some catastrophic event to the Sandhill  
18  cranes that just decided that year to go through Ivanpah  
19  at the wrong time.

20           So that is what we're looking at.  That's what  
21  we're talking about.

22           COMMISSIONER DOUGLAS:  Well, let me just back  
23  up a minute, too, I mean, we've heard a lot of testimony  
24  today and we've gotten a lot of information.  We have a  
25  lot more information than we did when we issued the

1 PMPD. I want to thank all of the parties for working  
2 very hard to bring information into the record. We're  
3 in a different place in many, many ways just in terms of  
4 the record we have and the thoroughness with which we've  
5 been able to evaluate what is available, which is not  
6 what we would have if we had four years of data. But it  
7 is a lot more than we had in the fall when we had our  
8 last evidentiary hearings on this topic. So I  
9 appreciate that.

10 It's been -- it's very valuable. In terms of  
11 performance standards, Mr. Galati, you had mentioned the  
12 petitioner's interest in focusing performance standards  
13 on the mitigation. I think that if you think about how  
14 to make that outcome based as well as -- if you think  
15 about how to make that outcome based, it would -- you,  
16 the petitioner, you, all the parties, think that would  
17 be helpful to the committee.

18 MR. GALATI: Thank you. We thought about  
19 that. One of the things we were concerned with is a lot  
20 of programs that could be implemented would have to be  
21 implemented through some agency. That's why we're  
22 really trying to have the TAC help us do that. But I  
23 hear what you're saying, and I think we might be able to  
24 propose some language maybe that -- but it would also be  
25 holding the TAC responsible on how they use the money.

1           So I already provided the table. There's not  
2 a lot of data out there for you to say, "If you put this  
3 acre aside, you create X amount of this habitat."  
4 There's a lot of programs. There's not a lot of  
5 accounting for how those programs -- what they actually  
6 create. And we worked with U.S. Fish and Wildlife  
7 Service to try, and we couldn't find any of their  
8 programs that had sort of a metric where they say, you  
9 know, this is how many birds we create. This is how  
10 many birds we save. And we're going to need help from  
11 the agencies to really do that. That's why we tried to  
12 put it in the TAC as opposed to saying \$1.8 million, it  
13 goes this way.

14           COMMISSIONER DOUGLAS: I think that's a fair  
15 point, Mr. Galati. I also think that when I looked at  
16 the chart that applicant put forward with a list of  
17 different things that can be done to reduce avian  
18 mortality from domestic cats and electrocution and many  
19 other things, it occurred to me, and I think a number of  
20 parties raised this issue, that it might not be the best  
21 use of the scarce mitigation funding to attempt to  
22 improve the situation of birds in a scattershot way as  
23 opposed to really hone in on what the specific impacts  
24 of the project might be and mitigate those specific  
25 impacts.



1           And I think that to the extent that you think  
2 about how mitigation can be very, very, very focused on  
3 actual impact from project, meeting those kinds of  
4 performance standards -- you know, having some kind of  
5 outcome-based standards makes sense.

6           I do hear you, however, that the petitioner is  
7 not in complete control of how mitigation funds are  
8 spent. And Ms. Anderson raised earlier the question of  
9 the TAC and what is the TAC. And I do think -- what  
10 time is it?

11           HEARING OFFICER CELLI: 9:30.

12           COMMISSIONER DOUGLAS: Well, all right, so  
13 maybe we just have a moment to get into the TAC and then  
14 we'll check on where we are.

15           I think there's a perception sometimes because  
16 it's a technical advisory committee that it's a body of  
17 experts and so on and yet it meets in private. Now,  
18 I've always thought of the TAC as more of a  
19 one-stop-shop relationship between projects and  
20 permitting agencies that are compliance jurisdiction.

21           But I just want to get comments or questions  
22 from the parties in terms of my characterization of the  
23 TAC. Petitioner.

24           MR. STUCKY: Well, I think we deal with that,  
25 and it's possible that Wally has some experience because

1 I know that these come from -- the concept comes from  
2 the wind industry, is my understanding. But I think  
3 that there's a desire on behalf of the resource agencies  
4 to have everyone with a stake as far as jurisdiction  
5 looking at the implementation of these avian plans and  
6 how they're implemented over time and a body that can  
7 make some sort of decisions when some need to be made  
8 because, clearly, some do need to be made during  
9 operations.

10 We're going to monitor and then at some point  
11 ask for relief from monitoring. We're going to estimate  
12 total facility fatalities and at some point ask someone  
13 to agree that they think that's correct. We're going to  
14 estimate whether there's population impacts to various  
15 species and look for someone to agree. So I guess, you  
16 know, I know there's one for Ivanpah. I'm not privy to  
17 those discussions. I've seen the meeting notes, and I  
18 think we'd like ours to work like theirs.

19 COMMISSIONER DOUGLAS: It certainly is not  
20 very helpful if you know when I say a project permitted  
21 jointly with BLM like Ivanpah, if the energy commission  
22 says do X and BLM is saying don't do X. And if you're  
23 in a compliance situation. So I think there's a very,  
24 very, very important role for this kind of close mutual  
25 information sharing and decision-making with permitting

1 agencies. I know BLM is still here. If you've got any  
2 comments on this, or other staff.

3 MS. MARTIN: I think staff could speak to the  
4 adaptive management nature of it.

5 MR. HUNTLEY: Well, I'll just kind of  
6 reiterate something the petitioner said is, I think the  
7 TAC is an important tool because it will allow a group  
8 of scientists, researchers, agency folks to be able to  
9 look at data that's coming from the monitoring and try  
10 to determine the best way to spend mitigation.

11 And we think this is a good tool, but we can't  
12 predict the exact nature of the birds we're taking out  
13 of a group of -- a population. Even the birds that are  
14 being lost, we don't know unless they're banded, per se,  
15 what population center they're from. You know, we've  
16 said this in testimony before, you know, it will be very  
17 difficult to predict whether we're taking out a small  
18 number of birds from a giant robust population or a  
19 small number of birds from a declining barely recovering  
20 population. And I think we've been clear about that.  
21 But we do think the TAC will be used once we get some  
22 data, some real data. We believe data is being  
23 accumulated right now in a useful manner, and we think  
24 as more is collected we'll have a better sense of what  
25 those impacts are. Again, when we start talking about

1 performance standards or thresholds, my comment has  
2 always been that, if we were taking state- or  
3 federally-listed birds, we should be trying to maybe  
4 focus mitigation on those birds because their  
5 populations are already low, that's why they're listed.  
6 And that's about all I have to say on that.

7 COMMISSIONER DOUGLAS: Okay.

8 HEARING OFFICER CELLI: Mr. Smallwood.

9 DR. SMALLWOOD: Can I add something to that?  
10 (Inaudible) said, there's no TAC in a -- I get calls  
11 from TACs all the time. They're looking for advice. A  
12 lot of TACs around the country are on projects,  
13 non-California solar projects, that don't have the  
14 expertise to assess the data very well. They're  
15 important, though.

16 But I want to point out one thing that is  
17 important that maybe it's being lost here, is that the  
18 data being collected at wind farms, solar farms, they  
19 aren't suitable for determining population level  
20 affects. They never will be. That's not the kind of  
21 data we collect.

22 So you won't get to make these kinds of  
23 decisions about which species needs help because it's  
24 declining, there's a population of level effect. It  
25 just won't go that way.

1 COMMISSIONER DOUGLAS: Okay.

2 HEARING OFFICER CELLI: Ms. Anderson.

3 MS. ANDERSON: So you know, as I've stated  
4 before, our concern about the TAC is we thought it was  
5 actually, you know, a technical advisory committee,  
6 which would infer that there were actually specialists  
7 that knew about these sorts of things on the committees.  
8 And that there's also an opportunity for the public to  
9 be a party to that and sit in on these advisory  
10 committees and see what's going on. Right now, we get,  
11 you know, the minutes from these six months after  
12 decisions are made. And what I'm hearing here is that  
13 more and more of the mitigation is now being funneled  
14 over to the TAC to figure out what to do with it.

15 And, you know, how can we possibly evaluate if  
16 it's going to be adequate. There's no mechanism for  
17 that.

18 COMMISSIONER DOUGLAS: Thank you.

19 Mr. Figueroa, anything at this point?

20 MR. FIGUEROA: No, I have no comments.

21 COMMISSIONER DOUGLAS: CRIT?

22 MS. CLARK: No.

23 COMMISSIONER DOUGLAS: Ms. Belenky  
24 (inaudible).

25 HEARING OFFICER CELLI: Yeah.

1           COMMISSIONER DOUGLAS: Staff.

2           MS. MARTIN: I would just like to ask if we  
3 have the threshold issues that, you know, the types of  
4 thresholds that you have provided in your testimony, the  
5 TAC through the VBCS a listing these things would have  
6 those at the ready to say this is how we need to -- how  
7 would the staff -- how would the TAC be able to use  
8 those thresholds to make decisions about where  
9 mitigation measures go?

10           MR. HUNTLEY: Ideally, when the mortality data  
11 comes in, the TAC's going to look at the distribution of  
12 mortality and look at the species. And if they see  
13 we're hitting a lot of, you know, sensitive riparian  
14 songbirds, maybe we should target some of our mitigation  
15 to habitat restoration.

16           Mr. Galati had mentioned a comment earlier  
17 about trying to find some metrics. We found some  
18 papers -- and I'll have to look into it a little bit  
19 more -- on habitat creation along the Colorado River  
20 done by the Bureau of Rec, where they actually do some  
21 pre and post bird monitoring studies. I think they're  
22 preliminary. But it's one of those mechanisms where you  
23 actually create habitat, you're creating birds. And so  
24 there's some benefits to things like that.

25           But, again, it's going to be have to be looked

1 at on a case-by-case basis. And, again, the performance  
2 standards that we've presented were for discussion  
3 purposes. Although, again, I do think if we're killing  
4 listed and threatened species, we should be focusing  
5 mitigation on those kinds of species.

6 COMMISSIONER DOUGLAS: Thank you.

7 HEARING OFFICER CELLI: Mr. Galati?

8 MR. GALATI: We have no more witnesses or  
9 anymore testimony.

10 COMMISSIONER DOUGLAS: Well, that was going to  
11 be our question, is whether we're at a stage where we  
12 can conclude that we're done taking evidence and talk  
13 very, very quickly about briefs.

14 HEARING OFFICER CELLI: Let's take it starting  
15 with Colorado River Indian Tribes.

16 MR. GALATI: I do have to move my evidence in,  
17 the exhibits, though.

18 HEARING OFFICER CELLI: Oh, that's right. Let  
19 me take care of that first. Bio, petitioner.

20 MR. GALATI: You just asked if we were done,  
21 and --

22 COMMISSIONER DOUGLAS: No, we looked all  
23 around the room. But we haven't gone around yet. We're  
24 going to do evidence, and then we'll -- the question on  
25 everyone' mind is do we need to convene tomorrow to

1 collect more evidence or not. That's the question. But  
2 we're going to take exhibits.

3 MS. CLARK: The Exhibit 80 -- 8035,  
4 (inaudible) is also relevant biological -- or bio, so  
5 I'd like to move that into the evidence.

6 HEARING OFFICER CELLI: Okay. 8035. Any  
7 objections? CBD.

8 MS. BELENKY: No.

9 HEARING OFFICER CELLI: Staff.

10 MS. MARTIN: No.

11 HEARING OFFICER CELLI: Petitioner.

12 MR. GALATI: No.

13 HEARING OFFICER CELLI: Mr. Figueroa?

14 MR. FIGUEROA: No.

15 HEARING OFFICER CELLI: 8035 will be received  
16 into evidence. I'm going to move this way.

17 Mr. Figueroa, we've got all of your evidence.

18 Mr. Galati, your motion?

19 MR. GALATI: I would like to move in 1127 and  
20 28, 1130, 1131, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41,  
21 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 70,  
22 73, 74, 75, 76, 77, 78, 82, 86, 88, 94 through 1205.

23 HEARING OFFICER CELLI: Okay. Let me --  
24 please listen, because I may not have gotten all of  
25 those. The motion is that petitioner would move into



1 evidence the following exhibits marked for  
2 identification, 1127, 1128, 1130, 1131, 1132, 1133,  
3 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1153,  
4 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162,  
5 1163, 1164, 1165, 1170, 1173, 1174, 1175, 1176, 1177,  
6 1178, 1182, 1186, 1188, 1194 through 1205 inclusive.

7 MR. GALATI: Correct.

8 HEARING OFFICER CELLI: That is the motion.  
9 Is there any objection from Mr. Figueroa?

10 MR. FIGUEROA: No objection.

11 HEARING OFFICER CELLI: Ms. Clark.

12 MS. CLARK: No objection.

13 HEARING OFFICER CELLI: Miss Belenky.

14 MS. BELENKY: No objection.

15 HEARING OFFICER CELLI: Ms. Martin.

16 MS. MARTIN: No objection.

17 HEARING OFFICER CELLI: Those exhibits will be  
18 moved -- are received into evidence. Staff.

19 MS. MARTIN: We'd like to move into evidence  
20 Exhibit 2017, 2018, 2019, and then Mark Fooks resume,  
21 Exhibit 2029, and also mark as Exhibit 2034 the staff's  
22 revised Bio 29 Table 3.

23 HEARING OFFICER CELLI: So the motion is --

24 MS. CLARK: Mark and move into evidence.

25 HEARING OFFICER CELLI: So the motion is for

1 exhibits 2017, 2018, 2019, 2029, and 2034?

2 MS. MARTIN: Correct.

3 HEARING OFFICER CELLI: Any objection?  
4 Petitioner.

5 MR. GALATI: No objection.

6 HEARING OFFICER CELLI: Any objection  
7 Mr. Figueroa?

8 MR. FIGUEROA: No objection.

9 HEARING OFFICER CELLI: CRIT.

10 MS. CLARK: No.

11 HEARING OFFICER CELLI: CBD.

12 MS. BELENKY: No.

13 HEARING OFFICER CELLI: Exhibits 2017, 18,  
14 19 -- I'm sorry. Exhibit 2017, 2018, 2019, 2029, and  
15 2034 are received into evidence. Center for Biological  
16 Diversity.

17 MS. BELENKY: Yes, exhibits 3092 to 3112  
18 inclusive and exhibits 3126 to Exhibit 3145 inclusive.  
19 Also Exhibit 3150 and 3151.

20 HEARING OFFICER CELLI: So the motion is to  
21 move into evidence exhibits 3092 through 3112 inclusive,  
22 3126 through 3145 inclusive, and 3150 and 3151. Any  
23 objection from staff?

24 MS. MARTIN: No objection.

25 HEARING OFFICER CELLI: Petitioner.

1 MR. GALATI: No objection.

2 HEARING OFFICER CELLI: Mr. Figueroa.

3 MR. FIGUEROA: No objection.

4 HEARING OFFICER CELLI: CRIT.

5 MS. CLARK: No objection.

6 HEARING OFFICER CELLI: Then those exhibits  
7 3092 [sic] through 3112 inclusive, 3126 through 3145  
8 inclusive, and 3150 through 3151 are received into  
9 evidence. Now, do we need to meet tomorrow is the  
10 question, so let me -- I'm going to ask Mr. Figueroa.

11 MR. FIGUEROA: Excuse me?

12 HEARING OFFICER CELLI: Whether you feel we  
13 need to come in and reconvene for any purpose tomorrow?

14 MR. FIGUEROA: No. What's the agenda?

15 COMMISSIONER DOUGLAS: Thank you,  
16 Mr. Figueroa, that's exactly what we're asking.

17 MR. FIGUEROA: This is out of my league. I'm  
18 here for the culture.

19 COMMISSIONER DOUGLAS: Thank you.

20 MR. FIGUEROA: You know, I'll come, I live in  
21 Blythe. I was born here.

22 HEARING OFFICER CELLI: Thank you,  
23 Mr. Figueroa. I'll take that as a no. Ms. Clark.

24 MS. CLARK: No.

25 HEARING OFFICER CELLI: Ms. Belenky.

1 MS. BELENKY: I actually had one question on  
2 the curtailment feasibility that I would like to ask.

3 COMMISSIONER DOUGLAS: Please ask.

4 HEARING OFFICER CELLI: Please ask.

5 MS. BELENKY: Okay. I can't remember who said  
6 it, so I can't -- because it was a while ago now. But  
7 there was a discussion that stated that short-term  
8 curtailment is infeasible because it takes too long to  
9 move the mirrors. That was what I understood you to  
10 say, that was it infeasible because it takes too long to  
11 move the mirrors. My question is, the discussion that  
12 we had in glint and glare implied that the mirrors can  
13 be re-positioned and that they can use new algorithms  
14 and change all the time. So I am having trouble putting  
15 those two sets of testimony together. They don't seem  
16 to necessarily match.

17 MR. BUHACOFF: If you've read the testimony --  
18 this is Gustavo Buhacoff for the record.

19 If you have read, the testimony says it takes  
20 30 minutes to go to a safe position, safe as in I can  
21 guarantee there's no concentrated solar flux anywhere on  
22 the project site. That's why it takes too long to  
23 respond to any bird sighting in the area.

24 COMMISSIONER DOUGLAS: I think petitioner is  
25 saying if the radar pick up birds coming in, dissipating

1 the flux field in 30 minutes isn't soon enough. Is that  
2 correct?

3 MR. BUHACOFF: Thank you, Commissioner  
4 Douglas.

5 MS. BELENKY: But they can be re-positioned  
6 for the glare and glint?

7 MR. BUHACOFF: You are confusing two different  
8 issues.

9 MS. BELENKY: I'm trying to understand what  
10 the testimony is.

11 MR. BUHACOFF: I'll try to explain it.  
12 Positioning heliostats for glint and glare is a  
13 permanent position. It changes their orientation on a  
14 regular basis. What you're asking me to do is to  
15 respond to a bird sighting -- this is before we even  
16 have radar inside -- to respond to a bird sighting by  
17 changing the solar field position, to put it in a  
18 position where there's no concentrated flux that could  
19 harm the bird.

20 The answer is it takes about 30 minutes to get  
21 to such a position. 30 minutes is too long to respond  
22 to a bird sighting. The bird will arrive on-site before  
23 that, therefore, it would still be at risk despite the  
24 fact that we've stopped operation and tried to go to  
25 some mitigating factor as you requested.

1           Therefore, it's not a good solution. It would  
2 not solve the issue we're trying to solve.

3           MS. BELENKY: I understand what you're saying  
4 as far as the time it takes, but I still don't  
5 understand because the glint and glare issue, it seems  
6 to be saying that they could be re-positioned fairly  
7 quickly and easily. And it's only to get to the safe  
8 position that seems to take too long. Is that what  
9 you're saying?

10          MR. STUCKY: If I could answer Miss Belenky?

11          MS. BELENKY: Yeah, I'm just trying to  
12 understand it.

13          MR. STUCKY: When he describes changing the  
14 algorithm, this is the program that decides that -- that  
15 says heliostat A will go from this position to that  
16 position when called to go to standby. It has nothing  
17 to do with how fast it goes from here to there. It's  
18 just the algorithm might have been that it only went  
19 this far, but they found that still created too much  
20 glare so they changed the algorithm, which is just  
21 programming. But they can now go from this position to  
22 something further. And then the one next to it maybe  
23 goes to a different spot. And that combination creates  
24 a different glare affect.

25          It's not changing the speed at which they can

1 move; it's just changing where they're parking them  
2 during standby. And that's a malleable program that  
3 these engineers can change.

4 MS. BELENKY: So they would still be within  
5 the standby position?

6 MR. STUCKY: They would still be considered  
7 standby, yes. It's just a different standby  
8 configuration.

9 MS. BELENKY: Thank you.

10 HEARING OFFICER CELLI: Anything further?

11 MS. BELENKY: Not on that. I did just want to  
12 make a blanket objection once again that having hearings  
13 go late into the evening, I don't feel like this part,  
14 the whole bio, was fully addressed as it could have been  
15 if it was held at a more reasonable time. I want to  
16 preserve that for the record, because this is like the  
17 7th proceeding that I've been through, and I can see the  
18 quality dropping really precipitously as we go into the  
19 evening. So I just wanted to preserve that for the  
20 record, please.

21 HEARING OFFICER CELLI: Thank you. Anything  
22 further from staff?

23 MS. MARTIN: Nothing further.

24 HEARING OFFICER CELLI: Petitioner.

25 MR. GALATI: Nothing.

1 (Off-Mike Discussion)

2 HEARING OFFICER CELLI: Is there anyone on the  
3 telephone who would like to make a comment at this time?  
4 Okay. Hearing none. And I'm looking over at --  
5 Mr. Ogata, you have no blue cards at this time? Okay.  
6 Then, at this time we are -- the topic of biology --  
7 biological resources is closed. Evidentiary hearings  
8 then are closed. We'll -- I will send a memo to the  
9 parties as soon as the transcripts are available, the  
10 transcripts from today, so starting from today's  
11 transcript is when the clock will run for when briefs  
12 are due.

13 I know that the committee is very interested  
14 in hearing and having the parties brief the performance  
15 standards that were talked about tonight.

16 MS. BELENKY: You're going to send a memo or  
17 you're going to tell us now?

18 HEARING OFFICER CELLI: I'm just mentioning  
19 that right now. The parties do not have to file briefs  
20 at all. That's entirely discretionary with the parties.  
21 If you want to file briefs, you may. And I will send a  
22 memo telling you what the deadlines are for opening  
23 briefs and for rebuttal briefs. With that, I'm going to  
24 turn it over to Commissioner Douglas adjournment.

25 COMMISSIONER DOUGLAS: All right. Well, I'd



1 like to thank all of you for hanging in there with us  
2 through two long days of hearings. This has been very  
3 informative to the committee. You've all put a lot of  
4 preparation into this. I know some of the tribal  
5 representatives are still here, a number had to leave,  
6 but thank you again for your participation. We will  
7 have -- we will continue this to a closed session on  
8 Monday for deliberation.

9 I've been asked this question before, I'll say  
10 it again, when we have closed sessions nothing  
11 interesting happens. We show up -- at least nothing  
12 interesting happens in the public forum. We show up, we  
13 open the meeting, we do offer an opportunity for comment  
14 right as we open the meeting, and then we have a closed  
15 session where the committee deliberates. And after the  
16 closed session, we send a hearing officer back to the  
17 hearing room to say the commissioners are done  
18 deliberating.

19 And that's what happens in a closed session.  
20 That will happen on Monday. With that, thank you very  
21 much.

22 (ADJOURNED AT 9:51 P.M.)

23 --o0o--

24

## CERTIFICATE OF REPORTER

I, MARTHA L. NELSON, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Horse Racing Board Meeting; that it was thereafter transcribed.

I further certify that I am not of counsel or attorney for any of the parties to said conference, or in any way interested in the outcome of said conference.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of August, 2014.

/s/ Martha L. Nelson  
MARTHA L. NELSON

**TRANSCRIBER'S CERTIFICATE**

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified transcriber and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of August, 2014.



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Terri Harper  
Certified Transcriber  
AAERT No. CET\*\*D-709

**TRANSCRIBER'S CERTIFICATE**

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of August, 2014.



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Barbara Little  
Certified Transcriber  
AAERT No. CET\*\*D-520