

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

In the Matter of the: )  
 )  
Application for Certification )  
for the Hidden Hills Solar )  
Electric Generating System )  
\_\_\_\_\_ )

Docket No.  
11-AFC-02



DEATH VALLEY ACADEMY GYMNASIUM  
127 OLD STATE HIGHWAY  
SHOSHONE, CALIFORNIA

VOLUME III

THURSDAY, MARCH 14, 2013

9:05 a.m.

Reported by:  
Troy A. Ray  
Contract No. 170-09-002

COMMITTEE MEMBERS PRESENT

Karen Douglas, Presiding Member

David Hochschild, Associate Member

HEARING OFFICER, ADVISORS PRESENT

Kenneth Celli, Hearing Officer

Jim Bartridge, Advisor to Commissioner Hochschild

Galen Lemei, Advisor to Commissioner Douglas

Jennifer Nelson, Advisor to Commissioner Douglas

Eileen Allen, Commissioners' Technical Advisor for Siting

CEC STAFF PRESENT

Richard Ratliff, Staff Counsel IV

Pippin Brehler, Staff Counsel

Kerry Willis, Staff Counsel

Mike Monasmith, Senior Project Manager

APPLICANT

Jeff Harris, Attorney  
Chris Ellison, Attorney  
Samantha Pottenger, Attorney  
Ellison, Schneider and Harris, LLP

Gary Kazio  
BrightSource Energy

John Carrier  
CH2MHill  
Susan Strachan  
Strachan Consulting, LLC

INTERVENORS

John William Zellhoefer

Lisa T. Belenky  
Ileene Anderson  
Center for Biological Diversity

Cindy MacDonald

Richard Arnold

Dana Crom  
County of Inyo

Mr. Kingsley, Supervisor, Fifth District

Larry Levy  
Southern Inyo Fire Protection District

ALSO PRESENT

Mike Battles

Rayetta Haskin

Eddie Jim

Vivian Wilkinson

Jim Copeland, Superintendent  
Death Valley Unified School District

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P R O C E E D I N G S

9:05 a.m.

1  
2  
3 HEARING OFFICER CELLI: Let's go on the record  
4 now, Troy. This is Ken Celli, Hearing Advisor with the  
5 California Energy Commission. This is the third day of  
6 evidentiary hearings of four that we intend to have.

7 Superintendent Copeland, are you here? I don't  
8 see him. You're pointing, Ms. Haskin. Oh, there he is.

9 Mr. Copeland, I understand you wish to address the  
10 Commission -- well, the Committee -- this Committee made up  
11 of two Commissioners, and so if you wouldn't mind coming to  
12 the podium and speaking into the microphone, we'd love to  
13 hear what you have to say.

14 MR. COPELAND: Thank you for your time. I'd like  
15 to have some young folks introduce themselves real quickly  
16 and they'll be the folks that I'm talking about here.  
17 Gentlemen.

18 MR. TIESI: Hi, my name is Dominic Tiesi and I  
19 live in Stewart Valley.

20 MR. LEIKIM: My name is Dustin Leikam and I live  
21 in Charleston View.

22 MR. LaGUARDIA: Hi, my name's Tyler LaGuardia and  
23 I live in Tecopa Heights.

24 MR. WASHUM: My name is Olivier Washum and I live  
25 in Tecopa.

1           MR. COPELAND: My name is Jim Copeland. I'm a  
2 Superintendent of Death Valley Unified School District and  
3 these young people here are our future, the only reason any  
4 of us are here I suppose. I'd like to briefly -- and thank  
5 you for giving me this quick opportunity to chat for a  
6 minute.

7           I would like to suggest that a path for  
8 Internet/cell phone activity be established that spills over  
9 to the greater Charleston View, Tecopa, Shoshone areas, as  
10 of right now, basically our area -- and I'm hoping that  
11 would involve a partnership I'd like to think with  
12 BrightSource and with the state's blessing.

13           We live in a third world out here. I don't know  
14 how many people are aware, but many of our families do not  
15 have dial-up telephone service. It has never existed in  
16 Charleston View and other parts of the district. So -- say,  
17 well, gee, you ought to get cell phones.

18           Well, cell phone service does not exist in many  
19 parts of our district and I bet a lot of you have taken your  
20 iPads out and started punching, oh, it doesn't work here.  
21 There's no cell service here.

22           So I'd like to think that one thing that might  
23 come out of this project is an opportunity for us to do some  
24 piggybacking so this part of the world and certainly school  
25 might have connectivity. Since two land lines are no longer



1 going to be supported -- we have iPads for every student --  
2 iPad minis for every student in the district, but we don't  
3 have connectivity. We have the technology, but we don't  
4 have the delivery system and certainly we do not have nor  
5 have we ever had particularly reliable telephone service in  
6 this part of the world.

7           It's been suggested that Death Valley Unified is  
8 going to benefit financially from this project. It's not  
9 and that's not BrightSource's fault or anybody else's fault.  
10 We are not a basic aid district. We're a revenue limit  
11 based district, so tax revenue generated by this project  
12 will disburse out to the rest of the state. It will not  
13 come to Death Valley Unified School District, perhaps for  
14 the first 15 years by the time we get through construction  
15 and tax write-offs and things like that.

16           So as an offset in the interim, I'm suggesting the  
17 following. First, certainly the Internet/cell phone tower  
18 connection between our communities and of course  
19 BrightSource could -- because I assume this project is not  
20 going to function with dial-up service. Not going to  
21 happen.

22           I'd like to ask the state and BrightSource to  
23 consider funding two student scholarships per year for  
24 students who attend Inyo County schools for the majority of  
25 their schooling. The scholarship might focus on technology

1 and that sort of thing that BrightSource is engaged in.

2           Scholarship could be -- look in two different  
3 directions: one for students who are looking at going to a  
4 four-year college. I'd love to see a scholarship the amount  
5 of \$5,000 per year and also the option of a student who's  
6 going to a technical school -- a scholarship of \$5,000 per  
7 year for two years.

8           I've been around long enough that I remember when  
9 the Luze Power Plant was constructed down at Four Corners  
10 and it was magical when that was done and it successfully  
11 operated for a long, long time now and I just found out  
12 there's that connection. So if I had a dream, I would hope  
13 that BrightSource and the state might have the same dream  
14 that our future lies in education and that part of the  
15 scholarships could be an internship by which students would  
16 be able to work with BrightSource and perhaps -- maybe not  
17 perhaps -- that they'd be able to go to Israel themselves  
18 and go to the heart of this corporation and have the  
19 opportunity to become citizens of the world rather than just  
20 citizens of Inyo County.

21           Also since teaching is what education is all  
22 about, I would like to see two scholarships for teachers  
23 established for summer studies or something similar to that  
24 where teachers could go and perhaps learn from BrightSource  
25 and from the parent company and/or go to a university and

1 have a scholarship of perhaps \$2,500, \$3,000 to advance  
2 their studies so that when these good folks here graduate  
3 from high school, they will have a future and this is  
4 knowing that one thing is a fact in Inyo County. In our  
5 population of 18,000, there are very few jobs and a lot of  
6 our students have had parents who've in Las Vegas and of  
7 course lost their jobs because of the economic meltdown and  
8 the future does not always look so bright.

9           This would be a chance to brighten that future and  
10 it would be a partnership that we would more than welcome  
11 with BrightSource.

12           And finally until such time as we achieve basic  
13 aid status as a school district, I would like to see and  
14 request that as part of this project that one teaching --  
15 one endowed position be established with Death Valley  
16 Unified School District to help bridge that gap between our  
17 current revenue limit status to basic aid status which is  
18 enjoyed by most of the other school districts in the county  
19 so that we could provide a first-rate education and as a  
20 result provide some first rate job candidates who may have  
21 enjoyed scholarships from BrightSource, some future  
22 employees for the corporation and on that basis, I say thank  
23 you for the time and I'd appreciate the state's  
24 consideration certainly and BrightSource consideration of  
25 our request and thank you for spending some time here in

1 beautiful downtown Shoshone.

2 PRESIDING MEMBER DOUGLAS: Thank you,  
3 Mr. Copeland.

4 MR. COPELAND: You're welcome.

5 PRESIDING MEMBER DOUGLAS: Downtown Shoshone  
6 certainly is beautiful and we really recognize and  
7 appreciate your dedication to education and your students  
8 here and thank your students as well for coming in. The  
9 comments about cell phone coverage did raise a curiosity in  
10 my mind. I don't know, BrightSource, if you have anyone who  
11 can address how you are planning on achieving communications  
12 with the project and --

13 MR. KAZIO: Good morning, Gary Kazio,  
14 BrightSource. We will have a communications group on the  
15 project site --

16 PRESIDING MEMBER DOUGLAS: Can you speak in the  
17 mic. I can't quite hear you. There you go.

18 MR. KAZIO: Okay. Once again Gary Kazio,  
19 BrightSource, and good morning. The project site will have  
20 a cell tower for communications within the project site  
21 itself. We would offer that a location on the tower for  
22 cell company to come in and co-locate if that is their  
23 desire. We can't force a cell provider who's now on the  
24 tower to provide service, but we would offer that  
25 opportunity to any cell company that would like to come out

1 and participate.

2 PRESIDING MEMBER DOUGLAS: Okay. Thank you. All  
3 right. Well, again thank you, Mr. Copeland. Let's start  
4 with introductions now briefly. Again I'm Commissioner  
5 Douglas. I'm the presiding member of the Siting Committee.  
6 If you've been here for the last two days, that's obvious,  
7 but not everyone necessarily has been here for the last two  
8 days.

9 To my immediate left is our hearing officer, Ken  
10 Celli. To his left is the associate member on the Siting  
11 Committee, Commissioner Hochschild. To Commissioner  
12 Hochschild's left is Eileen Allen. She's a technical  
13 advisor for siting at the Energy Commission.

14 To my right, my advisor Galen Lemei. To his right  
15 is Jennifer Nelson. She's also my advisor. And at this  
16 point, let me ask the parties to introduce themselves and  
17 just can you tell us who you've got here today. Let's begin  
18 with the applicant.

19 MR. HARRIS: Good morning. I'm Jeff Harris,  
20 Ellison, Schneider and Harris, on behalf of the applicant.  
21 To my right is Samantha Pottenger, the brains of the  
22 operation. Mr. Kazio is to my left, we just heard from from  
23 BrightSource, and Susan Strachan, Strachan Consulting.  
24 John Carrier from CH2MHill who's been solving all of my  
25 problems about exhibits. We have a myriad of people from

1 literary all over the world sitting behind me and sitting  
2 over there who will introduce themselves at the appropriate  
3 time as well.

4 PRESIDING MEMBER DOUGLAS: Thank you. Staffs?

5 MR. RATLIFF: Dick Ratliff, counsel for staff.  
6 With me are Kerry Willis and Phippen Brehler who are also  
7 counsel for staff and Mike Monasmith, the project manager,  
8 and we have a number of people here who are witnesses who  
9 we'll be identifying when their time comes.

10 PRESIDING MEMBER DOUGLAS: Thank you. Inyo  
11 County.

12 MS. CROM: Dana Crom, Deputy County Counsel for  
13 Inyo County. I also have present Mr. Kingsley, supervisor  
14 for the fifth district.

15 PRESIDING MEMBER DOUGLAS: Thank you. Mr. Arnold.

16 MR. ARNOLD: Richard Arnold, Intervenor.

17 PRESIDING MEMBER DOUGLAS: Thank you.

18 Mr. Zellhoefer.

19 MR. ZELLHOEFER: Jon Zellhoefer, Intervenor.

20 PRESIDING MEMBER DOUGLAS: Mr. Levy.

21 MR. LEVY: Larry Levy, Southern Inyo Fire  
22 Protection District.

23 PRESIDING MEMBER DOUGLAS: Great. CBD.

24 MS. BELENKY: Lisa Belenky with the Center for  
25 Biological Diversity and Ileene Anderson is also here with

1 the Center.

2 PRESIDING MEMBER DOUGLAS: Great. And  
3 Ms. MacDonald.

4 MS. MacDONALD: Cindy MacDonald, Intervenor. It's  
5 really good to be here.

6 PRESIDING MEMBER DOUGLAS: It's great to have you  
7 here, Ms. MacDonald. We missed you yesterday. All right.  
8 With that, I'll turn this over to the hearing officer.

9 HEARING OFFICER CELLI: Good morning, everybody.  
10 We're going to resume the evidentiary hearing.  
11 Ms. MacDonald was not with us yesterday and I had told the  
12 parties that I was going to give you an opportunity to put  
13 in any evidence that you wanted to, any documentary  
14 evidence. We dealt with the topics of socioeconomics  
15 yesterday, soil and water, and water supply and I would ask  
16 you at this time, Ms. MacDonald, if you have a motion with  
17 regard to exhibits as to socioeconomics, water, soil and  
18 water, and water supply.

19 MS. MacDONALD: Thank you, Hearing Officer Celli,  
20 and if I could just briefly thank everybody for your  
21 patience. I'm terribly sorry I was not here. Nobody had  
22 more regrets than me. May I also say that I really, really  
23 appreciate your giving me the opportunity to present some  
24 exhibits. So thank you so much.

25 Yes, I'd like to make a motion to submit exhibits

1 for socioeconomic which also includes environmental justice  
2 and growth-inducing impacts.

3 Exhibits 700, 702, 713, 719, 724, 725, 727, 728,  
4 744, 746 -- am I going too fast?

5 HEARING OFFICER CELLI: No.

6 MS. MacDONALD: Okay -- 747, 748, 752, 754, 756,  
7 759, 762, 763.

8 HEARING OFFICER CELLI: Okay. And then give me --  
9 go ahead and give me land use.

10 MS. MacDONALD: The water and soil --

11 HEARING OFFICER CELLI: Well, no.

12 MS. MacDONALD: -- on surface water?

13 HEARING OFFICER CELLI: I'm sorry. Go ahead,  
14 Ms. MacDonald.

15 MS. MacDONALD: Quite all right. Water and soil  
16 and surface water: Exhibit 700, Exhibit 702, Exhibit 703,  
17 Exhibit 706, Exhibit 710, Exhibit 713, Exhibit 718,  
18 Exhibit 724, Exhibit 726, Exhibit 733, Exhibit 734,  
19 Exhibit 736, Exhibit 742, Exhibit 743, Exhibit 744,  
20 Exhibit 746, Exhibit 747, Exhibit 752, Exhibit 754,  
21 Exhibit 756, Exhibit 757, Exhibit 758, Exhibit 759,  
22 Exhibit 60, Exhibit 762, and Exhibit 763.

23 HEARING OFFICER CELLI: Is that everything?

24 MS. MacDONALD: Yes, sir. Thank you again.

25 HEARING OFFICER CELLI: Thank you. Okay. There



1 is a motion. The motion is to move those aforementioned  
2 exhibits. If anybody needs to, I'm happy to read back -- in  
3 fact let me read them back so that we can confirm that I  
4 have what you just said, Ms. MacDonald.

5           Regarding socio, that would be Exhibits 700, 702,  
6 713, 719, 724, 725, 727, 728, 744, 746, 747, 748, 752, 754,  
7 756, 759, 762, and 763. That was socio.

8           MS. MacDONALD: Correct. Thank you.

9           HEARING OFFICER CELLI: And then for water, all  
10 water topics, 703, 706, 710, 713, 718, 724, 726, 733, 734,  
11 736, 742, 743, 744, 746, 747, 752, 754, 756, 757, 758, 759,  
12 760, 762, and 763.

13           MS. MacDONALD: In the beginning, 700 and 702.

14           HEARING OFFICER CELLI: 700 and 702, yes.

15           MS. MacDONALD: Okay. Yes. That's correct.

16 Thank you.

17           HEARING OFFICER CELLI: Any objection to those  
18 exhibits being admitted, applicant?

19           MR. HARRIS: Good morning, Ms. MacDonald. Glad to  
20 see you. We have no objection.

21           HEARING OFFICER CELLI: Thank you. Staff.

22           MR. RATLIFF: No.

23           HEARING OFFICER CELLI: County of Inyo.

24           MS. CROM: Submit.

25           HEARING OFFICER CELLI: Mr. Arnold.

1 MR. ARNOLD: No objection.

2 HEARING OFFICER CELLI: Mr. Zellhoefer?

3 MR. ZELLHOEFER: I have a point of clarification.  
4 Yesterday when the -- Richard Arnold was entering documents  
5 more than once, you pointed out that was not necessary. Is  
6 that also the case here?

7 HEARING OFFICER CELLI: Yes, because as soon as --  
8 if the exhibit is received into evidence, it's received in  
9 its entirety. We're not going to parse it out.

10 MR. ZELLHOEFER: Okay. But I might -- I'm not  
11 really objecting, but I might point out that documents are  
12 being entered multiple times under different topics.

13 HEARING OFFICER CELLI: That's fine. We're making  
14 absolutely sure that exhibit is in the record. Thank you.  
15 Mr. Levy.

16 MR. LEVY: No objection.

17 HEARING OFFICER CELLI: Thank you. CBD?

18 MS. BELENKY: No objection.

19 HEARING OFFICER CELLI: Thank you. Those  
20 aforementioned exhibits are now received into the record.

21 Now, today before we get into biology, I want to  
22 do a little housekeeping if we may. Today was set aside  
23 entirely for biological resources. Our experience so far  
24 has shown that this informal procedure that we've been using  
25 has been extremely efficient. We've been able to get a lot

1 done in a lot less time than the usual formal Q and A and it  
2 would be nice -- we talked yesterday I think on the record  
3 with regard to also handling air quality, greenhouse gases  
4 which is included in air quality, and public health today.

5 Is there anyone or any reason why we could not  
6 cover those topics today after biology, if we can get to  
7 them in terms of people's witnesses? Applicant, would you  
8 have your witnesses on air quality, public health,  
9 greenhouse gases?

10 MR. HARRIS: Yes. They're here today and we  
11 appreciate that accommodation.

12 HEARING OFFICER CELLI: Thank you. And, Staff,  
13 would you be able to provide witnesses on air quality, GHG,  
14 and public health?

15 MS. WILLIS: I believe I'd have to go back to the  
16 rec and get Internet access and try to make sure that  
17 they'll be available.

18 HEARING OFFICER CELLI: Okay.

19 MS. WILLIS: I believe -- I don't see a reason why  
20 they can't be at this point. I would have to make sure that  
21 they are.

22 HEARING OFFICER CELLI: Who are those witnesses?

23 MS. WILLIS: Jacquelyn Leyva and for public  
24 health, Ann Chu.

25 HEARING OFFICER CELLI: Let me just take a quick

1 look because Jacquelyn Leyva comes in as J. Leyva, didn't  
2 she, yesterday.

3 MS. WILLIS: And Ann may be -- that may be Ann.  
4 Mike, can you ask her if she's available today.

5 HEARING OFFICER CELLI: Okay. A lot of people  
6 actually -- for some reason some people are needed and some  
7 aren't. There's an Ann. Now, she appears to be listening  
8 in. Do you see Ann up there when you have -- would you turn  
9 off the chat there, if you could, to -- off the projector,  
10 Mr. Battles. Please close the chat. Yeah. Thank you.

11 See Ann. Next to Ann is that headphone little  
12 icon. When you have the icon with the headphones, what that  
13 means is somebody has tuned in to WebEx on their computer,  
14 but it doesn't necessarily mean they can speak to us because  
15 unless they have a microphone that's hooked up on their  
16 computer, they would probably have to call in.

17 MS. WILLIS: It appears that from the chat,  
18 Mr. Martinez, one of our project managers, is checking.

19 HEARING OFFICER CELLI: Okay. So Inyo County, you  
20 have any witnesses on air quality or public health,  
21 greenhouse gases?

22 MS. CRUM: No, we do not.

23 HEARING OFFICER CELLI: Richard Arnold, air  
24 quality, greenhouse gases, public health?

25 MR. ARNOLD: No.

1 HEARING OFFICER CELLI: Thank you.

2 Mr. Zellhoefer?

3 MR. ZELLHOEFER: No witnesses.

4 HEARING OFFICER CELLI: Mr. Levy?

5 MR. LEVY: No.

6 HEARING OFFICER CELLI: Ms. Belenky?

7 MS. BELENKY: No.

8 HEARING OFFICER CELLI: Ms. MacDonald.

9 MS. MacDONALD: I need some clarification. As an  
10 intervenor, can I ask questions or because I'm not part of  
11 the panel or am I part of the panel and then I can  
12 participate in some questioning?

13 HEARING OFFICER CELLI: We're going pretty much  
14 the way we've been doing it. When -- on Monday when we were  
15 here is how we would continue to do it.

16 MS. MacDONALD: Then I will be my own witness.

17 HEARING OFFICER CELLI: Okay.

18 MS. MacDONALD: Thank you.

19 HEARING OFFICER CELLI: Very good. Now, Mr. Levy,  
20 I remember we talked about this before. One of the things  
21 that for whatever is getting carried into Sacramento was the  
22 worker safety and fire protection topic. Is that something  
23 we can do today or did you prefer to have that handled in  
24 Sacramento in Monday?

25 MR. LEVY: I'm afraid my main witness is on an

1 airplane today and to available.

2 HEARING OFFICER CELLI: Okay. So we will have to  
3 do that in Sacramento on --

4 MR. LEVY: Yes.

5 HEARING OFFICER CELLI: -- on Monday.

6 MR. LEVY: Yes.

7 HEARING OFFICER CELLI: Okay. Very good. What  
8 that leaves us, ladies and gentlemen, is we have biological  
9 resources today plus air quality, greenhouse gases, and  
10 public health. Tomorrow we will have cultural resources.

11 Now tomorrow's Friday. We have cultural resources  
12 and that would be both the Old Spanish Trail and then also  
13 the concerns with regard to the Pahrump Paiute cultural  
14 resources.

15 Which leaves us for Monday with worker safety and  
16 fire protection which we have to do of necessity now.  
17 Everything else, the only remaining topic area after  
18 tomorrow would be alternatives. Now is alternatives  
19 something that we need to do in Sacramento or -- I see  
20 Ms. Belenky shaking her head in the affirmative, rather than  
21 doing alternatives here. So let me hear from Ms. Belenky  
22 because this might kind of make things go quickly.

23 MS. BELENKY: For alternatives, I would have to  
24 check with our witness -- our other witness. I know he was  
25 possibly available on Friday, but it would have to be by

1 phone and given the WebEx problems, I'd be a little bit  
2 concerned. But I can check. I'm just concerned about the  
3 time that -- cultural will take a lot of time and then I  
4 know people have planes on Friday and need to leave at a  
5 certain point. So I'm a little concerned about trying to  
6 jam it in on Friday.

7 HEARING OFFICER CELLI: I think you're right. I  
8 think that what we'll end up having to do is worker safety,  
9 fire protection, and alternatives on Monday. So with that,  
10 we will begin.

11 MS. BELENKY: I had one other question. The  
12 geopaleon, I might have just gotten confused. Did we finish  
13 it or --

14 HEARING OFFICER CELLI: Yes. We received evidence  
15 on geopaleon.

16 MS. BELENKY: Okay.

17 HEARING OFFICER CELLI: So with that --  
18 Mr. Harris, go ahead.

19 MR. HARRIS: Just on the possibility I won't be  
20 here when you get to air quality and public health, if  
21 Ms. MacDonald wants to be on the panel, that's fine. Or if  
22 she just wants to answer questions, we're fine either way,  
23 whatever's more convenient.

24 HEARING OFFICER CELLI: Thank you.

25 MR. HARRIS: I'm hoping to run away again, so I

1 wanted to --

2 HEARING OFFICER CELLI: Now we're on to the topic  
3 of biological resources. We have quite a few people here  
4 today to talk about that. I'm going to ask you to -- from  
5 left -- from my left, your right, towards -- from the dais  
6 to the back of the gym, please state your name, sir.

7 MR. HUNTLEY: Chris Huntley, Biological Resources,  
8 Energy Commission.

9 HEARING OFFICER CELLI: Chris Huntley. Next to  
10 Mr. Huntley.

11 MS. WATSON: Carol Watson, Biological Resources.

12 HEARING OFFICER CELLI: Was that Carol Watson?

13 MS. WATSON: Carol with a C.

14 HEARING OFFICER CELLI: Ms. Watson.

15 MS. CHAINEY-DAVIS: Carolyn Chainey-Davis, Energy  
16 Commission.

17 HEARING OFFICER CELLI: Don't go so fast. I'm  
18 writing these down. Carolyn Chainey-Davis.

19 MS. CHAINEY-DAVIS: Correct.

20 HEARING OFFICER CELLI: Next to Ms. Davis.

21 MR. HASS: Bill Hass.

22 HEARING OFFICER CELLI: Bill Hass, thank you. We  
23 need to dumb down a little bit from time to time. Thank  
24 you.

25 MR. RATLIFF: Mr. Celli, we also have another



1 witness and that's Debra Hawk who -- I think she needs a  
2 chair actually -- a place on our panel. I don't want her to  
3 have to sit in the back seat.

4 HEARING OFFICER CELLI: Let's bring Ms. Hawk --  
5 I'm going to put you to the right of Mr. Huntley. So you're  
6 going to be sitting at the corner of the table.

7 MR. RATLIFF: Ms. Hawk is the representative for  
8 the California Department of Fish and Wildlife who has been  
9 in collaboration with our staff on the issues that the  
10 Department would normally concern itself were it the  
11 permitting agency or responsible agency instead of the  
12 Energy Commission.

13 HEARING OFFICER CELLI: Thank you very much.  
14 Thank you for being here, Ms. Hawk.

15 MS. MacDONALD: Excuse me, Mr. Celli. This is  
16 Cindy MacDonald. I'm sorry. I put myself down as an expert  
17 recognizing that I just have knowledge of local wildlife  
18 populations and I just have a few questions on specific  
19 kinds of things. Where would you like me to be in this?

20 HEARING OFFICER CELLI: Just stay where you are.

21 MS. MacDONALD: Thank you.

22 HEARING OFFICER CELLI: And we'll get -- we'll  
23 sort of have you straddle the line there.

24 Ladies and gentlemen, for those of you who haven't  
25 been with us so far, the sound in this room has been

1 absolutely fantastic thanks to Tony over here who's managing  
2 the sound. But Tony from Cali has -- he's from Sacramento.  
3 Actually he lives in Las Vegas now. From time to time  
4 though, he needs to recalibrate. In other words, he's going  
5 to have to turn on your mics. Some mics are higher than  
6 others.

7           We need you to be able to speak directly into your  
8 mic. I know you're sharing mics. We can't hear you. If  
9 you're -- if the mic is here and you're sitting, for  
10 instance, where the two Commissioners are sitting on either  
11 side of me and you start yelling to the mic, that won't get  
12 picked up.

13           So when you do speak, I need you to please  
14 conscientiously get right up to the mic, get right into the  
15 mic, and speak directly into the mic. Put it right at your  
16 mouth and then we'll all be able to hear you and then we  
17 will have a complete record. We have Troy Ray over here who  
18 is our court reporter taking all of this down and we want to  
19 make sure that you all make the record.

20           The other thing about that is we expect some  
21 hopefully robust discussions today about biology and we can  
22 only hear one person at a time and he can only transcribe  
23 the speaking of one person at a time. So please do not  
24 speak over each other. Let each speaker finish what they're  
25 saying before. People have been pretty good about sort of

1 raising their hand if they have something they want to add.

2 That's a good thing to do. I will call on you.

3 So with that, I have Bill Hass. Next to Bill Hass  
4 is?

5 MS. ANDERSON: Good morning. It's Ileene Anderson  
6 with the Center for Biological Diversity.

7 HEARING OFFICER CELLI: Good morning,  
8 Ms. Anderson. Next to Ms. Anderson.

9 MR. PHILLIPS: Dave Phillips, wildlife biologist,  
10 with CH2MHill.

11 HEARING OFFICER CELLI: Good morning,  
12 Mr. Phillips. Next to Mr. Phillips.

13 MS. HISS: Amy Hiss, botanist with CH2MHill.

14 HEARING OFFICER CELLI: Good morning, Ms. Hiss.  
15 Next to Ms. Hiss.

16 MS. HISS: I just want to clarify that that's  
17 Hiss, H-i-s-s.

18 HEARING OFFICER CELLI: H-i-s-s. Thank you.  
19 Ms. Hiss. And then?

20 MR. SPAULDING: Jeff Spaulding for the applicant.

21 HEARING OFFICER CELLI: Mr. Spaulding, good  
22 morning.

23 MR. SPAULDING: Thank you.

24 HEARING OFFICER CELLI: Next to Mr. Spaulding.

25 MR. RUBENSTEIN: Gary Rubenstein with Sierra

1 Research for the applicant.

2 HEARING OFFICER CELLI: Gary Rubenstein?

3 MR. RUBENSTEIN: Correct.

4 HEARING OFFICER CELLI: Thank you. Good morning,  
5 Mr. Rubenstein. Next to Mr. Rubenstein.

6 MR. FRANCK: Dan Franck, BrightSource Energy.

7 HEARING OFFICER CELLI: Dan Franck. Next to  
8 Mr. Franck.

9 MS. KARL: Alice Karl, consultant of BrightSource.  
10 I'm discussing desert tortoises today.

11 HEARING OFFICER CELLI: Good morning, Ms. Karl.  
12 Next to Ms. Karl.

13 MR. KLINEFELTER: Mike Klinefelter. I'm a  
14 consultant to BrightSource.

15 HEARING OFFICER CELLI: Good morning,  
16 Mr. Klinefelter. Next to Mr. Klinefelter.

17 MS. ROSE: Kathy Rose with CH2MHill for the  
18 applicant.

19 HEARING OFFICER CELLI: Thank you, Ms. Rose. Good  
20 morning, everyone. Please rise, raise your right hand.

21 Come on up and be sworn again, those of you who've already  
22 been sworn. I'm going to really swear you in this time.

23 Whereupon,

24 DEBRA HAWK

25 CHRIS HUNTLEY

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CAROL WATSON

CAROLYN CHAINEY-DAVIS

BILL HASS

ILEENE ANDERSON

DAVE PHILLIPS

AMY HISS

W. GEOFFREY SPAULDING

GARY RUBENSTEIN

DAN FRANCK

ALICE KARL

MIKE KLINEFELTER

KATHY ROSE

Were called as witnesses herein, and after being duly sworn,  
were examined and testified as follows:

HEARING OFFICER CELLI: All right. Thank you. All  
witnesses are sworn. Please be seated. I'm going to ask  
staff to begin with a short synopsis of what the issues in  
biology are. Staff, are you prepared for that, Mr. Huntley.

MR. HUNTLEY: Yes, Mr. Celli, we are.

HEARING OFFICER CELLI: Okay.

MR. ARNOLD: Mr. Celli. Excuse me.

HEARING OFFICER CELLI: Mr. Arnold, go ahead.

MR. ARNOLD: Yes. Be mindful again that I'm on  
the list of the folks to be included in this group, so --

HEARING OFFICER CELLI: Now, are you a -- are you

1 going to -- do you want to be a witness or is it your  
2 intention to call a witness today?

3 MR. ARNOLD: As indicated on the list, I'm  
4 actually one of the witnesses for --

5 HEARING OFFICER CELLI: I might -- you know,  
6 because yesterday I forgot when we were doing I think it was  
7 water because you were so far away from the panel, you know,  
8 I just -- keep reminding me if you will. If there's  
9 anything you want to say, you want to pipe up, please just  
10 speak up and this way I won't neglect you.

11 MR. ARNOLD: I haven't failed yet.

12 HEARING OFFICER CELLI: Okay. So thank you,  
13 Mr. Arnold, and yes, you are -- you did indicate in your  
14 prehearing conference statement that you wanted to be a part  
15 of this.

16 BIOLOGY PANEL

17 So if everyone wants to turn to the back of the  
18 room. You can see that there is an overhead projector. I  
19 understand, Mr. Huntley, that you have a PowerPoint; is that  
20 correct?

21 MR. HUNTLEY: Yes, sir.

22 HEARING OFFICER CELLI: Okay. And Mr. Battles, is  
23 that PowerPoint up and ready to go? Now that is not showing  
24 on WebEx. Okay. Folks, just give us a second. I want to  
25 confirm that this is on WebEx. Now, I've given you -- you

1 are presenting and so I cannot turn off the sound on this --  
2 the people speaking. Would you mute everybody, Mr. Battles.  
3 That is Call-In User No. 7. Everybody has to be muted  
4 except the hearing line and the recording PC.

5 MR. HARRIS: I guess I want to make sure we're all  
6 on the same page. These are not all of our biology  
7 witnesses. We still have a separate panel on flux. Is that  
8 how you're proceeding today?

9 HEARING OFFICER CELLI: Yeah. Basically we're  
10 going to look to staff to identify what these issues are.  
11 We talked about it yesterday at the close of the session.

12 MR. HARRIS: Yeah. I -- apparently they had  
13 enough copies, so -- but that's fine. I just wanted to make  
14 sure I didn't --

15 HEARING OFFICER CELLI: But you raise a good point  
16 and I want to put this out to everybody. What we expect to  
17 be talking about today is desert tortoise, the flux issue.  
18 Staff wanted to talk about burrowing owl, kit fox. There  
19 were some unresolved issues with regard to bio 23. Ilene  
20 Anderson from CBD was going to talk about avian issues, the  
21 eagle. Also soils. Cryptobiotic soils, water-dependent  
22 vegetation, and mitigation ratios.

23 So that pretty much sums up what we're going to be  
24 talking about today and then of course there's going to be  
25 cultural issues with regard to biological resources, is what

1 Mr. Arnold wanted to speak to. So --

2 MR. RATLIFF: Mr. Celli, this panel, as we  
3 discussed with the applicant and I think we've informed the  
4 Committee, this panel will be discussing the biological  
5 issues with the exception of solar flux and the issue of  
6 solar flux will have an overlapping panel of additional  
7 witnesses who are not in this panel.

8 HEARING OFFICER CELLI: Yeah. I think the best  
9 way to do this today is let's deal what the traditional  
10 biological resources subject areas which are the actual  
11 critters and plants, et cetera, and then we will take a  
12 break at some point and re-imp panel the experts for the avian  
13 issue and tackle the avian issue as a separate piece because  
14 that seems to be a big one for everyone.

15 So, Mr. Battles, how are we doing over there?

16 MR. BATTLES: I'm all ready.

17 HEARING OFFICER CELLI: Okay. Is everybody muted?  
18 I need you to speak into your microphone. I can't hear you.

19 MR. BATTLES: No. I'm the presenter. I have  
20 presenter rights, but you're still the host of the meeting,  
21 so you still are able to mute and unmute.

22 HEARING OFFICER CELLI: Oh, okay. So give me a  
23 second, folks. What I'm going to do is mute all of the  
24 people who called in and I just want to give you a heads-up  
25 that when people call in after I've muted everybody, that's



1 just a separate problem and I'm just going to have to deal  
2 with -- Mike Conway is listening in on a cell phone.

3 Is staff -- Ann -- did we determine that Ann was  
4 your witness?

5 MR. RATLIFF: Yes, we had put it in a prehearing  
6 conference statement.

7 HEARING OFFICER CELLI: But you don't need her for  
8 a bio, do you?

9 MR. RATLIFF: Who are we talking about?

10 HEARING OFFICER CELLI: Ann on the telephone.

11 MR. RATLIFF: Oh, no, no.

12 HEARING OFFICER CELLI: Okay. Nobody has any  
13 witness on the telephone today; correct? In terms of  
14 biology because if they are, I'm going to mute them unless  
15 you tell me otherwise. Okay.

16 Now -- good. And Jacquelyn Leyva is online for  
17 air quality. So with that I'm going to return to sharing.  
18 Okay. Mr. Battles, you now have presenter rights and let's  
19 hear now from Mr. -- from staff. Go ahead, Mr. Huntley.

20 MR. HUNTLEY: Thank you. Good morning,  
21 Commissioner Douglas, Commissioner Hochschild, and Hearing  
22 Officer Celli. My name is Chris Huntley. I'll be giving a  
23 brief overview on the biological resources staff testimony.  
24 We'll be highlighting three or so areas that are issues in  
25 dispute. We recognize there's a couple more things --

1 conditions of certification, other things that we'll be  
2 working out with the applicant. And then I wanted to  
3 provide just a quick overview -- a summary of the impacts to  
4 biological resources of the proposed project. Next slide,  
5 please.

6 The primary issues in dispute at this time between  
7 the applicant and staff revolve around three primary areas.

8 HEARING OFFICER CELLI: I'm going to ask you to  
9 speak -- keep that mic right in front of your mouth so we  
10 can hear you well.

11 MR. HUNTLEY: I'm sorry. Thank you, sir. The  
12 primary issues in dispute revolve around three primary areas  
13 and it's desert tortoise, the presence, the use of the  
14 animals on the site, staff and applicant's contention on  
15 proposed mitigation ratios; burrowing owls, both the use and  
16 distribution of the animals on the project site,  
17 interpretation of existing data, and then staff approach to  
18 mitigation; and then risk to birds in general from solar  
19 flux.

20 We're not going to get into a discussion on the  
21 mechanics behind the risk of solar flux, but I'd just like  
22 to highlight some of the concerns we have from the  
23 biological resources perspective regarding bird abundance,  
24 interpretation of data, sort of the risks, and then the  
25 proposed significance, conclusion, and mitigation. Next

1 slide, please.

2 MR. BATTLES: Excuse me, Mr. Celli, for  
3 interrupting. We have muted our phone. We're Call-In User  
4 No. 3 apparently on the list. We're Call-In User No. 3. Now  
5 we're hearing line.

6 HEARING OFFICER CELLI: Okay. Thank you for  
7 bringing that to our attention. I show that the hearing  
8 line is now open. While I'm at it, I better make sure that  
9 the recording is unmuted. I can mute the recording. Okay.  
10 Go ahead. I'm going to return to sharing. Sorry for the  
11 interruption.

12 MR. BATTLES: None of the presentation for that  
13 last slide got in -- none of the audio. Would you like us  
14 to go over that again.

15 HEARING OFFICER CELLI: No. Just keep going. We  
16 have a transcript. They can read about it later.

17 MR. HUNTLEY: Thank you. I'll be very brief on  
18 the project setting and overview because for the most part I  
19 believe that the applicant and staff do not have any major  
20 issues with this.

21 The project sits in approximately five square  
22 miles in southeast corner, Inyo County, borders the state of  
23 Nevada. It's an area that consists primarily of native  
24 vegetation. It does have portions that have been  
25 historically subject to disturbance, including road system

1 that was cut onto the site many years ago. And portions of  
2 the site we acknowledge appear to have been subject to some  
3 form of agriculture/other disturbance including a fallow  
4 orchard.

5 The site's bordered by a mixture of public and  
6 private lands, including BLM to the east and then private  
7 lands particularly to the south and that includes the  
8 community of Charleston View. Next slide, please.

9 That's a photograph of the site just giving a  
10 representative overview. The project's going to result in  
11 impacts to vegetation and plants from construction of the  
12 project. There's 11 rare species of plants on the site.  
13 Staff felt it was appropriate to propose mitigation for four  
14 of those species. The same with vegetation.

15 We've proposed a series of conditions and  
16 certification that we believe will reduce those impacts to  
17 less than significant levels. Next slide.

18 Implementation of the proposed project would also  
19 result in the loss of state waters and have the potential to  
20 impact groundwater dependent vegetation in adjacent lands  
21 and these include mesquite areas, seeps, springs, and some  
22 off-site habitats.

23 Staff considers that these impacts can be reduced  
24 to less than significant levels or avoided with the  
25 implementation of our proposed conditions of certification.

1 Next slide.

2 Implementation of the proposed project will also  
3 result in direct impacts to a variety of sensitive wildlife.  
4 This includes desert tortoise, a state and federally  
5 threatened species that lives on the project site. It will  
6 also require the translocation of those animals to off-site  
7 areas.

8 The project will also result in impacts to  
9 burrowing owl. As we mentioned earlier, we'll speak a  
10 little bit more about desert tortoise and burrowing owl.  
11 American badgers, a species of special concern, have been  
12 found on the project site. We believe with staff's proposed  
13 conditions that these impacts will be reduced to less than  
14 significant and/or fully mitigated as required by law.

15 There's a variety of other species on the project  
16 site, including desert kit fox, big horn sheep, a variety of  
17 bats, and a suite of resident and migratory birds. And  
18 impacts to these species will result from a number of  
19 mechanisms, including displacement, risk of mortality.

20 Species like big horn sheep will potentially lose  
21 some areas where they periodically move and then loss of  
22 habitat primarily from construction of the facility for a  
23 lot of the species. We believe with the conditions proposed  
24 in the FSA that these impacts can be reduced to less than  
25 significant levels.

1           There are some important, significant, and  
2 unavoidable impacts that we believe will occur from  
3 implementation of the proposed project and these revolve  
4 primarily around resident and migratory birds including  
5 golden eagles. And the risks are threefold. There's an  
6 electrocution risk, a collision risk in our mind, and a risk  
7 from exposure to solar flux, which again we'll talk about in  
8 more detail later.

9           We believe the electrocution risk is minimal with  
10 the implementation of the guidelines, but that still the  
11 project would result in significant residual effects to  
12 these species after implementation of the proposed project  
13 and with our conditions of certification. Next slide, sir.

14           Cumulative impacts we believe will largely be  
15 mitigated by the existing conditions of certification.  
16 However, we believe again that there will be cumulatively  
17 considerable impacts to resident and migratory birds  
18 including golden eagles even with the implementation of the  
19 conditions of certification.

20           Now I'd like to talk a little bit about the  
21 primary issues in dispute. And as we mentioned earlier,  
22 these revolve around desert tortoise mitigation, the number  
23 and distribution of the animals on the project site, the  
24 habitat value, and what we perceive is a misinterpretation  
25 of the existing data and the ecology of the animal on the

1 project site.

2           Burrowing owls as we mentioned we have some  
3 disagreement about we'll speak to a little bit later and  
4 then again the risk to birds. Next slide, sir.

5           There's a wealth of desert tortoise data that's  
6 been provided by the applicant on the project site. And the  
7 applicant in testimony and in a variety of workshops has  
8 suggested that the site supports limited amount of tortoises  
9 and that the staff estimates of tortoise on the project site  
10 are incorrect and not based on use of the site.

11           They suggest that the habitat is generally low  
12 quality, mispreponderance of soils, are poorly consolidated  
13 soils, a number of weeds, and a fair level of disturbance.  
14 They've also suggested that the mitigation proposed by staff  
15 is too high and not warranted for a site of this nature and  
16 they've proposed a tiered system of mitigation.

17           Similar to staff, they did not propose mitigation  
18 for disturbed -- and then they provided ratios ranging from  
19 a half to one up to one and a half to one. This in effect  
20 provides a mitigation for the five square mile loss of  
21 habitat of a ratio less than one to one. And staff rejected  
22 this proposal.

23           The next figure shows a distribution of desert  
24 tortoise sign that was detected by the applicant on the  
25 project site. The green dots reflect burrows that are

1 desert tortoise burrows identified by the applicant's  
2 tortoise biologist. The red dots represent in effect live  
3 tortoises found on the project site and it's important to  
4 understand the distribution of the animals on the project  
5 site. Next slide, please.

6           Biological Resource Table 12 identifies the  
7 tortoises found both on the project site, within the  
8 150 meter buffer, and within the zone of influence and you  
9 can see that on the project site, they only found two  
10 tortoises. But within 150 meters of the site, they found  
11 six additional tortoises. Please note though that there's  
12 58 burrows that occur on the project site and that's  
13 important when we come to the estimation of animals.

14           Biological Resource Table 13 is our estimates of  
15 the amount of tortoises that have the potential to occur on  
16 the proposed project site. And the original estimate that  
17 you see on the left, the lower and upper, is the estimate  
18 that was actually provided by the applicant in their desert  
19 tortoise surveys or the desert tortoise survey report and in  
20 the AFC.

21           They've since suggested that these numbers are too  
22 high and they've broken down the distribution of tortoises  
23 to tortoises -- the two tortoises on the project site,  
24 tortoises within the 150 meter buffer, and then those  
25 tortoises found in the zone of influence. And what they



1 suggest is the overall density of tortoises on the project  
2 site is extremely low.

3           And doing a straight math game, they're probably  
4 right, but the tortoises do not abide by these artificial  
5 boundaries. Tortoise data even provided by the applicant in  
6 their testimony suggested that they should count the  
7 tortoises within the 150 meter buffer because there's every  
8 expectation that these animals would occur on the project  
9 site at some point in their life. Next slide, please.

10           This is important because they suggest now that we  
11 shouldn't count animals within the buffer, yet this argument  
12 was proposed by the applicant in the rationale for  
13 translocating tortoises to the east of the project site and  
14 we concurred with them. We felt that animals within  
15 150 meters likely use some portion of the project site  
16 during their life history, so that at any given time,  
17 conducting clearance surveys of the site, you may encounter  
18 a larger number of tortoises than were found on the project  
19 site.

20           They also suggest that there's no tortoise in  
21 areas dominated by shadscale habitat. We acknowledge that  
22 tortoise density in this area is low, yet tortoises occur in  
23 this area. We found tortoise burrows and the animals are  
24 likely using this site, at least periodically. Next slide,  
25 please.

1           You know, we've also talked about the habitat  
2 quality on the project site. Staff acknowledges that  
3 there's disturbed portions in this area, including the road  
4 edges and some previously graded area. In fact the  
5 photograph on the top represents an area that is highly  
6 disturbed and dominated by weeds, yet down below is a  
7 shadscale area that provides good quality habitat with a  
8 broad diversity of plant life, in fact I think 150 species  
9 of plants were found across the site and at least 11 rare  
10 plants distributed between both the shadscale habitat and  
11 the creosote brush scrub habitat. Next slide, please.

12           We believe that our population estimates are valid  
13 and we remind you that these are actually the population  
14 estimates provided by the applicant in their original  
15 submittals and we felt they were appropriate based on the  
16 ecology of the animal. We also believe that the habitat is  
17 largely intact. It has been cut by a road system, yet most  
18 of the interstitial areas within those road areas consist of  
19 intact habitat.

20           There are weeds. We acknowledge that, yet we  
21 don't believe that population of weeds are at a high enough  
22 level to exclude tortoises from using this site. Again it  
23 also supports a broad diversity of other animals and  
24 sensitive plants, including a variety of annuals utilized by  
25 tortoise for forage.

1           We also think -- we don't think, we know based on  
2 the evidence that desert tortoise are using the project  
3 site. So it is manifestly occupied desert tortoise habitat.

4           We think the mitigation is reasonable and we took  
5 a hard look at the mitigation ratios for this project. Now,  
6 CBD had commented that they felt an appropriate mitigation  
7 ratio was 5 to 1 for the project site and the Department of  
8 Fish and Wildlife originally proposed a mitigation ratio of  
9 3 to 1 for habitat across the entire project site.

10           In a workshop in Bishop, we spoke with the  
11 applicant about assessing the habitat quality and they  
12 provided a guideline what they thought provided a good  
13 estimate of habitat quality and appropriate mitigation  
14 ratios.

15           We viewed this and felt it was inappropriate and  
16 after we reviewed it, we went to the site with the  
17 Department of Fish and Wildlife and spent a couple days with  
18 botanists and biologists inspecting the area and really  
19 having a hard look at what we thought was an appropriate  
20 mitigation ratio. And based on the distribution and  
21 presence of tortoise, their potential to use this habitat  
22 over time, we felt our mitigation approach was warranted and  
23 we settled on a mitigation of -- effectively similar to the  
24 applicant of zero to one for disturbed habitat such as roads  
25 and the orchard, a one to one ratio for habitat

1 characterized by shadscale which we acknowledge had the  
2 lower density of tortoises on the project site, and then a  
3 three to one for the creosote brush scrub where we tended to  
4 find the majority of the burrows and which supports adequate  
5 habitat for the species.

6           We have a full mitigation standard that we have to  
7 apply to this project under SESA and we believe this ratio  
8 is appropriate. The aggregated mitigation ratio that we're  
9 proposing is slightly less than two to one for the loss of  
10 five square miles of habitat in this location. Next slide,  
11 please.

12           PRESIDING MEMBER DOUGLAS: Actually -- I'm sorry,  
13 Mr. Huntley, before you go into burrowing owls, I just had  
14 one question about the tortoise information before you go on  
15 to burrowing owls. Could you flip back to the picture  
16 showing the distribution of burrows quickly.

17           MR. HUNTLEY: Yes, ma'am.

18           PRESIDING MEMBER DOUGLAS: I was kind of puzzled  
19 to see so many burrows by the road and so many settings by  
20 the road, and I was just curious if you could talk about the  
21 distribution.

22           MR. HUNTLEY: Certainly.

23           HEARING OFFICER CELLI: Mr. Battles --

24           PRESIDING MEMBER DOUGLAS: -- to the right slide,  
25 but -- as you know, sometimes that's reflected by the fact

1 that surveyors stay near roads, but I don't think that's  
2 probably the case in here, so --

3 MR. HUNTLEY: We believe that the surveys  
4 conducted by the applicant were sound. They were done by  
5 qualified people and they found burrows. We went back and  
6 looked at a lot of the same burrows that they had found and  
7 we believe they did a good job.

8 Habitat quality shifts from the shadscale area on  
9 the left still occupied in most cases, right there --  
10 exactly to the left and it transitions slightly upslope into  
11 the -- which is more characterized by creosote brush scrub.

12

13 The presence of roads we don't believe is an  
14 artifact. It's just the road cuts through an area of  
15 particularly decent habitat.

16 PRESIDING MEMBER DOUGLAS: Okay. So where are the  
17 shadscale areas on the --

18 MR. HUNTLEY: The shadscale areas -- I'm sorry, I  
19 don't have a good map of that in this presentation. But it  
20 basically -- the bottom center portion of the project just  
21 above the emergency lights --

22 PRESIDING MEMBER DOUGLAS: Okay.

23 MR. HUNTLEY: -- starts as kind of the boundary  
24 and it kind of cuts up the half -- the half of the project  
25 site is characterized by shadscale habitat and it's a

1 mixture of atriplex and liceum and other things.

2 PRESIDING MEMBER DOUGLAS: Okay.

3 MR. HUNTLEY: And there's a small orchard --  
4 abandoned fallow orchard. You can see a small polygon kind  
5 of at the center south portion of the project just above the  
6 lights.

7 PRESIDING MEMBER DOUGLAS: Got it. Okay. That's  
8 helpful. Thank you.

9 MR. HARRIS: And while we're on that topic, you  
10 said the -- I can't read the -- Chris, over here, Jeff  
11 Harris.

12 MR. HUNTLEY: Sorry.

13 MR. HARRIS: Where are the burrows -- the  
14 green --

15 MR. HUNTLEY: The green burrows --

16 MR. HARRIS: To the east of the -- that east --

17 MR. HUNTLEY: I'm having a dickens of a time  
18 hearing you, so forgive me.

19 MR. RATLIFF: Well, we can't hear the applicant's  
20 bench either here for some reason.

21 MR. HARRIS: All right. I'm sorry. Is that  
22 better?

23 MR. HUNTLEY: Yes, sir.

24 MR. HARRIS: Operator error, sorry. I just wanted  
25 to know -- I can't read the legend on this. All the burrows

1 you're talking about, the green lines on the eastern side of  
2 the project -- the green circles.

3 MR. HUNTLEY: This is a figure from your existing  
4 data, and I believe the green burrows represent desert  
5 tortoise burrows that were found on the project site and off  
6 the project site. The lines on the east and the west are  
7 the zone of influence surveys your biologists conducted.

8 MR. HARRIS: Okay. Thank you. I'll -- my glasses  
9 don't help me, but thank you.

10 HEARING OFFICER CELLI: Lastly, Mr. Huntley. I  
11 have that you had a zero to one ratio on roads, one to one  
12 on shadscale, and three to one on creosote.

13 MR. HUNTLEY: Yes, sir.

14 HEARING OFFICER CELLI: Can you give me the  
15 relative percentages, do you know, of the site of those --

16 MR. HUNTLEY: There's about 77 acres of roads and  
17 disturbed habitat on the project site in a sense of like the  
18 old agricultural area. Normally to be honest, we just  
19 include roads as a subset of the existing habitat, but in  
20 negotiations with the applicant, we elected to remove those  
21 in this case.

22 In fact we found a desert tortoise burrow on the  
23 very margin on the road and we often find tortoises in the  
24 sides of roads because there are small berms and things that  
25 often facilitate burrow development.

1           Commissioner Douglas, Fish and Wildlife had a  
2 question they wanted to pose or at least provide some  
3 supplemental comments.

4           HEARING OFFICER CELLI: I just wanted -- so there  
5 were 77 acres of road.

6           MR. HUNTLEY: Yes, sir.

7           HEARING OFFICER CELLI: How much shadscale and how  
8 much creosote?

9           MR. HUNTLEY: In the original slide, we had  
10 approximately 1,580 acres of creosote brush scrub and 1,616  
11 acres of shade scale or shadscale.

12          HEARING OFFICER CELLI: Thank you.

13          PRESIDING MEMBER DOUGLAS: Okay. Ms. Hawk.

14          MS. HAWK: Commissioner Douglas, I just wanted to  
15 speak to your question with regard to the mapping. The  
16 green dots that represent the desert tortoise burrows, it's  
17 actually a good observation on your part, but I wanted to  
18 suggest that it's not survey bias, but rather actual desert  
19 tortoise bias. The roads represent small relief and that  
20 actually is a type of topographical sought-out space for  
21 tortoises to dig their burrows. So a lot of observations  
22 tend to be on roadsides.

23          PRESIDING MEMBER DOUGLAS: Thank you.

24          MR. HUNTLEY: Mike, could we go to the burrowing  
25 owl slide, please. Staff and the applicant are in some



1 disagreement on use of the site by burrowing owls. The  
2 applicant has suggested that burrowing owls are fairly  
3 common in the desert and a few owls are actually using this  
4 site, but staff and most of the regulatory agencies  
5 recognize that this species is a species in decline. It's  
6 considered sensitive by the California Department of Fish  
7 and Wildlife, the BLM, and other agencies. And more  
8 importantly, it's been documented on the site.

9           In previous discussions, they've suggested that  
10 there's no breeding or wintering use, but in our review of  
11 the data, we don't believe that their surveys provide them  
12 the power to make that observation. To fair, in reviewing  
13 data responses, follow-up breeding surveys were not required  
14 by the Department of Fish and Game at the time because they  
15 felt the site was occupied and that may be why supplemental  
16 breeding surveys were not conducted.

17           The applicant did go out and do some winter  
18 surveys and apparently did not find animals on the site.  
19 Yet we have routinely seen in every site visit desert -- or  
20 pardon me -- burrowing owls sign, active burrows, and live  
21 burrowing owls as recently as I think it was December  
22 when -- January when we did an inspection of the site.

23           The applicant has also suggested that our  
24 mitigation ratio is too high and they propose a lower  
25 mitigation standard. Next slide, please.

1           I wanted to show you data that is provided by the  
2 applicant in the applicant's burrowing owl survey report  
3 that was conducted a couple of years ago I believe -- or a  
4 year ago. The red dots represent burrowing owl sign. The  
5 orange or yellow polygons represent potential territories of  
6 those birds.

7           Staff considered it an accurate representation of  
8 burrowing owl sign on the project site and suggests to us  
9 that burrowing owls do and are using the project site.  
10 Backed up by our observations during our inspections, we  
11 know there are at least several burrowing owl on the project  
12 site. In fact we found burrows in a couple other locations,  
13 which is consistent. The animals move around and that would  
14 explain why they're in one location on the site at one time  
15 and a couple months later, perhaps differently.

16           But ultimately we're not certain what the uses of  
17 the site, whether it's breeding, whether it's used just  
18 during dispersal or whether it's a wintering site and I  
19 think the key thing is, is there's good data. Applicant's  
20 provided it, but we just are not confident that you can draw  
21 conclusions about the site not supporting wintering or  
22 breeding use based on that data. Next slide, please.

23           So in a sense, we don't accept the conclusions the  
24 applicant on burrowing owls. We believe our significance  
25 conclusions are appropriate and the mitigation proposed is

1 proportional to the impacts of the project.

2           We propose mitigation for this project to replace  
3 lost territories and I think it's important to understand  
4 why we're doing that is this is going to result in the loss  
5 of five square miles of habitat that clearly is being used  
6 by burrowing owls.

7           If this was a transmission line or a pipeline that  
8 was merely bisecting a territory, we wouldn't ask for  
9 mitigation of that nature. It would be much smaller. But  
10 because of the scale of the project, the duration, the fact  
11 that it's likely going to displace birds, we thought our  
12 mitigation was appropriate and we base this on a number of  
13 things including guidelines developed by the Department of  
14 Fish and Wildlife.

15           And we think -- well, we don't think. We believe  
16 that the current mitigation approach that's been utilized  
17 for this species especially for landscape level projects is  
18 not appropriate. Next slide, please.

19           PRESIDING MEMBER DOUGLAS: Before you go on, does  
20 anyone know how to dim the lights just because when you do  
21 put up these maps, it's helpful to be able to see. Great.  
22 All right. So go ahead because this slide is text, but it  
23 would be nice if we could figure out how to dim the lights  
24 next time we have a map.

25           MR. HUNTLEY: Okay. Thank you, Commissioner.

1 Kind of a final point of contention that we have with the  
2 applicant right now is regarding migratory birds and golden  
3 eagles. And throughout the proceeding, the applicant has  
4 collected some good solid data we believe on the  
5 distribution, the types of birds that are found on the  
6 project site that we feel the data doesn't allow them again  
7 the power to draw conclusions that the site doesn't support  
8 large number of birds.

9           They suggested multiple times that bird use is low  
10 on the project site. Yet again we believe that that -- the  
11 data they have can't provide in that in the surveys, for  
12 example, in that they use point counts are not method for  
13 estimating -- a reasonable method for estimating abundance  
14 of a population.

15           More importantly, they've made comments that the  
16 site is not a migratory corridor, yet the site is an  
17 important migratory corridor and it's documented and it sits  
18 between several important areas include Ash Meadows --  
19 Valley and other areas. Next slide, please.

20           What we have some concern also about is that the  
21 applicant suggests that the site really has limited value or  
22 use by golden eagles and this is interesting because golden  
23 eagles continually are identified by the applicant during  
24 surveys and we hear comments that they were seen incidental  
25 to something else, yet that's a golden eagle.

1           You know, we've observed golden eagles on the site  
2 when we've been there and we've noted that the applicant has  
3 noted them at least 13 occasions, something of that nature.  
4 A question that maybe they can answer later as I was looking  
5 desert tortoise survey reports and their database forms and  
6 I note that between April and May during their tortoise  
7 surveys, on five separate days, they had nine eagle  
8 observations either at or adjacent to the project site.

9           So this suggests to us that eagles are in fact  
10 using the project site on a somewhat routine basis. We also  
11 believe that -- pardon me. The applicant also contends that  
12 there's a low risk to migratory birds and golden eagles in  
13 particular from exposure to solar flux. And again we don't  
14 believe the data that they have provides them the evidence  
15 to make that call. Next slide, please.

16           This is a figure from the applicant's golden eagle  
17 survey report and I -- forgive the scale of this, but golden  
18 eagles are known to nest in the Nopah Range and they had  
19 excellent eagle surveyors, found a number of the nests in  
20 those locations and I think it's the Kingstons in the south.

21           Do eagles are known to nest I think it's within as  
22 close as four and a half miles to the project site. These  
23 are birds that have incredibly large territories and are  
24 able to cover very large areas in a given time. Next slide,  
25 please.

1           I can barely see the dots on there, but there's a  
2 variety of dots -- yellowish-orange dots. These are eagles  
3 that the applicant has observed on or near the project site.  
4 And I'm not certain whether these dots also reflect the  
5 eagles that were incidentally observed during the desert  
6 tortoise surveys and were reported on their CNDB database  
7 forms. They may very well be.

8           Nonetheless, you know, eagles are on the project  
9 site. Next slide, please.

10           In workshops and in recognition that there could  
11 be a risk to birds from exposure to solar flux, the  
12 applicant has proposed some supplemental mitigation or  
13 proposed a new condition of certification.

14           And we took a hard look at this. Their mitigation  
15 provides or recommends a one-to-one land acquisition,  
16 provides some conservation measures, including approximately  
17 \$300,000 for retrofitting existing facilities such as  
18 distribution lines, providing anti-perch units, things like  
19 that, and about a half million dollars for bird mitigation  
20 of various sources.

21           And they've also proposed to do a bird and bat  
22 plan, but in that approach, they've recommended not  
23 preparing an eagle conservation plan. And again we looked  
24 at this mitigation and we think there's value in it, but  
25 there's a couple things we wanted to pointed out is the

1 one-to-one land acquisition that they've proposed is not  
2 additional land acquisition. As suggested in their  
3 condition, it would be nested within existing mitigation.  
4 So it doesn't actually provide any additional offset.

5 We've already required or mentioned that the  
6 acquisition of lands for desert tortoise and other species  
7 would somewhat offset the habitat loss for this species. So  
8 again we didn't think it added value.

9 We had also proposed retrofitting existing  
10 facilities. So the funds proposed by the applicant are  
11 meaningful and they could be incorporated into existing  
12 conditions. But we thought it was very important to have an  
13 eagle conservation plan. We believe that the data suggested  
14 a real risk that birds will be lost during the life of the  
15 project and we think this is warranted. Next slide, please.

16 So these are some of our recommendations on this,  
17 is we believe our significance conclusions and mitigations  
18 are reasonable. This is a 30-year project and we believe  
19 the risk to solar flux, which we'll talk about a little bit  
20 later, is a real threat and that birds who fly into this  
21 could be lost or will be lost.

22 We believe it's based on the interpretation of  
23 data and we believe our proposed conditions of  
24 certification, including an eagle conservation plan, are  
25 warranted and are supported by the Department of Fish and

1 Wildlife and the U.S. Fish and Wildlife Service.

2 I'd like to conclude and, you know, leave the  
3 floor open for questions or we could proceed into  
4 discussions of solar flux or --

5 HEARING OFFICER CELLI: Go ahead, Commissioner  
6 Hochschild.

7 ASSOCIATE MEMBER HOCHSCHILD: Thank you for the --  
8 just a question on the survey methodology. So when a  
9 biologist goes out in the field to do a survey on tortoises  
10 or any of these other species, what is actually the  
11 methodology for that? I mean are they walking all five  
12 miles. Is it --

13 MR. HUNTLEY: There's different methodologies for  
14 different organisms. So, for example, if you're doing  
15 desert tortoise surveys, there is prescribed methodologies  
16 recommended by the Fish and Wildlife Service and the  
17 Department of Fish -- California Department of Fish and  
18 Wildlife. And basically the intent is to walk with  
19 experienced biologists familiar with ecology of the animal,  
20 the ability to detect tracks, signs, just scat or drinking  
21 pans and other things and then you walk in basically  
22 parallel transects ten meters apart.

23 Sometimes you walk closer if the ground is tough.  
24 And then you record all observations that you see, whether  
25 it's a tortoise above ground, whether it's a hole on the



1 ground, you investigate it.

2 What's important to note and it comes --

3 ASSOCIATE MEMBER HOCHSCHILD: Hold on a sec. Let  
4 me make sure I'm understanding. In ten -- so basically were  
5 people actually walking the entire --

6 MR. HUNTLEY: Yes, sir, they are very -- they are  
7 very expensive.

8 ASSOCIATE MEMBER HOCHSCHILD: Back and forth, back  
9 and forth until they cover all five square miles?

10 MR. HUNTLEY: Yes, sir.

11 ASSOCIATE MEMBER HOCHSCHILD: Wow. How long does  
12 it take to do that?

13 MR. HUNTLEY: Well, for example, you can probably  
14 cover -- I just did the math here the other day -- a square  
15 mile, 640 acres in -- with five people and I think about  
16 eight days or five days, something like that. You're  
17 walking about eight miles an hour if you're recording  
18 things. Sometimes you can walk faster if there's no sign,  
19 but you really don't want to walk too fast.

20 ASSOCIATE MEMBER HOCHSCHILD: So we have five  
21 square miles?

22 MR. HUNTLEY: Yes, sir.

23 ASSOCIATE MEMBER HOCHSCHILD: With five -- how  
24 long did it take to do that? How many people were involved?

25 MR. HUNTLEY: We didn't conduct the surveys. I

1 can -- the applicant can certainly answer that. I can do  
2 the math --

3 ASSOCIATE MEMBER HOCHSCHILD: I'm just -- just out  
4 of curiosity, how many days were spent on this survey or --  
5 whoever did that? For this tortoise, for example.

6 PRESIDING MEMBER DOUGLAS: I don't know if  
7 applicant wants to answer that or --

8 MR. HUNTLEY: We're going to hear that.

9 ASSOCIATE MEMBER HOCHSCHILD: Okay. Maybe we'll  
10 get to that. Okay. Okay.

11 MR. HUNTLEY: I have the report if you want to see  
12 it.

13 ASSOCIATE MEMBER HOCHSCHILD: Yeah. That's  
14 helpful. That's fine.

15 HEARING OFFICER CELLI: Thank you, Mr. Huntley.  
16 And now we'd like to hear -- does applicant have a  
17 PowerPoint as well?

18 MR. HARRIS: We don't. We have a couple slides  
19 that we've given to Mr. Battles that we use, so --

20 HEARING OFFICER CELLI: Okay.

21 MR. HARRIS: -- we'll go ahead and proceed --

22 HEARING OFFICER CELLI: I'd like to hear from the  
23 applicant next on their position with regard to the issues.

24 MR. HARRIS: Okay. Thank you very much.

25 Appreciate the opportunity. One very -- if I could have the

1 lights again, that would be really helpful.

2 HEARING OFFICER CELLI: Yeah. We can put that --

3 MR. HARRIS: Let's leave the lights on for the  
4 Committee and I'll struggle with that.

5 So -- we're fine. Thank you.

6 HEARING OFFICER CELLI: Actually we have -- I have  
7 that projection on our laptop here.

8 MR. HARRIS: It's important you see the exhibit,  
9 so I will -- I'll actually wear my glasses instead of  
10 putting them on my head.

11 Appreciate the opportunity to make our  
12 presentation. We're going to do as we did yesterday, more  
13 of a kind of loose direct testimony of the applicant's  
14 presentation of things. We've pretty much narrowed the  
15 issues. We can talk in more detail about any of these that  
16 you want to talk about, but we're going to focus really on  
17 desert tortoise issues and then also on the eagle issues  
18 moving forward, so --

19 There may be other things that -- just to warn my  
20 panel -- I may throw at you that came out of staff's  
21 PowerPoint. We had not seen that PowerPoint before today  
22 and I'd like to suggest to you that it suggests things or  
23 suggested the positions that we didn't suggest in moving  
24 forward. So I think I just want -- I think it's one of the  
25 parts of this process that's not working well is seeing

1 things new for the first time, so --

2 HEARING OFFICER CELLI: Let's mark that for  
3 identification. So with staff's exhibits, we were at --  
4 give me a sec. The last exhibit was Exhibit 328. So let's  
5 mark as 329 staff's PowerPoint on biology. And this way we  
6 know what it is in the record and staff can put it in when  
7 we put it in -- when we've taken evidence. Go ahead.

8 MR. HARRIS: Thank you. I'm going to take these  
9 in the same order as staff did, so I'm going to start with  
10 Dr. Alice Karl and, Dr. Karl, you're our desert tortoise  
11 expert and I think I'm just going to ask you to summarize  
12 your testimony and respond to any questions the Committee  
13 would pose to you. Go ahead, if you would, Dr. Karl.

14 DR. KARL: Sure. So staff and applicant agree  
15 that there are relatively few tortoises on the west side of  
16 the project. And actually in the last workshop where -- is  
17 it possible that I could get that slide? It's called  
18 Figure 3 and it's from Exhibit 69. There we go.

19 And does anybody by the way have a laser pointer  
20 in this room that I could use? All right. In lieu of that,  
21 then we'll just move forward.

22 MR. HARRIS: Dr. Karl, if you would direct --  
23 Mr. Battles will do his best with --

24 HEARING OFFICER CELLI: Actually I would prefer,  
25 Ms. Karl, why don't you go where Mr. Battles, use his

1 microphone, use his mouse, and then you can run the whole  
2 show from where he's sitting.

3 MR. HARRIS: She probably will need her computer  
4 and her other information.

5 HEARING OFFICER CELLI: Just for the purposes of  
6 this figure; otherwise it'll go crazy. So let's keep it  
7 organized. You know, it might -- we're dealing with  
8 their -- good. Thank you. Ms. Karl, can you just sort of  
9 give me a test on that mic.

10 DR. KARL: Yes. This work?

11 HEARING OFFICER CELLI: That's good. Thank you.

12 DR. KARL: Okay. So the applicant and staff agree  
13 that there are -- I believe -- correct me if I'm wrong,  
14 Christ -- that there are relatively few animals, for  
15 tortoises, for -- very little tortoise sign on the west side  
16 of the site. So that's in this area -- sorry. So that's in  
17 this area around here. Very few tortoises and very little  
18 tortoise --

19 HEARING OFFICER CELLI: For the record, you've  
20 drawn sort of a triangle showing the western and southern  
21 portion of the HH Seg site.

22 DR. KARL: That's correct. And the -- and in the  
23 last workshop, the applicant actually in their compensation  
24 argument, which is Exhibit 69, they actually proposed a  
25 compensation ratio for the southern area. So this area

1 around the southwest and then in -- and in the far west  
2 based on a variety of habitat features of 0.5 to 1. But in  
3 the more recent workshop, they agreed with staff that it  
4 was -- it could be considered tortoise habitat -- occupied  
5 tortoise habitat and they were willing to go one to one for  
6 this area.

7           So now the applicant is at a point of one to one  
8 for quite a bit of the site and 1.5 to 1 for the eastern  
9 part.

10           MR. HARRIS: Dr. Karl, can you briefly explain the  
11 factors that make that gray shaded area unique and why  
12 you've reached the conclusion you've reached?

13           HEARING OFFICER CELLI: And before she answers  
14 that question, we're interested in that, but for the record,  
15 we are looking -- where is this diagram to be found? What  
16 exhibit are we looking at?

17           DR. KARL: 69.

18           HEARING OFFICER CELLI: Exhibit 69 is --

19           DR. KARL: And Figure 3.

20           HEARING OFFICER CELLI: Figure 3. Thank you. Go  
21 ahead.

22           DR. KARL: So I think the current disagreement is,  
23 one, the compensation ratio and then, two, the division of  
24 where this ratio should occur. And habitat is not simply a  
25 division between a coarse grain shrub community which is

1 what staff has proposed. They propose three to one for  
2 Mojave Desert scrub, one to one for sulfur scrub. The green  
3 line -- it's kind of hard to tell on the wall, but the green  
4 line is the division between Mojave Desert scrub and sulfur  
5 scrub, sulfur scrub being west of this green line.

6           So as Chris said, it's about 50-50. And the  
7 habitat for desert tortoises includes soils, substrates,  
8 topography, hydrology, which species are there, how many  
9 species are there, what the species -- there's a variety of  
10 factors.

11           And so the applicant actually prepared -- they  
12 looked at and analyzed a variety of these variables for the  
13 site, and what they concluded is this map. And they looked  
14 at the results of the tortoise surveys which is important  
15 and so what they found was that in fact most of the  
16 tortoises are concentrated not just throughout the eastern  
17 area, not just throughout the entire creosote brush scrub or  
18 Mojave Desert scrub, but in this area along the eastern side  
19 where there are also a lot of washes.

20           And for a variety of reasons, tortoises like  
21 washes. And so this is where the tortoises are concentrated  
22 not throughout -- evenly throughout the entire Mojave Desert  
23 scrub.

24           The other thing is that tortoise density increases  
25 dramatically as one goes off site. There were two tortoises

1 found on site. There were two tortoises found on site, one  
2 here, one down here. There were three tortoises found in  
3 the 150 meter buffer along the east side off site. There  
4 were five tortoises found in the zone of influence transects  
5 even further east off site and while two to three to five  
6 doesn't sound like very much difference, the difference is  
7 enormous when you look at the acreage that was surveyed.

8           So for the site, it essentially lets us use that  
9 as one. That's your basis. There were 18 times as many  
10 tortoises given the acreage surveyed. It was only -- the  
11 buffer's only 265 acres on the east side, so if there's 18  
12 times as many tortoises in the buffer on the east side,  
13 there are 86 times as many tortoises in the zone of  
14 influence transects. That was only 95 acres, five tortoises  
15 found.

16           So the tortoise sign -- the tortoise density  
17 increases dramatically as one goes from the site off the  
18 site. And if you -- the numbers that are in all the  
19 documents are based on the Fish and Wildlife Service  
20 protocol and so that 3.8 tortoises or 13.81 includes the  
21 buffer and I have -- as a tortoise biologist, I have no  
22 problem using buffer animals as well, but I think we have to  
23 be careful because you also have to look at what the surveys  
24 show.

25           The surveys show that most of the tortoises



1 actually were off site, the density increased off site as  
2 you went further east.

3           And so you can't just assume that all of the  
4 tortoises on the east side are going to be on the site at  
5 any point in time. And they may and the tortoises that are  
6 on site may be off site at another point in time.

7           The -- so the densities -- if you're looking at  
8 per unit area -- and that's what density truly is. It's not  
9 the total number. It's total number per unit area. So on  
10 the project site, it's 0.7 tortoises per unit area per  
11 square mile.

12           In the buffer, it's 14.6 per square mile. And  
13 then it's even more obviously in the zone of influence  
14 transects further east.

15           So in summary, I think we just have to look at  
16 what is the biologically relevant division where the  
17 compensation ratio should occur. Should it occur in this  
18 entire Mojave Desert scrub/sulfur scrub division which is  
19 what staff would like to use. That's really a very gross  
20 grain reconnaissance level division.

21           PRESIDING MEMBER DOUGLAS: Excuse me. We're -- we  
22 distracted staring at the map and trying to make sure that  
23 we understand it. The green line that you showed us is the  
24 salt brush --

25           DR. KARL: -- division, correct.

1           PRESIDING MEMBER DOUGLAS: And tell me again what  
2 the red line is that's drawn --

3           DR. KARL: Okay.

4           PRESIDING MEMBER DOUGLAS: There, that one.

5           DR. KARL: The red line was a combination of where  
6 the tortoises were concentrated and the more concentrated  
7 hydrology and the sandier soils. Now, the sandier soils --  
8 it's this QA that you'll see on the map. What that is is  
9 that is alluvium which is more recent than the entire basin  
10 upon which it's deposited and it's been deposited there  
11 like, you know, 4,000 years ago.

12          PRESIDING MEMBER DOUGLAS: Okay.

13          DR. KARL: But be that as it may, it's not  
14 homogenous throughout and the tortoises are concentrated  
15 east of the red line.

16          PRESIDING MEMBER DOUGLAS: All right. That's  
17 good. And then the little blue lines are washes; is that  
18 correct or --

19          DR. KARL: Where there are more washes.

20          PRESIDING MEMBER DOUGLAS: Where there are more  
21 washes.

22          DR. KARL: Yes. And also it's not just more  
23 washes. More washes mean different species.

24          PRESIDING MEMBER DOUGLAS: Right.

25          DR. KARL: It means a different concentration of

1 species.

2 PRESIDING MEMBER DOUGLAS: Right.

3 DR. KARL: It means more robustness and that  
4 includes annuals as well as perennials.

5 PRESIDING MEMBER DOUGLAS: Got it.

6 DR. KARL: And so the division -- the question  
7 here is do you -- is it appropriate to use a more coarse  
8 grained division in light of these more detailed data  
9 including the actual tortoise surveys which why would you  
10 want to ignore those when they're done and they provide not  
11 only incidental take limits or estimates, but they provide  
12 an estimate of where tortoises are on the site, what the  
13 impacts are going to be, you know, and includes mitigation,  
14 you know, what the mitigation should be.

15 And so we want to consider -- I would think our  
16 biologists would want to consider the actual results of the  
17 surveys and so given that, where do we want to look at the  
18 dividing line and it seems to me that this is a reasonable  
19 dividing line, the purple line.

20 Now something that was brought up in the workshop  
21 is well, if we go out there, we're going to find different  
22 burrows or different use. Truly a survey is a snapshot in  
23 time. If you go out there in two years, it's going to  
24 look -- you will find different burrows. Some of the other  
25 burrows that are there now will disappear. They're eroded

1 away. You'll find new burrows, but you won't find a  
2 different relative concentration.

3           Adult tortoises -- probably about every decade,  
4 one in a hundred adult tortoises changes its home range  
5 dramatically. So they're pretty tight with their home  
6 ranges. That's not true of immature tortoises. Immature  
7 tortoises are like teenagers. They run off and they're  
8 everywhere and they behave badly and so --

9           But adult tortoises, the concentrations aren't  
10 going to change a lot and so this is where tortoises are  
11 concentrated in this area. There's a reason for that and  
12 that's not going to change. The actual burrow locations may  
13 change. The concentrations are not.

14           And so again where do you want to draw the  
15 divisions and then is three to one really appropriate for a  
16 density that's less than one tortoise per square mile when  
17 most of the tortoises probably live off site and I probably  
18 wouldn't necessarily say that if it hadn't also been shown  
19 that in the zone of influence further east there were even  
20 more tortoises.

21           So, you know, I question three to one in light of  
22 this low density on site.

23           PRESIDING MEMBER DOUGLAS: Can I ask another  
24 question while we're looking at this map.

25           DR. KARL: Sure.

1           PRESIDING MEMBER DOUGLAS: I'm kind of struggling  
2 with the notion of so few tortoises found on site and so  
3 many dots representing burrows. Can you give us some sense  
4 of what percentage of burrows seem to be potentially  
5 occupied versus not or, you know, do you have that -- or you  
6 know, what percentage of burrows seem to be obviously old?

7           DR. KARL: In the -- the way that the surveyors --  
8 it was reported, they only reported burrows that were active  
9 tortoise burrows at the time. This was in 2011.

10          PRESIDING MEMBER DOUGLAS: Okay.

11          DR. KARL: And it took them approximately a month,  
12 by the way, to do the surveys.

13          PRESIDING MEMBER DOUGLAS: Okay.

14          DR. KARL: So it's -- so they didn't include, you  
15 know, old burrows, I assume. They said active burrows.

16          Tortoises have from 2 to 20 burrows a year. They  
17 occupy many of the same burrows every year and they dig new  
18 burrows every year. Their burrows erode. Burrows are long,  
19 short, temporary burrows, you know.

20          That's why -- you know, if you look at -- further  
21 down in the site in this area, the reason why tortoise --  
22 there's very little tortoise sign in this area is not  
23 because of disturbance. It's not because of weediness. The  
24 only reason we use the Halogeton, which is a weed -- the  
25 only reason we use that as an indicator is because it likes

1 moist, fine soils.

2           Fine soils hold moisture longer and Halogeton  
3 loves it. It also is very tolerant of saline conditions.

4           MR. HARRIS: Alice, when you're saying -- this is  
5 Jeff Harris. When you're saying in this area, for the  
6 transcript, could you talk about -- refer to this as the  
7 southern portion of the --

8           DR. KARL: The southern portion.

9           MR. HARRIS: However you want to refer to it,  
10 but -- colors on the map, but just be aware that you need to  
11 indicate which areas you're talking about for the  
12 transcript.

13           DR. KARL: Okay. So for the transcript, it's the  
14 QBF area below the blue line.

15           MR. HARRIS: -- soil types --

16           DR. KARL: And the soil types are very -- they  
17 have a high clay content. It's the old basin. It's the  
18 very ancient basin and it has a high clay content, high soil  
19 content. They hold -- they're very fine. They hold water a  
20 long time.

21           It's not good for tortoises because they stay  
22 moist a long time. That's not good for tortoises to be in  
23 wet conditions. Sometimes they're flooded. Often these  
24 basins with enough rain will also stay flooded for a while.

25           In addition, they're very hard to dig in when it's

1 dry. There's a lot of clay. So that's why -- and this is  
2 not atypical. This is a common situation that we see.  
3 Tortoises just don't live where there's a high clay content  
4 and you get a lot of flooding or inundation in the soils.

5           If there's a burrow, I don't know what this burrow  
6 looks like. I looked it up in the surveyor's -- in a survey  
7 report. I couldn't identify about this burrow in  
8 particular, whether a short burrow, long burrow, temporary,  
9 who knows.

10           You know, tortoises clearly use this part of the  
11 site. There's two tortoises down here. And that's  
12 probably -- that's in that same habitat I believe and so,  
13 you know -- and there's two burrows up here off site that,  
14 but still, you know, it's in that same habitat. So there's  
15 some use of the site and I think it's --

16           MR. HARRIS: So -- I'm sorry. Go ahead.

17           DR. KARL: Go ahead.

18           MR. HARRIS: So sticking with the soil types, can  
19 you talk about the other two regions in terms of soil types  
20 as well just to -- that's really helpful to hear about the  
21 clay and --

22           DR. KARL: Sure. So this is -- so this QA soil  
23 type basically is just two different soil types. There's  
24 the QB and -- or QBF and then there's the QA and the  
25 difference between QA1 and QA2 is just a time when it was

1 deposited.

2 But the QA soils are from -- are just alluvium  
3 that has flowed down. Some of it's -- flowed down mostly  
4 because of drainages. It's sandier soils. It's much  
5 sandier soils. It's not loose sandy as in, you know,  
6 aeolian sands, very loose sand dunes. It's not that kind of  
7 sand. It's just got high sand content.

8 MR. HARRIS: Okay. And there's been no -- the  
9 last area up there, forget whether it's QA or QB --

10 DR. KARL: I'm sorry.

11 MR. HARRIS: I guess kind of the reddish colors in  
12 the eastern portion.

13 DR. KARL: Eastern portion, yeah. So this is the  
14 most -- it's the QA -- QA1 is the more recent deposition  
15 and -- of the alluvial flows, it's just the more recent  
16 deposition. Obviously there's QA1 in the north part of the  
17 soil -- north part of the project too, but there aren't that  
18 many tortoises there.

19 So there are also -- you know, there are some  
20 drainages there. There aren't that many tortoises there.  
21 There may be some other reasons why there aren't tortoises  
22 there.

23 MR. HARRIS: Back to the question of ratios, can  
24 you talk about which ratios for which of the particular soil  
25 types recommended.



1 DR. KARL: So the applicant recommended for the  
2 portion below -- originally recommended for the portion  
3 below the blue line and in the west -- west of the blue  
4 line, 0.5 to 1. They've since agreed to one to one for  
5 fully mitigated because it is used by tortoises.

6 And then for the -- everything between that blue  
7 line and west of the purple line is -- the applicant  
8 recommended one to one and then one and a half to one  
9 because of the low densities, less than one tortoise was  
10 east of the purple line. Does that answer your question?  
11 Okay.

12 HEARING OFFICER CELLI: Go ahead, Commissioner.

13 ASSOCIATE MEMBER HOCHSCHILD: Yeah. A few quick  
14 questions here. What's the life span of a desert tortoise?

15 DR. KARL: Well, it depends on where you are in  
16 the desert. Some places in the desert, it's not very long  
17 because, for instance, there's like -- their life span in  
18 captivity, over 80 years.

19 ASSOCIATE MEMBER HOCHSCHILD: Over 80 years?

20 DR. KARL: Over 80 years. But in the desert --  
21 the desert has -- you know, it's -- for instance, in some of  
22 the southern Mojave Desert areas right now, this is the  
23 second spring with no forage and no summer rain and a lot of  
24 tortoises will die this year.

25 ASSOCIATE MEMBER HOCHSCHILD: Right.

1 DR. KARL: So tortoises that might be 40 or 50  
2 will be dead this year -- years of age. So -- but in the  
3 wild, you typically -- you commonly see tortoises that are  
4 probably older than you.

5 ASSOCIATE MEMBER HOCHSCHILD: Okay. And the  
6 designation, this is an endangered species or a  
7 threatened -- what --

8 DR. KARL: It's a threatened species, state and  
9 federally threatened.

10 ASSOCIATE MEMBER HOCHSCHILD: State and federally  
11 threatened. Okay. And then finally do you happen to know  
12 or anybody else know offhand what is the total acreage in  
13 the buffer zone? It's a one-mile-wide zone that spans the  
14 circumference of the area. Is that larger -- is it more  
15 than 3,300 acres or --

16 DR. KARL: Well -- I'm not sure. If on the east  
17 side in the Nevada portion, it's about -- it is 265 acres.  
18 I'm not sure what it is on the west of the site.

19 ASSOCIATE MEMBER HOCHSCHILD: Does anybody else  
20 happen to know the cumulative total of the buffer zone? No?

21

22 MR. HARRIS: It is in the documentation, but we  
23 wouldn't get that --

24 ASSOCIATE MEMBER HOCHSCHILD: Okay. Yeah.

25 MS. BELENKY: I just wanted to clarify. It's not

1 a mile wide, the buffer.

2 ASSOCIATE MEMBER HOCHSCHILD: It's not a mile  
3 wide. Correct --

4 MS. BELENKY: No.

5 DR. KARL: 150 meters.

6 ASSOCIATE MEMBER HOCHSCHILD: It's 150 meters?

7 DR. KARL: Meters.

8 ASSOCIATE MEMBER HOCHSCHILD: 150 meters wide  
9 around the whole -- okay. Thank you.

10 MR. HARRIS: Dr. Karl, anything else for the  
11 Committee? Did you cover it all, you think?

12 MR. HUNTLEY: Commissioners, are we going to have  
13 an opportunity to perhaps respond to Dr. Karl?

14 PRESIDING MEMBER DOUGLAS: Yes.

15 MR. HARRIS: Well, can I finish our presentation  
16 like you all did --

17 MR. HUNTLEY: Yes, sir. I'm just asking.

18 PRESIDING MEMBER DOUGLAS: Yes. Please finish  
19 your presentation.

20 MR. HARRIS: Okay. Thanks. We're going to switch  
21 over now to Dave Phillips -- about eagle issues. Dave, I  
22 know you'll also be on the avian panel later, but I want to  
23 talk a little bit about the staff's recommendation that we  
24 have approval of an eagle conservation program or receipt of  
25 an eagle take program.

1           So can you describe that program. First, is that  
2 a state or federal program?

3           MR. PHILLIPS: That is a federal program.

4           MR. HARRIS: Federal program. And is it also a  
5 voluntary program at the federal level?

6           MR. PHILLIPS: Yes.

7           MR. HARRIS: Okay. You've had a lot of experience  
8 with these --

9           MS. BELENKY: Objection. I'm not sure that we  
10 completely agree and --

11          MR. HARRIS: That's fine. You'll have --

12          MS. BELENKY: -- that's like a legal question.  
13 That's not a biologist question. Thank you.

14          HEARING OFFICER CELLI: Noted. Let's hear from  
15 the expert, so get the expert talking, Mr. Harris.

16          MR. HARRIS: I'm going to do my best --

17          HEARING OFFICER CELLI: Thank you.

18          MR. HARRIS: Thank you.

19          MR. PHILLIPS: Actually I can comment if it is a  
20 legal question, the answer is quite simple. It is expressed  
21 in the Fish and Wildlife Service guidance very clearly that  
22 it is a voluntary process to go through -- to -- either  
23 prepare an eagle conservation plan and/or, you know, proceed  
24 to attempt to authorize take.

25          MR. HARRIS: Yeah. Okay.

1 MS. BELENKY: But take is -- I'm sorry. I don't  
2 think this is the right place for this debate and I want  
3 that stricken from the record because I don't think it's  
4 appropriate for this expert to be opining on this question.  
5 It's a biology panel --

6 HEARING OFFICER CELLI: Okay. So --

7 MS. BELENKY: -- biology expert.

8 HEARING OFFICER CELLI: Overruled. And  
9 Ms. Belenky, I'm just going to ask, because as we explained  
10 up front, we want to hear from these experts, and if you  
11 have an objection, that's fine, but I'm going to ask that  
12 you refrain from speaking objections. Just tell us what the  
13 legal objection is and we'll rule on it.

14 In this case, the motion is denied. Continue,  
15 Mr. Harris, please.

16 MR. HARRIS: Can you briefly help us understand  
17 the terms eagle conservation plan versus an eagle take  
18 permit?

19 MR. PHILLIPS: Sure.

20 MR. HARRIS: A little closer to the mic, Dave.

21 MR. PHILLIPS: And eagle conservation plan is a  
22 process -- or it's a document that could be developed in  
23 coordination with the Fish and Wildlife Service to  
24 understand risk of eagles posed by a project. The guidance  
25 that is currently available on that is solely based on wind

1 projects.

2           The process does involve assessing that risk,  
3 estimating the level of potential take during operation of a  
4 project. If risk is present, it documents or demonstrates  
5 the advanced avoidance measures, advanced conservation  
6 measures that would be implemented to reduce that risk and  
7 then also mitigate any take that might be predicted.

8           It's a document that would be used really to --

9           MR. HARRIS: Can I ask what the conference is  
10 about over there. Counsel's --

11           HEARING OFFICER CELLI: Yes. Mr. -- please have a  
12 seat at counsel table. There's no conferring with your  
13 witness while they're under oath at this time. Thank you  
14 for taking your seat. I don't know what they conferred  
15 about, but let's just go on with the testimony.

16           MR. HARRIS: I'm not suggesting anything  
17 nefarious. I just wanted to make sure that we're all on the  
18 same page. So thank you. You had some experience with the  
19 overall federal eagle program, Mr. Phillips?

20           MR. PHILLIPS: I do. I -- actually I worked for  
21 the past five years in -- for CH2MHill primarily working on  
22 resolving and understanding wildlife conflict issues with  
23 renewable energy projects, wind and solar. A large portion  
24 of that has been related to wind and eagles particularly and  
25 for the last three years since the 2009 rule was passed to

1 theoretically permit take.

2 MR. HARRIS: Okay. Thanks. And then I guess one  
3 last question. In that experience, have you had the  
4 situation develop where a state agency has required this  
5 kind of permit -- permit activity. I'm sorry.

6 MR. PHILLIPS: To my knowledge, I'm not aware of  
7 any state level permit that has required preparation of an  
8 eagle conservation plan that would be approved by the U.S.  
9 Fish and Wildlife Service.

10 MR. HARRIS: Thank you. I've got other witnesses  
11 who are available to talk about ground water dependent  
12 vegetation. I'm not going to put anything direct on about  
13 that and the rest of the panel is also available to answer  
14 questions about any of the other issues, but I'm going to go  
15 ahead and stop there.

16 HEARING OFFICER CELLI: Thank you, Mr. Harris.  
17 We're going to have to go back because we didn't hear from  
18 all of the experts. I'd like to -- I wonder if we can get a  
19 little more light back in the room. Whatever lights were  
20 turned off for the projector, now we can turn them back on  
21 because I guess we're done with that.

22 And I'd like to open up the discussion. We were  
23 talking about desert tortoise. Staff made a presentation.  
24 Applicant made a presentation.

25 PRESIDING MEMBER DOUGLAS: Staff wanted a chance

1 to speak to that and then we should hear from other experts  
2 as well.

3 HEARING OFFICER CELLI: Okay. So staff with  
4 regard to mitigation that Ms. Karl discussed.

5 MR. HUNTLEY: Staff would like to respond kind of  
6 to her general comments about use to the site by tortoise,  
7 the location of the burrows, the assumptions made for their  
8 approach to mitigation.

9 HEARING OFFICER CELLI: Please do.

10 MR. HUNTLEY: And would it be possible for us to  
11 go down and use the mouse. That way we could show you where  
12 we're talking about?

13 PRESIDING MEMBER DOUGLAS: All right. Go ahead  
14 and use the mouse and let's keep the lights dim for a little  
15 longer.

16 MR. HUNTLEY: Thank you.

17 HEARING OFFICER CELLI: Actually, Mr. Arnold, I'm  
18 going to want you to have your own microphone because you  
19 may want to cut in at some point. So let's -- I want to  
20 make sure that you continue to keep your microphone next to  
21 you, Mr. Arnold, and then Mr. Huntley can use Mr. Battles'  
22 microphone --

23 MR. ARNOLD: I don't believe -- that was --

24 HEARING OFFICER CELLI: Tony can fix it. Start  
25 speaking into that one. Thank you.



1 MR. HUNTLEY: Thank you, sir. Staff reviewed the  
2 proposal submitted by the applicant which discusses and  
3 characterizes the site kind of in a soils-based approach and  
4 in fact we had lively debate on the matter.

5 We went to the site to inspect it, to ground truth  
6 it in a sense and try to get a sense of how it made sense or  
7 not. There's a couple important things. One is the  
8 clusters of tortoise burrows here are just that. They are  
9 clusters of burrows. They found tortoise scat. You can see  
10 the little squares, tortoise scat. Tortoises are clearly  
11 here.

12 But it seems that Dr. Karl is operating on the  
13 assumption that these animals never range out away from  
14 those clusters. Desert tortoise have variable home ranges  
15 and they can range from, you know, a handful of acres to,  
16 you know, several hundred acres. In fact some tortoises  
17 have ranges of over a square mile. And tortoises also move  
18 periodically.

19 So we didn't want to dismiss this habitat where  
20 I'm running the mouse in this creosote brush scrub area  
21 because we are operating on the assumption that these  
22 animals are foraging down these drainages and in this  
23 creosote brush scrub habitat. The area supports five  
24 variety of forage that's suitable for these species and  
25 there's no reason that desert tortoises won't move down

1 through these areas.

2           Recognizing that tortoise burrows do change, staff  
3 has identified -- there's a new tortoise burrow here. We  
4 found another tortoise burrow there just during our last  
5 surveys and --

6           HEARING OFFICER CELLI: And when you say here and  
7 there, for the record --

8           MR. HUNTLEY: Where the mouse is in the lower  
9 right-hand quadrant kind of about a half mile up in this  
10 section. There's actually a burrowing owl and a tortoise  
11 burrow there and --

12           HEARING OFFICER CELLI: And the record should  
13 reflect you're in the southern portion of the site on the  
14 map looking where it says solar plant 2 in the bottom  
15 right-hand corner.

16           MR. HUNTLEY: Yes, sir. Directly up from the two  
17 tortoise observations that were made during their surveys.  
18 But I think what's important here is we do have a fully  
19 mitigate standard and we tried to accommodate the fact that  
20 fewer tortoises are here, yet there's tortoise burrows right  
21 here. There's tortoise burrows right there.

22           This area was encapsulated within our one to one.  
23 We thought -- there was not a lot of tortoises here. We  
24 felt it was appropriate to mitigate it at that one-to-one  
25 ratio. It was extremely -- while there was not many

1 tortoises there, we felt the one-to-one ratio would fully  
2 mitigate that.

3           What's important to remember in these areas is  
4 this -- there's nothing functionally wrong with this  
5 habitat. So desert tortoises could range and forage here at  
6 any time. More importantly, the zone of influence surveys  
7 are a single transect that run 2-, 4-, 600 meters out.  
8 They're only a snapshot of what's here.

9           So the fact that they found more tortoises within  
10 this buffer area here is a good indication that, you know,  
11 the site does support a fair number of tortoises. But again  
12 it seems to me to ignore the fact that these tortoises range  
13 all through this area and there's -- at any given time  
14 tortoises were clearly moving into this habitat.

15           There are burrows here. There's a burrow there.  
16 There's burrow in these locations and we don't know what the  
17 home ranges are. They may present this way. They may  
18 present that way. But it's clearly functional desert  
19 tortoise habitat.

20           And to recommend replacing functional, occupied  
21 desert tortoise habitat at a one-to-one ratio does not allow  
22 us to fully mitigate under SESA and we have an obligation to  
23 do so.

24           This area here, we feel is being utilized by  
25 desert tortoise.

1 HEARING OFFICER CELLI: And when you say this area  
2 here, can you describe it --

3 MR. HUNTLEY: I'm sorry.

4 HEARING OFFICER CELLI: -- for the record.

5 MR. HUNTLEY: The upper area QA, there's burrows  
6 in this area. The habitat, there's nothing functionally  
7 wrong with it. It's got a broad variety of annual plants.  
8 It's not heavily disturbed. We believe that our approach to  
9 mitigation for the creosote brush scrub is warranted.

10 MS. CHAINEY-DAVIS: It's not only --

11 HEARING OFFICER CELLI: One moment, Ms. Karl. Let  
12 staff finish. Go ahead. Ms. Chainey-Davis?

13 MS. CHAINEY-DAVIS: Ms. Chainey-Davis, yes. The  
14 habitat to the north and to the south is not only  
15 functional, it's identical to the habitat where the burrows  
16 are clustered. So there are virtually no differences in the  
17 habitat type between the area that they've delineated as  
18 that which they're willing to mitigate for one and a half to  
19 one and that that they are not.

20 MR. HUNTLEY: Another comment that Dr. Karl made  
21 was that tortoises are probably not in this area because --  
22 and I'll be careful not to put too many words in your  
23 mouth -- but the area is more prone to flooding and  
24 tortoises -- the soil is too wet. There are certainly areas  
25 that pond and hold water for a short period of time, but

1 there are certainly areas that we found that are not within  
2 those areas and the area does not pond to a level that would  
3 preclude animals from utilizing this area.

4           There could be any number of reasons why the  
5 distribution of tortoises is lower here. We do believe  
6 there's a difference in habitat and because of annual  
7 flowers and things that are found here, we felt this habitat  
8 warranted a higher protection. It was also based on the  
9 number of tortoises and based on the adjacency.

10           Animals that are here can range in here at any  
11 given time. An important consideration with tortoise  
12 surveys are also that at any given time, even if the  
13 tortoises are all above ground, the observer sees them only  
14 about 50 percent of the time. And that's why we're left  
15 with making estimates and using formulas to predict the  
16 level of tortoises on a site.

17           We don't know how many tortoises will actually be  
18 on the project site and Energy Commission projects do have a  
19 record of finding more tortoises on than -- after the  
20 surveys have been completed. And so we're providing our  
21 best estimate of the animals that we think could be on the  
22 project or be affected by it.

23           MR. HARRIS: Mr. Celli, Jeff Harris. Ms. Karl  
24 wanted to -- far away from some of these points. It'd be  
25 nice to -- when she raises her hand to have her have an

1 opportunity to respond before you move to the --

2 HEARING OFFICER CELLI: That's right, but I was  
3 going to let staff finish and then take Ms. Karl's  
4 questions.

5 MR. HARRIS: But finish each point or finish the  
6 entire --

7 HEARING OFFICER CELLI: Well, he -- I believe he  
8 just finished a point. Now it's time of Ms. Karl to respond  
9 and then I'd also like to hear from Ileene Anderson and the  
10 other witnesses as well. So go ahead, Ms. Karl.

11 DR. KARL: I think that -- with all due respect, I  
12 think that you have to be very careful about saying this is  
13 functionally just as good. You don't know that. It may  
14 look -- excuse me. It may look the same to you, but you're  
15 not a tortoise and if it was functionally just as good,  
16 tortoises would probably be there.

17 So there are many times -- I've been studying  
18 tortoises for 35 years. The habitat -- I did my master's  
19 thesis on habitat associations in Nevada. Plus I've been  
20 looking at this. I'm working on habitat model right now.

21 Habitat is very important to me and -- but I -- as  
22 much as I study tortoises, I can't tell you every reason why  
23 they are where they are. And so I think it is a little  
24 elitist of us to say it looks the same to us and -- because  
25 tortoise -- animals are distributed for a variety of reasons

1 and so I think you have to be very careful about it and you  
2 have to look at where they actually are distributed. That's  
3 point one.

4 Point two to your point two, I'm happy -- Carol  
5 has to talk now. I'm happy to talk with her.

6 HEARING OFFICER CELLI: Well, I think I would -- I  
7 appreciate your comments. I think that that probably is  
8 true in the inverse and now we're getting to an area where a  
9 lot of what is likely to come is the sort of thing that's  
10 going to show up in the attorney's briefs.

11 MR. HARRIS: I don't know anything about habitat,  
12 so this will not be in my brief. It should come from the  
13 expert.

14 HEARING OFFICER CELLI: We -- but what -- I think  
15 we understand the two positions. Ms. Karl says this is  
16 where they are, this is where they've been found, these are  
17 her reasons why she doesn't expect to see them in these  
18 other areas outside that ring or whatever we're going to  
19 call that red line.

20 MR. HARRIS: If we could let her finish --

21 DR. KARL: Yeah, I don't expect to see many,  
22 Commissioner Celli and just based on what I've seen here and  
23 I mean if you look at the darker areas, there essentially  
24 are -- there's one burrow on -- three -- there's 14 in the  
25 area west of the -- 14 to 17, something like that, in the

1 area west of the purple line and there's over 50 in that  
2 area with the purple line. Those are just burrows alone.

3 Certainly tortoises obviously use some of that  
4 area and they may come down and use the washes and forage in  
5 that area. Of course they probably do, but it doesn't  
6 appear to be based on the use of the site and burrows and  
7 scat are a very good indicator of where tortoises  
8 actually -- it's the core use areas.

9 It doesn't mean that there aren't peripheral areas  
10 that they use. Of course they do. But they also have core  
11 use areas.

12 The other thing I wanted to mention is that,  
13 Chris, the zone of influence transects are only -- and  
14 that's where it's important. They went out to a mile. And  
15 yes, there are only one -- each transect is only 30 feet  
16 wide, but that resulted in 95 acres of surveys and five  
17 tortoises were found.

18 So that is significant that there were so many  
19 tortoises found on the zone of influence transects to the  
20 east of the buffer area and so few acres surveyed.

21 HEARING OFFICER CELLI: Thank you.

22 Ms. Chainey-Davis, go ahead.

23 MS. CHAINEY-DAVIS: By your own admission, you say  
24 that we really don't know why tortoises area where they are.  
25 So in a sense, you're agreeing with me that there is



1 potential for the tortoise to occur in a functionally  
2 identical habitat to the north or to the south. Just  
3 because the -- the burrows are clustered where they are  
4 today, that's not necessarily an indication of where they'll  
5 be clustered 10 or 15 or 20 years from now.

6 DR. KARL: That's -- no, that's not true. Like I  
7 said, tortoises tend to change their home ranges about --  
8 you know, one in a hundred tortoises changes about every  
9 decade.

10 So you'll probably -- in five years, you would  
11 probably see relatively the same concentrations of burrows.  
12 Same areas would have the higher number of burrows. If  
13 there were more tortoises in -- you know, in the future than  
14 there would possibly be, you know, more burrows all over the  
15 entire site, but they would still be relatively the same.

16 And we don't know everything about why tortoises  
17 live where they live. That's all I'm saying is we -- we  
18 know some things. We just don't know it all. And we can't  
19 go out there as humans and say well, it looks the same to  
20 us. We can only be human.

21 HEARING OFFICER CELLI: I'd like to hear from  
22 Ms. Anderson. Would you grab a microphone, please. We'd  
23 like to hear what your point of view is on this discussion  
24 regarding desert tortoise.

25 MS. ANDERSON: Yes. This is Ileene Anderson with

1 the Center for Biological Diversity and -- well, I wanted to  
2 point out a couple of things before I enter into comments  
3 specifically on the --

4 HEARING OFFICER CELLI: I'm going to interrupt for  
5 one minute. Where did Mike Battles go? Mike, this map is  
6 not on WebEx. You have permission right now -- in other  
7 words, you have presenting rights on that computer, but this  
8 map is not on WebEx. It's just on the projector. So it  
9 needs to get -- be opened up in the WebEx.

10 MR. BATTLES: -- have presentation rights --

11 HEARING OFFICER CELLI: Yes, you have presentation  
12 rights right now. Great. Thank you. You could stay there  
13 if you wanted to, Mr. Huntley. I don't care. I just wanted  
14 to make sure that the people on the WebEx could see what  
15 we're talking about.

16 Just for the sake of the people on the phone,  
17 this -- what you're looking at now is what the map is that  
18 everybody has been discussing up till now. Go ahead,  
19 Ms. Anderson.

20 MS. ANDERSON: Great. Thank you. Just a couple  
21 of points to sort of frame some of our concerns. One, this  
22 particular area of California that has desert tortoise in it  
23 is sort of the northernmost range of the desert tortoise in  
24 California and so in that respect, we believe this makes it  
25 a special area for desert tortoise in California.

1           And then also one of the things that I've been --  
2 was in my testimony but I want to reiterate here and that  
3 has been a frustration to us is that, you know, clearly on a  
4 map that shows where the concentration of desert tortoise  
5 are on the eastern side of the project.

6           And we've asked for an alternative that would  
7 actually site the project to avoid those areas, i.e., the  
8 desert tortoise avoidance alternative.

9           Not only that, I believe it would also take care  
10 of avoiding impact to state waters which I think would be a  
11 benefit to the project as well as to the resources. So I  
12 wanted to make sure to bring that up as some of our  
13 concerns.

14           With regards to the mitigation rate -- well, if  
15 avoidance can't be done, which we think is the way to  
16 proceed with the proposed project, there's still likely  
17 going to be impacts to desert tortoise and the notion of  
18 looking at desert tortoise and what's happening with the  
19 populations which unfortunately are still in decline  
20 throughout the range of the species not only in California  
21 but elsewhere, the notion is that we have these sort of  
22 large scale visions of how to help the species survey and  
23 ultimately of course our goal is to recover the species.

24           And this project site has actually been modeled as  
25 very good desert tortoise habitat by the USGS. Not only are

1 they looking specifically on the ground like the details and  
2 we're addressing here today of well, this part's desert  
3 tortoise habitat, but this isn't as good desert tortoise  
4 habitat, the USGS is looking at it on sort a larger scale or  
5 I guess smaller scale vision of, you know, how is this  
6 serving the population of desert tortoise as a whole and  
7 including in their modeling the opportunity for desert  
8 tortoise to move across the landscape as in corridors and  
9 linkages.

10           And so the notion that this area not only is an  
11 occupied desert tortoise habitat which we've heard here  
12 today, but also provides the opportunities for desert  
13 tortoise to move across the landscape and clearly with the  
14 project going in that's going to put a big chunk of habitat  
15 that they're going to bump up against a fence when they do  
16 try to move across the landscape, that they're not going to  
17 be able to flow as freely.

18           And so, you know, my -- why we suggested initially  
19 five-to-one mitigation is just for that reason, that this is  
20 important habitat not only for on-site tortoises but also  
21 for the population as a whole. And so I think that the  
22 preview thing is to have a much higher mitigation ratio.

23           Not only that, but with regards -- and this goes  
24 for all species, but I'll say specifically for desert  
25 tortoise here, what we're looking at is a limited finite

1 amount of habitat out there now. And what we're doing is  
2 now carving up the pie and even with mitigation, it's a net  
3 loss of habitat for these species.

4           So we're slicing the pie smaller and smaller and  
5 smaller and the notion is if we are going to -- if we do  
6 care about our state reptile, because not only is it a  
7 listed species, but it's also California's state reptile --  
8 the notion is that we need to really make some efforts to  
9 try to help these guys not only survive and deal with the  
10 climate change that I think tortoises are responding to and  
11 hence we're seeing them moving around the landscape, but  
12 also to help them recover, to regain their population levels  
13 to sustainable levels because, as I said, all we've seen  
14 since the populations have been listed and therefore  
15 monitored is declines.

16           So those are some of the issues that I have with  
17 the mitigation. But as long as I'm talking, I want to get  
18 some of the other issues that we have out there on the table  
19 or I'll wait, whatever.

20           HEARING OFFICER CELLI: Let me just ask this  
21 question.

22           MS. ANDERSON: Yeah.

23           HEARING OFFICER CELLI: You're recommending a  
24 five-to-one ratio. You've heard the discussion between  
25 applicant and staff and you understand that this map that

1 we're looking at, Exhibit 69, Diagram 3, shows in gray sort  
2 of the least likely habitat, this middle yellow striped is  
3 sort of better habitat, useful habitat, and then the habitat  
4 on the right -- on the east end of the site is best habitat  
5 and there's discussion about splitting out the ratios  
6 according to these sort of habitat zones.

7 MS. ANDERSON: Um-hmm.

8 HEARING OFFICER CELLI: And I wanted to -- you're  
9 not suggesting five to one for the entire site?

10 MS. ANDERSON: I am because of the importance for  
11 the -- not only the occupied habitat, where the tortoises  
12 are actually living on the site and yeah, there -- they  
13 appear from the snapshot in time of the surveys that they  
14 like that eastern side of the site better right now, but the  
15 notion is, is that tortoises do run the landscape and that  
16 they're moving across the site.

17 HEARING OFFICER CELLI: Okay. I just wanted to  
18 see if you had a position in terms of the two other  
19 parties', staff's and applicant's, differentiation, but you  
20 don't. You're basically --

21 MS. ANDERSON: I think that they're both  
22 inadequate. That's my position.

23 HEARING OFFICER CELLI: Thank you. Go ahead. You  
24 were going to say -- go ahead.

25 MS. ANDERSON: Yeah. I think the other two sort

1 of large holes that I am -- continue to be frustrated by in  
2 this process is that desert tortoise are proposed that are  
3 on site when they go through to do clearance surveys are  
4 proposed to be translocated, there's no translocation plan.  
5 We don't know where they're going.

6           The final staff assessment suggested that they  
7 will be moved to assure that lands will be -- the lands that  
8 they're moved to will be managed for conservation so the  
9 potential threats from future impacts are precluded.

10           And as far as I know, that would only mean  
11 wilderness areas or National Park Service units. And so  
12 it's very confusing to me about where these tortoises are  
13 going to be move and -- so it's impossible actually for me  
14 to evaluate the effectiveness of the proposed mitigation for  
15 desert tortoise because of all these unanswered questions.

16           HEARING OFFICER CELLI: Now, I'm sorry. I thought  
17 you just said that there was no translocation plan.

18           MS. ANDERSON: There is no translocation plan.

19           HEARING OFFICER CELLI: Okay. So --

20           MS. ANDERSON: What else?

21           HEARING OFFICER CELLI: Go ahead.

22           MS. ANDERSON: And so, you know, I can't really  
23 evaluate the impacts and then -- let's see. Oh, and then  
24 the last thing is that -- or from right now, is that on the  
25 federal side of things, the project is waiting to get their

1 federal permits through the BLM process for messing with the  
2 tortoises.

3           And so it just seems that since that DEIS -- that  
4 DEIS isn't even available, it's completely unclear to me how  
5 that dovetails with this process. As far as I know, there's  
6 no biological assessment of tortoises that are associated  
7 with this project that are not on the project site itself,  
8 what's going on there, how many there are, what's going to  
9 happen to them, et cetera, and certainly there's your  
10 biological opinion.

11           And so this, you know, leaves another big question  
12 mark in my mind about what exactly the impacts are to desert  
13 tortoise from this proposed project and all of the necessary  
14 infrastructure outside of California that's going to be  
15 required in order for this project to move forward.

16           HEARING OFFICER CELLI: Go ahead. Commissioner  
17 Douglas.

18           PRESIDING MEMBER DOUGLAS: So Ms. Allen [sic],  
19 when you talked about the BLM analyses that are ongoing, you  
20 mean for the linears on the Nevada side?

21           MS. ANDERSON: Yes. And the substation.

22           PRESIDING MEMBER DOUGLAS: And the substation.  
23 Thank you. And I've got another question for you, but I'd  
24 invite staff and applicant's witnesses to answer this as  
25 well.



1           When you mentioned that this is the northernmost  
2 part of the range of desert tortoise in California, it  
3 caused me to want to ask a question about climate change  
4 impacts and the potential for this area to be a corridor for  
5 tortoise movement. I just wanted to ask all of the parties  
6 here about that issue. So why don't you start and then  
7 we'll have staff and applicant add on if they'd like to.

8           MS. ANDERSON: Yes. Thank you. I'm glad you  
9 brought that up actually. So it's my opinion that desert  
10 tortoise are moving on the landscape, that they're moving  
11 northerly and upwards in elevation to try to get to more  
12 appropriate habitat these days.

13           And so I do think that the northern part of the  
14 range is more -- is becoming more important as well as  
15 higher elevations. So I think that this area is key in  
16 keeping, you know, populations -- localized populations from  
17 winking out because it provides corridor and habitat for the  
18 species to move through as they're trying to figure out  
19 where they're going to survive.

20           PRESIDING MEMBER DOUGLAS: Right. Keeping  
21 localized populations from what?

22           MS. ANDERSON: From going extinct -- from  
23 winking --

24           PRESIDING MEMBER DOUGLAS: Okay.

25           MS. ANDERSON: -- winking out.

1           PRESIDING MEMBER DOUGLAS: Winking out is what --  
2 technical term.

3           MS. ANDERSON: Winking out.

4           PRESIDING MEMBER DOUGLAS: I just wanted to make  
5 sure that we got that right in the transcript. Thank you.  
6 Okay. Staff and applicant, anything to add on that? Do you  
7 agree, disagree, nuance, what's your position? Go ahead,  
8 staff.

9           MR. HUNTLEY: This is staff. We acknowledge the  
10 importance of this location for desert tortoise. It's not  
11 the northernmost population in California to the best of my  
12 knowledge. But, yeah, they go quite farther up. And this  
13 group of tortoises is part of a larger recovery unit which  
14 does span portions of Nevada.

15           Nonetheless, we think it is important to  
16 appropriately mitigate for the project in proportion to the  
17 impacts.

18           PRESIDING MEMBER DOUGLAS: Okay. And CDFW, I see  
19 you're nodding. It would be great to hear from you as well.

20           MS. HAWK: Only because I concur.

21           PRESIDING MEMBER DOUGLAS: All right. And you  
22 don't have anything to add.

23           MS. HAWK: I have several things I'd like to add  
24 but with regard to earlier comments.

25           PRESIDING MEMBER DOUGLAS: All right. Well, let's

1 wait then. Applicant.

2 DR. KARL: As far as climate change goes,  
3 tortoises probably -- with warming and reduction in forage  
4 and cover, they will most assuredly go up slow, which would  
5 be to the east of the site. At this point, there really  
6 isn't a corridor. It's so difficult with tortoises. A  
7 corridor is not a movement corridor. It's not like animals  
8 going -- big animals, lions, sheep, you know, coyotes. It's  
9 not like a movement corridor where they run back and forth  
10 between core population areas. It's an occupied area. It's  
11 a genetic corridor and -- because tortoises don't migrate.  
12 They don't go back and forth.

13 So there's really -- you know, as you can see, as  
14 you go west off the site, you get into -- really into the  
15 basin. There's not really a corridor to anything.

16 So that's why you don't see much use of the cite  
17 in the western part of the site. It gets even finer and  
18 lower and hotter. So tortoises are probably likely in the  
19 future and quite a bit in the future will be more to the  
20 east and more to the east and more to the east of that.

21 There is one -- the desert tortoise -- the draft  
22 desert tortoise translocation plan was submitted in  
23 November. It's Exhibit 16.

24 PRESIDING MEMBER DOUGLAS: You anticipated my  
25 third question. Thank you.

1 HEARING OFFICER CELLI: Oh, staff, with regard to  
2 translocation, would you please speak to that.

3 MR. HUNTLEY: Yes, sir. AT the current time,  
4 desert tortoise translocation is twofold. If animals are  
5 found within a short distance of the eastern border, they  
6 would be allowed to be translocated to a narrow strip of  
7 land in California that abuts Nevada.

8 And the rationale for that is that portions of the  
9 home range probably extend in Nevada and extend in  
10 California. Again it's part of our original argument about  
11 why animals are likely using both sides of the property.

12 Tortoises found farther than say a half mile or so  
13 would likely have to be disease tested and then held on site  
14 and that would be flushed out in our -- or in the  
15 applicant's translocation plan which is in draft form at  
16 this time.

17 HEARING OFFICER CELLI: So there is no proposed  
18 condition of certification with regard to translocation?

19 MR. HUNTLEY: Yes, sir, there is a translocation  
20 plan requirement and it would be flushed out post  
21 certification, but the intent is to allow animals that are,  
22 you know, a very short distance to be translocated over the  
23 fence without -- probably without disease testing and other  
24 things.

25 Disease testing and handling is something that's

1 still being worked out between the Department of Fish and  
2 Wildlife and the services, the appropriate level of testing  
3 that should occur.

4 HEARING OFFICER CELLI: So that is something that  
5 is prospective; in other words, staff is going to require --  
6 is recommending a requirement for translocation plan, but  
7 the translocation plan hasn't been finalized.

8 MR. HUNTLEY: The translocation plan has not been  
9 finalized and yes, sir, we will recommend the adoption of a  
10 translocation plan.

11 HEARING OFFICER CELLI: So, Ms. Anderson, when you  
12 said there was no translocation plan, essentially you were  
13 saying it hasn't been finalized; right?

14 MS. ANDERSON: That's correct.

15 HEARING OFFICER CELLI: Okay.

16 MS. ANDERSON: And I'd just to add one thing. If  
17 tortoises are going to be moved over into Nevada, those are  
18 primarily BLM lands which have no protection from additional  
19 development and then I'll harken back to the issues that we  
20 talked about yesterday with regards to additional projects  
21 being targeted in Nevada which could potentially result in  
22 tortoises being translocated a second time at a minimum.

23 PRESIDING MEMBER DOUGLAS: Now, what I heard staff  
24 say was that they would -- the tortoises would be  
25 translocated into California but on a place where they could

1 choose to walk into Nevada, if they so chose; is that  
2 correct?

3 MR. HUNTLEY: Yes, Commissioner. The likelihood  
4 is the animals will either wander the fence lines and be  
5 collected or move into portions of their home range or  
6 familiar areas within the state of Nevada, but they would be  
7 placed within California in compliance with state law.

8 PRESIDING MEMBER DOUGLAS: Okay.

9 HEARING OFFICER CELLI: Is there anything before  
10 we move -- Ms. Anderson, go ahead.

11 MS. ANDERSON: Yeah. I just have a question. How  
12 wide is the strip between the state line and the project  
13 that the tortoises are going to be moved into?

14 MR. HUNTLEY: It is merely a matter of feet. It's  
15 a legal requirement.

16 MS. ANDERSON: Okay. Thank you.

17 MR. HARRIS: I'm going to object to the legal  
18 conclusion --

19 PRESIDING MEMBER DOUGLAS: Which legal conclusion,  
20 Mr. Harris?

21 MR. HARRIS: The statement that it's a legal  
22 requirement that those tortoise be relocated in California.

23 PRESIDING MEMBER DOUGLAS: Okay.

24 HEARING OFFICER CELLI: Overruled.

25 MR. RATLIFF: Mr. Celli.

1 HEARING OFFICER CELLI: Mr. Ratliff. Is your mic  
2 working?

3 MR. RATLIFF: Do you hear me now?

4 HEARING OFFICER CELLI: Yes. Thank you. We heard  
5 you now.

6 MR. RATLIFF: We have other witnesses -- other  
7 desert tortoise witnesses. We have our plant specialist,  
8 Ms. Davis, who I think should summarize at least briefly I  
9 think our agreements on rare plants and we have Mr. Hass who  
10 I'd ask if the Committee wants to hear it about the presence  
11 of burrowing owl and eagle use --

12 HEARING OFFICER CELLI: We're just about --

13 MR. RATLIFF: -- I'd still like to see covered --

14 HEARING OFFICER CELLI: Right.

15 MR. RATLIFF: -- before you move on.

16 HEARING OFFICER CELLI: Well, actually we would --  
17 we were going to move off of desert tortoise right now.

18 PRESIDING MEMBER DOUGLAS: Well, actually what  
19 we're going to do is we're going to see if we're done with  
20 desert tortoise.

21 HEARING OFFICER CELLI: Right.

22 PRESIDING MEMBER DOUGLAS: We've got -- I think  
23 Fish and Wildlife wanted to make a comment. Is there anyone  
24 else besides Fish and Wildlife on the panel? Ms. MacDonald,  
25 wanted to make to comment. Mr. Arnold wanted to make a

1 comment. Okay. So let's go in that order then. Go ahead.

2 MS. HAWK: Thank you. I would just like to make a  
3 couple of points with regard to some comments made by  
4 Dr. Karl earlier in regard to the map that you're looking at  
5 currently, Exhibit 69.

6 From the perspective of the Department of Fish and  
7 Wildlife, once desert tortoise surveys have been conducted  
8 and signed or presence of desert tortoise confirmed, these  
9 types of overlays with regard to using vegetation types,  
10 soil types are faulty correlations. This becomes irrelevant  
11 with regard using this as a metric for deciding  
12 compensation.

13 This metric was never meant to be used for  
14 deciding compensatory habitat requirements.

15 PRESIDING MEMBER DOUGLAS: Is that it?

16 MS. HAWK: Yes.

17 PRESIDING MEMBER DOUGLAS: Thank you.

18 HEARING OFFICER CELLI: Ms. MacDonald.

19 PRESIDING MEMBER DOUGLAS: Ms. MacDonald.

20 MS. MacDONALD: Thank you. This is Cindy  
21 MacDonald. In my original March comments, I had asked staff  
22 two questions and I could not find an answer to it. So I  
23 would like to know if it's located in the FSA.

24 And what it was based on is I've been reviewing a  
25 variety of different proposals over the last several years



1 and have noticed repeatedly that they approve getting into  
2 desert tortoise habitat and that they'll mitigate and find  
3 other acreage.

4           So the two questions were what is the cumulative  
5 total of habitat that has been lost for desert tortoise as a  
6 result specifically of CEC-approved projects over the last  
7 ten years. And then the second question, the follow-up was,  
8 what was the cumulative total acreage of the CEC-approved  
9 have acquired through their various mitigation plans over  
10 the last ten years and I wanted to ask staff if that was  
11 located in the FSA somewhere, please.

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

13           MR. HUNTLEY: Staff does not have that information  
14 in the FSA. I don't have those numbers in front of me, but  
15 I'd be more than willing to do the research and try to  
16 calculate those numbers for you. I'm sorry we haven't  
17 included it.

18           MS. MacDONALD: Thank you very much. That was my  
19 questions.

20           HEARING OFFICER CELLI: Thank you. Richard  
21 Arnold, please.

22           MR. ARNOLD: That would be me. Richard Arnold  
23 speaking here.

24           You know, it's really interesting listening to the  
25 comments here and I'm speaking as a traditional practitioner

1 here. And I truly appreciate the comments. Sometimes we  
2 look at, you know, folks talking east and walking west and I  
3 think this is kind of an interesting conversation because I  
4 think there's a lot of points that have been raised.  
5 However, specific to the desert tortoise, while the comment  
6 being made that, you know, we really don't know what's  
7 happening with the desert tortoise, we don't know where  
8 they're going because we're not desert tortoises, I couldn't  
9 agree more.

10           And moreover, you're not Southern Paiutes. And so  
11 you don't understand where we're coming from.

12           I believe the -- you know, obviously the avoidance  
13 of sensitive habitats is critical and when you start  
14 speaking to translocation of desert tortoise, it raises some  
15 concern.

16           Yesterday, I began providing a glimpse into our  
17 culture and why things are the way they are and how we see  
18 them through our eyes. I share with you everything that has  
19 or will be represented has a cultural connotation to it and  
20 that's where again I'm coming from with respect to biology  
21 and respect to desert tortoises.

22           You can't talk about desert tortoises without  
23 talking about Southern Paiutes and I haven't seen nor heard  
24 any of that discussion in any of the comments that have been  
25 made within the FSA specific to biology in the biology

1 section. I kept on looking for where the Southern Paiutes'  
2 comments were and they were absent.

3           The desert tortoise -- actually we view as our  
4 relative and so now you're talking about family and you're  
5 striking close to home. You can't talk about something that  
6 is so embedded in our culture without considering our  
7 feelings as well.

8           These things are also going to -- you'll hear  
9 again tomorrow how they'll spill over into cultural  
10 resources. When you're starting to talk about the desert  
11 tortoise, you're talking about something that is so critical  
12 to us that it's within the habitat that is part of our  
13 pharmacy, our grocery, our church, our school, and our  
14 home -- our homelands.

15           Moreover it's equally important, those same  
16 attributes are equal to the desert tortoise. We know that  
17 the desert tortoise has many important things that we  
18 continue to use. We know that the desert tortoise, for  
19 example, travels around.

20           I know that. My parents know that. My  
21 grandparents knew that. Their grandparents knew that and it  
22 goes on and on since the beginning of time.

23           Yesterday I shared with you a concept of ten  
24 directions and when you're thinking about the desert  
25 tortoise, I would again urge you to consider those ten

1 directions as to what happens to them and what's happened to  
2 them in the past, the present, and the future, the  
3 directions in which they travel, the space of going up and  
4 down, and then also where they are as a person or as a unit.  
5 All those things need to be considered.

6           You know, when you start talking about the  
7 traveling and trying to keep them in a certain area, I find  
8 that somewhat I guess for us maybe amusing because, gee,  
9 whenever I see all these different construction projects, if  
10 they don't travel, then why in the heck do they -- why do  
11 they put up those desert tortoise fences hoping that they --  
12 you know, basically trying to restrict them.

13           Of course now, I'm just an old country boy, you  
14 know, and so I don't know how other people think, but it  
15 seems to me that that's only because they travel. We know  
16 that they travel.

17           The tortoise long ago and continues to be part of  
18 our culture and part of our spiritual being. We use them --  
19 they were a food source. We used to eat the eggs of  
20 their -- of these animals, these reptiles, but we did so for  
21 a reason. It wasn't just for nutrition. It was because  
22 they had healing power. We knew that they could travel long  
23 distances without water. We know they have a long life. We  
24 know that it gives you protection.

25           We know that they have wisdom and it teaches you

1 the patience that we all need before making -- I mean just  
2 haste decisions. And so that's why we don't need to rush.

3           There's so much wisdom in all these things that  
4 we're talking about that we tend to overlook or people tend  
5 to focus just the science. If you look at just the science,  
6 you're going to forget everything else that is so vitally  
7 important.

8           We look around and we know that those desert  
9 tortoise, while they're walking slow and using their  
10 patience like we need to do, that they look around and  
11 they're enjoying everything that's around and we know -- and  
12 they know because they tell us in our stories that there are  
13 things that are out there to get you.

14           Think about that. This project could potentially  
15 be one of those things that's coming to get you and it's  
16 going to change your home. It's going to change your life.  
17 There's a lot of similarities and crossovers to the Indian  
18 people. You know, and maybe some of those parallels need to  
19 be truly considered.

20           Most importantly, I think that these attributes  
21 are so integral to Southern Paiute epistemology and it's  
22 further discussed and considered in our cultural songs and  
23 stories and within the cultural landscapes and the  
24 Storyscapes that are there, that when we talk about -- and  
25 as I shared just a little yesterday, with some of the songs

1 that we have about all these different animals, we talk  
2 about the various landscapes. We talk about the importance  
3 of that particular animal, that particular tortoise, why  
4 it's in that spot, why it's not supposed to be moved, why  
5 its home is there, why it's supposed to be giving us the  
6 songs, the messages, and the information it does for us to  
7 survive and perpetuate our culture. Thank you.

8 HEARING OFFICER CELLI: Thank you, Mr. Arnold. At  
9 this point, I think we've finished the topic of desert  
10 tortoise. I'm going to --

11 PRESIDING MEMBER DOUGLAS: Mr. Harris, is there  
12 anything that you would like to add or have your witnesses  
13 add at this point or have we finished the topic of desert  
14 tortoise?

15 MR. HARRIS: -- unless Alice raises her hand --

16 PRESIDING MEMBER DOUGLAS: Okay.

17 HEARING OFFICER CELLI: She's shaking her head no.

18 MR. HARRIS: Okay. Thank you.

19 HEARING OFFICER CELLI: Thank you. So let's go  
20 back to staff then and I think the way we're doing this is  
21 we're sort of starting with staff and moving to applicant  
22 and then to other --

23 MR. RATLIFF: Mr. Celli, I think Ms. Hawk was  
24 asking to --

25 HEARING OFFICER CELLI: Oh, go ahead.

1 MS. HAWK: I'd like to make a comment with regard  
2 to a point that Mr. Arnold just made.

3 HEARING OFFICER CELLI: Please.

4 MS. HAWK: Yes. I think it's important to  
5 recognize his point about desert tortoise fencing. Fencing  
6 is used not to exclude tortoises today or tomorrow but  
7 potentially in perpetuity and that is because they do move  
8 and a point Dr. Karl made earlier was that in looking at  
9 this map, for example, the red dot in the south portion of  
10 that habitat, it represents a current desert tortoise that's  
11 existing in that area. Not only is it going to move, but  
12 it's going to reproduce and I don't think anybody's  
13 mentioned caring capacity yet, but I think it's an important  
14 subject to talk about just because it appears as if in a  
15 comment that was made by Dr. Karl that if we were to do  
16 these surveys that were done in 2011 say this year or next  
17 year, the density would be the same and I would suggest that  
18 that's not true for two reasons.

19 Desert tortoise not only do move within their home  
20 territories which is quite large, but they also reproduce.  
21 And so we expect that those numbers could change. They may  
22 increase. They may decrease, but that is the very reason  
23 why these protocol tortoise surveys are required year by  
24 year.

25 The information gained in 2011 is only good for

1 that snapshot for that year and it's for that reason.

2 PRESIDING MEMBER DOUGLAS: Thank you. Dr. Karl.

3 DR. KARL: I just want to clarify that I didn't  
4 say the density would not change. I said the distribution  
5 of sign would not sign.

6 PRESIDING MEMBER DOUGLAS: Understood.

7 HEARING OFFICER CELLI: Thank you. Let's --  
8 that's a good idea. You know, in order to make some room  
9 for people since we're moving off of the desert tortoise  
10 issue, if you have experts that are here only for desert  
11 tortoise they can be excused and then we would keep the rest  
12 of the panel. Thank you, Ms. Karl. And then we could seat  
13 any other experts that need to come in.

14 Ms. Belenky, you have a question.

15 MS. BELENKY: Yes, Mr. Celli. Thank you. Before  
16 we leave desert tortoise, I just wanted to clarify I know  
17 Ileene Anderson mentioned this and I would like to  
18 understand from staff how they are looking at the LORS for  
19 the desert tortoise because our understanding is that the  
20 federal part of that permitting is going to be done not just  
21 for the transmission line but they are assuming that the  
22 federal approval for the transmission line and the gas will  
23 also cover any take of desert tortoise on the site -- on the  
24 project site and therefore I'm just trying to understand the  
25 timing of these issue in staff's view and so that we don't



1 close the record before we have all of the necessary  
2 information.

3 HEARING OFFICER CELLI: Go ahead, Mr. Huntley or  
4 staff, anyone.

5 MR. HUNTLEY: Thank you. We do understand that  
6 the service will likely be preparing a biological opinion on  
7 the organism. We are quantifying take in compliance with  
8 SESA. We understand that the BA will be written for the BLM  
9 and it'll incorporate much of the same.

10 What we're trying to do is make sure that we are  
11 not deferring any actions to another agency to complete and  
12 that will require translocation plan and conditions of  
13 certification.

14 We understand that there may be some overlap, but  
15 our intent would be to work with the service as they move  
16 down that road and just communicate to ensure that we don't  
17 have conflicting language anywhere.

18 MS. BELENKY: Thank you. I just want to follow  
19 up. So is there going to be a provision in the language  
20 that if the service would require something different there  
21 is some mechanism for addressing that.

22 MR. HUNTLEY: We'll take a look at that. Again we  
23 have obligation to ensure that we disclose and mitigate the  
24 impacts in compliance with SESA. We wouldn't want to  
25 minimize something, but I think we could have language --

1 you know, there's regular speed limits, there's other things  
2 that would be put in there. We'll have to look at the  
3 condition to make sure that there's some provision to ensure  
4 there's an accommodation.

5 MS. BELENKY: Thank you.

6 MR. HARRIS: Well, hang on a second. Factually --  
7 let Ms. Strachan answer this. I believe it is actually in  
8 the --

9 HEARING OFFICER CELLI: Okay. Ms. Strachan, you  
10 have been previously sworn.

11 MS. STRACHAN: Correct. Correct. If I understand  
12 the question correctly, Bio 7 which is the biological  
13 resources mitigation implementation plan has a requirement  
14 that all of the mitigation that's included in the biological  
15 opinion be put into that plan and part of the project.

16 MR. HARRIS: Thank you.

17 HEARING OFFICER CELLI: Any further --  
18 Ms. Belenky, any -- does that call open any more questions  
19 from you with regard to that overlap between jurisdictions?

20 MS. BELENKY: I'm just a little bit confused.  
21 They don't know what those conditions are, but they will  
22 adopt them regardless is what it says. Is that correct? Is  
23 that your interpretation of it?

24 MR. HUNTLEY: I believe it's our intent to adopt  
25 the conditions identified in the biological opinion, but I

1 believe the process is to ensure coordination between the  
2 service and staff through CPM to make sure that there's not  
3 something in there that's inconsistent with our LORS.

4 MS. BELENKY: Thank you.

5 HEARING OFFICER CELLI: Thank you.

6 MR. HARRIS: Mr. Celli, one more housekeeping. We  
7 got the acreages for the Commissioner.

8 HEARING OFFICER CELLI: Go ahead.

9 MS. STRACHEN: I believe there was a question  
10 about the number of acres that were surveyed for desert  
11 tortoise. The total, which includes the site and the 150  
12 meter buffer, is 3,932 acres and then -- I don't have an  
13 acreage number, but there were additional acreage surveyed  
14 and tied to the zones of influence.

15 ASSOCIATE MEMBER HOCHSCHILD: Sorry. But I was --  
16 the zone -- the buffer -- I was trying to find the number of  
17 acres in the buffer zone. If the project is 3,274 and you  
18 mentioned 3,932. The difference those two numbers is the  
19 buffer zone?

20 MS. STRACHEN: Yeah. The buffer zone total  
21 acreage is 652.

22 ASSOCIATE MEMBER HOCHSCHILD: Okay. Thank you.

23 MS. STRACHEN: And the site, although it's 3,277,  
24 the acreages identified in our survey plan is 3,280. So  
25 there's a three acre difference --

1 ASSOCIATE MEMBER HOCHSCHILD: Okay. Thank you.

2 HEARING OFFICER CELLI: Thank you, Ms. Strachan.

3 Now, staff, after desert tortoise, was it your intention --  
4 what's the next species we're going to be talking about?

5 MR. HUNTLEY: We can speak to anything, whether --  
6 if you'd like to talk about burrowing owl or something,  
7 we're happy to do so, or --

8 HEARING OFFICER CELLI: I'm thinking golden eagle  
9 since we heard a little bit about golden eagle from --

10 MR. HUNTLEY: Certainly.

11 HEARING OFFICER CELLI: -- yeah, from applicant.  
12 And burrowing owl.

13 ASSOCIATE MEMBER HOCHSCHILD: By the way, I just -  
14 - you know, you see the Commissioners and staff up here are  
15 periodically standing up because the seats are so  
16 uncomfortable. Feel free to do the same. I know it's hard  
17 to sit so long on these metal chairs, so --

18 HEARING OFFICER CELLI: That's right. But I want  
19 to add that if you're an expert, don't wander. Stay here if  
20 you're an expert. You're welcome to get up and shake out if  
21 you need to, but certainly do not walk over and talk to your  
22 counsel. We want your opinion. So with that, staff.

23 MR. HUNTLEY: Hearing Officer Celli, I believe one  
24 of our biologists went out to the port-a-potty.

25 HEARING OFFICER CELLI: Okay. Well, we can go to

1 burrowing owl next then. If we can do that, we'll go to  
2 burrowing owl. This is not a break. We will be taking a  
3 break in another half an hour or so at noon at which time we  
4 would take some public comment. We'll take public comment  
5 again tonight at the close of the proceedings, but I think  
6 it would be useful we have people here and we'll hear from  
7 them when we have a lunch break.

8 But at this time, let's get into desert -- or  
9 rather burrowing owl.

10 There's a lot of talking in here and it's coming  
11 into the record. We need it to be quiet so we can hear  
12 everyone. We're still on the record, ladies and gentlemen.

13 So we've heard from staff and applicant in their  
14 presentations with regard to burrowing owl. So maybe we  
15 need to hear from other parties. Ms. Anderson, did she step  
16 out?

17 ASSOCIATE MEMBER HOCHSCHILD: She's here.

18 HEARING OFFICER CELLI: Oh, there you are. Hi.  
19 Nothing on burrowing owl? I need you to grab your  
20 microphone and --

21 MR. PHILLIPS: Sure. My name's Dave Phillips,  
22 wildlife biologist with CH2MHill. I actually concur with  
23 the position of the staff as stated that the impacts to the  
24 species would be fully mitigated with the condition of  
25 certification. I believe that was stated in the

1 introductory remarks.

2 I should just probably correct I think one  
3 comment. As I understood, the statement was made that the  
4 applicant suggested that there were no breeding or winter  
5 use of burrowing owls. The statement that was actually in  
6 my written testimony was that no owls were documented during  
7 the protocol surveys that were completed.

8 Those are completed during the spring and during  
9 the winter. Owls have apparently been documented on site.  
10 One was observed apparently in the botanical surveys. It  
11 sounds like the staff have observed them on site. One was  
12 observed off site during some earlier avian studies that  
13 were completed for the project.

14 So I was reporting the protocol level survey  
15 results. Interestingly we've had very robust avian surveys  
16 being completed on the project since September of 2012  
17 through the present and no owls have been documented during  
18 those surveys. They're not specifically documented to -- or  
19 designed to document burrowing owls. However, there's a lot  
20 of hours, there's a lot of boots on the ground since this  
21 past fall through this winter and none have been documented  
22 opportunistically or in the standardized searches.

23 HEARING OFFICER CELLI: Thank you. So it sounds  
24 like since staff and applicant seem to be in agreement that  
25 all of the impacts to burrowing owl are fully mitigated.

1 I'd like to hear someone who has a contra position. Go  
2 ahead.

3 MR. HASS: Sorry. This is Bill Hass and I don't  
4 want to complicate the matters of the mitigation -- but I  
5 will probably later and have been prepared to discuss the  
6 concept of having a lot of hours -- it's that bad? Sorry.  
7 Thanks for the hint -- the number of hours and I was just  
8 looking at some of this.

9 The combination of hours and methods which I'm  
10 prepared to discuss, but I think perhaps in a slightly  
11 different context after this, just those hours, for  
12 instance, in this context are absolutely worthless looking  
13 for burrowing owls. Not that you can't find them  
14 incidentally, but the point count method that they're using  
15 has so many flaws in, not so much the method itself, but how  
16 the method could be applied.

17 And frankly, in general, not a hundred percent  
18 true but very close, that if you don't find a burrowing owl  
19 at a point count location once, it's very unlikely you'd  
20 find it again, and so these point counts are routinely  
21 visited. So guess what, if you didn't find them -- in other  
22 words, if the owl X distance away over a hill, even if it  
23 was 150 meters, in other words, not far, if you can't see it  
24 and you're at that point, you'll never see it.

25 So I don't -- I think it's important that numbers

1 of hours in the field has to be taken into consideration and  
2 to what power those data can actually be applied for. So --  
3 and indeed during that time period, we observed burrowing  
4 owls on the site, not at the edge but on the site on several  
5 occasions, the times that I've been out there.

6           So -- and again not to be argumentative. It's  
7 just when someone says something to try to be powerful with  
8 data, it's a very inappropriate use of those data and  
9 especially in a public forum, it leads people to think the  
10 wrong thing.

11           HEARING OFFICER CELLI: Okay. Ms. Hawk.

12           MS. HAWK: I'd like to further add and clarify  
13 that I concur actually with both, but I just would like to  
14 point out that all you can say with regard to those hours of  
15 point counts is that we did not observe any birds.

16           When you conduct protocol level surveys, you can  
17 say the birds are absent. There is a difference.

18           HEARING OFFICER CELLI: Thank you. Now, having  
19 heard that though, it doesn't sound like there's any  
20 difference in terms of -- position of staff and applicant in  
21 terms of whether the impacts to burrowing owls are mitigated  
22 fully or not.

23           Ms. Anderson, did you have a position on that?  
24 We'd love to hear from you.

25           MS. ANDERSON: Yes. So my position basically is



1 that the staff -- the final staff assessment identified that  
2 there were five territories on the project site and we saw  
3 an exhibit of that earlier today I think in staff's  
4 PowerPoint, which thank you for doing that.

5           And the notion is that basically based on science  
6 that's out there that the mean foraging territories for  
7 burrowing owl is about 242 hectares. And so if it's -- the  
8 project is impacting five territories, even at just a  
9 one-to-one mitigation ratio, that's going to be almost 3,000  
10 acres that needs to be mitigated for if you're displacing  
11 these owls.

12           And so I believe that the 600 acres that's being  
13 required by staff is inadequate to actually mitigate the  
14 impacts to those birds.

15           The second thing that I'm concerned about is that  
16 the condition of certification doesn't actually comply with  
17 the California Department of Fish and Wildlife's requirement  
18 in their latest guidance that talks about the mitigation  
19 lands need to be legally secured prior to the passive  
20 relocation of birds.

21           And as I've seen in other projects, oftentimes  
22 birds get displaced, but the actual mitigation areas are not  
23 acquired for months to years after the impact has occurred.  
24 And so I'd like to see that the condition of certification  
25 actually require what Fish and Wildlife is recommending.

1 HEARING OFFICER CELLI: Let me ask, what is the  
2 current requirement with regard to the timing of the  
3 acquisition of mitigation land.

4 MR. HUNTLEY: The current requirement does not  
5 require the applicant to provide these lands immediately,  
6 but if I may expand just a touch. The 2012 guidelines do  
7 not require that the land be acquired before the project.  
8 They recommend it and there's specific leeway in there and  
9 we tried to accommodate that approach.

10 HEARING OFFICER CELLI: Well, usually don't you  
11 have at least in the verification some -- you know, prior to  
12 construction, prior to breaking ground, prior to operation,  
13 something like that, what does it say?

14 MR. HUNTLEY: I'll have to look at the exact  
15 condition. It's probably prior to operation of the facility  
16 not prior to ground disturbance.

17 HEARING OFFICER CELLI: Okay.

18 MS. ANDERSON: So -- but my point still remains  
19 that birds are going to, you know, be --

20 HEARING OFFICER CELLI: Be displaced.

21 MS. ANDERSON: Yeah. Right.

22 HEARING OFFICER CELLI: Prior to the acquisition  
23 of the land -- or potentially anyway. It depends on when  
24 they exercise their discretion. Okay.

25 MR. RATLIFF: Mr. Celli, I may be stating the

1 obvious, but I want to make sure that the Committee  
2 understands that staff and the applicant agree that  
3 burrowing owl is mitigated, but they have proposed different  
4 levels of mitigation and as has CBD just now. So I mean  
5 there is a disagreement about what that mitigation should  
6 be.

7           Staff says it's fully mitigated with staff's  
8 proposed mitigation, which is not the same as what the  
9 applicant has proposed.

10           HEARING OFFICER CELLI: Thank you for that  
11 clarification. What I'd like to do now -- where did Ms. --  
12 Ms. MacDonald's coming back. Let's hear from Mr. Arnold.

13           MR. ARNOLD: Thank you. Again Richard Arnold.  
14 Okay. Burrowing owls -- you know, and everything that we  
15 talk about is always going to have some level of importance  
16 to the Southern Paiute people.

17           And specifically burrowing owls, not only are they  
18 a threatened species, but they're culturally important. I'm  
19 not sure if the Committee or members of the Commission have  
20 ever really seen them and noticed their mannerisms, noticed  
21 what they are. There's a reason for that.

22           In our stories, there's a reason for that.  
23 Yesterday I shared with you a little bit about how there was  
24 a movement in the water that happened as a result of an owl  
25 and it redirected the water, that it was originally coming

1 there and it had gone over toward where the Colorado River  
2 is now.

3           And those particular owls were important because  
4 they not only changed the course of the world as we know it  
5 and as we see it, but they also predicted what was going to  
6 happen in the future.

7           Our stories tell us about -- and again be mindful  
8 that we have winter stories that can only be told at certain  
9 times and so I'm just going to just briefly describe a  
10 little bit of this for lack of -- so no retribution comes,  
11 but, you know, the burrowing owl was one that he along with  
12 many other different animals used to argue and they used to  
13 talk and argue all the time and they were warned.

14           And the reason that they were warned is because of  
15 all the discord. Oftentimes maybe like we're having here.  
16 And when the creator had seen that and talked to those  
17 animals and warned them about the importance of talking,  
18 listening, and hearing and understanding and appreciating  
19 what was going to happen, if you didn't do that your voices  
20 would be taken away.

21           Consequently they didn't listen and their voices  
22 were taken away. However, if you look at the burrowing  
23 owls, you'll look at their mannerisms. They're like humans.  
24 They'll come out of their burrows. They, you know, tilt  
25 their heads different ways. They look at you. They have --

1 they bring a lot of information and messages to us, but they  
2 also represent that connection to us in the past when the  
3 world was new. And we have to always be able to respect  
4 that.

5           Now, we -- I think one of the important things to  
6 note here is while I'm sharing with you some cultural  
7 perceptions, there's other parts that carry over into some  
8 of these things that are very germane.

9           First of all, when you're going out and doing  
10 burrows -- and this is a blend of both cultural and just  
11 physical science here -- that when you go out to see animals  
12 and if you're going out to do surveys and it doesn't matter  
13 for whatever resource, if you don't see it, we'll tell you  
14 that's because it wasn't meant for you to see. It doesn't  
15 mean that it doesn't exist. It's out there.

16           And if you are of the right heart, the right mind,  
17 you open up your eyes, you open up your heart, you'll see  
18 those things you're supposed to.

19           If you're not and if you're driven by, with all  
20 due respect, a project or if you're driven by something that  
21 you need to get done, you may be in haste overlooking those  
22 things or they won't reveal themselves to you. And it's  
23 very, very important that we continue to do that.

24           Every animal -- every mammal, very insect that is  
25 or was out there, it has a spirit. So when we talk -- and

1 you're going to hear tomorrow even more about the Salt Song  
2 and you'll hear about other songs and stories that we tell.  
3 They all have to do with those ten directions. Those  
4 burrowing owls that were here a long time ago, the ones that  
5 were here now, and the ones that are going to be in the  
6 future, the ones that may look up and the ones that are  
7 going to look down, the ones that are going to look to the  
8 east, to the west, to the north, and to the south and  
9 they're going to look and consider themselves.

10           And so when we're talking about those and we're  
11 praying to those, we're singing those songs, we're talking  
12 about the importance of those animals and those resources,  
13 we're talking about them in that context that have been  
14 around there and regardless of what will happen, their  
15 spirit stays there. So you can never -- it doesn't matter  
16 what, you can't erase any of that past. You can't erase  
17 their presence there.

18           There -- any kind of a habitat, anything that's  
19 there from a trail to their homelands to where they exist or  
20 the things that they've seen, those trails have knowledge  
21 and it's just as present to us as what it is if it made  
22 right this minute. You know, you can't -- can never  
23 discount those types of perspectives.

24           Now, we don't have a mechanism -- a cultural  
25 mechanism for resolving artificial removal, translocation,

1 or coming up with ways unless we want to take on the role of  
2 the creator and all the deities that are there. And none of  
3 us do and none of us are qualified to ever consider that.

4           And I'm not trying to get into a religious  
5 perception here or debate, but it's important to understand  
6 that you can't -- as I said yesterday, when you're talking  
7 about Southern Paiute epistemology, you cannot discount the  
8 culture from the language from the religion to everything  
9 else. It's all collective and it's all interwoven.

10           So I have to and if I cross some lines, I  
11 apologize, but for that, I think it's important that you  
12 understand moreover that when their voices were taken away,  
13 we were here to talk for them. That's what we're charged  
14 with. We're here to make sure that those burrowing owls,  
15 those smallest little insects that you don't think of or  
16 maybe you don't -- you overlook, maybe you step on because  
17 you don't realize that or you don't consider the sensitive  
18 habitats that are around. You overlook those things.

19           We're here to speak for them and that's what we  
20 have to do. You know, so I think just again in  
21 retrospect -- and I have to reiterate this for everything  
22 that I speak that when I look at all the various sections  
23 and be mindful that within the FSA and within the  
24 ethnographic report, it was not the intent of that report to  
25 cover in full detail all this information.

1           So that's why we have to be here to share our  
2 perspectives. So I think -- again I just want to make sure  
3 that -- I have to continue on this journey. I hope it  
4 doesn't become redundant. If anything I hope it becomes  
5 enlightening for the Committee and the Commission because at  
6 no time in the past, good, bad, or indifferent, there has  
7 never been an American Indian person as an intervenor on  
8 these projects and for that reason, I needed to come here  
9 and I needed to share these thoughts. Thank you.

10           PRESIDING MEMBER DOUGLAS: Mr. Arnold, I just  
11 wanted to say that the Committee really appreciates your  
12 participation. You're adding a really value perspective not  
13 only on the topics that you're speaking to but also very  
14 much giving us some background, some perspective to be able  
15 to effectively listen tomorrow when we take up the cultural  
16 issues. So this is helpful on many levels. It's helpful  
17 both for the, you know, water, desert tortoise, burrowing  
18 owl, the specific issues you're speaking to, but for our  
19 perspective on the project as a whole and our ability to  
20 listen well when we hear this issue in greater detail  
21 tomorrow.

22           So thank you for being here. You're doing a great  
23 job. You're communicating very effectively and we really  
24 appreciate you being here.

25           MR. ARNOLD: Well, all I have to say is aw,



1 shucks.

2 PRESIDING MEMBER DOUGLAS: There you go.

3 HEARING OFFICER CELLI: Thank you, Mr. Arnold.

4 Ms. MacDonald. We're talking about the burrowing owl.

5 MS. MacDONALD: Yes, sir. Thank you. This is  
6 Cindy MacDonald. I just wanted to briefly share my first  
7 story with burrowing owls in the area.

8 The first time I ever saw them they had made a  
9 little burrow right directly across from the place that we  
10 lived and I just remember being stunned. I was about maybe  
11 10, 11 years old, that owls went in the ground and they were  
12 the cutest little things. And the reason I remember them so  
13 much besides just loving to see them is a neighborhood boy  
14 went in there and shot them all and -- but what is relevant  
15 besides just I had to say that is they've been there quite  
16 some time. They've been there since the mid '70s that I  
17 know of. So I just wanted that noted on the record. Thank  
18 you.

19 HEARING OFFICER CELLI: Thank you. Noted. Well,  
20 applicant would bat last if we need anything further on  
21 burrowing owl. Otherwise I think it's time to -- if there's  
22 nothing further from any of the applicant's experts on the  
23 burrowing owl, we would go to public comment. Anything  
24 further from any of the applicant's witnesses on burrowing  
25 owl?

1           Okay. Hearing none, thank you. Ladies and  
2 gentlemen, at this time we are going to hear public comment.  
3 It appears that the applicant has once again provided lunch.  
4 Everybody who's here is welcome to participate in the lunch.  
5 Thank you very much to BrightSource for that.

6           We would hear public comment now and  
7 simultaneously take a lunch break and we would resume the  
8 evidentiary hearing at 1:00 o'clock. And I want to say  
9 something about the public comment. We're going to hear  
10 public comment again this evening at the close of the  
11 evidentiary hearing and at -- and I can say at 6:00 o'clock  
12 for sure, maybe as we did last night, we took public comment  
13 before then because we finished before then.

14           But we would -- if we haven't finished tonight at  
15 6:00, we would break for public comment at 6:00 and then  
16 resume the evidentiary hearing.

17           I have Laura Cunningham, Basin and Range Watch.  
18 Ms. Cunningham, please speak right into that mic. You can  
19 tilt it up toward you.

20           MS. CUNNINGHAM: Hello. Thank you. My name's  
21 Laura Cunningham. I with the group Basin and Range Watch  
22 and I live about 80 miles north of here. And I had a quick  
23 comment on desert tortoise habitat.

24           I've worked as a desert tortoise biologist since  
25 1999 in California and I'm -- the map that was just up here,

1 I'd like to point out that I would support at the very least  
2 the staff position on mitigation of tortoise habitat and  
3 probably greater because having lived around here and  
4 noticed tortoise burrows, some of the storms that we'll get  
5 in the summer, these huge flash flood events, can change  
6 tortoise habitat overnight. They can change the position of  
7 a wash that comes out of an alluvial fan overnight and you  
8 have -- the applicant's witness mentioned that tortoise  
9 habitat in that map in that red area, the far eastern side,  
10 had a lot of washes that is very good tortoise habitat.

11 But I'd just like to say that those can change.  
12 Immediately washes can shift and over the 30-year period of  
13 a project, little population -- dense populations of  
14 tortoises can certainly shift over time so that the whole  
15 area of that part of the project site should be mitigated  
16 higher. Thank you.

17 HEARING OFFICER CELLI: Thank you, Ms. Cunningham.  
18 Thank you for your comments. Eddie Jim, I saw him earlier.  
19 Mr. Jim, please come forward.

20 MR. JIM: Thank you. This is Eddie Jim, chairman,  
21 Pahrump Paiute Tribe. Golden eagles, tortoise used to be  
22 abundant in the Pahrump Valley at one time. They're very  
23 rare anymore, especially the tortoise.

24 Eagles have -- now and then but not often. My  
25 family grew up with artesian wells in that valley where

1 these animals survived. With people come into the Pahrump  
2 Valley, they've been pushed out and left the area of the  
3 Pahrump. These animals have been pushed to the outer limits  
4 of Pahrump. Projects like these are going to threaten these  
5 animals and wildlife. It's going to have domino effect on  
6 wildlife with other proposed projects in the area.

7           When animals and wildlife were pushed further out,  
8 so were the Pahrump Paiute Tribe and other Native people  
9 that use these areas. Wildlife is a very big concern for  
10 the Paiute people. Thank you.

11           HEARING OFFICER CELLI: Thank you, Mr. Jim.

12           PRESIDING MEMBER DOUGLAS: Thank you.

13           HEARING OFFICER CELLI: Is there anyone else who  
14 is here today who would like to make a comment? Go ahead,  
15 Ms. Haskin. Why don't you come on up to the microphone.

16           MS. HASKIN: I just want to talk as a resident of  
17 Charleston View. I spend a normal 12, 14, 16 hours a day in  
18 my yard. I have five acres there and I'm trying to  
19 landscape it like a little park for my grandkids. I have 12  
20 of them like I said. And I regularly see in the summertime  
21 the desert tortoises will suddenly show up in my yard.

22           I have to make sure that I leave my gate open so  
23 they can get back out because they sneak in and then they --  
24 and the owls, because I have a place in my yard that I keep  
25 water running all spring, summer, fall for the animals that

1 come and it's like a trough I've dug with a backhoe down one  
2 side of my yard that I have lined with trees and brush so  
3 that they have a place to go.

4           And I have an abundance of what you call animals  
5 or game -- wild animals from the desert that come in my  
6 yard. I mean I have thousands of birds in the summer. I  
7 have the owls come in and they purge. I have a heard of  
8 dragonflies that fly up and down my driveway all summer long  
9 that scare my younger granddaughters.

10           And when you're talking about this, the one thing  
11 I heard is if you have one cluster group of land that these  
12 tortoises are accumulating in, there seems to be like prime  
13 land that we would call Beverly Hills or something to us in  
14 real estate and yet we're negotiating it like it's, you  
15 know, not much at all and you're going to take this away  
16 from a species that is potentially endangered that could be  
17 down the road become nonexistent.

18           And I think there needs to be a lot of weight  
19 given to that parcel of land as far as the accumulated  
20 population for the turtles because when we're driving to go  
21 to shop or to run an errand, we commonly see these turtles  
22 crossing the highway and I have taught my neighbor -- and  
23 this is my neighbor Kathy -- to stop and we'll pick the  
24 turtles by the shells because you can't tough their skin,  
25 it's very sensitive, and we will pick them up by their

1 shells and put them across the road the direction they're  
2 going and then stay there and make sure that they get across  
3 the road and keep going and they don't get hurt.

4           And I just think that maybe in an area when you're  
5 dissecting something like this with animals that live in our  
6 desert, you group them into something and say they don't  
7 move very far. I see them moving farther than what  
8 statistics say and I don't think you can document the desert  
9 animals as clearly as what these, you know, educated people  
10 are because I've have things like bobcats in my yard. I've  
11 had a cougar kill my dog.

12           My other neighbors have had dogs killed by cougars  
13 and so we have -- because we're the only green spot out  
14 there, the animals that are in our area come to in  
15 particular the little track of land that is known as  
16 Charleston View, which is a block wide.

17           The other lots that are around us are called  
18 Spring Valley Ranchos, but that particular group, when the  
19 Wiley family sold those lots when I originally bought out  
20 there in 1972, called that little track -- because if you go  
21 from Carpenter to Rose, that is all that's actually  
22 Charleston View. Everything else is considered Spring  
23 Valley Ranchos.

24           And in that little track of land, the main bunch  
25 of us who live there, we constantly -- the coyotes circle

1 our homes at night looking for our dogs and cats because  
2 they want to eat. And so you can't define what you find on  
3 one piece of land right there.

4 Last year, I photographed a golden eagle that was  
5 sitting in the tree in the orchard that's in this project.  
6 It lives in my neighbor's tree. There are hawks that live  
7 in the trees around my yard. There's one that lives in my  
8 back yard in a cottonwood tree. There's another one that  
9 lives in my neighbor's trees.

10 You know, they're out there and just because a  
11 person drives to Charleston View for a day or a week or a  
12 month doesn't mean that you're seeing the entire population,  
13 but in the summertime, I get -- or spring, summer, fall, I  
14 get the ocean birds, the herons. I've had blue cranes in my  
15 yard because I have water running and I have burro trough  
16 that I keep full. And my burro has died by the way. I had  
17 her for 30 years. I found her abandoned on the side of the  
18 road by somebody.

19 But we have an abundance of wildlife that comes  
20 spring, summer, fall and then in the winter, it declines,  
21 but there's still animals always there, you know, and I  
22 think you need to take that into effect the fact that we're  
23 like the oasis for wildlife where we live and that's all I  
24 want to say. Thank you.

25 HEARING OFFICER CELLI: Very clear. Thank you for

1 that insight. Is anyone else who is in this room who would  
2 like to make public comment? Okay. Seeing none and hearing  
3 none, let me just quickly see if we have any on the phone.

4 Is there anyone on the phone who would like to  
5 make a public comment at this time? Everybody is unmuted.

6 MR. GARABEDIAN: I would like to make a comment.  
7 This is Michael Garabedian.

8 HEARING OFFICER CELLI: Thank you, Mr. Garabedian.  
9 Now, you have the floor, Mr. Garabedian. We're going to  
10 need to get your audio a little more fine tuned in the room.  
11 Go ahead and speak, Mr. Garabedian.

12 MR. GARABEDIAN: Hi. I'm -- on this computer  
13 actually. I'm also --

14 HEARING OFFICER CELLI: One moment,  
15 Mr. Garabedian. We're -- you're not coming through very  
16 clearly. If you're on a phone with a speaker, you need to  
17 pick up the handset.

18 MR. GARABEDIAN: Why don't I call back on the  
19 phone line.

20 HEARING OFFICER CELLI: Actually you're coming in  
21 better a little bit now. Speak some more.

22 MR. GARABEDIAN: Okay. How's this?

23 HEARING OFFICER CELLI: We can hear him a little  
24 better. How's that, Tony?

25 MR. GARABEDIAN: Testing, testing.



1 HEARING OFFICER CELLI: That's very good. Keep  
2 going.

3 MR. GARABEDIAN: Okay. Michael Garabedian --  
4 245 million acres. I wanted to talk about the desert  
5 tortoise -- on what the -- has presented today. The area of  
6 the QA1 -- that has -- on the -- and the areas of  
7 concentrated desert tortoise -- the purple area. It seems  
8 to me the case has been suggested today for -- areas from  
9 solar facilities. The -- area on the border in the purple  
10 area about 1,200 feet, it should be -- solar facility and  
11 the -- there are wash -- particularly a wash to the north  
12 where -- concentrated -- also concentrated desert tortoise  
13 use in the -- areas -- the point being that the facility is  
14 designed based on -- there. Similar -- and this little --  
15 the site and areas where other -- the project area seems to  
16 be -- to confirm -- on the site.

17 HEARING OFFICER CELLI: Mr. Garabedian.

18 MR. GARABEDIAN: Yes.

19 HEARING OFFICER CELLI: I'm just going to ask are  
20 you actually speaking on a computer using the computer's  
21 microphone?

22 MR. GARABEDIAN: Yes.

23 HEARING OFFICER CELLI: Okay. You can't turn your  
24 head. You're going to have to speak right at that  
25 microphone because you seem to be coming and going and if --

1 we're getting sort of a buzz sound. So if you can stay in  
2 one place as you speak, that might help.

3 MR. GARABEDIAN: Okay. Yeah. I -- so I don't know  
4 what -- how much I've said has been heard -- the point of  
5 course is that the -- Mojave Desert and other solar  
6 projects. This really may be something -- I haven't  
7 heard --

8 HEARING OFFICER CELLI: That's right. We haven't  
9 heard about cumulative impacts yet on bio today.

10 MR. GARABEDIAN: The main point I wanted to make  
11 was about the -- and also inquire about possibility that --  
12 from the project site facility 1,200 foot area along the  
13 border and then along -- major washes that are -- areas  
14 by --

15 HEARING OFFICER CELLI: Okay. Mr. Garabedian, is  
16 there anything else?

17 MR. GARABEDIAN: No, that's it. Thank you.

18 HEARING OFFICER CELLI: Thank you. Thank you for  
19 participating. Is there anyone else who's on the telephone  
20 who'd like to make a public comment at this time.

21 MR. BRANSFIELD: Yeah. This is Ray Bransfield  
22 with the Fish and Wildlife Service.

23 HEARING OFFICER CELLI: Ray Bransfield with Fish  
24 and Wildlife. Please go ahead. We can hear you fine.

25 MR. BRANSFIELD: Okay. Hi. Ray Bransfield with

1 the Fish and Wildlife Service in Ventura, California.  
2 Couple of points we'd like to make. We agree with the  
3 Energy Commission staff that BrightSource's assessment of  
4 bird use and eagle use of the areas, their characterizations  
5 are off. The methodologies weren't necessarily bad, but  
6 it's just hard to assess full use of a site from periodic  
7 visits.

8           We agree with Energy Commission staff that the  
9 project should have a bird and bat conservation strategy and  
10 an eagle conservation plan. Eagle conservation plan is much  
11 like the one speaker described. It's voluntary, but the  
12 take of a golden eagle is a violation of a federal law,  
13 their Bald and Golden Eagle Act.

14           So the part of the plan component is to assess the  
15 likelihood that take would occur through a detailed analysis  
16 and then based on that analysis we would recommend whether  
17 BrightSource should apply for a permit. So that needs to be  
18 taken into consideration.

19           In terms of migratory birds, the loss of habitat  
20 for migratory birds and impacts to bird populations, we  
21 really don't support the land acquisition. Without  
22 enhancing the habitat or creating habitat, you're really not  
23 doing anything for birds other than losing one patch of  
24 habitat and buying another.

25           Instead we support BrightSource's participation in

1 the service's joint venture program to look at widespread  
2 conservation efforts that could benefits birds across the  
3 region.

4 Last, we would encourage Energy Commission, if it  
5 decides to approve the project, in its certificate of  
6 conditions to be mindful of the other agencies like the Fish  
7 and Wildlife Service have responsibilities and mandates that  
8 deal with some of the issues on the project also. So in the  
9 timing of when certain things to be done, we can't meet the  
10 time frames that you work on and if you rush ahead of us, it  
11 makes things difficult.

12 And also we caution you to be careful with  
13 requiring things in your terms and conditions that might  
14 violate federal law like requiring BrightSource to collect  
15 carcasses. Those would have to be done under the auspices  
16 of a salvage permit issued under the authority of the  
17 Migratory Bird Treaty Act.

18 HEARING OFFICER CELLI: Are you aware of that,  
19 Mr. Bransfield?

20 MR. BRANSFIELD: Pardon?

21 HEARING OFFICER CELLI: Are you aware of such a  
22 proposed condition in the record right now?

23 MR. BRANSFIELD: As -- when I looked at the final  
24 staff assessment, one of the conditions requires that,  
25 unless I'm reading the wrong version.

1 HEARING OFFICER CELLI: Okay. We'll probably  
2 ask about that later. Collecting carcasses --

3 MR. BRANSFIELD: I can barely hear you.

4 HEARING OFFICER CELLI: I'm sorry. Can you hear  
5 me better now?

6 MR. BRANSFIELD: Much better.

7 HEARING OFFICER CELLI: Okay. I'm looking over at  
8 staff and I'm getting a nod in the affirmative from  
9 Mr. Huntley that there is some condition that requires the  
10 collection of carcasses. Please, Ms. --

11 MS. WATSON: Watson.

12 HEARING OFFICER CELLI: Ms. Watson, go ahead.

13 MS. WATSON: I believe it's condition Bio 15 as  
14 part of the monitoring of the flux effects which we haven't  
15 discussed yet. We had suggested carcass removal and we do  
16 acknowledge that if it's a raptor, you would need the  
17 service's permission.

18 HEARING OFFICER CELLI: Okay. Thank you. Did you  
19 hear that?

20 MR. BRANSFIELD: Pretty much.

21 HEARING OFFICER CELLI: Anything further,  
22 Mr. Bransfield?

23 MR. BRANSFIELD: That's it.

24 HEARING OFFICER CELLI: Thank you very much for  
25 listening. Thanks for participating today and we are

1 continuing on with these evidentiary hearings today at  
2 1:00 o'clock. Anyone else on the phone who would like to  
3 make a comment?

4 DR. SHARMA: Yes. I have a question. My name is  
5 Dr. Shankar Sharma, California Department of Fish and  
6 Wildlife. Can you hear me, sir?

7 HEARING OFFICER CELLI: Very clearly, go ahead.

8 DR. SHARMA: Thank you. I'll ask my question. My  
9 question is what are the quantitative probabilities for any  
10 kind of risk -- damage or -- to different species.

11 HEARING OFFICER CELLI: I'm going to ask you to  
12 ask your question again very clearly because you sort came  
13 and went and we didn't hear that clearly. Speak directly  
14 into your phone.

15 DR. SHARMA: Okay. What are the quantitative  
16 probabilities --

17 HEARING OFFICER CELLI: Wait. I'm sorry. Sir,  
18 you probably want to get away from the phone about three  
19 inches and then speak directly into the phone. Otherwise  
20 it -- we get static.

21 DR. SHARMA: Is that better now, sir?

22 HEARING OFFICER CELLI: That's much better. Stay  
23 right there and Tony, bring him up, please. Go ahead.

24 DR. SHARMA: Okay. My name is Dr. Sharma. The  
25 question is what are the quantitative probabilities for any

1 risk in short term and long term over the period of next 20  
2 or 30 years on various species individually as well as  
3 cumulatively. I am asking for a risk assessment data to be  
4 computed and presented. Thank you. Did you hear my entire  
5 question?

6 HEARING OFFICER CELLI: I did. Short-term and  
7 long-term assessment of risk of what?

8 DR. SHARMA: Short-term and long-term assessment  
9 of risk on the species individually and cumulatively.

10 HEARING OFFICER CELLI: Okay.

11 DR. SHARMA: And I'm asking for the quantitative  
12 probability computation based on statistical analytic and  
13 modeling as -- as possible.

14 HEARING OFFICER CELLI: Thank you.

15 DR. SHARMA: My name is Dr. Shankar Sharma,  
16 California Department of Fish and Wildlife.

17 HEARING OFFICER CELLI: Thank you, Dr. Sharma. We  
18 actually have someone here from the Department of Fish and  
19 Wildlife.

20 DR. SHARMA: -- for the applicant -- for the  
21 applicant?

22 HEARING OFFICER CELLI: Okay.

23 DR. SHARMA: And this is -- to the -- particularly  
24 relevant to the -- that is being applied for --

25 HEARING OFFICER CELLI: I would basically say that

1 at this time, Mr. Sharma, since we are at the public comment  
2 period, there are some experts here from staff -- or from  
3 applicant, not all of them, and I'm sorry that the CDFW  
4 person isn't here anymore, Ms. Hawk, but, what I would say  
5 is this. I don't know if you have access to the Internet.

6 If you go to the California Energy Commission's  
7 website and if you -- when you get to the first page, you  
8 will find a list of power plants. You can log into that  
9 list and find Hidden Hills solar energy generating -- solar  
10 electric generating system project and in there is pretty  
11 much all the data that we have in this case.

12 And I would recommend that you begin with the  
13 final staff assessment, Exhibit 300 in our records, because  
14 that's where most of the data is summarized and that's where  
15 you see where see where -- what the data is that we're  
16 talking about today.

17 Ms. Hawk, are you -- is that Ms. Hawk walking over  
18 here? Yes. Ms. Hawk is from the California Department of  
19 Fish and Wildlife. We have Dr. Sharma from CDFW calling in  
20 and I'm not sure if we're responding to his question  
21 adequately or not. Maybe you can help.

22 DR. SHARMA: I am -- and what will -- risk  
23 assessment completed. I mean is the risk computation that  
24 is based on the technology as --

25 HEARING OFFICER CELLI: Mr. Sharma, I'm going



1 to -- I'm sorry to interrupt, but we're not hearing much of  
2 any of this because we can't understand you. There's too  
3 much static on the line. I think the best thing you can do  
4 is back away from your phone a little bit and we'll try to  
5 keep the volume up on the speaker here. Go ahead.

6 DR. SHARMA: Okay.

7 HEARING OFFICER CELLI: Now you may speak, sir.

8 DR. SHARMA: Okay. Yeah. No. What I -- I am  
9 absolutely familiar with the document that you are talking  
10 about. What needs to be included is a risk -- and the  
11 risk -- and the quantitative risk assessment, that would  
12 really help. That would really help and that is the reason  
13 I'm requesting the -- and also -- risk -- consider doing a  
14 risk assessment.

15 HEARING OFFICER CELLI: Let me do this, Mr. Sharma  
16 because we are just -- we can't -- this is not working and  
17 we can't hear you very well and I'm sorry about that. I  
18 don't know what the problem is, but there's so much static  
19 on the line. The request that I have would be for you to  
20 communicate with the California Energy Commission's public  
21 advisor.

22 If you go on the webpage, you can -- there's  
23 actually an interactive page where you can actually send  
24 communication to the public advisor and then we would have  
25 that information and that we would take it in as a comment.

1 DR. SHARMA: Okay. Yeah. I will send you the  
2 question.

3 HEARING OFFICER CELLI: Thank you. I am so sorry,  
4 but it is -- this is just -- we just can't hear you.

5 DR. SHARMA: Okay. I'll email the question.  
6 Thank you.

7 HEARING OFFICER CELLI: Thank you. And I'm sorry  
8 about that, but thanks for participating and continue to  
9 listen in. Is there anyone else on the phone with a  
10 comment -- public comment at this time? FWS. Okay.  
11 There's a person who's identified themselves as FWS. Did  
12 you wish to make a public comment? Hearing none, is there  
13 anyone else on the phone at this time who wishes to make a  
14 public comment? Anyone wishing to make a public comment at  
15 this time?

16 Okay. Then at this time we will break for lunch  
17 and resume at 1:00 o'clock. We'll see you all here at  
18 1:00 o'clock. Thank you. We're off the record.

19 (Off record)

20 HEARING OFFICER CELLI: Well, good afternoon.  
21 Thank you again to the applicant, BrightSource, for getting  
22 the caterers who made a beautiful for everybody. Thank you.  
23 We're going to get back on the record now. We are talking  
24 about biological resources. We've already completed the  
25 topics of desert tortoise and burrowing owl.

1 MS. BELENKY: Hearing Officer Celli -- oops. My  
2 mic is suddenly very loud.

3 HEARING OFFICER CELLI: Oh, I hear you loud and  
4 clear. Go ahead.

5 MS. BELENKY: Hi. This is Lisa Belenky with the  
6 Center. I just wanted to suggest from our last public  
7 comment period just to clarify for the record that we're  
8 separating agency comments from other public comments  
9 because some of these are responsible agencies who have --  
10 people who are on the phone are listening in and it seemed  
11 like they were making comments at the stage of public  
12 comment.

13 I just want to clarify that we're keeping that  
14 straight on the record.

15 HEARING OFFICER CELLI: You know, that's a good  
16 point. I think what I'm going to do, Ms. Belenky and  
17 everyone, from here on out is try to see if I can get agency  
18 comments first and then after that we'll go to the full  
19 general, just so we can sort of separate them out.

20 MS. BELENKY: Thank you.

21 HEARING OFFICER CELLI: Just for organizational  
22 purposes. So good point. Thanks for raising that.

23 Now we want to get into the issue of eagles --  
24 golden eagle and avian issues. I'm going to lump them  
25 together so we can talk about whatever the issues are,

1 avian, migratory birds, et cetera -- migratory birds other  
2 than burrowing owls.

3 BIOLOGICAL (GOLDEN EAGLE AND AVIAN)

4 MR. RATLIFF: Commissioner Celli -- I'm now  
5 calling you a Commissioner.

6 HEARING OFFICER CELLI: Thanks for the promotion.

7 MR. RATLIFF: Mr. Celli, during discussion with  
8 counsel for the applicant at the half time here, I think we  
9 became aware of what the nature of the conflict was or their  
10 concerns about our condition requiring an eagle conservation  
11 permit.

12 And in hearing what the concern was, I think maybe  
13 we can probably work through this hopefully fairly quickly  
14 such that we can remove that concern, which I think is a  
15 concern about either requiring a permit, which is not part  
16 of our condition certification, or requiring approval of  
17 buying a federal agency, in this case the U.S. Fish and  
18 Wildlife Service, which is not what our condition requires.

19 But I think we need -- those are the things I  
20 think the applicant has expressed concern about that need to  
21 be addressed and hopefully our witnesses can address it and  
22 perhaps Mr. Harris can describe the issue as well.

23 HEARING OFFICER CELLI: Go ahead, Mr. Harris.

24 MR. HARRIS: Thank you. This is -- lunch break.  
25 Our blood sugar's up and we figured out what -- so -- but

1 there are really two concerns and I need to kind of take a  
2 little bit of time to explain what they are.

3 But there's an eagle conservation plan, ECP. It's  
4 the plan which is the first thing that's requested by the  
5 service, which may or may not ultimately lead to an  
6 application for an eagle permit. Okay.

7 Our concern is -- and maybe I should ask the  
8 witness to -- to give you the factual basis for this, but  
9 our concern is that there's not -- approval process for that  
10 plan. It's part of the step, if you will, towards the other  
11 one. And we want to make sure the project's approval by you  
12 all -- construction and the operation is not conditioned  
13 upon approval of a federal plan. Okay?

14 So that really is kind of a sticking point at the  
15 highest level. Staff didn't talk about us getting a permit,  
16 but it would also be the same problem if the construction or  
17 operation were conditioned upon approval -- or receipt of a  
18 permit from a federal agency.

19 So those two conditions are really what -- I think  
20 it's the core of what we figured out once we had lunch.

21 So I think we're following the same page there,  
22 moving things forward. I guess I want to reiterate that  
23 regardless of what you guys do, we still have to work with  
24 the service. We will continue to work with the service and  
25 we're also not adverse to the idea of giving you copies of

1 everything that we give to the service in that connection.

2           It sounds very magnanimous, but they're public  
3 documents anyway. So I'm very -- pleased to be able to do  
4 that. So those are kind of the sticking points and so if we  
5 can have clarification that this state agency is not  
6 intending that your approval is contingent upon federal  
7 actions down the road, then that would really help --

8           HEARING OFFICER CELLI: Thank you. So the way I  
9 thought that we would normally proceed and have been  
10 proceeding up until now is to hear from staff's people  
11 first, then applicant's people, when they're usually on the  
12 same page, at least in agreement, and then we hear the  
13 contra positions from all of the other parties.

14           Are you asking for a departure in that or should I  
15 just continue to follow that format?

16           MR. HARRIS: I think if I asked my witness two  
17 questions, you'd have actual evidence --

18           HEARING OFFICER CELLI: Okay. Go ahead.

19           MR. HARRIS: Mr. Phillips, in your experience, is  
20 there an approval of an eagle conservation plan?

21           MR. PHILLIPS: Do you mean is there one in  
22 existence or is there -- I'm not sure I understand your  
23 question. I'm sorry.

24           MR. HARRIS: As a general rule, have you seen an  
25 approved eagle conservation plan?

1 MR. PHILLIPS: Well, actually I have -- there's  
2 nowhere in the guidance -- the draft guidance for eagle  
3 conservation plan that says the eagle -- the service would  
4 approve an eagle conservation plan.

5 MR. HARRIS: All right. Thank you. And then my  
6 second question: To your knowledge to date, has there been  
7 an eagle take permit issued by the service to date?

8 MR. PHILLIPS: No. The eagle rule was passed in  
9 2009 and since that has been theoretically an available  
10 option, no take permit has been granted.

11 MR. HARRIS: I think with those facts and our  
12 colloquy here, I can probably stop an eagle issue for us.

13 HEARING OFFICER CELLI: Any further eagle issues  
14 from staff? Mr. Huntley.

15 MR. HUNTLEY: No, sir. I think we agree in  
16 principles that the Energy Commission would review and  
17 approve the eagle plan. We would seek the review and  
18 comment from the regulatory agencies, but we would not  
19 require their approval. So I don't think we're  
20 fundamentally in opposition.

21 HEARING OFFICER CELLI: Ms. Anderson, anything  
22 on --

23 MR. HARRIS: Hang on a second. That's -- is there  
24 a separate Energy Commission plan now called eagle  
25 conservation plan?

1 HEARING OFFICER CELLI: Let me just be clear. My  
2 thought was -- or my understanding was that staff was asking  
3 for an eagle conservation plan of its own and that applicant  
4 was resisting that and I thought that was what the issue  
5 was.

6 MR. HARRIS: You should have had lunch with us. I  
7 didn't understand that to be the issue.

8 HEARING OFFICER CELLI: Okay. So I'm completely  
9 off base here, so that's fine. What is the issue as you see  
10 it, Mr. Huntley?

11 MR. HUNTLEY: I'm not certain what the issue is at  
12 all at this point in time. Staff in its condition of  
13 certification Bio 15 has recommended the adoption of an  
14 eagle conservation plan. This would be approved by the CPM  
15 in consultation with U.S. Fish and Wildlife Service, but it  
16 wouldn't require the approval of. So I'm not certain what  
17 the confusion is.

18 MR. HARRIS: I guess our confusion is you called  
19 the plan exactly what you're calling the Fish and Wildlife  
20 Service called the plan. So you want -- you're intending us  
21 to submit a state -- a plan to use that is not the federal  
22 plan, but it's also called the eagle conservation plan?

23 MR. HUNTLEY: I'm frankly a little bit confused on  
24 what you're going with here because we have a bird that's a  
25 state fully-protected species. We feel it's appropriate to



1 have an eagle conservation plan to manage that bird and we  
2 would like you to follow the guidelines identified by the  
3 Fish and Wildlife Service for the development of a plan.

4 We're not asking you to seek a permit from the  
5 Fish and Wildlife Service, nor are we asking for their  
6 approval of our -- an approval of the plan before we will  
7 approve it. We're asking for feedback.

8 HEARING OFFICER CELLI: Does that clarify things,  
9 Mr. Ellison?

10 MR. ELLISON: Perhaps, but first of all, good  
11 afternoon, everybody. Chris Ellison. This -- I understand  
12 staff is asking -- you used the term eagle conservation  
13 plan. Do you mean an eagle conservation plan within the  
14 meaning of the guidelines prepared by U.S. Fish and  
15 Wildlife. That right?

16 MR. HUNTLEY: I think that's a fair statement.

17 MR. ELLISON: Okay. And you want to submit it to  
18 Fish and Wildlife Service.

19 MR. HUNTLEY: We would like you to submit it to us  
20 and we will coordinate with. So we would like your input.

21 MR. ELLISON: But you want to submit it to Fish  
22 and Wildlife Service.

23 MR. HUNTLEY: I think that's a fair statement.

24 MR. ELLISON: Okay. All right. BrightSource has  
25 no problem with that. We will do that. The issue is an

1 approval, quote/unquote/ of the plan as a condition of  
2 construction or operation of the facility by the feds is --  
3 if you want to have us accept the condition voluntarily, we  
4 will accept the condition that says yes, we will submit an  
5 eagle conservation plan to Fish and Wildlife Service, yes,  
6 we will provide a copy of it to Energy Commission staff.  
7 Staff can do with it what it wants to. Fish and Wildlife  
8 Service can do with it what its mandate is to do with it.

9 But if you insert a state approval of this federal  
10 voluntary plan and make that a condition of construction and  
11 operation of the plant, you've now done something that goes  
12 beyond federal law, even though you're essentially  
13 implementing federal law. You've done something that has  
14 very implications for the project.

15 PRESIDING MEMBER DOUGLAS: Mr. Ellison, my  
16 understanding from what staff said -- and we'll let them  
17 speak for themselves in a minute -- is that the state or the  
18 staff approval would be for the purposes of state law; is  
19 that correct?

20 MR. HUNTLEY: Yes, it is.

21 MR. ELLISON: Well, which state law are we  
22 referring to?

23 MR. HUNTLEY: We believe there's a reasonable  
24 expectation of impacts to this species. In order to  
25 minimize/reduce impacts to this species, we proposed a

1 series of mitigation measures or conditions of  
2 certification.

3 One component of that is development of Bio 15  
4 which one component of that is preparation of an eagle plan  
5 and that eagle plan identifies expected risks/methods for  
6 reduction.

7 Now, we are asking this because this species is a  
8 fully protected species and we believe its impact is  
9 significant.

10 MR. ELLISON: That's not the question I'm asking.  
11 The question I'm asking is what is the state authority for  
12 an eagle protection -- eagle conservation plan.

13 MR. HUNTLEY: I believe we have as our -- as any  
14 condition here, whether it's a restoration plan or anything,  
15 the ability under CEQA to require plans.

16 MR. ELLISON: Okay. So CEQA.

17 MR. HUNTLEY: Sure. I think so.

18 MR. ELLISON: -- CEQA. Okay. Do you know of any  
19 state agency that has required eagle conservation plan under  
20 the guidelines of federal law as a condition of CEQA?

21 HEARING OFFICER CELLI: You know, Mr. Ellison, I'm  
22 actually going to curtail this line of questioning and I'm  
23 going to tell you why. It's sounding very formalistic and  
24 while you've been very, very successful so far in allowing  
25 the parties to make their case through their expects,

1 through discussion with the experts rather than this sort of  
2 cross-examination and line of questioning, if staff wants to  
3 condition or recommend a condition that they perceive that  
4 there's a need for an eagle management plan, an eagle  
5 protection, eagle conservation plan, whatever they want to  
6 call it, this isn't an unusual thing.

7           It may be unusual as to eagles, but they ask for  
8 other kinds of management plans: desert tortoise, burrowing  
9 owl, that sort of thing. So I'm not clear what the -- can  
10 you get to the heart of it.

11           MR. ELLISON: I'm trying to get to the heart of  
12 it. I understand -- look, I apologize if I sounded like I  
13 was cross-examining staff. I didn't mean to do that.

14           What I was trying to do was to clarify in my  
15 mind -- nobody else's exactly what the issue is and I will  
16 just summarize by saying this is BrightSource's -- we  
17 understand an eagle conservation plan. That is a term of  
18 art under federal law.

19           We understand staff is asking us to submit this  
20 pursuant to those federal guidelines to the Fish and  
21 Wildlife Service. We will do all of that. That's not the  
22 problem.

23           The problem is if you condition it on approval  
24 prior to construction and operation, you're doing two  
25 things. One I think you're in a sense taking a federal

1 program and making it into a state program and that has  
2 legal implications. But more importantly -- more  
3 practically, given the history of this program, there are no  
4 guidelines for solar, for -- conservation plan. There are  
5 only guidelines for -- it took a very long time to develop  
6 those.

7           The approval process that we're talking about,  
8 whether it's by the state or by the federal government is  
9 potentially a very long process. So if you want us to  
10 submit this information and make a proposed conservation for  
11 eagles, that's fine. BrightSource has problem. We're doing  
12 that at Avenal.

13           We're working with Fish and Wildlife Service on  
14 exactly this issue. And if I may say one other thing, I  
15 think when Fish and Wildlife Service has said they support  
16 staff's recommendation, I'm going to -- you can correct me,  
17 Fish and Wildlife Service, Ray Bransfield, if you're still  
18 on the phone. I think they were talking about a submission  
19 of a federal plan.

20           And when Bransfield said his comments -- you may  
21 have heard his comment to the effect of don't hold us to a  
22 schedule in what you require that we can't meet. I think --  
23 Chris Ellison thinks -- speak for himself -- that he was  
24 referring to exactly this problem, that it's one thing to  
25 say we want a plan. It's another thing to tell us we have

1 to approve that plan within a fixed period of time when the  
2 project is in --

3 HEARING OFFICER CELLI: Okay. But right now, the  
4 state of the record is unless we hear contra evidence is  
5 that there is no such thing as such an approval.

6 MR. ELLISON: That's my understanding.

7 HEARING OFFICER CELLI: Okay.

8 MR. ELLISON: And I apologize for jumping into the  
9 middle of this, but I do want the record to be very clear  
10 what BrightSource is prepared to do. The problem's not  
11 presenting an eagle conservation plan. It's not about that.

12 We don't think there's going to be a take of  
13 eagles. We can have that discussion in a few moments when  
14 the flex panel gets up there, but we have no problem  
15 submitting a conservation plan.

16 What's important as a practical matter of the  
17 project is jeopardizing construction and operation on an  
18 approval process that doesn't exist, hasn't been developed,  
19 and it might take years.

20 HEARING OFFICER CELLI: And I just -- correct me  
21 if I'm wrong, but I get the sense, Mr. Huntley, that that's  
22 just not the case here. Is that so?

23 MR. HUNTLEY: I believe it is not the case.

24 HEARING OFFICER CELLI: Right. There is no  
25 requirement in Bio 15 for any sort of federal approval; is

1 that correct?

2 MR. HUNTLEY: That's true.

3 HEARING OFFICER CELLI: Okay.

4 MR. ELLISON: I understand there is a requirement  
5 for CPM approval in consultation with Fish and Wildlife  
6 Service.

7 MR. RATLIFF: As there is for many other plans,  
8 but --

9 HEARING OFFICER CELLI: Exactly. We often have  
10 CPM approval and consultation with CDF -- well, it used to  
11 be CDFG -- CDF, California Department of Fish and Wildlife,  
12 and that sort of thing. So we do take advantage of our  
13 sister agencies --

14 MR. ELLISON: Here's the practical problem and the  
15 I'm going to -- the practical problem is if I'm a CPM and I  
16 need to approve this eagle conservation plan developed  
17 according to eagle conservation plan guidelines of the Fish  
18 and Wildlife Service, for solar projects, that does not  
19 exist.

20 And so if I'm asked to approve that, it's quite --  
21 at least it's certainly risk that BrightSource doesn't want  
22 to have to take to say we need the guidelines for solar to  
23 be developed before we can approve your plan.

24 PRESIDING MEMBER DOUGLAS: So, Mr. Ellison, let's  
25 turn that into a question and let's say to staff, okay, so

1 on what basis do you think staff -- you know, what would  
2 staff look for in such a plan, what standards would staff  
3 want the plan to meet, what are you trying to achieve with  
4 this plan.

5 MR. HUNTLEY: As we've described in the condition,  
6 there's a number of things related to the injury of eagles  
7 whether it's from collision, exposure to solar flux,  
8 expected take, methods to minimize those.

9 I understand where you're going with that and I  
10 see the conundrum that if there's not a guideline that  
11 someone could lean on, there could be ambiguity. Someone  
12 might be in line to do that.

13 And perhaps the language in the condition can be  
14 modified in such a way that provides a little more  
15 flexibility in that, using the best guidelines available,  
16 and maybe even highlight a few other things that are perhaps  
17 ambiguous in our condition.

18 So again I think we can, you know, agree that  
19 there's some language that we can change and we can  
20 highlight maybe a little bit better the things we would like  
21 to see in the plan, if that will, you know, lower your fears  
22 a little bit.

23 MR. ELLISON: Well, obviously I need to consult  
24 with my client and we'll negotiate it in real-time here, but  
25 let me just say --



1 MR. HUNTLEY: Certainly.

2 MR. ELLISON: -- that speaking for myself, I think  
3 if we can come to an agreement on a set of criteria for  
4 approval or if we can do something to address the concern  
5 that I've expressed that we go along with and we're happy to  
6 talk with staff about language to that.

7 The -- there is a real difference in my mind  
8 between approval of a plan that commits Fish and Wildlife  
9 Service to saying not just that we've submitted something to  
10 start our process and then we can continue to deal with Fish  
11 and Wildlife Service. That's one thing versus saying we're  
12 done, this plan's final, and we're going to implement it.

13 So those kinds of distinctions --

14 MR. HUNTLEY: Understood.

15 HEARING OFFICER CELLI: And the committee gets  
16 that as well.

17 PRESIDING MEMBER DOUGLAS: So --

18 HEARING OFFICER CELLI: So I think -- did you  
19 have --

20 PRESIDING MEMBER DOUGLAS: I was just going to say  
21 that I think we have great confidence in your ability to  
22 work out acceptable language. You're talking to a committee  
23 which for better or for worse is relatively nuanced  
24 experience and understanding of the state of play with the  
25 eagle guidelines and the status of the eagle on both the

1 federal and state levels.

2           So recognize it's complex, but I think that such a  
3 plan can be a very valuable part of the process. I just  
4 hope that you'll be able to work out -- I also very much  
5 hear the concern that you're raising, so --

6           MR. ELLISON: Okay. Thank you. And again I  
7 apologize for jumping in here.

8           HEARING OFFICER CELLI: Ms. Anderson, we'd like to  
9 hear from the Center for Biological Diversity regarding  
10 eagle issues.

11           MS. ANDERSON: Thank you. Now with regards to  
12 golden eagles, we're concerned about the golden eagles and  
13 appreciate the staff showing the maps this morning of not  
14 only the golden eagle locations but also I think the  
15 applicant showed a picture -- or a map with the -- or maybe  
16 it was staff. I'm not sure -- but with regards to the  
17 golden eagle sightings that were done during the tortoise  
18 surveys, which clearly shows that, you know, not only are  
19 eagles nesting in and around the project site, but they're  
20 also using the project site for foraging, et cetera.

21           So we recognize that, you know, the flux issue is  
22 one threat to eagles, but I think our additional concern is  
23 that basically five square miles of eagle foraging habitat  
24 is going to be taken away from the eagles in the area.

25           The desert golden eagle do not occur generally in

1 high densities because the resources that they depend on are  
2 not as dense as in other areas and so basically we think  
3 that it's appropriate that the applicant be required to get  
4 a golden eagle take permit under the Bald and Golden Eagle  
5 Protection Act.

6 I think one of our concerns as well is that -- or  
7 my concern I should say actually is, you know, I've reviewed  
8 a lot of eagle conservation plans and the analyses that go  
9 along with those with regards to is this a high or low eagle  
10 density area and so many of the plans -- oh, you know,  
11 there's low eagle densities in these areas. It's going to  
12 not be a major problem for the eagles. The projects move  
13 forward and granted most of my experience has been with wind  
14 projects, but then the projects end up within, you know, the  
15 first couple of months or couple of years of operation  
16 killing a golden eagle.

17 And so there's been great impacts to the  
18 population as a whole. There's increasing threats to these  
19 populations in the California desert specifically. We're  
20 seeing more and more habitat disappear as it's turned into  
21 industrialized uses and I just think that it would be better  
22 to err on the side of caution and get all of those permits  
23 in place with adequate mitigation, et cetera, than to let  
24 this get to a point where golden eagles are going to need to  
25 be a listed species.

1 HEARING OFFICER CELLI: Thank you. And next to  
2 Ms. -- that is Mr. --

3 MR. PHILLIPS: Dave Phillips.

4 HEARING OFFICER CELLI: -- no, go ahead.

5 MR. PHILLIPS: I work a lot with this issue. It's  
6 not simple. It's kind of actually in some cases almost an  
7 unsolvable problem.

8 But I do want to just kind of correct a couple of  
9 statements that were made and discuss a little further this  
10 issue.

11 You mentioned that eagles are documented nesting  
12 in and around the project. That's totally inaccurate. The  
13 nearest tended nest was documented last spring. It was 4.7  
14 miles to the west of the project. The nearest known active  
15 nest is over seven miles to the west of the project.

16 So not nesting in the project. There is no  
17 nesting habitat there. Just wanted to clarify that.

18 You mentioned also that you have reviewed many  
19 ECPs. However, I would venture to say none of those are for  
20 solar projects and I would also venture to say that you  
21 recommend -- well, you recommended that it's appropriate to  
22 require a programmatic take permit.

23 That's actually starting at the end of this  
24 process. An eagle conservation plan, if you were to follow  
25 the federal guidelines, is a process where you would ask the

1 question, does this technology and this project site pose  
2 risk of take to eagles. Okay. Now, impact is a little  
3 different. Take is a very specific thing for which there's  
4 a federal mechanism available to authorize.

5           Impact, definitely different issue. And so -- but  
6 I also would like to say with regard to impacts, the  
7 applicant, in my understanding, has proposed some pretty  
8 significant conservation measures that would -- I think are  
9 designed to propose a net conservation benefit to this  
10 species.

11           We can go into detail on those, but, you know, to  
12 offset any potential impacts to this species, I think  
13 there's a very good plan in place.

14           I do think an eagle conservation plan described to  
15 adhere to the Fish and Wildlife Service guidelines is  
16 actually problematic because of where it takes you.  
17 However, an eagle conservation plan that is designed to  
18 minimize and avoid impacts to eagles is okay. And that's  
19 just my professional opinion on that issue.

20           HEARING OFFICER CELLI: Thank you. Do we have any  
21 other intervenor experts on the rest of the panel? They  
22 were all -- okay. Before I get to Mr. Arnold, I just -- I'm  
23 trying to come around here. Ms. MacDonald, anything on the  
24 eagle?

25           MS. MacDONALD: On golden eagle specifically or

1 that specific topic?

2 HEARING OFFICER CELLI: Gold -- well, let's just  
3 say golden eagles specifically --

4 MS. MacDONALD: Okay.

5 HEARING OFFICER CELLI: -- and if you have  
6 something on a specific topic, why don't you lead with that.

7 MS. MacDONALD: No, I didn't have anything on the  
8 specific topic. I could just testify that we've seen eagles  
9 in our area, eagles, hawks, all kinds of birds for the whole  
10 time that I've been there, so 40 years, and oftentimes they  
11 perch. They do perch on the power poles that go along the  
12 Old Spanish Trail Highway which are -- I don't know anything  
13 about what's a dangerous pole and what isn't, but these are  
14 pretty old poles. They're pretty basic. They're just, you  
15 know, like timber on the top and I've seen them perch there  
16 my entire life. And that's it. Thank you.

17 HEARING OFFICER CELLI: Thank you. All right.  
18 Richard Arnold, golden eagles.

19 MR. ARNOLD: That would be me. Richard Arnold  
20 here on intervenor -- actually I have some comments specific  
21 to golden eagles, but -- so it's hard to talk about just one  
22 species.

23 First and foremost again, in looking at the  
24 discussion in the FSA and as presented in this format today,  
25 the -- what we're focusing on golden eagles and of course

1 again I didn't see any reference to Southern Paiutes, any  
2 kind of belief system as to what those birds mean to us  
3 culturally.

4           You know, you have to look at the  
5 interconnectedness to the -- and I guess that's what's  
6 somewhat puzzling to me, you know, how to look at the golden  
7 eagle without looking at what they see, what they use, you  
8 know, in their frame of vision. So, you know, they're  
9 obviously around. You don't put up a fence to hold them in  
10 the place. You can't put up like a desert tortoise,  
11 relocate them to another area because they're going to get  
12 out and they're going to go to the places that they're  
13 supposed to be.

14           I think it's -- for me it's almost like trying to  
15 talk about your finger without talking about your hand. And  
16 again it's all connected to the -- to everything that's  
17 around.

18           The locations and the areas that are around, you  
19 know, as was said, we have seen -- and what you've heard,  
20 the habitats are changing. They're going to oftentimes  
21 other locations around that create some stress for us  
22 culturally because again when we're talking about areas and  
23 we're talking about things either be it through prayers,  
24 songs, stories, observations, what have you, that when they  
25 become farther reaching that it becomes that much more of a

1 concern for tribal people.

2           You know, culturally the eagles, they're a very  
3 revered animal in many ways and oftentimes even for the  
4 United States obviously as using and recognizing the  
5 importance of the animal and classifying it as a threatened  
6 species -- or a protected species. I'm sorry.

7           It's something that is very important to the  
8 country, but if we look at culturally, it's even more  
9 important to us because the eagle is one of the ones that is  
10 responsible for connecting us in our songs and stories that  
11 we have with the creator, many other deities, and other  
12 things within the landscape that that are oftentimes  
13 overlooked and not considered.

14           And I think when we talked earlier about some of  
15 the cultural dynamics of again I have to -- I'll refer to  
16 the ten directions and looking at the spirit of those  
17 eagles, the things that they have seen throughout their  
18 lifetime and are going to continue to see.

19           They communicate those culturally with other  
20 important animals. So there is many other, you know,  
21 predatory birds, migratory birds that are out there as well  
22 that are integral to this.

23           But more importantly with the golden eagle, you  
24 know, it hasn't been really part of the discussion and/or  
25 consideration. In looking at a golden eagle conservation



1 plan, while I'm not a biologist and I'm not a  
2 conservationist per -- whatever you bird folks are, I'm just  
3 again an old country boy here, so -- so I think for us, it's  
4 something that is so critical to us because of the  
5 importance of what the bird means.

6 I appreciate the efforts to try to protect the  
7 animal, the habitat, and ensure that, you know, it's going  
8 to continue to be around, but I think again it's very  
9 critical as we talk about the interrelationship to the  
10 environment, we talk about the interrelationship to the  
11 other resources and animals.

12 You know, we just go off of talking about the  
13 burrowing owl and the desert tortoise and we talked about  
14 the tortoise and how it was important to teach us about  
15 patience and not rushing through things. And so that's what  
16 we need to do here.

17 I think we don't want to speed through this  
18 process and I appreciate all the comments that have been  
19 made. However, in looking at trying to haggle over some  
20 stipulations as to an agreement to protect the animal  
21 because of it's going to cause a hardship on the project, I  
22 tend to question that culturally because I look at the  
23 things that are important to us culturally that need to be  
24 given some priority in those considerations.

25 Nobody here has known, used, or considered the

1 Southern Paiute beliefs or significance of this animal.  
2 Nobody here knows that I have -- that I've heard in these  
3 discussions at least, although there are some parallels,  
4 some crossovers -- about the prayers that we use, the  
5 Southern Paiute people, the songs and the stories that are  
6 related to these animals, the things that they provide us up  
7 to and including their feathers.

8           Nobody here has the knowledge or the information  
9 or the tools or the instruments that come from their  
10 relatives that have come from these animals that we still  
11 use today as Paiute people.

12           Nobody knows about the doctoring that is -- that  
13 relies upon this animal, that Southern Paiute people rely  
14 upon this animal specifically and not just in -- I mean not  
15 just in general, but for animals, these particular eagles  
16 that come down from this very important cultural and  
17 ethnographic landscape that has been identified, that  
18 particular area is why we need these particular resources in  
19 there because of the power that is embedded in the stories  
20 and the songs we have.

21           Nobody watches out for this animal and has an  
22 appreciation from a cultural point of view like Southern  
23 Paiute people. You can talk to other tribal people from  
24 across and universally you're going to find that a lot of  
25 shared and similar types of concerns about this animal.

1           But I'm not here to talk about the other people.  
2 I'm here to talk about Southern Paiute people.

3           Lastly, this -- the golden eagle is the one that  
4 can take the messages source up high. Those of you that  
5 have ever had the privilege of watching a golden eagle from  
6 the Hidden Hills area specifically -- and I've done that  
7 many, many times -- watching and how they can -- they can  
8 take you way up into the sky. They can take you up into the  
9 sun where you can't see them any longer, but they're there.  
10 You can talk to them and they'll come down.

11           They watch over. And again anything that happens  
12 in that area no matter what you do and as far as whatever  
13 kind of a conservation plan, you folks aren't -- don't have  
14 the ability to control whether or not it's going to fly over  
15 into the area or be concerned with the impact by the things  
16 that are going into the -- that are happening as a result of  
17 this particular project. Thank you.

18           HEARING OFFICER CELLI: Thank you, Mr. Arnold.

19           MR. PHILLIPS: Can I make one brief comment?

20           HEARING OFFICER CELLI: Mr. Phillips.

21           MR. PHILLIPS: Thank you.

22           HEARING OFFICER CELLI: Yes.

23           MR. PHILLIPS: I love your perspective and I  
24 really appreciate your input. I just want to respectfully  
25 correct one minor point that you were kind of surprised that

1 we're arguing over whether or not to protect the species and  
2 I would just point out I work with BrightSource every day on  
3 this issue and others and it's my impression -- I work with  
4 a lot of industrial clients both wind and solar and other  
5 industries, that BrightSource is very much interested in  
6 actually enhancing the circumstances for this animal.

7           So I don't think we're arguing over that. They do  
8 obviously have an interest in building their project, but  
9 they do want to do what is right. We're really arguing I  
10 think in this case over a very problematic policy issue that  
11 is kind of a quagmire especially presently for the wind  
12 industry and I think they're just very concerned about  
13 stepping into that quagmire and affecting the outcome here.

14           HEARING OFFICER CELLI: Thank you, Mr. Phillips.  
15 I believe at this point we're now out of the factual problem  
16 and into a legal problem or a word sniffing problem between  
17 applicant and staff in terms of creating a condition and I  
18 know that you can do that and if we use our time  
19 effectively, maybe you'll have some quality time today to  
20 put into that. So that's --

21           MR. RATLIFF: Yes, Mr. Celli, I think I hear two  
22 things. I hear basically that there's confusion over what  
23 we're calling the plan which is a plan under the Energy  
24 Commission's SESA authority, but it sounds like a federal  
25 plan. And it appears that that's creating confusion with

1 U.S. Fish and Wildlife Service.

2 And I hear secondly that there is concern about  
3 what the plan entails such that it isn't some kind of --  
4 that design is so bad that they don't know whether they  
5 could ever meet the requirements.

6 So those are the things that, you know, if we  
7 rewrite the condition, we would try to address to try to  
8 make it clear and more definite what the plan is, what  
9 authority -- and what the contents are and we'll try to do  
10 that.

11 HEARING OFFICER CELLI: Thank you. And we know  
12 you can. So I'm going to move on now to the -- Ms. Ileene  
13 Anderson. When we were talking earlier about what are the  
14 issues going to be on biology, you said eagle and avian. We  
15 are going to take avian -- the avian flux problem is a  
16 separate issue which we're going to take up last.

17 I just wanted to make sure with you that there  
18 wasn't some other avian issue apart from avian flux that you  
19 felt needed to be discussed.

20 MS. ANDERSON: Thank you, Hearing Officer Celli.  
21 That is one of the concerns that I have, the avian flux, so  
22 I'm anxious to participate in that discussion when we have  
23 it.

24 I guess the other thing that I'm concerned about  
25 flux -- and I don't mean to digress into the flux discussion

1 now, but flux is one of the impacts. The other one that I'm  
2 concerned about with regards to the power tower technology  
3 that I'm not hearing that we're going to discuss under the  
4 flux -- in the flux discussion is impacts -- the largest  
5 mortality impact that has been documented in the scientific  
6 literature from this type of technology was from birds  
7 running into mirrors and I just want to, you know, put out  
8 there that I really haven't seen any suggestions from either  
9 the staff or applicant about ways to minimize that or avoid  
10 that other than I guess the new sort of proposal that we  
11 discussed at the workshop with regards to additional  
12 mitigation and that sort of thing.

13           And I don't know if we're going to discuss that  
14 now or if we're going to discuss it in flux.

15           HEARING OFFICER CELLI: Well, let's -- okay. I  
16 want to keep flux as a separate thing. So we'll talk about  
17 that later. I just want to ask staff -- right.

18           So, staff, if you wouldn't mind, could you address  
19 the avian issues vis-a-vis the mirrors.

20           MR. HUNTLEY: Yes, sir. Staff identified in its  
21 FSA that we believe based on the evidence today that birds  
22 will collide with the mirrors and we do believe that that's  
23 going to pose -- you know, in combination with other  
24 risks -- a significant and immitigable impact over the  
25 30-year life of the project.

1           And we've proposed in our Bio 15 methods to  
2 monitor and efforts to minimize that where possible, but we  
3 acknowledge there may not be any feasible mitigation that  
4 can be done on the site to minimize the collision risk with  
5 the existing mirrors.

6           HEARING OFFICER CELLI: So did you say  
7 unmitigable? Was that the word you used?

8           MR. HUNTLEY: We said it was significant and  
9 unavoidable. Forgive my poor English.

10          HEARING OFFICER CELLI: And Mr. Phillips, did you  
11 have something to add to that, please.

12          MR. PHILLIPS: Yes. The staff concludes a  
13 significant and unavoidable impact that as I understand it  
14 cannot be mitigated. However, I do not understand their  
15 criteria for significance, sort of how they get there, nor  
16 do I understand the evidence that they would use to arrive  
17 at that conclusion.

18                 We have quite a bit real world evidence from  
19 currently operating projects that gives us a great deal of  
20 information with which to assess risk. We also have quite a  
21 bit of information about the biology of the birds on site,  
22 the population status and circumstances as it relates to  
23 what level of impact might be biologically significant.

24                 I would respectfully disagree with the conclusion  
25 of staff that we're even close to that situation with any

1 likely outcome of this -- with operation of this project.  
2 If you'd like, I can kind of go through a lot of the  
3 evidence. You know, I know we're focused more on I guess  
4 the collision topic with mirrors as opposed to flux.

5 HEARING OFFICER CELLI: Right.

6 MR. PHILLIPS: I think -- is now the appropriate  
7 time to kind of go into the --

8 PRESIDING MEMBER DOUGLAS: Well, you asked a  
9 question staff. You said that you didn't understand the  
10 basis of their conclusion. So let's let staff answer that  
11 before you recite evidence. Go ahead.

12 MR. RATLIFF: Yes, Commissioners, we have a person  
13 who is our avian specialist. He's Mr. Hass and I would like  
14 him to address that.

15 PRESIDING MEMBER DOUGLAS: Okay.

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

17 MR. HASS: Thank you. Yeah --

18 HEARING OFFICER CELLI: Please speak right into  
19 that -- bring the mic up to you and speak right into it,  
20 please.

21 MR. HASS: So I apologize for the earlier sort of  
22 soliloquy, but that was leading into this and I also was  
23 hoping to be able to set our side of the record straight  
24 ultimately on the status of the golden eagle. And I think  
25 it is different, although it's nice to see that we are I



1 think moving in a very positive direction after the earlier  
2 discussion.

3           So when I was invited to participate in this  
4 project, I wasn't given any specific direction. I was asked  
5 to evaluate studies and the applicability of the studies to  
6 the project. And so I did four basic chores. Two of them  
7 related to what I call natural history and two which will  
8 surface later when we get into the flux discussion.

9           So the -- in general I was asked to assess the  
10 site and give an idea. So I basically have been familiar  
11 with this type of project in the past and in sort of  
12 conflict with what was recently stated, there actually is no  
13 project nor has there ever been an operational project of  
14 similar nature of an eagle vaguely comparable size to Hidden  
15 Hills. That's just flat out true.

16           The size of the other projects now, I know that  
17 Ivanpah has generated power. We have no specific data of  
18 the same sort of nature of surveys and such.

19           So one of the most important criteria about which  
20 I nested my analysis was the necessity that use of any  
21 experimental data including field studies or historical data  
22 must take into account in every parameter the tremendous  
23 size discrepancy between the project and the surrogates from  
24 which the data were derived.

25           So with that in mind, I did as much reading

1 literature and visited the old Solar I site and already --  
2 as soon as I visited there, I started to see problems and  
3 one of those problems which I'm not going to address right  
4 now is that to actually look of carcasses would require so  
5 much more time than was -- than had been documented or would  
6 be needed.

7           And that would also be true for other sites. Now  
8 when you then take a site that's 5.1 miles square and figure  
9 out how you're actually going to be able to evaluate these  
10 things, you have to look at your data and you have to look  
11 at it highly critically.

12           So having made several site visits, I found at the  
13 site it's a mix of desert habitats of broadly varying levels  
14 of disturbance, but there's no portion of the site that is  
15 unsuitable for wildlife use.

16           Avian occurrence at the site is expected to ebb  
17 and flow with respect to weather phenomena including  
18 seasonal changes as well as general avian behaviors and life  
19 strategies.

20           Now, Chris and staff have mentioned this before.  
21 The quality of the surveys, I independently created a list  
22 of what I expected at the site. It very much matches by  
23 species, in other words, what's called species richness,  
24 very much what the applicant's biologists have found.

25           So we are not critical of the way they carried out

1 their surveys. What is the problem is that you cannot take  
2 the types of surveys that have been conducted and then apply  
3 them on a large scale.

4           So I had a list of all the species and I don't  
5 think we need to go over them because in effect I can simply  
6 say many of the species that I would expect have already  
7 been documented by applicant's biologists. So that is not  
8 the issue.

9           But one to the biggest issues is that the so  
10 called point count method was used to do surveys. Point  
11 count method is a wonderful way of censusing birds. It was  
12 designed for long-term monitoring, not population  
13 estimation.

14           And although it's become a standard for bird  
15 surveys, when not used for long-term monitoring -- and  
16 that's the sort of thing where, for instance, there's a  
17 forest fire and they want to find out how the habitat  
18 recovers. So they go out and establish point counts and  
19 over many years, 5, 10, 15, 20. They census.

20           That is the ideal for what point counts were  
21 designed for.

22           The data from this method is typically misapplied  
23 and misinterpreted and even when implemented on long-term  
24 monitoring studies, there's still no power to ferret out  
25 what it was that would have caused changes. So then you

1 then have to design secondary studies to say okay, we've  
2 noticed a change, what caused the change.

3           So most biologists typically try to analyze point  
4 count data using standard sampling estimation procedures and  
5 assume that the counts can be used in place of exact  
6 measurements of bird abundance.

7           Most point counts unfortunately miss over  
8 50 percent of the individual birds at any point and often  
9 fail to adequately estimate the actual area that's being  
10 investigated. So if you're undercounting and you have no  
11 sense about how sense about how, if you have what you think  
12 is a hundred meter radius, but it's --

13           HEARING OFFICER CELLI: One meter. Why not?

14           MR. HASS: Oh, I'm sorry.

15           HEARING OFFICER CELLI: I'm sorry to interrupt,  
16 Mr. Hass, but we have to make sure we have a good record and  
17 we're having a problem right now with our court reporter's  
18 record. So we need to fix this.

19           (Interruption in proceedings)

20           HEARING OFFICER CELLI: We are -- we have not  
21 gotten off the record. We've been on the record this whole  
22 time. So the point is we're trying to get avian mortality  
23 having to do with mirrors and so if you could please kind of  
24 get to the point, Mr. Hass, we'd appreciate that. I -- if  
25 we understand the point count is not --

1           MR. HASS: I think this leads to all of these  
2 questions including we have -- you have to set a baseline  
3 because if I don't get to it now, it'll end up having to  
4 come out and it does assess how do you tell how much  
5 mortality or what is a predictable level of mortality.

6           And the applicant states that it's X and the  
7 analysis of their data suggests it's considerably greater  
8 than X. And I think there's very specific things with  
9 respect to the golden eagle.

10          HEARING OFFICER CELLI: So what you're building  
11 towards is that your opinion is that the mortality would be  
12 higher than that estimated the applicant.

13          MR. HASS: And I'm saying considerably higher.

14          HEARING OFFICER CELLI: And can you give us some  
15 sort of percentage perhaps?

16          MR. HASS: I'd have to actually ask them for their  
17 data. It's not clearly defined in their methods section so  
18 that if I had what they did, how they did it, and looked at  
19 their data, I probably could.

20          HEARING OFFICER CELLI: Okay. Hold on that.  
21 Mr. Huntley, you have some piece of information that you  
22 think could solve this problem?

23          MR. HUNTLEY: Well, I don't know if it's to solve  
24 the problem, but I wanted to just point out that in an  
25 effort to extrapolate and upscale the potential of

1 collision, we basically scaled up the project in a linear  
2 fashion. We don't believe the impact would be linear. We  
3 think they might be, you know, exponential.

4 But just scaling up the project size, I think in  
5 the FSA we said annual results could range in mortalities  
6 from 2,900 to 3,400 approximate birds and that doesn't  
7 account for morbidity or injury or other things.

8 So we felt over the course of a 30-year life span  
9 that was a substantial number of birds and we felt that was,  
10 you know, really one of the leading reasons why we ended  
11 with a significant and unavoidable impact.

12 ASSOCIATE MEMBER HOCHSCHILD: Sorry, sir. Just a  
13 question. I really don't understand what we're actually  
14 talking about. Since birds don't typically fly into a  
15 structure or a tree or something unless it's a window,  
16 right, to my knowledge, are we -- what we're talking about  
17 here is that you're expecting them to hit the mirror itself,  
18 in other words, the concave side of the heliostat or are you  
19 also expecting them to hit the outside?

20 MR. HUNTLEY: Yes, sir. Taking one step back,  
21 bird collisions is a well-documented phenomena and birds  
22 strike building, structures, you know, utility lines,  
23 transmission lines, trees, they strike everything because  
24 like any animal, they can make errors in judgment or they  
25 can perceive something to be clear that is not.

1           And they do run into mirrors and they were  
2 documented colliding with the heliostats at the original  
3 Daggett Solar I facility.

4           We believe the same phenomena could occur here in  
5 the same way that certain, you know, geese and ducks will  
6 sometimes land in the parking lot and crash. You know,  
7 they're mistaking it for water.

8           So we believe there is a collision risk and a  
9 documented one. And I think what my colleague was getting  
10 to was the applicant in a number of locations has suggested  
11 that the bird populations on the project site are low and I  
12 think what Bill is saying is that's just not the case and  
13 that the data that they're using to support that doesn't  
14 really give them the power to draw those conclusions.

15           ASSOCIATE MEMBER HOCHSCHILD: Okay. So just --  
16 let me just understand. Are you -- is your contention that  
17 the likelihood of a bird striking a heliostat is greater on  
18 the mirror side or the backside or equal?

19           MR. HUNTLEY: I don't know if we define it as  
20 front or back, but I believe that birds will collide with  
21 the front of the heliostat where it looks -- it could look  
22 like the reflection of sky.

23           ASSOCIATE MEMBER HOCHSCHILD: Right.

24           MR. HUNTLEY: It could look like water. Yes, sir.

25           ASSOCIATE MEMBER HOCHSCHILD: Okay.

1 MR. HUNTLEY: And that's independent of what  
2 affects flux might have.

3 ASSOCIATE MEMBER HOCHSCHILD: Right. Right. I  
4 get that, yep.

5 HEARING OFFICER CELLI: Okay. I don't want to  
6 take Mr. Phillips yet. I just want to -- I'd like to ask  
7 you, Mr. Hass, if you could just sort of bring it up a level  
8 and just give us some broader opinion -- your opinion on  
9 this, please. I don't know that we need to descend into the  
10 details just now especially if it's --

11 MR. HASS: No, no. I understand. I'm trying to  
12 figure out what would be -- I mean I think Chris has done a  
13 good job and answers the mirror question I think, although  
14 again my estimate is that the numbers would be greater than  
15 what -- and the greater -- the numbers out at the site are  
16 greater than what's been detected and that's for any number  
17 of other reasons as well.

18 So I think if that's the point or that's the issue  
19 you want me to address, I would be happy to stop right  
20 there. I think the point's been made, but I still think  
21 it's important for us to state our position on the golden  
22 eagle which does differ from applicant's in terms of the  
23 occurrence of the bird in the area and I'm happy to take  
24 guidance from whoever to proceed to not.

25 HEARING OFFICER CELLI: Well, basically what your



1 opinion is, is that there's a greater number of eagles than  
2 applicant has said, just as you said, that there was a  
3 greater -- you felt that there was a greater presence of  
4 various avian species than estimated by the applicant.

5 MR. HASS: And one other feature to this, going  
6 back to my introductory statement, is that I don't believe  
7 that the actual operational facility and its components have  
8 been taken into account and making statements that in  
9 addition to not having that many birds out at the site that  
10 the site will also not create other problems, whether it's  
11 the mirrors, the flux, and one that wasn't mentioned which I  
12 think is important is that these towers will create pretty  
13 significant thermals and hawks, raptors in general and  
14 it's -- in different parts of the country, it would be  
15 different things, sandhill cranes in certain areas, but they  
16 are going to be attracted no only to the tallness of the  
17 tower but also they will be seeking out these types of  
18 thermals because that's how these birds fly and conserve  
19 energy.

20 And to ignore that is a very big -- it's the  
21 classic attractive nuisance to a hawk or an eagle and so if  
22 we get to those two important things -- and that's a big  
23 difference in why I believe the potential for take, for  
24 mortality of golden eagles is not only real, it would be  
25 regular. So --

1 HEARING OFFICER CELLI: Thank you. And you made  
2 the point that this is sort of a first impression kind of  
3 situation because there's not a lot of data to draw from  
4 because there is no analogous structure.

5 MR. HASS: Thank you. Yes. That is right on.

6 HEARING OFFICER CELLI: So we get that. Okay.  
7 Thank you. One moment.

8 PRESIDING MEMBER DOUGLAS: Just a moment.

9 (Off record discussion)

10 HEARING OFFICER CELLI: You wanted to say  
11 something, please.

12 MR. PHILLIPS: Sure. This is actually very hard  
13 to respond to. You're talking a bit about collision with  
14 mirrors. It seems that the discussion really went all over  
15 the place. There were a lot of issues thrown out there, but  
16 I guess some may come to mind. Uncertainty as indicated by  
17 Mr. Hass, does not equal significance.

18 I think we actually do have a very strong data  
19 set.

20 HEARING OFFICER CELLI: That would actually be an  
21 argument, sir.

22 MR. PHILLIPS: Okay. I apologize. I don't mean  
23 to be argumentative.

24 HEARING OFFICER CELLI: No problem. But I see  
25 Mr. Franck also had his hand up for the applicant. Did you

1 have some factual information you'd like to impart?

2

3 MR. FRANCK: Yes. I think -- that there are other  
4 plants working with power towers in the world that have real  
5 data. The Gemasolar Plant in Spain that has studied. It  
6 was presented and shown did not show that any collision with  
7 mirrors. I'm not saying there's not -- but on their site it  
8 wasn't.

9 We're operating two facilities, one -- we have  
10 the -- an outside -- preservation -- study there I think was  
11 presented and showed definitely not the same numbers as what  
12 the Solar I showed. Solar I was a specific case that  
13 represent a specific place and I don't think it can be taken  
14 as a sole representative of this technology, ignoring all  
15 the rest of the studies and all the rest of the real world  
16 data. That's not scientific work in my opinion.

17 HEARING OFFICER CELLI: And let me ask you now.

18 MS. BELENKY: I'm sorry. I have to -- I'd like to  
19 object.

20 HEARING OFFICER CELLI: You have an objection  
21 to -- go ahead. What's your objection?

22 MS. BELENKY: I'm objecting to the use of the term  
23 study as being the same. At least Ms. Anderson was talking  
24 about a published peer review study and these other studies  
25 which we've had workshops, et cetera, are not at that same

1 type of study. So I just want to clarify that for the  
2 record and I object to them being stated as being equal.

3 HEARING OFFICER CELLI: All right. So you take --  
4 okay. So that objection is overruled because that's just  
5 you take a -- you disagree.

6 MS. BELENKY: I guess --

7 HEARING OFFICER CELLI: So let's -- let me ask  
8 you. So -- but we understand, was it SEDC.

9 MR. FRANCK: SEDC. Solar Energy Development  
10 Center. That's in Israel.

11 HEARING OFFICER CELLI: That's right. And isn't  
12 that some fraction of the size of what --

13 MR. FRANCK: It is a significantly smaller size  
14 than the proposed plant is, although the Gemasolar Plant in  
15 Spain is relatively close to the Ivanpah because it's also  
16 got a very big storage place. So don't take SEDC if you  
17 don't want, but you can take Gemasolar. You can ignore that  
18 as well.

19 PRESIDING MEMBER DOUGLAS: Thank you.

20 HEARING OFFICER CELLI: Well, actually those  
21 figures are 79 acres for Solar I, 80 acres for SEDC, and 457  
22 acres from Gemasolar and this project, Hidden Hills, is  
23 3,277.

24 So I'm going to stand by what I earlier said.

25 MR. FRANCK: Thank you.

1           PRESIDING MEMBER DOUGLAS: Thank you. Can you  
2 remind us what staff's estimate of bird mortality over the  
3 life of the project would be? Did you have an estimate?  
4 Someone said a number and I just don't remember what it was.

5           HEARING OFFICER CELLI: Yes, Commissioner.

6           MR. HUNTLEY: The FSA identified a range in annual  
7 mortalities from 2,912 to 3,484 birds.

8           PRESIDING MEMBER DOUGLAS: Okay.

9           MR. HUNTLEY: But we want to caution that's just  
10 an estimate. It's a straight linear scale and may be  
11 inaccurate.

12           PRESIDING MEMBER DOUGLAS: All right. And I  
13 wasn't clear the first time you said it whether you meant  
14 annual. So you've clarified that for me too. Thank you.

15           ASSOCIATE MEMBER HOCHSCHILD: Sorry. And was that  
16 for flux and collision or just collision?

17           MR. HUNTLEY: I believe that's collision only.

18           ASSOCIATE MEMBER HOCHSCHILD: Just collision.

19           MR. PHILLIPS: And I would comment that that is an  
20 extrapolation of the Solar I project site data which is in a  
21 very different habitat. They documented I believe a hundred  
22 and -- actually I'll have to go back to my notes -- a  
23 hundred and seven species observed on that site. The most  
24 that we have observed in the studies to date in any given  
25 season is 29 at Hidden Hills. So they're taking a different

1 technology in a different location, multiplying it in a  
2 linear fashion just simply based on the area.

3           We're originally talking about heliostats. The  
4 mirrors that are proposed for Hidden Hills are actually  
5 smaller. There are more. I agree we're talking about a  
6 much larger field of mirrors, but an 80-acre field at  
7 Solar I, one could argue that that is actually all edge  
8 habitat.

9           If you were to go into the center of that field,  
10 you would hardly even be into Hidden Hills. So the effect  
11 of distance from the perimeter on the likelihood of  
12 collision to mirrors has not been considered. The data from  
13 the site at Hidden Hills has not been considered. That's  
14 literally just a log of a number that has no scientific  
15 credibility or basis.

16           It's just an -- I could come up with all kinds of  
17 ways to estimate a number from Solar I. It will be very  
18 hard for me to very seriously justify that it is accurate.

19           MR. HASS: Right. And in that failure to  
20 estimate, they also failed to take into account migration  
21 which is the thing that would actually bring the largest  
22 number of birds through and possibly collide with the  
23 heliostats and/or be affected by solar flux.

24           So we're not -- our numbers are way, way lower  
25 than a good estimate in my mind.

1 HEARING OFFICER CELLI: Ms. Anderson, what was the  
2 applicant's estimate because I'm not aware that was  
3 provided. Staff, if you can -- Chris, what was applicant's  
4 estimate?

5 MR. HUNTLEY: I may be incorrect, but I believe  
6 the applicant suggested that there would be no loss of birds  
7 from solar flux.

8 PRESIDING MEMBER DOUGLAS: We're not talking about  
9 solar flux.

10 MR. HUNTLEY: Or collision. I'm not certain they  
11 provided an estimate.

12 PRESIDING MEMBER DOUGLAS: Okay. So is that  
13 correct? Did applicant provide an estimate or not?

14 MR. PHILLIPS: I am not aware of one that was  
15 provided -- there was a very careful assessment of risk  
16 especially as it relates to whether or not that is  
17 significant at a biological or population level.

18 Now, if you're a bird that flies into a mirror and  
19 you die, it's significant at your personal level.

20 PRESIDING MEMBER DOUGLAS: We understand that.  
21 Thank you.

22 MR. PHILLIPS: But from the standpoint of  
23 meaningful nature across the range of a population, across a  
24 group of birds that uses a particular flyway, we're just not  
25 even in the same ballpark on these issues.

1 PRESIDING MEMBER DOUGLAS: Okay.

2 HEARING OFFICER CELLI: Okay. Ms. Anderson, you  
3 have a statement you wish to make?

4 MS. ANDERSON: Yeah. I just wanted to add a  
5 couple of things. So from understanding staff's  
6 presentation this morning, the project is in a migratory  
7 pathway. We're really concerned about the effects of the  
8 project due to collision and flux on the birds, the  
9 mortality basically, and the potential population sink. And  
10 I use that in a technical term of population impact to  
11 birds -- avian species from the project.

12 And so I've been thinking about this and, you  
13 know, two potential solutions that I see for trying to avoid  
14 these impacts and minimize them would be, one, to permit  
15 only one unit of this project so we can collect the data on  
16 what's going on in this area so we have a definitive answer  
17 of what's going to happen out there if a larger project is  
18 then proposed or, two, wait for the data from ISGS to see  
19 what's going on there with another very large project.

20 HEARING OFFICER CELLI: Thank you for that. Let  
21 me hear from Ms. MacDonald next.

22 MS. MacDONALD: Thank you. This is Cindy  
23 MacDonald. I have two specific questions and then  
24 specifically I want to address the collision issue.

25 The first question is staff has stated that the



1 SEDC Israel facility is 80 acres and this has been a  
2 particularly contentious point for me. I would like to know  
3 what the source of that data is please.

4 MS. WATSON: On page 97, the source is -- 2012(a).

5 MS. MacDONALD: It's what?

6 MS. WATSON: 2012(a) of URS. I believe we also  
7 confirmed this online.

8 MS. MacDONALD: Okay. Because I didn't see a  
9 reference. All right. Then the second question I would  
10 like to along this line is for Mr. Franck.

11 When we were discussing reliability, et cetera,  
12 the other day, I brought this up about confusion with the  
13 size of the SEDC facility and its relevance to how these  
14 avian impacts and their studies.

15 I don't remember actually him committing to the  
16 record. So I would like Mr. Franck to definitely say is the  
17 SEDC facility 80 acres, 82,000 meters squared, or  
18 13,000 meters squared, please?

19 MR. FRANCK: I can definitely say so, but first of  
20 all you need to understand what we're talking about. The  
21 area of SEDC is 80 -- about 80,000 square meters. That's  
22 including the facility and the site -- et cetera. The  
23 13,000 meter you refer to, this is the reflective area of  
24 the mirrors.

25 MS. MacDONALD: Okay.

1 MR. FRANCK: They are two different. They are  
2 both areas but of different stuff.

3 MS. MacDONALD: Thank you very much.

4 MR. FRANCK: -- clear enough?

5 MS. MacDONALD: Yes. Thank you very much for that  
6 clarification.

7 The last point -- and it's a little more -- it's a  
8 dovetail, but it goes back to when I was trying get to the  
9 reliability and the efficiency of the plant, I don't know if  
10 I'd fleshed out the impacts of wind, but applicant has said  
11 that when a certain wind -- you know, wind miles per hour  
12 kicks up -- and please feel free to correct me if I'm wrong,  
13 but my understanding is the heliostats will rotate to a safe  
14 position which is a horizontal position; is that correct?

15 MR. FRANCK: This is correct when the mirror  
16 facing up.

17 MS. MacDONALD: Okay. Thank you. All right.  
18 Now, how this dovetails is that my understanding of the  
19 collision is that when those mirrors are in that position,  
20 it can resemble a lake and I started thinking about this  
21 with concern to screening for public safety by putting trees  
22 up and I started thinking about the various migratory birds  
23 that we know come through here and wondering if with the  
24 trees around it and the heliostats perhaps looking like a  
25 lake, that got me concerned about the collision issue.

1           And so I don't have any answers, but I would like  
2 to throw this out. It would be good to have an idea of  
3 approximately annually about how often they think that those  
4 mirrors might be rotated into the safe position to represent  
5 a lake because I think that that might pose a larger  
6 collision problem than normal. Thank you very much.

7           HEARING OFFICER CELLI: Thank you, Ms. MacDonald.  
8 Mr. Franck.

9           MR. FRANCK: I don't know how to look like the --  
10 an eye of a bird, so I don't -- I'm not going -- it look  
11 like a lake, but I can be -- about being a safe mode or a  
12 protection mode. That would be a very unique occasion. It  
13 would be in the detailed design of the heliostats that will  
14 determine exactly the wind speed, but you have to understand  
15 our position. We will try to minimize it because we would  
16 want to maximize the time that we are working.

17           It's really we're talking about a matter of hours,  
18 maybe a few days in a year. But this is in the detailed  
19 design. I can't give a number at the moment.

20           MS. MacDONALD: So there's no actual statistics or  
21 data or facts that support it. Because I went with a  
22 10 percent, you know, but I mean you have nothing --

23           MR. HARRIS: -- we're kind of going back to the  
24 liability. But I just want to be clear on the record. It's  
25 not our testimony that it looked like a lake. That was her

1 characterization.

2 HEARING OFFICER CELLI: Commissioner, why don't  
3 you ask your question about --

4 PRESIDING MEMBER DOUGLAS: I've just got a  
5 question of staff and -- do we have any visual  
6 representations or have you thought about whether this  
7 facility might look more or less like a lake with the  
8 heliostats, you know, pointing up versus, you know, pointing  
9 in some other direction?

10 I've seen pictures of these and, you know, they  
11 have a certain reflectance even when they're not pointing  
12 straight up. I was just curious if there was any difference  
13 in your view.

14 MS. WATSON: I think that a picture's available in  
15 the alternatives analysis. They're not part of -- they're  
16 not currently as part of the biological presentation.

17 PRESIDING MEMBER DOUGLAS: Okay.

18 HEARING OFFICER CELLI: Mr. Arnold.

19 MR. ARNOLD: Actually I only have just one comment  
20 but -- and nothing for any kind of wisdom to impart.

21 I just wanted to respond to the comment from the  
22 gentleman over here from CH2MHill and I appreciate you  
23 clarifying what BrightSource's position was about not trying  
24 to -- you know, you two are -- or they two or whomever two  
25 are interested in protecting or preserving eagles and their

1 habitats and the like.

2 And while true, I just wanted to again just remind  
3 everybody that if true, there was no consideration given to  
4 the Southern Paiute culture or implication of any of those  
5 analyses. That is my comment. Thank you.

6 HEARING OFFICER CELLI: Thank you for that  
7 comment. Mr. Phillips, go ahead.

8 MR. PHILLIPS: Okay. Ms. Anderson made the  
9 comment that the project is in a migratory pathway. I  
10 agree. Most areas of this part of the world are in a  
11 migratory pathway. So that is an accurate statement, but I  
12 feel that it misrepresents a little bit of what we're  
13 dealing with.

14 When we look at whether an impact of an industrial  
15 facility is likely to be significant, we ask a series of  
16 specific questions. As it relates to migration, we ask is  
17 it in an important concentration area for migration, for  
18 nesting, for wintering, and we actually have very good data  
19 to indicate, you know, what we're dealing with that this is  
20 not a funnel, a unique area that might contain a large  
21 portion of a particular population at any given time.

22 We also ask questions does the site regularly hold  
23 rare, threatened, endangered species. The answer on this  
24 project site is an emphatic no as it is with an important  
25 concentration area for any particular species based on the

1 site assessment data that was collected.

2 That data, I recognize, does not meet all research  
3 or study objectives. However, it is done using very  
4 standardized site assessment techniques, almost precisely  
5 what is recommended or was recommended at the time by the  
6 BLM using protocol for songbird studies in the morning  
7 counts and using a protocol for raptor and large birds that  
8 was -- is -- has traditionally been recommended by the U.S.  
9 Fish and Wildlife Service.

10 They are not designed to count the number of birds  
11 that pass through, but they are designed to provide an index  
12 to the level of use to provide a count or a list of the  
13 majority of the species that occur. It does not detect all.  
14 Burrowing owl would be a great example, but it does detect a  
15 large portion of diurnal birds that use the site.

16 So our counts in our spring surveys of species --  
17 spring 2011, 29 species; fall 2012, 26 species. I would  
18 agree, which Mr. Hass is probably -- you know, seeming to  
19 say there's more than that. There probably are, but I don't  
20 think we're into a category of 45, 50 -- a migrant species,  
21 but, you know, I'm just pointing out what the data says and  
22 what some of the kind of comments seem to suggest.

23 HEARING OFFICER CELLI: So it's all one big shot  
24 in the dark and everybody's going --

25 MR. HASS: Not actually true. The problem is I

1 haven't seen those migration data because I was never  
2 presented any data on migration based methods in -- the  
3 setting or radar technology and again point counts, unless  
4 you have a specific like hot spot, an oasis, if you have a  
5 point count at an oasis, that might work, but this is a very  
6 broad migration, difficult to see because we're talking  
7 about birds that are six grams, eight grams, ten grams.

8           Those are the greatest numbers of birds that will  
9 be passing through, things like warblers. For instance,  
10 Wilson's warblers in migration up at Ash Meadows are counted  
11 in the tens of thousands annually. They pass through this  
12 corridor and they pass through -- actually this corridor and  
13 they pass through the corridor on the other side of the  
14 hills.

15           So we are definitely under-changing it and, yes,  
16 80, 90 species possible, yes, but -- and incidentally their  
17 total number of species, again not to criticize their data.  
18 They have 63 species based on the methods they used. That's  
19 a very --

20           HEARING OFFICER CELLI: I thought he said 29  
21 species.

22           MR. HASS: He said at one survey.

23           HEARING OFFICER CELLI: Okay.

24           MR. HASS: But no, he said 63 I believe is the  
25 current count unless they -- because they have picked up a

1 couple of interesting rare birds as well.

2           Again we're not trying to state that their surveys  
3 weren't done well. It's just the applicability again. And  
4 that's a very big issue.

5           HEARING OFFICER CELLI: You've made that point  
6 very clear.

7           MR. HASS: Good.

8           HEARING OFFICER CELLI: Okay.

9           MR. PHILLIPS: I would just comment that we did  
10 not conduct migration surveys as I think it's being used.  
11 We conducted point count site assessment surveys using  
12 standard protocols during the migration period.

13           It's a very, very different objective. What  
14 Mr. Hass is describing for counting birds in a particular  
15 area looking at change over time in the absolute number of  
16 birds that might use a particular area, you would not use  
17 point counts. Totally agree.

18           However, for these large-scale project sites, it  
19 is actually recommended consistently that we use techniques  
20 very similar to what was used and those techniques were  
21 actually expanded, the robustness and number of hours  
22 evaluated expanded dramatically this past fall through the  
23 present.

24           Since this past fall through the present, there  
25 have been 31 species documented on the site. That's not a



1 whole year fall migration and winter. So, you know, we're  
2 using a lot of hours and a lot of eyes and ears during those  
3 seasons.

4 HEARING OFFICER CELLI: Well, thank you for that  
5 information. I think that at this point -- this won't be  
6 the end of it because the parties will be -- when we get to  
7 talking about what's going to be in the briefs, this will be  
8 in the briefs. So we will hear what the parties want to do  
9 with the data that's in the record and we'll take it from  
10 there.

11 We're going to -- Mr. Franck, just -- we're not --  
12 we're going to move on now from the avian issue. I have kit  
13 fox that was raised by Ms. Anderson. Why don't you tell us  
14 what the issue is with regard to kit fox and if you can tie  
15 it into the FSA, that would be a real bonus. So go ahead,  
16 Ms. Anderson.

17 MS. ANDERSON: Thank you, Hearing Officer Celli.  
18 I wanted to update the Committee as well as others. We  
19 recently filed a petition under the California Endangered  
20 Species Act on the desert kit fox because of the impacts  
21 that we're seeing throughout the kit foxes' range as well as  
22 the canine distemper outbreak that occurred adjacent to the  
23 Genesis solar project. So I just wanted the Committee to be  
24 aware of that.

25 And then -- so the FSA basically recognizes that

1 desert kit fox occur on this site and there's a nice -- I  
2 don't have the actual figure number on that, but I can get  
3 that for you.

4 But it doesn't really estimate the number of kit  
5 foxes that were on the site and so it proposed to do the  
6 passive relocation for desert kit fox which is basically  
7 hazing them off the site.

8 And my issue that I'd like to bring before the  
9 Committee is that there is actually some new information  
10 with regards to how to treat desert kit fox on project sites  
11 that have been adopted by the Bureau of Land Management.  
12 They issued a decision from the McCoy project -- solar  
13 project yesterday down in the Riverside County that  
14 incorporates a much more rigorous evaluation of kit fox  
15 including a baseline census not only of the population and  
16 tomography on the site but also health surveys for the  
17 animals.

18 MR. HARRIS: Mr. Celli, this is -- none of this is  
19 in her pretrial testimony.

20 MS. ANDERSON: Yes, it is.

21 MR. HARRIS: What happened yesterday is not in  
22 your pretrial testimony.

23 MS. ANDERSON: Oh, that isn't, but the rest of  
24 this is.

25 MR. HARRIS: Nor is your petition that you talked

1 at the beginning of your --

2 MS. ANDERSON: The petition -- that's correct.

3 But all of the rest of this in my testimony.

4 HEARING OFFICER CELLI: So let's just let her get

5 to the point. I want to find out what the issue is here.

6 So go ahead.

7 MS. ANDERSON: So this is all in my testimony with

8 regards to the BLM requirements for that solar -- for the

9 McCoy solar project. And the issue is, is I think that's a

10 much better way to proceed with evaluating what's going

11 to -- the state of the kit fox are on the project site for

12 this project and for subsequent monitoring and seeing what

13 happens to the kit fox after they're displaced from the

14 project site here.

15 And in the absence of a kit fox and badger

16 relocation plan because that again has not been provided as

17 part of their proceeding yet because it's a plan that will

18 be developed, I wanted to say that I think that this sort of

19 an approach that the BLM is taking is the appropriate type

20 of approach for the desert kit fox.

21 HEARING OFFICER CELLI: Okay. And let me ask you

22 now. You've had a number of workshops with staff and

23 applicant present and I just wonder have you presented this

24 to them before the ideas that were contained in this other

25 methodology or these other conditions?

1 MS. ANDERSON: I know that it's in my original  
2 testimony and we've had workshops subsequent to that, but I  
3 don't think we have discussed that actually.

4 HEARING OFFICER CELLI: Okay. And I just -- I  
5 take it there is a kit fox plan and a badger plan in the FSA  
6 as recommended in conditions; is that right, Mr. Huntley?

7 MR. HUNTLEY: Yes, sir, there is.

8 HEARING OFFICER CELLI: Okay.

9 MS. ANDERSON: But the suggested issues in that  
10 kit fox plan are not nearly as comprehensive as what the BLM  
11 has put out and required for the McCoy project.

12 HEARING OFFICER CELLI: So do you have a prepared  
13 recommended language for a condition?

14 MS. ANDERSON: Certainly. Not today. I mean not  
15 here now.

16 HEARING OFFICER CELLI: I'm just asking if there's  
17 ever been one put in. Ms. Belenky, maybe you can help me  
18 with that. I don't know.

19 MS. BELENKY: We didn't put it in as a separate  
20 condition. It is in Ms. Anderson's testimony. I have to  
21 say our experience with trying to put in edited conditions  
22 is that sometimes by the time we put in our edit, they've  
23 changed two or three times and so we have not focused on  
24 that before hearing because it has often been a large waste  
25 of our time.

1           We did put in very specific language in  
2 Ms. Anderson's testimony that could simply be cut and pasted  
3 by the staff if they are interested in utilizing this  
4 language.

5           HEARING OFFICER CELLI: Okay. Thank you,  
6 Ms. Anderson and Ms. Belenky. Now, Ms. MacDonald, I don't  
7 know whether -- I don't see her now. I think that it was  
8 really only CBD's issue anyway with regard to the kit fox  
9 and the badger. You were the only party that raised that.

10           So -- and Mr. Arnold isn't here now. So let's get  
11 to the cryptobiotic soils. Is that cryptogenic --  
12 cryptobiotic soils. Ms. Anderson, that's your issue. Why  
13 don't you give us a big picture summation of what the issue  
14 is, please.

15           MS. ANDERSON: Okay. Thank you very much, Hearing  
16 Officer Celli. My issue with cryptobiotic soils is these  
17 are important components that stabilize the soil surface of  
18 desert soils and keep the soils intact from blowing away.

19           They also provide safe sites for seed germination.  
20 They also uptake carbon dioxide. And my concern with  
21 regards to the FSA and other documents related to this  
22 project is that no one's gone out and actually looked at the  
23 extent of the cryptobiotic soils across the project site.

24           And this is of concern to me for a number of  
25 reasons. One, as sort of a peripheral issues with air

1 quality. I'm not an air quality expert, but I know that  
2 soils that have their crust disrupted tend to get airborne  
3 and cause more dust problems.

4 One of my main concerns is the sort of disruption  
5 of these soils -- soil crusts which take an incredibly long  
6 time to reestablish and their - because they facilitate  
7 carbon dioxide uptake and there's published papers on  
8 exactly how much carbon dioxide they take up, I would like  
9 to see sort of an analysis of life cycle of the components  
10 for the project in addition to the amount of carbon dioxide  
11 that is taken by these cryptobiotic soils to sort of  
12 evaluate, you know, how much carbon dioxide uptake in the  
13 form of cryptobiotic soils are we disrupting to replace  
14 something that is going to be reducing carbon dioxide  
15 uptake, so sort of an equilibration of, you know, how much  
16 do we have to destroy in order to gain a reduction in carbon  
17 dioxide uptake. Does that make sense?

18 HEARING OFFICER CELLI: Well, let's ask staff if  
19 that makes sense.

20 MS. ANDERSON: Okay.

21 HEARING OFFICER CELLI: Staff, let's have you  
22 respond first.

23 MS. CHAINEY-DAVIS: There is an increasing concern  
24 about the loss because the cryptobiotic crusts -- and we can  
25 call them biological soil crusts. It's a more inclusive

1 term.

2 But there is an increasing concern about their  
3 loss because they confer so many ecosystem benefits. They  
4 stabilize soils. They increase the resistance to water and  
5 wind erosion. They inhibit the spread of invasive weeds.  
6 They do, as she says, fix atmospheric carbon dioxide and in  
7 that sense, they mitigate global warming to an extent.

8 They also fix atmospheric nitrogen which they make  
9 available to other plants. They improve infiltration; in  
10 other words, they slow storm water runoff, and they  
11 facilitate seedling germination. So there is -- but it's  
12 not an issue that has been typically addressed in these  
13 environmental documents because it's kind of a new and  
14 evolving science, particularly the science of estimating the  
15 amount of carbon dioxide that is released back into the  
16 atmosphere when these soil crusts are disturbed.

17 We did -- there was a data request early in the  
18 process and the applicant did respond. That's in  
19 Exhibit No. 18, data response set 1C2, and it was a response  
20 to staff's request about the prevalence of soil crusts on  
21 the site.

22 Soil crusts, they don't -- they're not well  
23 adapted to natural disturbance processes like burial by wind  
24 or water deposited sand or sediment and that's one of the  
25 reasons that they're not common on the site at all.

1           There are patches of them in a few areas, but  
2 they're not widespread on the site because the site  
3 fluvially active. There's a lot of -- there's a high  
4 density of small streams and -- across the site that  
5 periodically buries the -- any soil crust that tries to take  
6 hold.

7           And then there's also the wind deposited sand that  
8 buries the crust. So they don't -- for those reasons,  
9 they're not very common on the site.

10           And -- but there's actually new evidence that the  
11 alkaline desert soils are capable of significantly more  
12 carbon uptake than either soil crusts or vegetation, but the  
13 disagreements are about the estimates of how much carbon is  
14 stored. I mean the estimates widely from one researcher to  
15 another.

16           But regardless, there's still, you know, little  
17 dispute that the grading of desert soils and soils crusts  
18 and vegetation does release carbon back into the atmosphere.

19           So it is a -- you know, this suggests two things  
20 and she touched on that: that the benefits gained by a  
21 project's reductions in greenhouse gases must be weighed at  
22 least qualitatively against the loss of carbon sequestration  
23 benefits and the release of that carbon back into the  
24 atmosphere.

25           So it's something that we definitely need to



1 consider. But it also suggests that projects that require  
2 minimal site grading impact sequestration benefits less and  
3 release less greenhouse gases back into the atmosphere than  
4 projects that require total site grading.

5           So she's right. Staff did not do a complete  
6 analysis in the FSA or the PSA and that's because we  
7 concluded early on in the data request process that the  
8 impact would be less than significant in this case because,  
9 number one, there aren't a lot of crusts on the site and,  
10 number two, the site -- the project does -- the technology  
11 of the project requires considerably less site grading than,  
12 for example, the parabolic trough projects, you know, or  
13 residential development or something like that.

14           So there's considerably less site grading and  
15 there's not many -- there's a fairly low prevalence of the  
16 soil crusts on the site.

17           HEARING OFFICER CELLI: Very good. Thank you.

18           MS. CHAINEY-DAVIS: Um-hmm.

19           HEARING OFFICER CELLI: Go ahead, Ms. Anderson.

20           MS. ANDERSON: Yeah. Just one more comment on  
21 this. So this project has been a little bit frustrating for  
22 me because many of the other projects that we've had before,  
23 the Commission has been on public lands, so I've had access  
24 to them. This one's on private lands.

25           The notion -- without a sort of a quantification

1 addressing of this issue, it's hard for me to actually  
2 critique what's going on on the site, you know, without --  
3 well, there's very few crusts on the site. Well, what does  
4 that mean. Does that mean there's ten acres. Does that  
5 mean there's a thousand acres. That's why I'm bringing it  
6 up. A clarification of exactly the -- what is going on on  
7 site would be very helpful.

8 MS. CHAINEY-DAVIS: Sure. I mean if we just  
9 ignore for a moment the applicant's data response, staff  
10 spent about 40 hours -- I probably spent 40, maybe 50 hours  
11 on the site during the -- I mean as a consequence of the  
12 field verification of the water salinization and just sort  
13 of general verification of the applicant's data and when I  
14 say that they're less common, what I'm saying is that if you  
15 look at -- if you took -- if you sampled the site with a  
16 series of vegetation plots like the standard California  
17 Native Plant Society, you would see that the total aerial  
18 cover represented by the crusts represents less than a  
19 percent and -- or trace element and in many cases zero  
20 percent of the total aerial cover of a given sample site  
21 relative to other projects where the crusts can make up as  
22 much as 10 or 15 or even 20 percent of the total aerial  
23 cover of the sampling plot.

24 Does that answer your question or --

25 HEARING OFFICER CELLI: Anything further on that,

1 Ms. Anderson? She's shaking her head no. You know,  
2 remember, folks, when you say --

3 MS. ANDERSON: No, thank you.

4 HEARING OFFICER CELLI: Thank you. Since we're on  
5 the record, we need to hear people say yes and no. Shaking  
6 your head, we get it, but we need it in the record, so -- go  
7 ahead, Mr. Rubenstein. We need to hear you. Speak right  
8 into that microphone.

9 MR. RUBENSTEIN: Yes, I've got that.

10 HEARING OFFICER CELLI: Thank you.

11 MR. RUBENSTEIN: First of all, I'm a little  
12 confused about the question of whether the staff in fact did  
13 the kind of comparison analysis of uptake versus the  
14 displacement of CO2 emissions by the project. I believe the  
15 staff in fact did do that. I reference it in my rebuttal  
16 testimony. And the staff's analysis is in the FSA on  
17 page 4.1-70.

18 And in there, the staff concluded that based on  
19 this comparison, they believe that the impact was  
20 insignificant.

21 Second of all, I would disagree with the prior  
22 statements that the science is settled as to whether or not  
23 these types of crusts represent a significant carbon sink.  
24 In fact there have been several papers published. I cite  
25 one of them in my rebuttal testimony questioning that, the

1 most salient quote that again comes from my rebuttal  
2 testimony is that recent reports of net ecosystem production  
3 in deserts are incompatible with existing measurements of  
4 net primary production in carbon pools and deserts.

5           And in a second paper which I didn't reference but  
6 which I also reviewed, the quotes were actually far more  
7 scathing.

8           And then finally the testimony by CBD on this  
9 particular issue of carbon uptake relies on a paper by  
10 Wolfhart that was also at issue in the Ivanpah case and I  
11 testified in that case in terms of methodological flaws in  
12 that paper particularly with respect to how the carbon flux  
13 was measured and calculated based on carbon dioxide  
14 measurement instruments that in my opinion are not nearly  
15 sensitive enough to result in the conclusions that the paper  
16 drew.

17           I'd be happy to answer more questions, but that's  
18 a brief summary of my comments.

19           HEARING OFFICER CELLI: Well, I appreciate those  
20 comments. Basically we can say that applicant agrees with  
21 staff that the cryptobiotic crusts --

22           MS. CHAINEY-DAVIS: Biological soil crusts, you --

23           HEARING OFFICER CELLI: -- biological soil  
24 crusts -- thank you -- there's not a significant impact from  
25 the Hidden Hills project on these soils.

1 MR. RUBENSTEIN: That's correct.

2 HEARING OFFICER CELLI: Thank you. I'm going to  
3 continue around. Ms. MacDonald, anything on this?

4 MS. MacDONALD: Thank you for asking. This is  
5 Cindy MacDonald. I don't know if this would overlap with  
6 air quality, but since Gary Rubenstein brought this up, one  
7 of my concerns is cumulative impacts of two air quality  
8 which is also related to soils from the national and state  
9 policy for these large scale renewable projects, and I did  
10 tend to do some air quality too, but I think this will be a  
11 good time to be supportive of the issue of soil crusts and  
12 that in December 2013 [sic], the Solar Electric Industry  
13 Association published a paper. which I will be submitting as  
14 an exhibit, that listed what they believe to be the solar  
15 projects across the nation.

16 The rough estimate was -- it was approximately  
17 30,000 solar projects and out of those approximately 20,000  
18 of them were either constructed, under construction, or  
19 involved in project approval at the time in December of last  
20 year. And just that sheer volume based some of the PPA  
21 percentages of their expectation of the current applications  
22 that they have for the PPAs, even if 40 percent of them were  
23 not approved, I figure that's roughly about 12,000 projects  
24 just in California alone.

25 So I just wanted from a larger scale and as the

1 Commission goes forward with these new changes to kind of  
2 bring this into the foreground to be very mindful of  
3 cumulative impacts to biological soil crusts and surface  
4 scraping and erosion. Thank you very much for that  
5 opportunity.

6 HEARING OFFICER CELLI: Thank you very much.  
7 Mr. Arnold, anything on this, the biological soils?

8 MR. ARNOLD: Yes.

9 HEARING OFFICER CELLI: Go ahead.

10 MR. ARNOLD: Thank you. Richard Arnold here  
11 again. When we're talking about soils and crusts and all  
12 the implications to impacting the area there from any kind  
13 of activities -- unnatural activities is an area of concern.  
14 Of course we also equally know that natural occurrences  
15 happen to be the flooding and things that have happened to  
16 the area.

17 But most importantly, the concern that we have is  
18 with the plants that are going to be out there. And before  
19 I go on in my comments, I guess I need to know -- I mean are  
20 we going to be talking separately about the plant resources  
21 out there?

22 HEARING OFFICER CELLI: Yes. After -- as soon as  
23 we're finished with you, we're going to let the applicant  
24 bat last on this issue and then we're going to get into the  
25 groundwater dependent vegetation.

1 MR. ARNOLD: Then I would yield to that so that  
2 would -- I could be like Gilda Radner and say never mind.  
3 I'll go on in a moment. Thanks.

4 HEARING OFFICER CELLI: Okay. Thank you.  
5 Anything, Mr. -- let's see. I've got -- is that  
6 Mr. Spaulding?

7 MR. SPAULDING: Yes.

8 HEARING OFFICER CELLI: Go ahead.

9 MR. SPAULDING: Mr. Celli. I just -- before we  
10 got too much further down the line, I just wanted to correct  
11 two statements by Ms. Belenky. First she stated that  
12 cryptobiotic crusts are important to stabilizing the soils.  
13 That is not the case in all areas and we have seen nothing  
14 on the current project site to indicate that cryptobiotic  
15 crust is an important element in stabilizing the soils on  
16 the project site.

17 HEARING OFFICER CELLI: And you were talking about  
18 what Ms. Anderson said; right?

19 MR. SPAULDING: Was that Ms. Anderson? I  
20 apologize. Yes.

21 MS. BELENKY: And I believe staff said the same  
22 thing. It was --

23 MR. SPAULDING: And -- excuse me. Excuse me. I  
24 had one other comment.

25 HEARING OFFICER CELLI: Please, go ahead.

1 MR. SPAULDING: The other comment is that there  
2 was a statement that no one has gone out and looked at the  
3 extent of cryptobiotic crust on the project site. That also  
4 is not true and reference is made to our data response  
5 number 18 or 1C2. There'll be quite a description of the  
6 areas that do not have cryptobiotic crust on site as well as  
7 some of the areas that do have cryptobiotic crusts.

8 And generally speaking, it's a function of the  
9 outgoing soils and rack of suitable substrate that limit the  
10 distribution of cryptobiotic crust on our project site.

11 HEARING OFFICER CELLI: Thank you very much.  
12 Mr. Rubenstein.

13 MR. RUBENSTEIN: Thank you, Mr. Celli. I just  
14 wanted to correct one statement that Ms. MacDonald made.  
15 When she was referring to cumulative impacts on the number  
16 of projects, she used a number of approximately 30,000  
17 projects. I believe that number comes from her Exhibit 742  
18 and I believe she misread that table. It's actually  
19 30,000 megawatts worth of projects of which 20,000 megawatts  
20 are located in California.

21 Those are not separate utility scale projects but  
22 the number of megawatts of capacity.

23 MS. MacDONALD: If that's true, thank you for the  
24 correction.

25 HEARING OFFICER CELLI: Thank you for setting that



1 straight. We are finished now with the discussion on  
2 biological soils. We would like to talk --

3 PRESIDING MEMBER DOUGLAS: Mr. Harris, you're  
4 looking skeptical.

5 MR. HARRIS: There's more conferencing going on.

6 PRESIDING MEMBER DOUGLAS: Oh.

7 HEARING OFFICER CELLI: Yeah. You know, experts,  
8 have Mr. Hass -- I'm going to ask you to have a seat,  
9 please. I'm going to ask the experts to refrain from  
10 popping up. We're winding down on -- this is our last topic  
11 before we get to avian flux. So I'm going to ask all of the  
12 parties to stay in this area and try to --

13 PRESIDING MEMBER DOUGLAS: If you need to stretch,  
14 you could stretch, but let's avoid conferencing.

15 HEARING OFFICER CELLI: No conferences amongst the  
16 experts if we can avoid that now. Water dependent  
17 vegetation, let's start with staff on that. You want to  
18 speak to what the issues are with regard to water --  
19 groundwater.

20 MS. CHAINEY-DAVIS: Groundwater dependent  
21 vegetation.

22 HEARING OFFICER CELLI: Right. Groundwater  
23 dependent vegetation, please. Ms. Chainey-Davis.

24 MS. CHAINEY-DAVIS: Well, remarkably staff and the  
25 applicant have finally reached a consensus -- an agreement

1 on the terms and conditions of Bio 23. That's the  
2 groundwater dependent vegetation monitoring plan.

3 It was an odyssey and at times an inferno, but we  
4 have actually reached an agreement I believe. We had a  
5 workshop about this. We've had -- we've talked about this  
6 at several workshops, but we most recently had a workshop on  
7 this topic on March 6th. And --

8 HEARING OFFICER CELLI: Let me -- we talked  
9 yesterday in soil and water --

10 MS. CHAINEY-DAVIS: Correct.

11 HEARING OFFICER CELLI: -- about the new  
12 agreed-upon conditions with regard to the triggering.

13 MS. CHAINEY-DAVIS: Yes.

14 HEARING OFFICER CELLI: Is that what you're  
15 speaking to?

16 MS. CHAINEY-DAVIS: Exactly. It's the same  
17 condition.

18 HEARING OFFICER CELLI: Okay.

19 MS. CHAINEY-DAVIS: We were a little -- we weren't  
20 exactly sure if we -- if the applicant had come to terms  
21 with the terms yesterday, but as of this morning, I believe  
22 they've worked it all out amongst themselves and now agree  
23 to the revised condition of certification Bio 23. The  
24 revisions we talked about sort of conceptually last  
25 Wednesday in last Wednesday's workshop. We didn't go

1 through the individual edits one at a time.

2 HEARING OFFICER CELLI: Let me interrupt just a  
3 second --

4 MS. CHAINEY-DAVIS: Sure.

5 HEARING OFFICER CELLI: -- because as long as  
6 we've reached that agreement and we did get the sense of it  
7 yesterday in some detail with regard to the soil and water  
8 discussion, I think we need to hear what the issue is and  
9 we'll hear from Ms. Anderson because it was CBD's issue as  
10 to what was -- what's the issue with regard to groundwater  
11 dependent vegetation from CBD's point of view.

12 MS. CHAINEY-DAVIS: Okay.

13 HEARING OFFICER CELLI: Let's hear that.

14 MS. CHAINEY-DAVIS: Um-hmm.

15 MS. ANDERSON: Okay. This is Ileene Anderson  
16 again, and I just have one issue with the -- I think with  
17 the new condition of certification and that is there's a  
18 part of that -- and I don't have a redline of that actual  
19 condition.

20 But there's a part of that that requires a peer  
21 review of the groundwater dependent vegetation management  
22 plan which is going to be produced so -- that requires this  
23 peer review and my concern is that there will be peer review  
24 and, you know, scientifically based recommendations/edits to  
25 that groundwater management plan that as the condition's

1 written up right now may or may not have to be incorporated.

2 And I'm just thinking that if there are expert  
3 peer reviewers out there that are going to look at this plan  
4 and make recommendations, there should be a requirement that  
5 those recommendations be incorporated into the plan because  
6 otherwise why have a peer review.

7 MS. CHAINEY-DAVIS: I'll give you a copy of the  
8 redline, but under the subparagraph on peer review, the  
9 closing sentence is the project owner shall incorporate  
10 changes recommended in the peer review and prepare and  
11 submit a final monitoring plan to the CPM and other parties  
12 described in the verification section of that condition and  
13 that includes BLM -- Nevada BLM, California, and the Inyo  
14 County Water Department.

15 MS. ANDERSON: Okay. Thank you. And just one  
16 other question then. Was the trigger for -- was the stop  
17 pumping trigger taken out of there?

18 MS. CHAINEY-DAVIS: The stop pumping trigger  
19 was -- it wasn't a stop pumping trigger. It was -- the  
20 trigger was based on the groundwater drawdown. It was a  
21 quantitative measure of the groundwater drawdown.

22 The adaptive measures included stopping pumping,  
23 decreasing pumping, or modifying pumping. Stopping pumping  
24 was taken out.

25 We discussed that a lot and it was a heated

1 discussion, but we did go through that in last week's  
2 workshop and staff's conclusion was that by decreasing  
3 pumping, as long as the performance standard was included in  
4 water supply four that the decreasing pumping had to achieve  
5 a restoration of the groundwater levels to the pre-trigger  
6 level and simultaneously meet the performance standards of  
7 the -- the performance standards in Bio 23 for the  
8 protection of the health of the mesquite that it would  
9 achieve the same thing.

10 MS. ANDERSON: Thank you.

11 MS. CHAINEY-DAVIS: And in the time frame implied  
12 by Bio 23 that it would achieve the same.

13 MS. ANDERSON: Okay. Thank you. I was present at  
14 the workshop, but just missed those points.

15 HEARING OFFICER CELLI: Okay. Does that cover it,  
16 Ms. Anderson?

17 MS. ANDERSON: Yes.

18 HEARING OFFICER CELLI: Thank you.

19 MS. ANDERSON: Yes. Thank you.

20 HEARING OFFICER CELLI: Thank you very much.

21 Anything further on this, Ms. MacDonald?

22 MS. MacDONALD: Thank you for asking. This is  
23 actually a big issue and of course we all know I'm so sorry  
24 I missed yesterday, so if I'm being redundant or something,  
25 I apologize, but this kind of speaks to two issues that I'm

1 concerned with, the water supply and site suitability.

2 I was very dismayed to find out that staff had  
3 removed the stop pumping potential because I felt like at  
4 least there was a quantitative enforceable measure in there.

5 It's my understanding that because of the  
6 overdraft in the pump valley basin, dispute between the  
7 experts on the water sources as well as beyond concern with  
8 what they believe to be ground subsidence occurring north of  
9 the project site, that the specific issues are (a) now they  
10 have changed it from a potential final stop pumping to just  
11 reduce pumping and my question at the workshop that was not  
12 answered at the time, perhaps it was yesterday, was how much  
13 can the project reduce its water needs because it was my  
14 understanding it's already been pretty pared down in terms  
15 of its water requirements, you know, in the event that some  
16 of these trigger levels get hit. That's the first issue.

17 The second issue is my understanding is, is that  
18 if those trigger levels get hit, then the applicant will  
19 propose to kind of move the water pumping around to  
20 different to different wells throughout the project site.  
21 But to me that speaks of like a temporary fix and then I  
22 also have to wonder how does that relate to the potential  
23 subsidence issues of it.

24 And ultimately what it comes down to me is after  
25 going through this expense and three years approximately to

1 build this site and then it's going to be operating for 25  
2 or 30 years, I question the reliability of the site based on  
3 the water supply in the area.

4 I know it's a very low use compared to some of the  
5 other things that could go in, but I question it for site  
6 suitability because there has been such dramatic issues  
7 going on about water supply. Thank you. That was my  
8 comments.

9 HEARING OFFICER CELLI: Thank you. Ms. Belenky,  
10 you were indicating that you wanted to say something  
11 earlier?

12 MS. BELENKY: Well, I just had a question. At  
13 some point there was a -- it has to do with what we're  
14 talking about next. Mitigation for avian species has been  
15 an issue and I -- we didn't talk about it yet on the panel,  
16 but I'm not sure when we're going to talk about it. I just  
17 didn't want it to get lost.

18 HEARING OFFICER CELLI: No. We did talk about it.  
19 We spoke about -- we spoke at length about migratory birds,  
20 the counts, what the mitigation would be, and I believe that  
21 we had asked whether you had put forth any mitigation  
22 conditions. Maybe I'm --

23 MS. BELENKY: That was the kit fox mitigation  
24 condition.

25 HEARING OFFICER CELLI: Okay. All right. So --

1 you have mitigation conditions that you wanted to bring up  
2 now, please do.

3 MS. ANDERSON: Hearing Officer Celli, this is  
4 Ileene Anderson. And this is something that I was trying to  
5 sort of tease apart with regards to this new proposal that  
6 the applicant put forward at the workshop last week with  
7 regards to dealing with avian impacts and it was my  
8 understanding that we were going to sort of talk about that  
9 maybe after we discussed the flux.

10 HEARING OFFICER CELLI: We are going to -- let's  
11 talk -- let's do this. Let me finish with this groundwater  
12 dependent vegetation. I haven't heard from Richard Arnold  
13 yet.

14 MS. ANDERSON: Yeah. Okay.

15 HEARING OFFICER CELLI: If there are -- is  
16 there -- if there is further need for discussion regarding  
17 mitigation of impacts to avian species, we can sort of  
18 append that to our discussions of the avian flux issues if  
19 need be. So I'm going to just table that for the moment.

20 MS. ANDERSON: Okay. Because I do have a comment  
21 on that issue and I was just holding it till after the flux.

22 HEARING OFFICER CELLI: Write it down. Don't lose  
23 the thought. Mr. Arnold, go ahead.

24 MR. ARNOLD: We're back on plants; correct?

25 HEARING OFFICER CELLI: We are talking about



1 groundwater dependent vegetation.

2 MR. ARNOLD: That would be me.

3 HEARING OFFICER CELLI: Okay.

4 MR. ARNOLD: Okay. Now I'm back. Okay. Richard  
5 Arnold here. In talking about the groundwater vegetation,  
6 it's important to note that again the information I share is  
7 from a cultural perspective. The quality and quantity and  
8 the distribution of the native plants, animals, and insects  
9 necessary to sustain a healthy environment is critical in  
10 our belief and we need it to maintain the productive animal  
11 habitats that can clearly be affected again, showing the  
12 interconnectedness of the resources and the plants that are  
13 out there.

14 When I'm talking -- and at some point,  
15 re-vegetation may come as a discussion that it is important  
16 to integrate the Native perspective as to what we do  
17 traditionally and that is talking to the land, talking to  
18 the plants, and letting them know not only what we're doing  
19 but what we're hoping to accomplish.

20 When doing any type of re-vegetation, we always  
21 choose the sweetest seeds and the best plants for long  
22 processes. Every plant out there, although it looks like  
23 they may be abundant in some areas, other areas may look  
24 like there's nothing there and some people perceive that as  
25 maybe a barren wasteland. We obviously do not.

1           It has a -- it's a desert esthetic and a cultural  
2 esthetic that is critical to our survival. Every plant out  
3 there and animal, they have names. They have purposes and  
4 we have stories about their origins and what they do to help  
5 us. We talk to each one of them as if they were our  
6 relatives to watch over the land.

7           They also in turn as reward to us and as a gift to  
8 all of us is they help keep things in balance just like our  
9 songs and our prayers do. That you'll hear more about  
10 tomorrow. They are essential to our existence and to our  
11 journey to our afterlife. They're part of our pharmacy, the  
12 things that we use -- we still use for not only for foods  
13 but for medicines as well.

14           Again we have many people that rely upon the  
15 traditional vegetation and the medicines out there as  
16 opposed to going and using modern day medicine which some of  
17 you folks use and I guess that's why you guys have the  
18 problems that you do.

19           Just -- again just because there's a lot of plants  
20 out there again doesn't mean that we're able to or should  
21 have or consider devaluing them or not considering them  
22 important. Equally just as we all have a purpose in this  
23 room but yet we play a small part in the numbers of people  
24 on the planet or in the world, we are all unique and we all  
25 have something to share and that's what the plants do as

1 well. And that concludes my statements. Thank you.

2 HEARING OFFICER CELLI: Thank you.

3 MR. ARNOLD: Oh, wait, wait. I'm sorry. See, I  
4 was just joking. Just seeing if you were listening. Within  
5 the plants, there are indicator plants, so they'll tell you  
6 different things. They can tell you seasonal things. They  
7 can tell you weather conditions. They can tell you  
8 conditions of things are going to happen in the future.

9 We have food plants. We have medicinal plants.  
10 There are ceremonial plants. There are plants that are used  
11 for tools, for clothing, for fire, for toys, for ceremonial  
12 purposes such as there's a plant that's often referred to as  
13 Indian pipe weed that's out there that's used traditionally,  
14 has about five or six different uses just individually and  
15 that doesn't count using them collectively.

16 There's basket plants. There's plants for making  
17 weapons, utilitarian items, and everything that's out there  
18 that we use, interestingly enough you may go out there and  
19 you may find fine things. We've seen people go out there  
20 and they may find some change on the ground, say, look,  
21 somebody had a hole in their pocket and, hey, here's some  
22 more money over here and those things are not holes in our  
23 pocket. Those are offerings that were left out of respect  
24 for those plants.

25 Everything that we use has to be -- I cannot

1 emphasize how respectful we must be towards all the plants  
2 because without that, they're going to go away. They won't  
3 reveal themselves just as like what happened in the  
4 discussion with the desert tortoise or other types of  
5 habitats that you just don't see when things start to  
6 disappear and not that they're not to be seen, they're just  
7 not revealing themselves appropriately at the right time.  
8 So that concludes my comments at this time, honest.

9 HEARING OFFICER CELLI: Thank you, Mr. Arnold.  
10 After Mr. Harris, we'll let applicant bat last on this and  
11 then we're going to take a break and come back and do avian  
12 flux.

13 MR. HARRIS: I struck out. We're done.

14 HEARING OFFICER CELLI: Okay. Thank you very  
15 much. Now, ladies and gentlemen, it's about four minutes  
16 after 3:00 o'clock in the afternoon. It's -- when we come  
17 back from this just very quick ten-minute break, we are  
18 going to hunker down and deal with the avian flux issues and  
19 any ancillary avian issues that may arise. And so we will  
20 expect everybody back in their seats please at 3:15. Thank  
21 you.

22 (Off record)

23 MR. ELLISON: -- what's going on here apparently,  
24 this is all surprise to me. You know, no advance notice of  
25 this even five minutes ago. What staff is attempting to do

1 is to present evidence that goes beyond what they previously  
2 filed in realtime and I strenuously object.

3 I'll say one last thing, the fact that the staff  
4 did not have an opportunity to respond was inherent in the  
5 schedule which had us making the last filing.

6 HEARING OFFICER CELLI: That's right. In fact  
7 there was an extension I think of four days to respond to  
8 avian issues followed by a surrebuttal on like the 20th I  
9 think of was it -- or was it December?

10 MR. BREHLER: It was February 15th and that  
11 surrebuttal that the applicant filed was appropriate. This  
12 is different and that surrebuttal sprang from the workshop  
13 on Santolo's flux study. This is different.

14 HEARING OFFICER CELLI: What I'm going to ask you  
15 to do, Mr. Brehler, is elicit what you can today into the  
16 record. I'm sure if they were the experts who wrote their  
17 testimony, they probably can say the same thing today on the  
18 record and hopefully they can -- we can hear what the issues  
19 are in their complete -- in their entirety and understand  
20 what's going on here.

21 So your objection's overruled with regard to the  
22 exclusion of witnesses and with regard to the exclusion of  
23 Exhibit 72. Okay. With that, let me find -- I want to find  
24 out who's here. Who said um?

25 MS. MacDONALD: This is Cindy MacDonald and I just

1 want it noted on the record that I object to your overruling  
2 or as to why I support what staff is saying. At the  
3 beginning of this hearing, conditions of certification were  
4 circulated. In fact that was one of my complaints that we  
5 hadn't received conditions of certification that had been  
6 worked on at the workshop and from what I understood from  
7 the biological panel just an hour ago, they still had not  
8 been circulated.

9           And with respect to that you also allowed the  
10 exhibit of Inyo County's agreement with BrightSource when  
11 that came in and finally the solar flux issue has been a  
12 hotly contested issue and it's very important and if there's  
13 information that staff can provide, I think that that should  
14 be part of the record. So I wanted that on record. Thank  
15 you.

16           HEARING OFFICER CELLI: Thank you. That's on  
17 record. Now --

18           MR. ELLISON: Let me add one more point, just for  
19 the record. I apologize. If staff's concern is that our  
20 rebuttal testimony was somehow improper, that rebuttal  
21 testimony was filed a long time ago. They could have filed  
22 a motion to strike ahead of these hearings, let along  
23 walking in and not even given us any oral notice on the day  
24 of the hearing. So I am objecting to this in the strongest  
25 possible terms.

1 HEARING OFFICER CELLI: And as long as we're on  
2 the subject, ladies and gentlemen, when the Committee makes  
3 a ruling, that's the ruling. If you don't like it, you have  
4 recourse, but this -- we've got to keep moving and we make  
5 the best calls we can make when we're up here and we're  
6 doing the best we can to try to be fair to all of the  
7 parties and to do the right thing with regard to putting --  
8 you know, what -- dare I say due process and having a fair  
9 hearing. And that's what we're about.

10 And so if we make a bad call, I'm sorry. We're  
11 trying not to. We're trying to preserve the fairness and  
12 the integrity of these proceedings and so if it's seems that  
13 somebody wants to take advantage of a situation or perhaps  
14 have an unfair advantage, the Committee usually will take a  
15 dim view of that, but I'm not ascribing any ill will or bad  
16 motive to anybody. I'm just saying that's -- we're just  
17 trying to keep the balance in place.

18 MR. ELLISON: Mr. Celli, could I just clarify what  
19 the ruling is? I understand you --

20 HEARING OFFICER CELLI: The objection is  
21 overruled.

22 MR. ELLISON: You've denied the motion to strike.

23 HEARING OFFICER CELLI: Correct.

24 MR. ELLISON: And then I understood Mr. Pippin as  
25 to say --

1 MR. BREHLER: Mr. Brehler.

2 MR. ELLISON: -- in a separate motion -- I'm  
3 sorry. Excuse me. I apologize.

4 MR. BREHLER: No worries.

5 MR. ELLISON: -- to say that as a sort of second  
6 motion that he wants permission for his panel to present  
7 testimony that was not presented previously and I don't know  
8 what your ruling was on that.

9 HEARING OFFICER CELLI: You know what, we're going  
10 to hear what the -- I have no idea what's coming and we're  
11 going to hear whatever it is that staff has to say. I know  
12 this is an important issue. You can -- how you know it's an  
13 important issue is because the attorneys keep back and forth  
14 and back and forth and back and forth. It's apparently an  
15 important issue to all parties and we're going to treat it  
16 as such.

17 We have live expert testimony. We're going to not  
18 put limitations on their expression. We want to hear  
19 everything they have to say. All parties -- this is very  
20 important. The Committee is very interested in avian flux  
21 and we are doing to hear whatever they have to say and if  
22 it's relevant, it comes in. If it's not, make an objection,  
23 but apparently I have earned a reputation for overruling  
24 objections.

25 MR. ELLISON: Okay. Well, Mr. Celli, I will just



1 say to spare us objections later, I'm not going to sit here  
2 and object every time I hear something new because I heard  
3 what you just said. It's relevant, it's going to come in.

4 I expect our people to be treated the same way.  
5 We didn't come here prepared to say anything new. But I do  
6 want to register a very clear objection to this practice of  
7 bringing in new evidence in realtime with no prior notice.  
8 Having said that, we can move on.

9 HEARING OFFICER CELLI: Notes. Now, I'd like to  
10 know who's here. So first, Mr. Lesh, would you state your  
11 name.

12 MR. LESH: I'm Geoffrey Lesh with the Energy  
13 Commission.

14 HEARING OFFICER CELLI: Next to Mr. Lesh is?

15 MR. TYLER: I'm Rick Tyler, Senior Mechanical  
16 Engineer with the California Energy Commission.

17 HEARING OFFICER CELLI: Next to Mr. Tyler.

18 DR. GREENBERG: I'm Alvin Greenberg, Toxicologist  
19 and Risk Assessor, Consultant to the Energy Commission for  
20 20 years now.

21 HEARING OFFICER CELLI: Next to Mr. Greenberg.  
22 Ms. Watson.

23 MS. WATSON: Good afternoon. Ms. Watson,  
24 Biological Resources, Energy Commission.

25 MR. HASS: Bill Hass, Commission, Biological

1 Resources.

2 HEARING OFFICER CELLI: Next to Mr. Hass.

3 MR. BREHLER: One moment, please. We also had  
4 Mr. Huntley in the back. He is on this panel.

5 HEARING OFFICER CELLI: Mr. -- that was Mr. --

6 MR. HUNTLEY: Chris Huntley.

7 HEARING OFFICER CELLI: -- Chris Huntley.

8 MR. HUNTLEY: Biological Resources.

9 HEARING OFFICER CELLI: And next to Mr. Huntley,  
10 is that another expert witness, please?

11 MS. HAWK: Debra Hawk with the California  
12 Department of Fish and Wildlife.

13 HEARING OFFICER CELLI: Thank you, Ms. Hawk.

14 MR. BREHLER: Thank you.

15 HEARING OFFICER CELLI: Hold on a minute. After  
16 Ms. Hawk, I was at Ileene Anderson. Go ahead.

17 MS. ANDERSON: Yes. Ileene Anderson with the  
18 Center for Biological Diversity.

19 HEARING OFFICER CELLI: After Ms. Anderson.

20 MR. PHILLIPS: Dave Phillips with CH2MHill.

21 HEARING OFFICER CELLI: Next to Mr. Phillips?

22 MR. SANTOLO: Gary Santolo with CH2MHill.

23 HEARING OFFICER CELLI: Santolo. Next to  
24 Mr. Santolo.

25 MR. FRANCK: Dan Franck, BrightSource Energy.

1 HEARING OFFICER CELLI: Next to Mr. Franck?

2 MR. RUBENSTEIN: Gary Rubinstein with Sierra  
3 Research.

4 HEARING OFFICER CELLI: Next to Mr. Rubenstein.

5 MR. CARETTO: Larry Caretto, Cal State Northridge,  
6 consultant to Sierra Research.

7 HEARING OFFICER CELLI: I didn't get your last  
8 name, sir.

9 MR. CARETTO: Caretto, C-a-r-e-t-t-o.

10 HEARING OFFICER CELLI: And the next witness.

11 MR. JOHNSEN: Sonke Johnsen, Biologist at Duke  
12 University.

13 HEARING OFFICER CELLI: Come on up, Mr. Schwab.  
14 Have a seat next to Mr. Caretto, please.

15 MR. SCHWAB: I'm Ivan Schwab, consultant to  
16 BrightSource.

17 HEARING OFFICER CELLI: Thank you. I'm going to  
18 ask you, if you're an expert and you're going to testify to  
19 go down where the experts are sitting next to Mr. Caretto.  
20 Any other witnesses besides I have Ms. MacDonald. I have  
21 Mr. Arnold. Okay. This is our complete panel. Welcome.  
22 If everyone would please stand -- please rise, raise your  
23 right hand.

24 Whereupon,

25 GEOFFREY LESH

1 RICK TYLER  
2 ALVIN GREENBERG  
3 CAROL WATSON  
4 BILL HASS  
5 CHRIS HUNTLEY  
6 DEBRA HAWK  
7 ILEENE ANDERSON  
8 DAVE PHILLIPS  
9 GARY SANTOLO  
10 DAN FRANCK  
11 GARY RUBENSTEIN  
12 LARRY CARETTO  
13 SONKE JOHNSEN  
14 IVAN SCHWAB  
15 Were called as witnesses herein, and after being duly sworn,  
16 were examined and testified as follows:  
17 HEARING OFFICER CELLI: Thank you. You may all  
18 seated. All witnesses have been sworn.  
19 BIOLOGICAL RESOURCES (AVIAN FLUX)  
20 HEARING OFFICER CELLI: Now, in this new area that  
21 we're talking about, avian flux, did staff prepare another  
22 PowerPoint on this or applicant? Are we going to have some  
23 sort of synopsis of what the issues are by way of  
24 PowerPoint.  
25 MR. BREHLER: Well, it's not a PowerPoint, but we

1 do have pdf images that we've provided to Mr. Battles that  
2 we'll -- that as the witnesses -- and ask him to call up.

3 HEARING OFFICER CELLI: Okay. Let me transfer  
4 permissions to Mr. Battles. Okay. You are going to be the  
5 presenter, Mr. Battles, so -- so Mr. Brehler, are your  
6 people prepared to frame the issues?

7 MR. BREHLER: They are. Mr. Tyler will go first  
8 and provide an overview.

9 HEARING OFFICER CELLI: Great. Thank you.  
10 Mr. Tyler, go ahead.

11 MR. TYLER: Good afternoon, Commissioner Douglas,  
12 Commission Hochschild, and Hearing Officer Celli. My name  
13 is Rick Tyler. I'm a Senior Engineer with the Energy  
14 Commission's Siting, Transmission, and Environmental  
15 Protection Division and I am the technical lead that was  
16 responsible for development of Bio -- of Appendix Bio 1 and  
17 Bio 2 at the end of Exhibit 300.

18 With me today is Dr. Alvin Greenberg who will be  
19 providing information on biochemistry, feather keratin, and  
20 ecotoxicology, and risk assessment. To my right is Geoff  
21 Lesh, a Professional Engineer with the Commission, who  
22 developed the thermal equilibrium model that we use to  
23 conduct our risk assessment. The biological panel consists  
24 of Carol Watson, Bill Hass, and Chris Huntley who are here  
25 to address avian biology, physiology, and behavior.

1           Appendix Bio 1 and Bio 2 are essentially an  
2 eco-risk assessment and supporting model used to evaluate  
3 the potential effects of flux on avian species that are  
4 exposed as a result of operation of the Hidden Hills  
5 facility.

6           One of the overarching disputes between staff and  
7 applicant goes to analytical approach. Risk assessment is a  
8 widely accepted method to evaluate this type of risk and  
9 Exhibit 301 provides reference to one of State of  
10 California's guidelines for conducting ecological risk  
11 assessment. These and many other state, federal, and  
12 international guidelines provide direction on accepted  
13 practices and procedures for conducting such ecological risk  
14 assessments.

15           Staff's analysis conforms with these guidelines  
16 while BrightSource's does not. BrightSource contends that  
17 the use of dose response concepts and risk assessment are  
18 not appropriate and that the assumptions made by staff are  
19 either incorrect, wrong, conservative, or should have  
20 utilized average or median assumptions. This could not be  
21 further from the truth.

22           Staff's analysis utilizes protective assumptions  
23 that are completely consistent with accepted practice and  
24 established guidelines for conducting such assessments.  
25 It's necessary to use such protective assumptions because if

1 you don't you will not protect the entire population that  
2 may be exposed or protect them under all the conditions that  
3 they may be exposed to.

4           Staff used, for example, a flight speed that was  
5 at the lower end of the range that is expected for birds to  
6 fly. We assumed dark colored plumage because many birds  
7 have dark colored plumage and that would result in the  
8 highest uptake of energy from the rating field. We used the  
9 bottom of the wing which is the part that's most likely  
10 exposed to the flux and because it also is always -- which  
11 means the convective heat transfer coefficient on the bottom  
12 is lower and thus the feather gets hotter. It absorbs more  
13 heat. There's less take-away.

14           The -- as described in staff's Exhibit 301 and  
15 302, the analysis by BrightSource has serious analytical and  
16 computational flaws that rely on average or median  
17 assumptions, that are not consistent with accepted risk  
18 assessment practices. There are three -- after that  
19 overarching issue of analytical approach, there's also three  
20 very specific areas where staff had contention with  
21 BrightSource.

22           First is that staff concluded that the safe  
23 exposure level for birds flying on the flux field would be  
24 something below five kilowatts per meter squared. The  
25 analysis by BrightSource concluded that the safe exposure

1 level would be 50 kilowatts.

2           Staff believes that it's a near certainty that  
3 golden eagles and other special status bird species will be  
4 killed or injured over the 30-year life of this project.  
5 While BrightSource contends that golden eagles will not be  
6 killed or injured and that the flux field and the impacts to  
7 birds in general will be insignificant. Staff contends that  
8 eagles and significant numbers of other special status  
9 species of birds will be killed or injured from exposure to  
10 the flux field and concludes that the killing or injury of  
11 even one fully protected or endangered species such as the  
12 golden eagle would constitute a substantial change or impact  
13 on the environment. As stated by CEQA that would constitute  
14 a potential for significant impact. That's how we arrived  
15 at the determination of significant impact.

16           Staff developed its safe threshold by first  
17 considering the decomposition of the keratin molecule which  
18 is what feathers are made off. It's a structural, fibrous  
19 protein that makes up feathers. Staff determined that  
20 degradation of keratin and the molecular structure starts at  
21 a temperature above 160 degrees C or 320 degrees F which is  
22 really quite high, based on very well-conducted and  
23 documented experiments described in reference 300 -- I mean  
24 in Exhibit 300. Thus no adverse effects would be expected  
25 as long as the feather temperature did not exceed



1 160 degrees C. We don't expect any adverse changes to the  
2 feathers at all. It's basically no observed effect.

3           Based on -- staff used a -- developed a flux model  
4 or a model to determine how the exposure to flux would  
5 change the temperature of the feather. This model invokes  
6 an engineering principle of thermodynamic equilibrium and  
7 when I say thermodynamic, the word dynamic has very specific  
8 meaning. It means it's constantly changing. As the bird  
9 moves through the flux field, the equilibrium constantly  
10 shifts from point to point, from exposure to exposure.

11           The model basically -- this principle basically is  
12 the balancing of energy from the radiant flux into the  
13 feather against the energy or heat that's removed from the  
14 feather by convective heat transfer and re-radiation.  
15 That's what the model essentially does.

16           The model basically allows staff to determine the  
17 temperature that the feathers would reach in a dynamic basis  
18 as it would move through the flux field. Based on staff's  
19 model and assumptions of the flux levels that cause feather  
20 temperature to reach 160 degrees C, staff determined that  
21 this would occur at an exposure level to flux of  
22 five kilowatts per meter squared.

23           The implication of staff's safe threshold is that  
24 exposures above five kilowatts per meter squared could  
25 result in irreversible injury to the feather of the exposed

1 birds and thus the flux field above five kilowatts per meter  
2 squared poses a clear hazard to birds that are exposed to  
3 it.

4           BrightSource contends that the safe exposure  
5 threshold is 50 kilowatts per meter squared based on  
6 experiments conducted by Mr. Santolo for BrightSource.  
7 They're included in Exhibit 44. However, these experiments  
8 cannot support BrightSource's contention of a safe threshold  
9 at 50 kilowatts per meter squared. The term threshold  
10 within the context of risk assessment has a very specific  
11 meaning. It implies that that level of exposure would cause  
12 no adverse effect whatsoever and that the exposure would  
13 leave no residual damage and that repeated exposures to that  
14 same level would not accumulate damage.

15           The fact is that the evidence from the photographs  
16 provided documenting this experiment indicate that there was  
17 carbonization of the end of the feathers which is a very,  
18 very serious end of the dose response spectrum and that in  
19 fact repeated exposures would result -- that there is  
20 residual damage as a result of it and that repeated  
21 exposures would accumulate damage.

22           So this cannot be considered a no-effect level.  
23 Based on standard risk assessment methods and assumptions  
24 and practice, it would be necessary to divide that flux  
25 level that caused that kind of damage by a factor of ten at

1 a minimum. It is an adverse effect. It's not a no-effect  
2 level. It's an adverse-effect level. And so the  
3 interpretation of that data is what's really wrong. It  
4 has -- it cannot be sued to support the concept of a  
5 threshold or a safe exposure threshold.

6           There observed adverse effects in a study were  
7 only the lowest adverse effects observed because of the  
8 gross limitations of visual evaluation of the feathers with  
9 the naked eye or with a ten power loop. BrightSource's  
10 experiment was also based on unrealistically short, one-time  
11 exposures of about 30 seconds or less.

12           The assumptions of median flight speed and the  
13 size of the pertinent flux field basically led to the  
14 assertion that there would be a threshold at 50. The fact  
15 is the flux field that was envisioned, there is no such  
16 thing as a solid mass of air or mass of air space that's at  
17 50. That's one isopleth -- very thin isopleth at one point  
18 in the field.

19           As soon as you go closer to the tower or the  
20 receiver, the flux level increases and it increases very  
21 rapidly. On the other side, it decreases. So there is  
22 no -- it's just a completely wrong abstraction that there's  
23 going to be exposure at 50 for 30 seconds. It's just  
24 inconsistent with any reality.

25           ASSOCIATE MEMBER HOCHSCHILD: I'm sorry. You used

1 the term isopleth?

2 MR. TYLER: Yeah. An isopleth is simply a level  
3 of flux that remains constant throughout the field at that  
4 level. So it's kind of like a contour map for a mountain.  
5 There's -- you see -- that's exactly the same sort of  
6 concept. So in addition to the --

7 HEARING OFFICER CELLI: If I can -- Mr. Battles,  
8 that's available to everybody and I don't think that that  
9 should be so. Let's just keep it on that if you would.  
10 Thank you. I'm sorry for the interruption, Mr. Tyler, go  
11 on.

12 MR. TYLER: In addition to the important  
13 differences that I've explained in terms of assumptions and  
14 methods or basically our method of doing the risk  
15 assessment, which BrightSource disagrees with, I think it's  
16 also very important to establish the sheer size of this  
17 facility in terms of its comparison to say SEDC or Solar I.

18 In this diagram, the top photograph or the top  
19 depiction is for the size of the field that is above  
20 ten kilowatts per meter squared.

21 HEARING OFFICER CELLI: Let's identify this --  
22 where this diagram comes from in terms of an exhibit,  
23 please.

24 MR. TYLER: That is described at the bottom, but  
25 basically this was provided by BrightSource. This is their

1 diagram.

2 HEARING OFFICER CELLI: Does anyone know what  
3 exhibit number this is -- this diagram comes from?

4 MR. BREHLER: The diagram itself is from a  
5 BrightSource presentation. That presentation was referenced  
6 in Exhibit 300 which is -- and it says at the bottom at  
7 page 4.2-289.

8 HEARING OFFICER CELLI: 4.2-289 of Exhibit 300.

9 MR. BREHLER: Of Exhibit 300 referenced this  
10 presentation.

11 HEARING OFFICER CELLI: Thank you.

12 MR. TYLER: If you could move to the second slide.  
13 This gives -- this is somewhat adapted from the top figure  
14 that was provided in the previous diagram. It just gives  
15 you a clearer depiction of the scale 2,000 feet across the  
16 top and a thousand feet in height.

17 The next diagram gives you a clear perspective.  
18 This is the size of the ten kilowatt per meter field as  
19 compared to the largest skyscraper in Sacramento, the Wells  
20 Fargo Building -- Wells Fargo Center. So I felt it was --  
21 it's really necessary to have that perspective and the  
22 diagrams just don't bring that out readily. While we would  
23 expect golden eagles and other raptors would not be present  
24 in the air space occupied by the flux of Solar I or SEDC --

25 PRESIDING MEMBER DOUGLAS: Mr. Tyler.

1 MR. TYLER: Yes.

2 PRESIDING MEMBER DOUGLAS: Before you go on, this  
3 is Commissioner Douglas --

4 MR. TYLER: Yes.

5 PRESIDING MEMBER DOUGLAS: -- you're looking  
6 around the room. Can you clarify just so that we're sure we  
7 know what we're looking at what this diagram means. But the  
8 blue area in this agreement means what again?

9 MR. TYLER: That is the area of the air space  
10 around the tower. If you look right there at the center,  
11 you can see the actual receiver and then it's kind of set up  
12 so that inside darker portion is at another flux level.

13 PRESIDING MEMBER DOUGLAS: So that is the air  
14 space --

15 MR. TYLER: That's air space above ten kilowatts  
16 per meter squared.

17 PRESIDING MEMBER DOUGLAS: Okay. And can you  
18 explain the significance of ten kilowatts per meter squared?

19 MR. TYLER: That is twice the level of staff's  
20 safe threshold.

21 PRESIDING MEMBER DOUGLAS: Okay. Thank you.

22 MR. ELLISON: And I just want to state for the  
23 record this is completely new and I note that Mr. Tyler said  
24 it was, quote, somewhat adapted. We have no idea what the  
25 adaptations area.

1 HEARING OFFICER CELLI: Well, let's hear it out.  
2 I'm going to let him make the case. It's helpful to the  
3 Committee. We need to know what this is all about.

4 MR. ELLISON: My point is we have had no  
5 opportunity to check this for accuracy and I doubt that our  
6 people in realtime can do that.

7 HEARING OFFICER CELLI: Well, your objection is  
8 noted and preserved.

9 MR. TYLER: These are -- the dimensions of this  
10 building are readily available on the web and elsewhere.  
11 And I provided it because each of you have ready access.  
12 You can look at the window at the Energy Commission and look  
13 at the size of that building and then compare it to the size  
14 of what we're dealing with.

15 Okay. Again while we would expect -- while we  
16 would not expect that golden eagles and other raptors would  
17 be present in the air space occupied by the flux field at  
18 Solar I and SEDC, it should be expected that they will  
19 occupy the higher air space associated with the Hidden Hills  
20 facility. It should also be noted that the relative  
21 dimensions of the flux field will significantly increase the  
22 potential of duration of exposure as compared to those  
23 facilities.

24 Based on this, staff concludes that it would take  
25 considerably longer than 30 seconds to pass through -- for a

1 bird to pass through the field -- through a field this size  
2 and would take over a minute easily. Based on this, staff  
3 concludes that golden eagles will be present in the project  
4 area and should be expected to migrate through the area.  
5 Thus based on the hazard posed by the concentrated field and  
6 the presence of eagles in the area, staff concludes that  
7 eagles and other special status bird species will almost  
8 certainly be killed or injured by exposure to the flux  
9 field.

10 I'd like to just take a minute and explain  
11 something as a risk assessor that I think is very important.  
12 Risk assessors routinely rely on morbidity or death. The  
13 reason is morbidity or death is very clear. It's not  
14 ambiguous. You're either dead or you're not dead.

15 When you start talking about morbidity or injury,  
16 that's much more subjective. But any risk assessor should  
17 realize and anybody looking at a risk assessment should  
18 realize that anytime you have fatalities you also have  
19 significant numbers of injuries. And the injuries are  
20 usually several times as large as the number of fatalities  
21 and those injuries can actually lead to late fatalities that  
22 aren't detected by the surveys that we've talked about.

23 So the bird lives for a while, flies off site, and  
24 dies later or it never reproduces or any number of other  
25 impacts that could occur, but I think it's really important



1 to recognize that the actual number of injuries will be  
2 several times as large as the number of fatalities.

3 Staff contends that killing or injuring even one  
4 golden eagle would constitute potential for substantial  
5 impact on the environment and over the life of the Hidden  
6 Hills project would cause a significant impact on avian  
7 resources.

8 ASSOCIATE MEMBER HOCHSCHILD: Okay. Mr. Tyler,  
9 just before we leave this slide -- this is a very helpful  
10 overview. I'm just still trying to get my hands around the  
11 actual -- what's actually going on here. The ceiling that  
12 you show there is at a thousand feet. Right. The blue area  
13 is basically double what you regard the actual threat level  
14 to be?

15 MR. TYLER: Yes.

16 ASSOCIATE MEMBER HOCHSCHILD: Right. So why have  
17 you not shown what you're projecting the threat level --

18 MR. TYLER: We didn't have a readily available  
19 depiction --

20 ASSOCIATE MEMBER HOCHSCHILD: Okay.

21 MR. TYLER: -- of five.

22 ASSOCIATE MEMBER HOCHSCHILD: So let me ask it  
23 this way. I mean what is -- and maybe you can't answer  
24 this. I'm not sure, but what is -- if you're -- you're  
25 saying the threshold is five. What is this what you might

1 call the safe altitude or the ceiling up to which a bird  
2 would be safe in your view flying over the heliostats?  
3 Anything -- right now, I mean that's clearly above a  
4 thousand feet is trouble from your perspective. What's  
5 the -- where does the --

6 MR. TYLER: It would be slightly higher, but  
7 mainly it would be much wider.

8 ASSOCIATE MEMBER HOCHSCHILD: Higher or lower I  
9 thought if --

10 MR. TYLER: It would be lower.

11 ASSOCIATE MEMBER HOCHSCHILD: Yeah.

12 MR. TYLER: It would be somewhat lower. The  
13 bottom of that is at about 500 feet. The height of the  
14 tallest building is 423.

15 ASSOCIATE MEMBER HOCHSCHILD: The bottom of the  
16 blue is at --

17 MR. TYLER: Yeah. See the building's 423 feet  
18 high.

19 ASSOCIATE MEMBER HOCHSCHILD: Right.

20 MR. TYLER: So the bottom of the flux field that's  
21 depicted there is about 500.

22 ASSOCIATE MEMBER HOCHSCHILD: Okay. So -- yeah.  
23 What I'm trying to figure out is we have -- so  
24 170,000 heliostats focusing this beam. Your contention is  
25 basically that the early part of that, it's so wide and it's

1 focused, it's not yet --

2 MR. TYLER: That's correct.

3 ASSOCIATE MEMBER HOCHSCHILD: -- a threat to the  
4 bird.

5 MR. TYLER: That's correct.

6 ASSOCIATE MEMBER HOCHSCHILD: At what altitude  
7 does it become a threat? This shows -- I'm just trying --  
8 and I'm -- it's just not clear to me why you're using twice  
9 your threshold if your threshold is five.

10 So what is -- just tell me -- what altitude does  
11 the threat begin?

12 MR. TYLER: That's all we had. We have some other  
13 maps and I don't know if we have them -- whether we're going  
14 to have those in this set, but they also provided some flux  
15 modeling. I believe that it would go down -- I seem to  
16 recall to about 200 meters which -- yeah. That would be  
17 higher than this.

18 So it would be somewhat lower. Not -- it wouldn't  
19 be substantially lower or substantially higher, but it would  
20 be wider.

21 ASSOCIATE MEMBER HOCHSCHILD: Yeah. And I -- you  
22 know, admittedly this is a very difficult rendering to  
23 provide because there's also the time interval that matters,  
24 right, which changes with altitude I'm presuming; right?  
25 The higher you go; the shorter amount of time would cause

1 damage to -- that it would take to cause --

2 MR. TYLER: That's correct. That's correct.

3 ASSOCIATE MEMBER HOCHSCHILD: Right. So --

4 MR. TYLER: As you get toward the inside, as you  
5 get right against the receiver, you're at 500 kilowatts per  
6 meter squared.

7 ASSOCIATE MEMBER HOCHSCHILD: Right. Right.

8 MR. TYLER: And so there's -- and it increases  
9 more or less as an inverse square.

10 ASSOCIATE MEMBER HOCHSCHILD: Right. Okay.

11 MR. TYLER: Not quite -- that's not quite  
12 accurate, but more or less.

13 ASSOCIATE MEMBER HOCHSCHILD: Okay. That's  
14 helpful. Thank you.

15 MR. TYLER: Um-hmm. In conclusion, this panel  
16 believes that the available evidence demonstrates a clear  
17 and evident hazard to birds posed by the concentrated flux  
18 field at the Hidden Hills facility. Neither staff nor  
19 BrightSource can provide conclusive evidence on the number  
20 of birds that will actually be exposed, the species that  
21 will be exposed, how the birds will react to the facility,  
22 whether they'll be attracted or repelled by the facility,  
23 nor how they will behave in the flux field.

24 The conditions of certification in Exhibit 300  
25 that will cause the documentation of -- will cause

1 documentation of these actual impacts associated with the  
2 facility once it's operational and will required adaptive  
3 mitigation to offset significant impacts to the extent these  
4 over the 30-year life of the project.

5 With that, I'd like to turn over the mic to  
6 Dr. Greenberg to discuss risk assessment and a little bit  
7 more in depth about feather keratin and the biodegradation  
8 of feather --

9 HEARING OFFICER CELLI: Can I ask, Mr. Battles,  
10 can you take us back to what we were just looking at.  
11 Mr. Tyler.

12 MR. TYLER: Yes.

13 HEARING OFFICER CELLI: As we look at this  
14 diagram, it looks like everything up to about 500 feet is  
15 safe. Okay? Am I right -- that's a correct assumption?

16 MR. TYLER: If ten was our criteria, yes.

17 HEARING OFFICER CELLI: Okay. Then you have  
18 gradation of color on the interior towards the middle of the  
19 tower.

20 MR. TYLER: If you go back to the first slide, you  
21 can see that -- what that -- there. Okay. You see that  
22 second, that's 25. That's what you're seeing as the  
23 gradation of color.

24 HEARING OFFICER CELLI: Oh --

25 MR. TYLER: Is the 25 kilowatt and then inside of

1 that is 50 kilowatts.

2 HEARING OFFICER CELLI: Okay. So if you're on the  
3 edge less -- there's less intensity there. Okay. So these  
4 are -- basically it's the three of them on top of each  
5 other --

6 MR. TYLER: Yes.

7 HEARING OFFICER CELLI: -- overlaying.

8 MR. TYLER: Overlaying.

9 HEARING OFFICER CELLI: Yeah. Okay. Thanks. I  
10 just didn't get that.

11 MR. TYLER: With that, I'd like to --

12 HEARING OFFICER CELLI: Mr. Greenberg.

13 DR. GREENBERG: With your permission. I'm going  
14 to talk about three particular areas and I'll be very brief:  
15 the first of which will be the biochemistry of feathers  
16 because I think it's important for you to understand a  
17 little bit about the chemistry so that you understand how  
18 heat impacts on the feathers; the second very quickly on  
19 dose response, for some reason there seems to be a  
20 controversy over dose response. I don't understand why the  
21 applicant doesn't believe that heat damages feathers and in  
22 a dose response manner, but I will talk about that. And the  
23 third again very briefly, I want to buttress what Mr. Tyler  
24 talked about as far as risk assessment being a utility, not  
25 only being useful but generally accepted in the scientific

1 and regulatory community as being a useful predictor of risk  
2 to ecological species.

3           A feather is literally composed of keratin which  
4 is a protein and protein is polypeptide. So we've got a lot  
5 of amino acids there. And it's in a particular structure.  
6 It has a form called a beta helix. Now, if you remember dna  
7 is a double helix, that's nucleic acid. In this case, we're  
8 talking about amino acids and it's not in a double helix but  
9 rather the beta helix which exists in sheets so that there's  
10 sheets on top of each other and the helix is held together  
11 by both hydrogen bonds and by disulfide, that's sulfur to  
12 sulfur, covalent bonds which are called disulfide bridges.

13           This imparts a certain not only thermal stability  
14 but also strength and flexibility. It is existentially very  
15 important to the bird because it allows the bird to fly. So  
16 it's definitely an existential issue that if there's damage  
17 to the feather the bird can't fly, the bird will die.

18           Heat is one of the insults that can impact of  
19 proteinaceous material. We all know what happens when you  
20 take an egg, you crack it open, and you put it on the fry  
21 pan and you're denaturing the albumin. The albumin is a  
22 protein. It's a polypeptide. It happens to be a different  
23 type of helix, but nevertheless, heat causes damage to  
24 proteins. It's called denaturing. You can add chemicals to  
25 an egg also and you can denature it.

1           But in this case, the keratin of the bird can be  
2 denatured by heat and you start to lose that beta helix and  
3 the sheets and the disulfide bridges. You literally are  
4 destroying chemical bonds, the disulfide bridges being much  
5 more stable and of greater strength than hydrogen bonds.

6           Now if we can have our -- one of our overheads  
7 please, one of our slides that shows -- I guess it's under  
8 my name, Greenberg. Excellent. Thank you.

9           MR. ELLISON: Again I want to make clear that this  
10 is new information.

11           DR. GREENBERG: This reference is from staff's  
12 Exhibit 300. It was referenced and discussed in Exhibit 300  
13 which happens to be the PSA -- I'm sorry -- the FSA -- the  
14 Bio -- Appendix Bio 1.

15           MR. ELLISON: The document that this comes from  
16 may have been referenced in staff's testimony but this  
17 diagram was not -- not shown --

18           HEARING OFFICER CELLI: Thank you. Let's hear  
19 what they have to say. You can renew that -- your  
20 objections later at the end of the testimony.

21           MR. ELLISON: I understand. I'm not trying to  
22 slow things down. I just want the Committee to know what  
23 we've seen and what we haven't.

24           HEARING OFFICER CELLI: Appreciate that. Thank  
25 you. And you haven't seen this one. This is new, so you



1 better explain it to us, Mr. Greenberg.

2 DR. GREENBERG: Thank you, sir. On the Y  
3 ordinate, we have -- it's called TG percent and this  
4 percent -- TG stands for thermogravimetric and this is a  
5 thermogravimetric analysis published in a very reputable  
6 scientific journal, peer reviewed very recent also. And  
7 it's starting at the top a hundred percent. That means the  
8 entire feather is intact. There's no damage to the feather.

9 We want to look at the curve of the dashed lines.  
10 Those are feathers, chicken feathers. We can ignore the  
11 wool and the hair at this time, although they're also  
12 proteinaceous -- along the X axis is a rise in temperature  
13 and the temperature is increased in this experiment at  
14 10 degrees Centigrade per minute. So looking at -- starting  
15 around 10 degrees, going up to 500, it's roughly a 40,  
16 50-minute experiment. And you can see that as you increase  
17 the temperature you are actually losing mass.

18 If you look at that curve, it starts out there at  
19 a hundred percent of mass. The feather is intact and then  
20 as the heat rises, you notice there's a drop. The initial  
21 drop is probably water vapor leaving the feather. Even  
22 though in this case the feather was in a dry state, there's  
23 still some water within the matrix.

24 And then it levels off a bit and it starts going  
25 down very slowly and then at a certain point, it really

1 drops. You're losing mass. The experiment is actually  
2 quite exquisite. The chemists have devised some very good  
3 methods. They are actually weighing the feathers and  
4 they're weighing the loss of mass and it's a very, very,  
5 very precise scale and this is done in an inert atmosphere  
6 and the atmosphere is usually helium or nitrogen and it's  
7 circulating, sort of flowing over the feathers as they're  
8 heated up, and you can then analyze the gas as it comes up.

9           And as the mass starts to drop, it keeps dropping  
10 till somewhere around 400 degrees Centigrade it levels off  
11 and now pretty much all you're left with is carbon. But  
12 what you've lost is you've destroyed your hydrogen bonding,  
13 you've destroyed your disulfide bridges, you're starting to  
14 lose chemicals. They've analyzed these as hydrogen sulfide,  
15 some carbonyl sulfide, carbon dioxide. Then they start  
16 losing some other parts of amino acids such as proline, the  
17 ones that contain nitrogen.

18           And the key here is this is a classic dose  
19 response curve, the dose being the temperature, the response  
20 being loss of mass. Dose response is a time honored --  
21 almost nobody argues against it because it's a basic  
22 principle of toxicology and toxicology doesn't just mean  
23 insult by chemicals. It's also an insult by radiation.  
24 There are numerous dose response curves for all types of  
25 radiation and solar flux is a type of radiation. It's not

1 the radioactive type with, you know, uranium and bombs and  
2 whatnot, but it is what we call nonionizing radiation and  
3 solar flux -- excuse me -- consists of infrared radiation in  
4 the electromagnetic spectrum, visual radiation, and some  
5 ultraviolet as well.

6           There are numerous, numerous studies to show dose  
7 response between exposure to radiation and biologic  
8 response. So this is nothing new and I don't understand the  
9 difference between the applicant and staff. We'll hear from  
10 the applicant, but that is a point of difference and that's  
11 why this reference in staff's Exhibit 300 which contains  
12 this particular diagram is so very important. It is a dose  
13 response. And the authors of this article stated that it  
14 was around 150 to 160 degrees Centigrade that the keratin  
15 really started to break down. The feathers really started  
16 to lose their integrity.

17           And that's of course very consistent with what  
18 staff used in its risk assessment, 160 degrees. So just a  
19 brief word on risk assessment. I won't repeat what  
20 Mr. Tyler said, but I do want to emphasize once again that  
21 what Mr. Tyler said is very correct, that we have standard  
22 guidelines from Cal EPA for doing ecological risk  
23 assessment, that these guidelines are consistent with US EPA  
24 and other regulatory bodies worldwide, and one of the key  
25 features -- or several of the key features include looking

1 at a sensitive endpoint -- the most sensitive endpoint. Not  
2 just something that you can see with your eyes or maybe with  
3 a ten power eyeglass, but rather something that you could  
4 tell by a necropsy or tissue analysis or more important  
5 microscopy -- microscopic examination.

6 HEARING OFFICER CELLI: You also --

7 PRESIDING MEMBER DOUGLAS: Mr. Greenberg, I've  
8 just got a quick question before you go on. This is  
9 Commissioner Douglas. I see you staring around the room.  
10 Here I am.

11 DR. GREENBERG: Oh, you know why, the laptop is  
12 blocking your mouth, so I --

13 PRESIDING MEMBER DOUGLAS: It is. It is.

14 DR. GREENBERG: I'm sorry, Commissioner.

15 PRESIDING MEMBER DOUGLAS: That's all right. I  
16 pushed down the diagram I was looking at. That's okay. So  
17 I've got two questions for you. You said a couple times  
18 that 160 degrees is the temperature at which the feather  
19 begins to break down, but I'm looking at this graph and, you  
20 know, it kind of looks like the feather, which is the dashed  
21 or dotted line there, seems to be pretty -- you know, there  
22 might be some downslope, but you mentioned there could be  
23 some water evaporation and it sort of starts going downhill  
24 fast a little past 200 degrees.

25 So unless I'm missing something, have you --

1 how -- what can you tell us about what is happening with the  
2 feather over this relatively flat portion of the curve? And  
3 why 160 degrees?

4 DR. GREENBERG: Excellent question. And it's  
5 actually not a relative -- it is -- it appears flat, but the  
6 analytical instrumentation is so accurate that it's starting  
7 to pick up molecules already and it's -- and the precipitous  
8 drop that you're seeing at 200 is showing massive  
9 degradation, but you're still seeing the degradation  
10 according to the authors and there is other tables and  
11 figures in this report.

12 PRESIDING MEMBER DOUGLAS: So what is the slope --  
13 you know, the portion of the line that looks relatively  
14 flat? Do you have that -- there is a downward slope, you're  
15 saying, it's not as flat as it looks. Do you know what that  
16 slope is?

17 DR. GREENBERG: Oh, in mathematical terms?

18 PRESIDING MEMBER DOUGLAS: Yeah.

19 DR. GREENBERG: Oh, no. I'm sorry. I don't.

20 PRESIDING MEMBER DOUGLAS: That's all right. All  
21 right. Just one more question. What is DTG? What's  
22 happening with that line?

23 DR. GREENBERG: Oh, okay. That is -- that's  
24 called a derivative.

25 PRESIDING MEMBER DOUGLAS: Okay.

1 DR. GREENBERG: And that really does show some  
2 percent of losses and it's another way -- it's a derivative  
3 of -- it's a mathematical --

4 PRESIDING MEMBER DOUGLAS: Okay.

5 DR. GREENBERG: -- examination or treatment of the  
6 data.

7 PRESIDING MEMBER DOUGLAS: All right.

8 MR. TYLER: I might just add real quickly, this is  
9 Rick Tyler, that that experiment that the part that's flat,  
10 that's actually where you start to see denaturing. Which  
11 basically you have breaking of bonds but you don't  
12 necessarily have the molecule leaving. But the breakage of  
13 those bonds actually affects the macroscopic structure of  
14 the molecule and compromises its integrity.

15 PRESIDING MEMBER DOUGLAS: So that makes, that  
16 makes sense. Just one or two more questions. So can you  
17 tell me where you come up with 160 degrees as the threshold.  
18 Because what you said, Mr. Tyler, makes a lot of sense. I'm  
19 just trying to understand.

20 MR. TYLER: The 160 degrees was identified as the  
21 onset of denaturing in the articles.

22 PRESIDING MEMBER DOUGLAS: Okay, all right. The  
23 DTG line, what's the --

24 ADVISOR LEMEI: The derivative over time, right?  
25 So it's the rate, the rate of change. But over what, over

1 what unit of time?

2 DR. GREENBERG: The heating is 10 degrees  
3 centigrade per minute.

4 ADVISOR LEMEI: Per minute, thanks.

5 ASSOCIATE MEMBER HOCHSCHILD: One further question  
6 which is just, what's the baseline temperature at which a  
7 bird, you know. We're in a very hot climate right now. You  
8 know, a bird flying over the area right now, what  
9 temperature would its feathers be at, typically?

10 DR. GREENBERG: We'll ask a biologist for that.

11 MS. WATSON: Could you repeat the question,  
12 please.

13 ASSOCIATE MEMBER HOCHSCHILD: What is, I mean,  
14 what's the typical temperature of a bird's feathers flying  
15 over the area right now?

16 MR. HASS: I think perhaps -- I'm going to  
17 actually --

18 ASSOCIATE MEMBER HOCHSCHILD: Ballpark.

19 MR. HASS: So typically --

20 ASSOCIATE MEMBER HOCHSCHILD: Get closer to the  
21 microphone.

22 MR. HASS: I'm sorry. I don't have one of these  
23 at home. Most birds operate in a core body temperature  
24 range around 31 to 38 degrees centigrade. Their external,  
25 their feathers are typically at a slightly lower

1 temperature. And of course the colder the weather the --  
2 the actual surface approaches that temperature. So on a 76  
3 degree day their feather temperature, unless they are being  
4 specifically radiated directly by light or some other  
5 source, is going to be just like we would feel. If we stand  
6 in the sun it will feel warmer and the body temperature  
7 might rise. But if you have that bird in the shade it's  
8 going to be close to ambient temperature. And of course as  
9 you -- bird feathers are great insulators. So as you get  
10 closer it will maintain the core body temperature.

11 ASSOCIATE MEMBER HOCHSCHILD: Right. So I'm  
12 interested in the delta. I mean, basically, let's say  
13 ballpark 25 degrees C or something. Would that be a rough  
14 guess of a bird's feathers' temperature in flight today in  
15 this location?

16 MR. HASS: And again, in flight as they are moving  
17 they also do get cooling effects.

18 ASSOCIATE MEMBER HOCHSCHILD: It's just ballpark.  
19 I mean, maybe --

20 MR. HASS: So I'm sorry. So just a medium sized  
21 bird on an afternoon, temperature 80 degrees in the shade.

22 ASSOCIATE MEMBER HOCHSCHILD: I'm talking about a  
23 bird flying over this area. Not in the shade today, flying  
24 with the temperature --

25 MR. HASS: Well, based on color. So if you want



1 to go with somewhere plus-or-minus 10, 12 degrees variation.

2 ASSOCIATE MEMBER HOCHSCHILD: Okay, so the delta  
3 is about -- in other words, the temperature needs to  
4 increase above 150 degrees above what it already is before  
5 it would get to this threat point, right? Am I  
6 understanding that correctly?

7 MR. HASS: I think that's -- (witnesses  
8 conferring). You know I can tell you what -- that feather  
9 temperature does depend on, you know, the color of the bird  
10 and such. And I think if you want to go at a rate of 10 to  
11 20.

12 ASSOCIATE MEMBER HOCHSCHILD: Sure.

13 MR. HASS: Because it does matter what the bird is  
14 doing and his core -- his or her core temperature. I'm  
15 sorry. So core temperature is important. But I would say  
16 that may be -- and it can go, if the bird is flying and it's  
17 at elevation it can actually be cooler because of the air  
18 temperature, the higher elevation is cooler. So plus or  
19 minus, let's put 15 degrees easily, is a very comprehensive  
20 and probably broad but pretty adequate temperature for a  
21 surface.

22 PRESIDING MEMBER DOUGLAS: One more question.  
23 What is the unit TG?

24 DR. GREENBERG: Thermogravimetric.

25 PRESIDING MEMBER DOUGLAS: I'm sorry, what is it?

1 DR. GREENBERG: Thermogravimetric.

2 PRESIDING MEMBER DOUGLAS: Thermogravimetric.

3 DR. GREENBERG: And the -- it's percent mass by a  
4 thermogravimetric analysis.

5 PRESIDING MEMBER DOUGLAS: Go ahead.

6 DR. GREENBERG: I was hoping that I could expand  
7 on a previous question you had, Commissioner.

8 PRESIDING MEMBER DOUGLAS: Okay.

9 DR. GREENBERG: As to why it looks like the curve  
10 is dropping down at around 200. And I explained to you that  
11 the authors of the paper had said that through other  
12 analyses there was denaturing as well as loss of mass  
13 starting earlier. This paper actually talks about a  
14 threshold of about 155, another paper shows 160, we have a  
15 third paper that points to 145. They are all relatively  
16 close, they are all in agreement. We chose the upper end of  
17 160. But there could be degradation starting as soon as 145  
18 degrees centigrade. And it's, again, the type of  
19 degradation we're talking about is loss of the structure of  
20 the protein beta helix which then weakens the feather and  
21 could indeed cause the bird to not be able to fly  
22 appropriately.

23 PRESIDING MEMBER DOUGLAS: Thank you, that's very  
24 helpful.

25 DR. GREENBERG: I believe I was just going to

1 finish up on risk assessment. And I was saying that what  
2 Mr. Tyler said is very accurate. Risk assessment is a very  
3 useful predictive tool. Certainly over the years you have  
4 heard me say that in regards to human health. The same  
5 holds true when it comes to ecological assessments.

6 Risk assessment is a tool, we do it. We followed  
7 Cal-EPA guidelines. We wish that there were observational  
8 studies that would be of sufficient scientific strength and  
9 validity that we could recommend to you to use those. We  
10 cannot at this time.

11 The applicant does feel that the Santolo study,  
12 and you're going to hear a lot from them on it, that is of  
13 sufficient scientific strength and validity that you should  
14 look at that study. We disagree. We think that that's more  
15 of an exploratory effort.

16 We also feel for various reasons stated earlier  
17 that the observational studies at the other power plants,  
18 solar tower power plants around the world, really lack any  
19 type of scientific basis, uniformity in reporting. They are  
20 more anecdotal. And of course the size and the volume of  
21 air space is vastly different than what is being proposed  
22 here.

23 So I'd like to be able to say, here is an  
24 observational study, please base your decision on that; I  
25 cannot do so. In the absence of that it is entirely proper

1 for you to base your decision on a predictive risk  
2 assessment which was conducted by us and followed Cal-EPA  
3 criteria and protocol. Thank you.

4 PRESIDING MEMBER DOUGLAS: Mr. Greenberg, one more  
5 question, at least one more question from me. What kind of  
6 feathers were used in this analysis and are there  
7 differences in the impact of heat on different, bigger  
8 feathers? Bigger birds, smaller birds, different colored  
9 plumage, can you describe that?

10 DR. GREENBERG: These were chicken feathers.

11 PRESIDING MEMBER DOUGLAS: These were chicken  
12 feathers.

13 DR. GREENBERG: In this particular study. And no,  
14 I don't know the answer to that. But we would expect them  
15 to behave very similarly.

16 PRESIDING MEMBER DOUGLAS: Okay.

17 DR. GREENBERG: All the feathers are composed of  
18 keratin.

19 PRESIDING MEMBER DOUGLAS: Okay.

20 MR. TYLER: With that, if --

21 PRESIDING MEMBER DOUGLAS: Who is talking?

22 MR. TYLER: If you will entertain, Jeff Lesh is  
23 the engineer that was responsible for development of the  
24 actual thermogravimetric model that we used. He is here.

25 HEARING OFFICER CELLI: Okay, Mr. Lesh, let's hear

1 from you.

2 MR. LESH: Okay. I'm the principal coder of the  
3 computer code that we're using. And the purpose of that  
4 code is to predict temperatures that might occur on the  
5 surfaces of a bird's feather. If I can use this as a  
6 surrogate for a bird's wing.

7 HEARING OFFICER CELLI: You can, just don't keep  
8 putting it between you and the microphone

9 MR. LESH: Okay.

10 HEARING OFFICER CELLI: If you could pull the  
11 microphone closer to you, please.

12 DR. GREENBERG: Get your lips right up there.

13 MR. LESH: Okay. What the model attempts to do is  
14 the accounting of the heat flows or the energy flows that  
15 come into a bird's wing as it flies over the solar heliostat  
16 field and encounters the flux levels that we've been told  
17 would occur. Some are over that field.

18 The model lets us, so to speak, fly a bird through  
19 varying levels and so it's not just a steady-state model.  
20 And we developed it so we could look at transient effects  
21 and the rapidity of heating. Because the question was, it  
22 could put a bird in high flux. How long does it have to be  
23 there before its feathers get hot. And so the mass of a  
24 particular surface is important and the thermal capacity of  
25 that before it gets hot.

1           So what our model did was through this kind of  
2 accounting. And the way we did it was pretty much with  
3 standard methodology. We've documented our assumptions, the  
4 justifications for all the methodology and the assumptions  
5 and we produced in the FSA the actual computer code along  
6 with references for all of those things. And all those went  
7 into the FSA, which is Exhibit 300.

8           If I can give you a very brief, just high-level  
9 summary of the steps that the computer model goes through it  
10 will maybe answer some questions about where the number is  
11 coming from and what's the nature of the dispute we have  
12 with the applicant over various assumptions and things that  
13 go into the model.

14           So if I can, if I can hold up this eyeglass case  
15 and say, okay, if we think of this as a, as an air foil.  
16 The bird is flying along, air is going past the wing on the  
17 top and the bottom. And he comes into a flux field. The  
18 first thing that happens is a beam, a beam hits the bottom  
19 side of the wing at some angle and that energy gets  
20 absorbed. Some of it gets absorbed, the rest of it gets  
21 reflected. What isn't reflected is absorbed.

22           There are rate factors then for how much is going  
23 in to the bottom of the wing. One of those is the view  
24 factor. If you're at an angle, if you go to zero, you're  
25 completely missing the surface, if you go 90 degrees you're

1 collecting all the energy, if you're somewhere in-between  
2 you're getting a proportion of it. So the model has to  
3 assume at what angle we're going to be exposed.

4           The second thing is the intensity of the beam it's  
5 being exposed to. The more intense the beam the faster  
6 power is going into, energy is going into the bottom of the  
7 wing.

8           That's the third thing. Or the third thing is  
9 the -- let's say the absorptivity of the bottom surface of  
10 the wing. If it's, for instance, a dark color it's going to  
11 absorb more energy than if it were white. So if it were  
12 white more of it gets reflected. So you see, three things  
13 that are going to be rate factors are how much energy and  
14 how fast it's going into the wing.

15           Once that happens the bottom of the wing starts to  
16 heat up. As it gets hot then the heat transfer mechanisms  
17 that everybody learned about in high school come into play.

18           There's convection, the air going past the bottom of the  
19 wing is going to pick up some heat, carry it past and it  
20 goes out that way. So there is a convective heat loss.

21           There is also a radiant heat loss. And so as the  
22 surface heats up it starts to radiate heat to other  
23 surfaces. To the ground in this case, for instance.

24           And the third heat loss mechanism is the surface  
25 is hot on the bottom so it starts to conduct heat through

1 the thickness of the wing to the top surface. If sufficient  
2 heat gets to the top surface that it gets hot then it also  
3 starts to convect heat and radiate heat.

4           Now a poor example of a wing is this eyeglass case  
5 but you can think of a wing as like an airplane wing, it's  
6 thick in the front, and near the body of the bird there are  
7 bones, skin, muscle under the feathers. Other parts it's  
8 just thick with feathers. And as you go farther back  
9 eventually it's just multiple layers of feathers until you  
10 get to the very tip of the wing and then you have just the  
11 secondary feathers that are overlapped.

12           So a lot of our details then that we discuss are  
13 how much energy is being re-radiated, how much is getting  
14 convected, and then finally, how much is getting through the  
15 wing and going out the top. There are rate factors for all  
16 those things and all those are things that we have to put  
17 into the model.

18           So finally what the computer does for us is the  
19 accounting, the real-time accounting. Spatially doing  
20 nothing more than looking at it every, for instance,  
21 millisecond, as we model through and say, okay, we brought  
22 in this much heat in the last millisecond, what's the new  
23 temperature, what's the new rate at which we're dumping heat  
24 in all these places? What are the temperatures everywhere?  
25    And go on to the next time.



1           And with that we can then make a graph of the  
2 temperature, given all those assumptions we've put in for  
3 these various factors, that tells us the temperature of the  
4 wing surface versus position in the field and versus the  
5 flux density that it is being exposed to.

6           It also tells us if you come into a flux level how  
7 long does it take before the temperature gets to a critical  
8 level. And in this case we have been tracking, for  
9 instance, 160 degrees C, which is the temperature we think  
10 is going to cause irreversible damage. And then other  
11 temperatures such as more than 300 where we think you're  
12 going to see substantial weight loss. That's, that's the  
13 short of it.

14           ASSOCIATE MEMBER HOCHSCHILD: Thank you very much.  
15 I'm learning a lot today. One question for you. I  
16 understand, you know, the act of flying itself cools the  
17 wing. How significant is that effect and what's the typical  
18 flight speed of a bird coasting in this region? I don't  
19 know, 15, 20 miles an hour, something like that?

20           MR. LESH: Well, it varies depending on the size  
21 of the bird and whether it's a soaring bird or a gliding  
22 bird, that sort of thing. We've looked at numbers that go  
23 from about eight meters per second up to closer to maybe  
24 twice that.

25           ASSOCIATE MEMBER HOCHSCHILD: Okay.

1           MR. LESH: The bird that we have chosen as our  
2 sort of surrogate for this analysis is flying at 18 miles  
3 per hour.

4           ASSOCIATE MEMBER HOCHSCHILD: Okay.

5           MR. LESH: Which is about eight meters per second.

6           ASSOCIATE MEMBER HOCHSCHILD: Okay. And how  
7 significant is that cooling effect?

8           MR. LESH: It's quite significant. There are  
9 literature numbers of a bird, for instance, sitting on the  
10 ground in the sun with dark plumage that reaches 83 degrees  
11 centigrade. Unfortunately, the reference I saw didn't say  
12 what the ambient temperature was on that day so I would  
13 guess that was somewhere between 25 and probably 40 degrees,  
14 because that gives you sort of an order of magnitude of what  
15 temperature it might reach under one sun without significant  
16 air flow over it.

17           ASSOCIATE MEMBER HOCHSCHILD: Okay, thank you.

18           MR. LESH: Okay. If I can then summarize the  
19 model. I guess in terms of how we've done it, I think we  
20 would like to get the point out that we've used well-  
21 established engineering standard practice. All the  
22 procedures were published. The values for phenomena that  
23 occur and the materials have all come from the literature  
24 and all have been referenced in all of our analyses. And we  
25 have documented every step as well as the entire computer

1 code of how we get there.

2           It's important to remember, as you have already  
3 heard, that this is a risk assessment and we are looking at  
4 populations of birds. What we attempting to do is draw a  
5 threshold underneath the population of birds that would be  
6 expected, such that as long as you stay below the threshold  
7 those birds won't suffer significant irreversible damage.  
8 Which in this case we're taking to be exposures to  
9 temperatures of the feathers above 160 degrees.

10           One thing we are not trying to find in this case  
11 is a typical bird or an average bird. We are not trying to  
12 find how a bird is going to experience an average day. Or  
13 we are not trying to find a bird on an average speed.  
14 Anything average we are not really interested in because  
15 doing that would theoretically protect half of the  
16 population. So we are looking to draw something that is  
17 going to protect most of the population.

18           The staff believes that the methodology we have  
19 used is appropriate, it's accepted, it's in the literature,  
20 it's taught in schools. The results are consistent, as it  
21 turns out, with other people's published papers on how they  
22 modeled heat flow from birds as well as their empirical  
23 results that they obtained when they tried to measure the  
24 same thing. And we do not believe that our particular model  
25 and the way we're using it is overly conservative in any

1 way. As the afternoon goes on I'd be happy to discuss it  
2 further.

3 HEARING OFFICER CELLI: Anything further from the  
4 staff about this?

5 MR. TYLER: Yes. I would like to give the  
6 biological group a chance to discuss the particulars of the  
7 flux field in terms of bird behavior, physiology and so  
8 forth.

9 HEARING OFFICER CELLI: Okay. Just let me ask a  
10 question before you do.

11 PRESIDING MEMBER DOUGLAS: We are trying to make  
12 sure we understand this graph. What is the X axis, Incident  
13 Radiant Heat Flux? Just help us with the units here.

14 MR. LESH: Okay. I must admit the appearance of  
15 the graph was probably before I was prepared to address it  
16 but would be glad to go into that if you can bear with that  
17 for a moment.

18 MR. BREHLER: Excuse me, Commissioner Douglas,  
19 this is Pippin Brehler, staff counsel. If I could expedite  
20 things. The images that are pulled up right now Mr. Lesh  
21 prepared in anticipation of discussing the areas of dispute  
22 in the back and forth between the experts. And it might not  
23 make sense to strictly ask questions about this one without  
24 him laying the context for all of the images that he has. I  
25 am not sure if you want to do that now or let the biologist

1 explain what's going on with the birds flying through the  
2 flux field?

3 HEARING OFFICER CELLI: Let's hear from the  
4 biologist.

5 MS. WATSON: Thank you.

6 HEARING OFFICER CELLI: Ms. Watson, go ahead.

7 MS. WATSON: I'll just take a brief moment to kind  
8 of re-contextualize this conversation in put it in terms of  
9 the biology and what we think is happening in the site and  
10 then I would like to have Bill Hass just explain on that a  
11 little bit briefly of the physiological and migrational  
12 patterns of birds.

13 So I believe we have already talked extensively  
14 about the golden eagle. We know that within ten miles of  
15 the project site there's been eight occupied eagle nests and  
16 two active nests located.

17 Aside from this special status species there's  
18 other species. And this is not an exhaustive list. But on  
19 the project site we would expect to find or have already  
20 found burrowing owl, northern harrier, loggerhead shrike.  
21 And also within about 20 miles of this site at Ash Meadows  
22 is the federally listed yellow-billed cuckoo, the federal  
23 and state listed Bell's verio and the willow flycatcher.

24 Of these birds we would expect them to use the  
25 site in a variety of different ways including as year-round

1 residents or as occasional use such as foraging. We would  
2 expect that another category of birds would use this site  
3 just very occasionally as a migration port or -- and this  
4 could be rare to seldom.

5 I'm sorry. Could you pull up my presentation.  
6 That's it. So this is just another slide showing again the  
7 eagles that have been documented on-site. And if you flip  
8 to the next slide it shows the eagle nest to the west of the  
9 site in the Nopah Range.

10 HEARING OFFICER CELLI: I actually have seen this  
11 already because I know that this is in the record.

12 MS. WATSON: That's correct.

13 HEARING OFFICER CELLI: The location of the  
14 eagles.

15 MS. WATSON: That's correct.

16 HEARING OFFICER CELLI: Okay. So what was it that  
17 we needed to hear from the biologists about this in terms of  
18 the flux issue, Mr. Tyler? Mr. Rick Tyler?

19 MR. TYLER: Yes.

20 HEARING OFFICER CELLI: What is it we need to hear  
21 from the biologists about as it relates to avian flux?

22 MR. TYLER: I think the most important thing is  
23 the orientation of birds in the field. How basically the  
24 wings would be exposed and the fact that birds don't fly  
25 like a jet airliner. They don't fly level. They bank, they

1 glide, they soar in circles. And in doing so their feathers  
2 are not at one specific angle.

3 HEARING OFFICER CELLI: We don't need a biologist  
4 to tell us that because we have all seen that ourselves.

5 MR. TYLER: That is why, in effect, we assumed a  
6 90 degree factor.

7 MR. HASS: If I can interrupt, Rick. I think what  
8 is actually very important is that --

9 HEARING OFFICER CELLI: Speak into the mic,  
10 please.

11 MR. HASS: What I think is very important and it  
12 actually would be universal. In other words, we are all  
13 looking at, we are all looking at the same issue. And  
14 without revisiting older issues one of the things that --  
15 and it is very important to understand with all these  
16 temperatures -- that the amount of flux and the location and  
17 the breadth and how much exposure has some very severe or  
18 potentially severe implications to a bird. And I think this  
19 is what's important.

20 There are very limited tolerances that birds have  
21 to that thing called hyperthermia, meaning overheating.  
22 They have what's called a thermal neutral zone. It's a  
23 range of body temperatures and it typically is between 31  
24 and 38 degrees, typically a little higher on average than  
25 the human body. But hyperthermia, which is the phenomena

1 that birds experience.

2 HEARING OFFICER CELLI: Continue.

3 MR. HASS: That birds experience that is similar  
4 to heat stroke, can begin to occur when that core body  
5 temperature, and consequently brain temperatures, rise no  
6 more than three, four or five degrees centigrade above that.  
7 And it varies for birds and a few birds can actually limit  
8 those changes. But we're talking about a thermal maximum.  
9 In other words, the core body temperature of a bird, once it  
10 gets to 46 degrees, keeping in mind at what temperatures the  
11 feathers are being burned, at 46 degrees you then hit the  
12 thermal maximum, which means that bird is going to either  
13 die or suffer sufficient injury that it will, it will  
14 experience some level of morbidity. Meaning, it may be a  
15 day later, it could be whatever.

16 So birds can only tolerate a very small change in  
17 body temperatures. It's very important for a second reason  
18 is that, as the model would predict, depending on that angle  
19 the amount of heat that a bird is going to receive from the  
20 flux field can vary significantly. And at an extreme  
21 situation with as many soaring birds like red-tailed hawks,  
22 like turkey vultures, like golden eagles fly, that can  
23 approximate 1.0 or 90 degrees. Meaning more or less because  
24 that still varies throughout the field but can be very close  
25 to that direct on flux influence.



1           So one of the other things is that big birds can  
2 tolerate and can lose heat but small birds do not have the  
3 abilities to release that heat. So small birds suffer in an  
4 extreme heat field far more severely than, or far more  
5 quickly, than would a large bird.

6           So I just wanted to, again using the species that  
7 the applicant has found, I categorized the kinds of birds  
8 that would glide and soar or otherwise move through the  
9 area, whether there's a power facility or not. And they  
10 would include turkey vultures, golden and bald eagles,  
11 although the latter are rare. Buteos like the red-tailed  
12 hawk, Ferruginous hawk, Swainson's hawk. Northern harriers,  
13 cliff swallows, tree swallows, rare again, purple marten,  
14 white-throated swift, western king bird, loggerhead shrike.

15       All of those birds, that's a pretty decent species list of  
16 birds that would be going through that flux field with  
17 modest or sometimes no flapping. And sometimes, especially  
18 the raptors, in a circular path. And especially if there  
19 happens to be a -- and obviously we're getting narrower and  
20 narrower about the conditions. But that's especially if  
21 they pick up a thermal somewhere in the area.

22           There are also numerous animals that occur in  
23 fairly large numbers in migration even as shown just from  
24 some of the data that we have seen already, including some  
25 data that we collected using a different method. But horned

1 larks, some warblers, Lessor night hawk and two species of  
2 swallow. So we're talking about just a sort of off the top  
3 of the head already documented in the area group of species  
4 that would have a high probability of moving through this  
5 area.

6           And then one last thing. And you may or may not  
7 need a biologist to tell you this but the heights at which  
8 birds migrate -- and I'm going to put it in the sense of one  
9 of the problems with the Solar I data being applicable to --  
10 and also, for instance, the SEDC data, is that most diurnal  
11 birds migrate from the ground up to somewhere between 1200  
12 and 2,000 feet. So they're in a very broad elevational  
13 level but outside for the most part of the tops of the  
14 towers at Solar I and SEDC, but very close to the central  
15 portion of the tower proposed for Hidden Hills.

16           So that slide is not as clear and actually you  
17 probably could -- I think you get the point that with this  
18 facility you're talking about a fairly large number of  
19 species, much less birds, that fly through. And even if we  
20 couldn't agree on numbers, the species I think and their  
21 daytime migration patterns put them through it. Now  
22 obviously most people think that birds migrate at night but  
23 that's not -- all of the birds I just mentioned are diurnal  
24 or daytime migrants.

25           HEARING OFFICER CELLI: Okay, thank you, Mr. Hass.

1 Anything further from staff before we hear the other side  
2 of things from applicant?

3 MR. LESH: If I could I'd like to summarize and  
4 comment on the applicant's most recent testimony that we  
5 haven't had a chance to address before.

6 HEARING OFFICER CELLI: Let's wait, we'll give you  
7 a chance to rebut. We need to, we've been going a long  
8 time, a lot longer than we thought staff would, and we would  
9 like to have -- let's kind of see what we can do to get to  
10 the point. We need to know what the areas of disagreement  
11 are and what the basis of your opinion is. If we can get a  
12 nice, organized explanation from staff's witnesses, please.

13 I'm sorry, I meant applicant's. We are now  
14 addressing the applicant's point of view regarding the flux  
15 issues.

16 MR. ELLISON: Mr. Celli, before I turn this over  
17 to the panel and I promise you I will, and I am not going to  
18 ask specific direct, I am just going to turn it over to the  
19 panel and let them comment; I do want to do two things.

20 One, I want the Committee to understand what just  
21 happened here. Now I know what the ruling has been. I have  
22 been practicing law at the Energy Commission as staff  
23 counsel or sitting where you are as a Commissioner's advisor  
24 or in front of the Commission since 1978. This was the most  
25 procedurally unfair thing I have ever seen in an Energy

1 Commission proceeding.

2 I want you to understand that staff's testimony  
3 that they just presented here, with the exception of what  
4 Mr. Lesh presented, is almost entirely new. All of it.  
5 It's fundamentally new. It's not new in the sense of a  
6 nuance here or a graph that we hadn't seen before but that  
7 was referenced. We're having a new CEQA standard of  
8 significance today. We have new EPA guidelines not  
9 referenced in the staff's testimony that supposedly are what  
10 the staff followed. We have core body temperature being  
11 raised as opposed to flight feather, feather temperature.  
12 We have fundamentally new testimony.

13 And I want the Committee to understand when they  
14 hear my panel that when they respond to many of these things  
15 they are doing so in real time.

16 HEARING OFFICER CELLI: On the fly, as it were.

17 (Laughter.)

18 MR. ELLISON: On the fly as it were. And I want  
19 you to understand, we may make a -- I'm going to talk to my  
20 client. We may make a motion, we'll decide how to deal with  
21 this. I know you want to get to the experts and have these  
22 people here. But I don't want this moment to pass without  
23 you understanding that this is just -- you know, this isn't  
24 a lawyer just being hyper-technical here. This is  
25 fundamentally unfair. If we came in here as the applicant

1 and did this the staff would go nuts, okay. Now I've said  
2 my peace.

3 HEARING OFFICER CELLI: The point is made,  
4 understood.

5 MR. ELLISON: Okay? All right.

6 Now with that what I want to do is, our  
7 disagreements with staff are actually fairly narrow.  
8 They're deep but they're narrow. And I want, and I want to  
9 set the stage here for what we agree on and what we don't  
10 agree on and what the legal significance is of what we don't  
11 agree on.

12 First of all, it is not, as some have -- and let  
13 me also say that much of staff's testimony was  
14 characterizations of applicant's testimony, applicant says  
15 this, applicant says that. And I didn't jump in and  
16 interrupt but most of that was incorrect too.

17 It is not the applicant's position that there is  
18 zero risk of avian mortality from this project.

19 It is not the applicant's position that we know  
20 all this information perfectly.

21 We agree with staff that there is uncertainty.

22 We agree with staff there is some risk.

23 That is why we have agreeing to do a very  
24 significant amount of mitigation in the form of monitoring,  
25 a very significant amount of adaptive management, and other

1 proposals that we have recently made in terms of habitat  
2 compensation, money and all the other things that we've  
3 talked about.

4           We are actually, we think, in very close agreement  
5 with staff. We hope to get to complete agreement with  
6 staff, subject to the eagle conservation plan and maybe a  
7 couple of other things, on the actual conditions of  
8 certification that relate to this topic. So we are not as  
9 far apart as you might think in that respect.

10           At the same time we do disagree very fundamentally  
11 with staff's assessment of what the -- of what I would  
12 characterize as the zone of uncertainty. You know, the  
13 kilowatts per meter squared that we know is safe for birds  
14 and the kilowatt, the threshold where it becomes uncertain,  
15 and we are going to have quite a bit of discussion about  
16 that.

17           But the reason that that's significant legally is  
18 not so much that it goes to the conditions of certification  
19 and this is what I want to explain.

20           Where it become significant legally is staff is  
21 saying that you need to do a CEQA override. You need to  
22 override a significant, unmitigated environmental impact to  
23 license this facility. We disagree with that. We think  
24 that when you hear the rest of the testimony that you will  
25 agree that although there is some risk and there is a need

1 for monitoring and mitigation, that with that monitoring and  
2 mitigation that the risk is not significant. That's one of  
3 the reasons why staff's new CEQA threshold of significance  
4 is pretty important. So we disagree about that. We don't  
5 think you need to make a finding of override under CEQA to  
6 license this project.

7 And we certainly don't believe, and you'll hear  
8 testimony on this, that there is any violation of any  
9 applicable law that's related to any of this as well.

10 So with that let me turn it over to the panel.

11 We do have one correction. And we actually are  
12 trying to stick to our prefiled testimony here. We do have  
13 one correction to our -- there is an error in our prefiled  
14 testimony. So let me ask first for Dr. Caretto if you could  
15 please make that correction and then I'm going to turn it  
16 over to Mr. Rubenstein and the panel.

17 MR. BREHLER: Excuse me, Hearing Officer Celli,  
18 before we turn it over to the applicant I'd like an  
19 opportunity to respond to the comments.

20 HEARING OFFICER CELLI: No. We don't want to hear  
21 it. We want to hear from the experts. We're not interested  
22 in hearing from the attorneys, we've heard enough.

23 MS. BELENKY: I agree. And I just also wanted to  
24 object to this long soliloquy about the law that none of the  
25 rest of us have been allowed to have.

1 HEARING OFFICER CELLI: That's right.

2 MS. BELENKY: I just wanted to object.

3 HEARING OFFICER CELLI: Thank you. And we will  
4 just deem everybody objecting to the long soliloquy so we  
5 don't have to get a long soliloquy from everybody about how  
6 they object about it.

7 Now we have some correction to the record. I'd  
8 like to know what the exhibit is we're talking about.

9 DR. CARETTO: This is the exhibit --

10 HEARING OFFICER CELLI: You need to talk into a  
11 microphone so everyone can hear you.

12 DR. CARETTO: Thank you. This is the exhibit  
13 called Biological Resources, A Solar Flux, which was  
14 basically --

15 HEARING OFFICER CELLI: Exhibit number which? Can  
16 someone help us up here, please? What exhibit number are we  
17 talking about? Is this applicant's exhibit, staff's  
18 exhibit?

19 MR. RUBENSTEIN: It's applicant's exhibit and it  
20 was the rebuttal testimony filed on February 11th. We'll  
21 get you the exhibit number in a moment.

22 HEARING OFFICER CELLI: Number which?

23 PRESIDING MEMBER DOUGLAS: What number did you  
24 say, Mr. Rubenstein?

25 MR. RUBENSTEIN: We think it's -- I think it's 72,



1 subject to check. We'll confirm that.

2 PRESIDING MEMBER DOUGLAS: All right, thank you.

3 DR. CARETTO: Okay. Basically the first  
4 correction is on page 32. It's the first answer in the  
5 seventh line. The words "equivalent type and circuit"  
6 should be added before "approach."

7 At the end -- at the middle of that sentence it  
8 says "top of the wing, but". The remainder of that  
9 sentence, "this neglect" et cetera should be deleted. And  
10 it should then read, "Radiation is added later."

11 MR. ELLISON: It is Exhibit 72.

12 PRESIDING MEMBER DOUGLAS: Thank you.

13 DR. CARETTO: On page 32 there was a first  
14 occurrence of a transcription error, one, two, three, four,  
15 five lines up from the bottom. The temperature of 381.15  
16 Kelvin should be really 318.15 Kelvin.

17 On page 34, counting equations as lines, on line  
18 16 which is an equation, the temperature 294.25 should read  
19 305.4.

20 And on line 23, again which is an equation, the  
21 number 375.96 should read 394.80. The number 381 should  
22 read 318.

23 On line 24 another substitution of 318 for 381.

24 And finally on page 35, the third line from the  
25 bottom, the number 12 should be replaced with the number 10.

1           And I apologize for the errors that I've had to  
2 report today.

3           HEARING OFFICER CELLI: I would like confirmation  
4 of what that exhibit number is just so we're clear for the  
5 record.

6           MR. ELLISON: It's 72.

7           HEARING OFFICER CELLI: It is 72. Okay, thank  
8 you. Let's go ahead now with the experts' testimony.

9           MR. RUBENSTEIN: Thank you, thank you, Mr. Celli  
10 and members of the Committee. My name is Gary Rubenstein.

11           Before I get into my summary of the comments,  
12 which will be followed by summaries from the remaining panel  
13 members of their specific analyses, I was wondering if I  
14 could get back the staff's graphic which showed the Wells  
15 Fargo tower. Because that was a pretty powerful graphic.

16           HEARING OFFICER CELLI: If you want to  
17 Mr. Rubenstein, you can go over there and work the computer,  
18 if that would help you.

19           MR. RUBENSTEIN: No, that would not be necessary.

20           HEARING OFFICER CELLI: Okay, thanks.

21           MR. RUBENSTEIN: It would take longer, I think.

22           HEARING OFFICER CELLI: I just want to ask you to  
23 keep -- because you have a bit of a soft voice. If you can  
24 keep that mic real close.

25           MR. RUBENSTEIN: I will do that.

1 HEARING OFFICER CELLI: Thank you.

2 MR. RUBENSTEIN: The staff had indicated that this  
3 was a graphic showing a 10 kilowatt zone, meaning twice the  
4 level that they believe is the clear safe level, and that  
5 the reason why they presented 10 kilowatts was because they  
6 didn't have available to them a 5 kilowatt graphic. I found  
7 that particularly perplexing since in Exhibit 309 the staff,  
8 in fact, does present a simulation of the shape of a 5  
9 kilowatt isopleth and they had that on February 22nd.

10 In addition, in that February 22nd series, which  
11 was the staff's rebuttal, they also had in Exhibit 307,  
12 which was a representation of a 10 kilowatt zone, which is  
13 in fact what they are trying to present here. And in the  
14 very brief I have had to compare the two all I would note is  
15 that the dimensions in Exhibit 307 do not match the  
16 dimensions, and in particular the height above the ground,  
17 for this exhibit. So we still don't know exactly where this  
18 new exhibit came from but I'd simply note that it is  
19 inconsistent with something the staff prepared just a couple  
20 of weeks ago.

21 If I can then move on. I mean, if I could replace  
22 this with the graphic that's called -- I think it's the  
23 avian solar bar flux graphic. That one, thank you. That's  
24 a graphic that a couple of the speakers will be referring to  
25 following me.

1 HEARING OFFICER CELLI: And where does this --  
2 what exhibit is this in?

3 MR. RUBENSTEIN: This is a new graphic based on  
4 data that is currently in the record to help, I think,  
5 visualize what the disagreements are on various issues.

6 HEARING OFFICER CELLI: Okay.

7 MR. RUBENSTEIN: So it would need a new exhibit  
8 number.

9 HEARING OFFICER CELLI: And we are -- this is  
10 applicant's exhibit?

11 MR. RUBENSTEIN: Correct.

12 MS. MacDONALD: Objection. You're entering new  
13 exhibits when staff is not allowed to enter new exhibits?

14 HEARING OFFICER CELLI: You know what,  
15 Ms. MacDonald, staff put in a PowerPoint, I think a couple  
16 of PowerPoints that no one has ever seen before that they  
17 said illustrative of the point they wanted to make, that it  
18 would help the Committee understand what's going on. And as  
19 you look at this one I see CEC staff and Johnson and Caretto  
20 and so I have the feeling that it's a summarization of what  
21 we're about to hear from the different points of view.

22 It looks probably -- we'll hear him make a  
23 foundation for it but I would allow it in. I just want to  
24 give it an identification number so we all know what we're  
25 talking about. So the last exhibit from applicant was, 84?

1 MS. CARRIER: Correct, 84 was the last exhibit  
2 number from applicant.

3 HEARING OFFICER CELLI: So Exhibit 85. What do  
4 you want to call this? The Avian Solar Flux Calculations  
5 Chart?

6 (Exhibit 85 was marked for identification.)

7 MR. RUBENSTEIN: Yes, that would be good.

8 HEARING OFFICER CELLI: Who is the author of the  
9 chart?

10 MR. RUBENSTEIN: Dr. Caretto.

11 HEARING OFFICER CELLI: Okay, thank you.

12 MR. BREHLER: Mr. Celli, as long as we are marking  
13 exhibits we might take the opportunity to mark the other  
14 three that Mr. Tyler referred to with the 10 kilowatts.

15 HEARING OFFICER CELLI: Okay, that's a good idea.  
16 For staff we are at -- Exhibit 329 was the last, which was  
17 staff's PowerPoint on Biology, which was the same situation.  
18 So 330. What do you want to call it, Mr. Brehler?

19 (Exhibit 330 was marked for identification.)

20 MR. BREHLER: 330 would be the Typical Flux  
21 Concentration Increase.

22 HEARING OFFICER CELLI: And was that a PowerPoint?

23 MR. BREHLER: No, that was merely a one-page PDF  
24 that was referenced in Exhibit 300.

25 HEARING OFFICER CELLI: Typical Flux -- I'm sorry,

1 what was the rest of that?

2 MR. BREHLER: Typical Flux Concentration Increase.

3 HEARING OFFICER CELLI: Increase. And that's a  
4 PDF?

5 MR. BREHLER: Um-hmm.

6 HEARING OFFICER CELLI: Okay. Are we just going  
7 to --

8 MR. BREHLER: And then the next one you could call  
9 it the Typical Flux Concentration 10 Kilowatts per Square  
10 Meter.

11 HEARING OFFICER CELLI: Is this part of 330 or do  
12 you want to mark this as 331?

13 MR. BREHLER: We could do 330 to keep the numbers  
14 low and it's three pages.

15 HEARING OFFICER CELLI: Okay, let's do that.

16 MR. BREHLER: So we'll just call it the three  
17 pages, the Typical Flux Concentration.

18 HEARING OFFICER CELLI: Three pages.

19 MR. BREHLER: Yes.

20 HEARING OFFICER CELLI: Okay.

21 MS. BELENKY: I don't want to stop this part but I  
22 just want to make sure that we're all agreeing these will  
23 all be served in the normal manner as well so everybody has  
24 them.

25 HEARING OFFICER CELLI: That's right.

1 MR. ELLISON: I have hard copies today if you'd  
2 like one. I can give you one right now.

3 MS. BELENKY: Yeah, and I'd also like the PDF  
4 because that will be more useful to me. But I --

5 MR. ELLISON: We can do that. But let me be  
6 clear.

7 HEARING OFFICER CELLI: Let me be clear about one  
8 thing, folks. Even though this is an informal discussion,  
9 this isn't a cocktail conversation. And we need to hear  
10 one person at a time and we can't have side conversations  
11 going on. And I'm tasked with the job of being the traffic  
12 cop so if I speak up and ask people, interrupt people, I  
13 need you to stop and listen so that we can keep the flow  
14 going.

15 ASSOCIATE MEMBER HOCHSCHILD: Is there any way to  
16 make that larger, by the way? Is that as big as it gets? I  
17 just can't read the language. Is that as big as it gets?

18 HEARING OFFICER CELLI: So.

19 MR. ELLISON: I was going to say, we have hard  
20 copies and we can provide them to the Committee as well.

21 I do want to be clear though, this is just a  
22 summary of information that's already been prefiled, there  
23 is not a new number in here.

24 HEARING OFFICER CELLI: Okay, that's fine.

25 MR. ELLISON: If there is any question about that

1 we'd be happy to respond to that.

2 HEARING OFFICER CELLI: I just want to make it  
3 very clear, parties, that anything that is being newly  
4 listed, newly identified and marked for identification  
5 number, has to be docketed, we need a TN, a Transaction  
6 Number and it needs to be served. It needs to be filed with  
7 Dockets and served on all of the parties. That goes without  
8 saying but we just said it.

9 Now let's get back into the applicant's experts  
10 testimony. I'm sorry for the inter -- if you're going to  
11 start pulling out anything new, I'm just giving you a heads-  
12 up. If we're talking about any documents at all that we  
13 don't already have listed in the Exhibit List I need to have  
14 an exhibit number for each thing. So just so everybody is  
15 aware of that. I will be stopping you to mark for  
16 identification any new documents.

17 MR. RUBENSTEIN: I understand.

18 HEARING OFFICER CELLI: Good.

19 MR. RUBENSTEIN: Thank you.

20 HEARING OFFICER CELLI: And this is Exhibit -- so  
21 again, this was Exhibit?

22 MR. RUBENSTEIN: Eighty-five.

23 HEARING OFFICER CELLI: Eighty-five, thank you.

24 MR. RUBENSTEIN: I would like to start by  
25 answering a question that I suspect Mr. Ratliff is going to



1 ask later and I'll save him the trouble, which is, why am I  
2 sitting here on this panel? This is fundamentally a panel  
3 about biological resource issues. And I'm sitting here  
4 because I initially reviewed Appendix Bio-1 and the Final  
5 Staff Assessment out of academic interest.

6           It has been some time since I've done heat  
7 transfer calculations. In my field I don't need to do them  
8 very often. But there were several leaps of faith that I  
9 saw in the staff's analysis that led me to question their  
10 conclusions and I advised the applicant to review the  
11 staff's calculations in more detail.

12           My testimony personally today is based on areas  
13 within my range of expertise. They include geometry,  
14 physics, engineering and CEQA. Other members of our panel  
15 are going to present testimony based on their areas of  
16 expertise, which include physics, engineering and biology.  
17 All of these disciplines play a role in understanding and  
18 addressing the issues that are before us at this point.

19           The key issue that I believe the Committee has to  
20 assess is the question of what is the level of critical flux  
21 that would result in temperatures adversely affecting a  
22 bird's wing in an irreversible manner. And that difference  
23 of opinion is reflected in Exhibit 85.

24           The solar flux issue is at its core a physics  
25 problem, not a biology problem. Some have suggested that

1 it's an engineering problem and not a physics problem;  
2 that's semantics. Engineering is merely the application of  
3 basic science to solve real world problems, address real  
4 world questions.

5           As will be explained by Dr. Johnson and  
6 Dr. Caretto, we believe there are significant flaws in the  
7 staff's calculation of the level of critical solar flux that  
8 could damage the wing of a bird in flight over the solar  
9 field.

10           The staff in its testimony has suggested that the  
11 disagreement with the applicant about this calculation is  
12 only one order of magnitude. That's a factor of ten, that  
13 is not a trivial difference. There is a significant  
14 difference in the scientific calculations that underpin this  
15 issue.

16           In addition, in addition we believe the staff's  
17 analysis reflects an inappropriate use of human health risk  
18 assessment techniques to avian bird populations flying over  
19 a solar field. The result of this inappropriate use is the  
20 application of so much conservatism to the analysis that the  
21 staff's analysis significantly departs from reality.

22           How do we know that the staff's analysis does not  
23 match reality? As will be discussed by Gary Santolo and  
24 Dave Phillips, empirical observations at three different  
25 solar thermal plants do not support the staff's theoretical

1 calculations. If the staff's calculations were correct then  
2 the field observations from three completely different,  
3 completely independent studies have all entirely missed this  
4 impact. In our opinion, that's extremely unlikely.

5 I believe there are two main reasons for the  
6 discrepancy between the staff's calculations and reality.

7 First, as will be discussed more by Dr. Johnson  
8 and Dr. Caretto, there are significant errors in the staff's  
9 solar flux calculations.

10 And second, there are simply too many conservative  
11 assumptions piled one on top of the other in their analysis.

12 The staff has suggested that they used traditional  
13 health risk assessment techniques to develop their  
14 calculations and their basis for their assumptions. That  
15 may be true if they were doing a very simplistic screening  
16 analysis. But when you're talking about risk assessments  
17 and following the guidelines that were mentioned by  
18 Dr. Greenberg, if you get a high result from the screening  
19 analysis you don't stop, you do a more refined analysis.  
20 And in fact, the guidelines by the Office of Environmental  
21 Health Hazard Assessment specifically provide for  
22 increasingly refined analyses of risk which remain  
23 conservative. If the staff's analysis is that screening  
24 analysis, our analysis is the refined analysis.

25 Finally, as was discussed in the written testimony

1 of Dr. Schwab, we believe that the chance of visual injury  
2 to bird species flying over the field or near the field is  
3 insignificant. Dr. Schwab will not be presenting as part of  
4 this panel to save time but he will be available for  
5 questions.

6           The staff presents no significance threshold to  
7 support their conclusion that there would be a significant  
8 risk to avian populations as a result of exposure to solar  
9 flux while flying over the Hidden Hills SEGS solar fields.  
10 Rather, they simply conclude that the project would, quote,  
11 "Pose significant risk to avian populations that may  
12 encounter the air space in the facility where concentrated  
13 flux density is above the safe levels." No quantification  
14 at all of what a significance level would be.

15           And the staff goes on to suggest that this flux  
16 results in a significant, cumulative, immitigable impact.  
17 We disagree.

18           To put this issue into context, the volume of  
19 space in which the solar flux exceeds a level that our panel  
20 believes would have the potential to create a risk to avian  
21 populations is equal to the swept volume of between one and  
22 five utility-scale wind turbines. One 250 megawatt solar  
23 field, between one and five utility-scale wind turbines.

24           Our panel's conclusion is that there are no  
25 significant adverse environmental impacts associated with

1 the exposure of avian populations to solar flux over the  
2 Hidden Hills solar fields.

3           That's not to say that we believe that conditions  
4 of certification are unnecessary. We have proposed  
5 conditions of certification related to monitoring and  
6 adaptive management. And we believe, as Mr. Ellison  
7 indicated, that the staff and applicant positions on these  
8 conditions are reasonably close. The real disagreement lies  
9 in the quantification of the potential risk and in the  
10 conclusion about the significance or insignificance of the  
11 potential adverse impacts.

12           I am next going to turn this over to Dr. Johnson  
13 who is going to start talking about the issue of the solar  
14 flux calculations.

15           DR. JOHNSEN: Hello?

16           HEARING OFFICER CELLI: Keep speaking and Tony  
17 will adjust the --

18           DR. JOHNSEN: Oh, he'll adjust the volume for me.  
19 Is it good now?

20           HEARING OFFICER CELLI: That's good enough,  
21 Dr. Johnsen. Let's hear it from you.

22           DR. JOHNSEN: Okay, all right. My name is Sonke  
23 Johnsen. I am a biologist at Duke University. I hold a  
24 full professorship there and, in addition, I hold an adjunct  
25 professorship in the Nicholas School of the Environment,

1 also at Duke University. My specialty is organismal  
2 biophysics, and there are certain sub-specialties of that  
3 that I am particularly known for. One in particular is  
4 biological optics; and, in doing that, I also am adept at  
5 doing both modeling and combining it with empirical  
6 approaches. And I'm particularly well-known for  
7 understanding when a problem can be modeled, and when a  
8 biological problem is simply too complex to be modeled  
9 accurately.

10           So, I looked over the staff's analysis and have  
11 three sort of fundamental conclusions. One is that this is  
12 really almost an impossible problem to model. There are  
13 some biological problems that can be modeled very well;  
14 there are others that can be modeled very poorly or not at  
15 all. A flapping bird in flight is an exceedingly  
16 complicated thermodynamics problem. We've talked before  
17 about convection, and convection depends very strongly on  
18 fluid flow in the actual fluid dynamics. And, because the  
19 fluid flow in birds is so complicated, this makes this  
20 almost impossible to address in a theoretical fashion.

21           My second conclusion is that what the staff has  
22 modeled is not a bird in flight. What they've really  
23 modeled is -- imagine the blackest asphalt surface that  
24 you've ever seen, something practically like midnight, and  
25 it is flying through the air as smoothly as possible at a

1 ninety degree angle to all the radiation that hits it.

2           This is not remotely what a bird in flight would  
3 be like. And this is sort of the primary reason why the  
4 numbers that I came up with and Dr. Caretto came up with are  
5 a full factor of ten different. In addition, I would say  
6 that, even if you were attempting to model, you know, a  
7 black sheet of asphalt flying through the air at this angle,  
8 staff had fundamental mistakes in the physics of doing this  
9 that also I disagree with, then.

10           So, to begin with, we should probably put this 4  
11 kilowatts per meter squared threshold -- or let's say 5  
12 kilowatts per meter squared threshold into some kind of real  
13 context, because most of us don't deal with kilowatts in our  
14 regular life. So the way to think of it is a kilowatt per  
15 square meters is one sun. So, when you're talking about 4  
16 kilowatts per meter squared you're talking about aiming  
17 three mirrors at your body, with the fourth sun being  
18 provided by the sun in the sky. This is something that  
19 people did in the fifties with regularity.

20           (Laughter.)

21           DR. JOHNSEN: They had those mirrors that they  
22 would sit, you know, at the beach; they would have a  
23 tripartite mirror which they would hold very carefully to  
24 aim three suns from the mirrors at their face, and then the  
25 fourth sun was provided by the actual sun. And these people

1 were experiencing fluxes on the order of 3 kilowatts per  
2 meter squared to 4 kilowatts per meter squared, depending on  
3 how far to the tropics they got and how high the sun got in  
4 the sky and so on.

5           These people, you know, were using their actual  
6 skin, not feathers. This skin had nerves; they could feel  
7 pain, and so you could pretty much guarantee that they were  
8 not experiencing 160 degrees centigrade temperatures. So,  
9 for me, this threshold just did not pass the common sense  
10 test. But, by being someone who likes to combine  
11 theoretical understanding with empiricism, I got out a hand  
12 lens in my office, and, if you take a hand lens and you  
13 focus the sun to a size that is half the size of the  
14 original hand lens, you are now focusing four suns on  
15 whatever strikes it. I aimed this at my palm, and I left it  
16 there for about thirty seconds.

17           My palm got warmer - and remember there's no  
18 convection to help this cool, remember the sun is hitting me  
19 directly straight on - and my hand got warmer, but I did not  
20 feel pain, I did not char, and my skin was good afterwards,  
21 and so on, and so on. You might say that palm is brighter  
22 than, let's say, a very, very black bird, but actually the  
23 absorptivity of Caucasian skin is about 0.65. So, not  
24 terribly different if, you know, 4 kilowatts per meter  
25 squared was really a threshold. I would have felt it with



1 no convective cooling at all.

2 All right, so, now, I apologize in advance because  
3 I'm going to have to introduce a few more technical terms.  
4 I know we've heard a lot and it's been a very long day, so  
5 I'll do my best. The first thing that I'd like to say is  
6 that we're not -- at least, I personally took the 160 degree  
7 centigrade threshold as a given. I'm not a keratin  
8 biologist, I'm not biochemist in that sort, so I just took  
9 that as a number. I also accepted staff's idea that this is  
10 not causing the feather to char, or, you know, burn, catch  
11 flame -- but what it's really doing is changing the  
12 mechanical properties. It's making it possibly stiffer,  
13 possibly limper, and so what it's really affecting is the  
14 ability to fly.

15 And so, the feathers that you really need to think  
16 about are the primary flight feathers. These are the  
17 feathers that constitute most of the wing in the back and  
18 that region -- that part of the wing is entirely feathers  
19 and it's about one to three feathers thick. It's really  
20 quite thin, depending on how it's spread out.

21 And so, I consider this as a single thin surface,  
22 meaning that, once it was warmed up, the entire surface was  
23 about the same temperature and it was going to lose heat  
24 from both sides. I didn't think about an opaque object  
25 like, you know, the feathers on the skin, where once the

1 energy goes in, it doesn't radiate out either side because  
2 there's a bird there. So, I just want to make sure everyone  
3 understands that.

4           So, there are four primary sort of differences  
5 that really add up to this tenfold factor, and Dr. Caretto  
6 is going to actually sort of go through them numerically,  
7 but I want to go through the concepts. And I'll go through  
8 them in decreasing order of importance. Most important is  
9 what we call view factor. View factor, really simply put,  
10 is how directly the radiation is striking the surface. When  
11 radiation strikes a surface perpendicularly, you know, sort  
12 of straight on - like "pow," straight down - you get the  
13 maximum amount of radiation imparted to that surface. When  
14 it hits at a lower angle, you get far less.

15           All of you have experienced this if you lay out on  
16 a sunny day. When the sun is directly overhead, you feel  
17 quite hot, because the sunlight is primarily hitting your  
18 body perpendicularly. If you lie out and try to feel warm,  
19 let's say, near sunset, it's going to be far less. And one  
20 of the major reasons for this is this idea of view factor.

21           Staff uses the view factor that essentially means  
22 that the radiation is always hitting perpendicularly. But  
23 they also say that it hits the undersurface of the wing. If  
24 we look at how high these birds are flying compared to the  
25 size of the solar field, most of the solar flux is actually

1 coming in fairly horizontally, because -- remember this  
2 large field, and compared to the height of the bird, most of  
3 it's coming in almost horizontally. And the birds, when  
4 they're not flapping, are holding their wings roughly  
5 horizontally, and so an angle that works out, based on their  
6 geometry in the flux field, is closer to seventy degrees  
7 away from perpendicular, which is quite a bit. This has a  
8 big effect on how much radiation actually strikes the  
9 surface.

10           The next thing that has a big effect - and this  
11 all has to do with cooling. The first is -- we talked  
12 before about convective cooling. We've all experienced  
13 this. This is what we call our wind-chill factor. As wind  
14 blows by us, we heat up that air and then we lose that heat  
15 as the wind is blown away. And it has an enormous effect,  
16 which staff admitted, on cooling an object. However,  
17 modeling it is unbelievably complicated in something like a  
18 bird, and this is why I said in the beginning that it's  
19 something like a fool's errand.

20           However, the way the staff modeled it was to treat  
21 a bird like the smoothest airplane wing you can imagine.  
22 And people who build airplane wings work very hard to  
23 achieve the kind of flow that staff has assumed, which is  
24 this beautiful laminar flow. Meaning that if you imagined,  
25 you know, the air going over it, there'd be no eddies,

1 there'd be no vortices, there'd be just this beautiful clean  
2 lines and everything would flow over. This does not happen  
3 in bird flight.

4 I fall under the general field of biophysics, and  
5 there are a lot of bird-flight people in that world - a  
6 number of them are good friends of mine and colleagues. I  
7 chatted about this with a number of them and they all just  
8 shook their heads, saying, you know, there's no way you can  
9 think of the flow over a bird wing as laminar. It's quite  
10 turbulent, particularly when the birds are flapping, and  
11 particularly when you're thinking about the tail end -- tail  
12 edge of the wing where the flight feathers are that we're  
13 most concerned about here.

14 And, again, I said that modeling these things are  
15 difficult, but, in general, convective heat transfer, which  
16 is what we care about in this case, from turbulent flow is  
17 much higher than it is for laminar flow. And this -- again,  
18 if you multiply with the correction factor for the view  
19 factor, adds up quite a bit, which Dr. Caretto will get into  
20 in detail.

21 The next thing is that staff assumed a very, very  
22 high absorptivity. Absorptivity is how well a substance can  
23 absorb radiation. In their initial documents, this is  
24 because they confused absorptivity with a completely  
25 different physical parameter called emissivity, which is how

1 well an object emits radiation.

2           Later on, they sort of go around this, but they  
3 still use their number 0.95, which is the blackest object  
4 you can imagine. And there are nice published values for  
5 the absorptivity of bird feathers, and they range lower than  
6 this. We actually, in our analyses, chose the highest  
7 values in the tables we found, which were about 0.85. And  
8 so the correction in that case is pretty small.

9           And this again -- there's this idea that we chose  
10 these sort of averages that, you know, half the birds would  
11 be damaged -- we really didn't. At least I didn't - I chose  
12 quite conservative values, because -- also what I'm  
13 completely ignoring -- it's not true that light either is  
14 absorbed or reflected. If the surface is thin enough, which  
15 a few layers of feathers are, some of the light just passes  
16 straight through. If you've ever looked at a feather  
17 against the sun, you know that it transmits light. So, the  
18 true absorptivity of these feathers is actually lower than  
19 even the values we gave - by quite a bit, most likely. So  
20 this has an effect. The other two effects have more to do  
21 with air temperature.

22           A fundamental mistake in the staff's analysis was  
23 when they considered radiative heat loss, which is the fact  
24 that anything hot radiates out to the environment, you know,  
25 like a hot stove or a hot plate, or anything of that sort.

1 That actually radiates out -- it sends out infrared  
2 radiation. And how efficiently it does this depends on the  
3 environment around it.

4           What staff used for this environment was the air  
5 temperature, which is not actually correct. What you need  
6 is something that's called the radiative temperature, in  
7 this case, of the sky. And this can be quite a bit lower,  
8 and there are actually nice examples of this. You can  
9 actually get frost on your windshield when the air  
10 temperature is above freezing, because the sky temperature  
11 is below freezing. These are different, and it's just a  
12 fundamental college-level thermodynamic physics thing. And,  
13 I mean, it's completely without dispute. This has an  
14 effect. As is the fact that they did not include, you know,  
15 radiating from both sides.

16           The final effect, which is really very small and  
17 probably not worth arguing about, is that they chose a very  
18 high air temperature. Air temperature is just not conceived  
19 very often. You can say, okay, well, yes, they're being  
20 very conservative. We still chose -- or I still chose quite  
21 a conservative temperature. And, in my opinion, that is one  
22 area where we -- you could say we differed on conservancy  
23 instead of just talking about, you know, what's correct and  
24 incorrect physics.

25           This is actually the least important effect and,

1 even considering if the air temperature around here was  
2 twenty degrees Celsius all year, this would not have a big  
3 effect on our calculations, as you can see by -- if you look  
4 up there on the second graph, there's this tiny little red  
5 part of the bar, all the -- right, it's a small effect.

6           So, to sort of reiterate my conclusions, this is  
7 not something that you can model. And for me, you know, I  
8 review papers from, I don't know, dozens, possibly a hundred  
9 different journals; I've taught many, many students and I  
10 think endlessly about what is a publishable result and what  
11 is not a publishable result. And if I were given this  
12 manuscript that purported to determine, you know, what level  
13 of flux was damaging to birds, and just presented what this  
14 was, it would not pass review. Even if they corrected all  
15 the physics, without any ground-truthing at all, it still  
16 would not pass muster if I was the reviewer. I'm not saying  
17 it wouldn't get published in some scientific journal,  
18 because you can always get lucky with reviewers. But, if I  
19 were looking at it personally, I would not accept it because  
20 it's simply not a modelable problem. However, if you do  
21 take their assumptions and just fix the basic physics in it,  
22 the basic geometry, it changes things by about a factor of  
23 ten.

24           HEARING OFFICER CELLI: Thank you, Dr. Johnsen. I  
25 guess we're going to hear from Dr. Caretto next.

1 DR. CARETTO: Yes, before I get started, I wonder  
2 if I could get the gentleman who talked about the computer  
3 program, who showed the slide from the Drysdale Fire  
4 Dynamics book, to get that slide back up again. I'd just  
5 like to point out something about that particular slide.

6 HEARING OFFICER CELLI: Thank you. Mr. Battles is  
7 working on that right now.

8 DR. CARETTO: Notice that the units on the radiant  
9 heat flux are watts per square centimeters. So far, we've  
10 been talking about kilowatts per square meters. If that  
11 acts as kilowatts per square meters, the units would range  
12 from zero to fifty. So, that chart is a little bit  
13 misleading, because, all throughout the conversation, we've  
14 been talking about kilowatts per square meters, and that  
15 five watts per square centimeter is really fifty kilowatts  
16 per square meter.

17 MR. LESH: We agree with that.

18 DR. CARETTO: I just wanted to point that out.

19 HEARING OFFICER CELLI: Thank you. Go ahead,  
20 Dr. Caretto.

21 DR. CARETTO: Okay. Again, my name is Larry  
22 Caretto. I'm a Professor Emeritus of Mechanical Engineering  
23 at Cal State Northridge. My areas of interest are applying  
24 thermodynamics, chemokinetics, computational fluid dynamics  
25 of e-transfer to problems of combustion, air pollution, and



1 energy systems. I worked as a faculty member, a research  
2 engineer, environmental consultant, a member of the  
3 California Air Resources Board, and the dean of engineering  
4 and computer science. I've also served on three National  
5 Academies of Sciences committees.

6 I was asked to look over the calculations done by  
7 the staff and look over Dr. Johnsen's calculations, and to  
8 make a comparison of them. And this chart here shows that  
9 comparison. The different colors show the effect of the  
10 different points that Dr. Johnsen just mentioned, but I want  
11 to point out the bottom line right now, which is fairly  
12 clear, and we've said several times that the calculations  
13 that we've done generally show a result which is about ten  
14 times larger than the staff's.

15 Now, what is this result? Well, I think what  
16 we've both agreed to do is to do what I call the staff's  
17 standard steady state problem. If a bird is flying for a  
18 long time, and exposed to some average radiation flux, and  
19 the temperature of the wing gets around sixty degrees, what  
20 is the flux coming from the mirrors that will do that?

21 Now, it's important -- the staff uses the word  
22 "exposure." Now, the flux that comes from the mirrors is  
23 not the exposure. The exposure, as Dr. Johnsen points out,  
24 depends upon the angle that the flux makes to the radiation.  
25 If you're standing in front of a fireplace and you turn

1 sideways, you'll get less heat, because you aren't getting  
2 the direct exposure to the radiation.

3           So, the mirror flux that we're calculating is the  
4 flux that's leaving the mirrors. The flux that actually  
5 reaches the bird's wing is much less, and that's a key  
6 thing, so that's -- we need to be careful in distinguishing  
7 what all these terms mean. Now, in the staff's model, where  
8 they always use a view factor of one, the two are the same.

9           Okay. Having said that, what I want to do here is  
10 to go through each particular term that Dr. Johnsen has  
11 mentioned and illustrate the differences. The first one is  
12 the -- first is the incident angle, which I was just  
13 mentioning. First of all, let me point out that with -- if  
14 Dr. Johnsen's calculation method or my calculation method  
15 uses the data and assumptions of the staff model, we all get  
16 the same result. There's nothing magic about this  
17 calculation. This calculation is trivial. It's the thing  
18 that you get in a junior course in heat transfer. So,  
19 there's nothing really magic about this or mysterious. The  
20 question is how do you try to model what Dr. Johnsen called  
21 unmodelable situation of a bird in flight?

22           And so what data do you use? So, with the staff  
23 assumptions, we all get the same result. Now, if we say  
24 that -- assuming that a bird is always perpendicular to the  
25 radiation is not a good assumption, and I saw in the staff

1 report the calculation for an incident angle of seventy-one  
2 degrees, so I used that value. Dr. Johnsen used a similar  
3 value of seventy degrees. So, when I used the staff value of  
4 seventy-one degrees, I get a flux of 14.9. Dr. Johnsen gets  
5 14.2.

6 Dr. Johnsen mentions absorptivity; I'm going to  
7 pass over this for a moment and come to the heat transfer  
8 coefficient. Now, heat transfer coefficients are an  
9 interesting kind of a thing, because the equation with which  
10 you calculate the cooling -- the convective cooling, it's a  
11 very simple one. The convective cooling is equal to the  
12 heat transfer coefficient times the temperature difference.

13 But the heat transfer coefficient is a very  
14 complex thing, and it depends typically, in almost every  
15 situation, upon having experimental data. Without  
16 experimental data to have a correlation, you don't know what  
17 the heat transfer coefficient is. And I have not seen any  
18 reference where I have found a correlation equation which  
19 tells me what the heat transfer coefficient is for a flying,  
20 flapping bird.

21 Therefore, I used the heat transfer coefficient  
22 that I found as -- that was actually measured. It was  
23 measured on the model of a bird, which was the same size as  
24 an actual flying bird on which temperatures had been  
25 measured. So, I regarded this heat transfer coefficient,

1 since it was an actual measured value that was derived from  
2 experiments and studies on birds in flight, it was for the  
3 whole bird, not just for the wing. But I thought an  
4 experimental heat transfer coefficient is better than trying  
5 to rig a model, and, therefore, I used this value. And,  
6 when I used the value, I got a flux of 30.5 watts per square  
7 centimeter. Why did I get that flux? Well, because I got  
8 much bigger cooling, because I had a much larger heat  
9 transfer coefficient than the staff did.

10 Now, the things that we've done so far can be  
11 considered what the staff has called conservatism. The next  
12 is the simple air. The staff ignored heat transfer from the  
13 top of the wing. Now, that's thermodynamically impossible.

14 In their transient code, they had a default temperature of  
15 160 degrees for the top surface of the wing, the same as Dr.  
16 Johnsen used. So they had 160 degrees on the top surface of  
17 the wing and an air temperature of 45 degrees, if they had  
18 no heat transfer. That's an impossibility.

19 When I put in the heat transfer for the upper  
20 surface of the wing, I got a final value of 47.5, 47.6  
21 kilowatts per square meter. I thought of an analogy -- this  
22 is basically sort of an extreme case, but if you imagine you  
23 had a frying pan, and you heated the bottom side to 160  
24 degrees, and you put an egg on the top, the egg wouldn't  
25 cook because no heat was coming out the other side. Thus,

1 basically, the staff's ignoring the heat transfer from what  
2 the upper surface of wing is equivalent to. Now, one thing  
3 that's not shown on these -- these slides is that Dr.  
4 Johnsen did calculations for a range of absorptivity values,  
5 and, as he pointed out, the value of 0.85 was the largest  
6 one he did. When he did a value of -- the lowest value he  
7 used was 0.65, and in that case his result came out to be  
8 somewhere up here, 47.6. So that's basically a different  
9 physical assumption, but in that particular case, and it's a  
10 less conservative one, he gets a high heat flux.

11           So, in summary, the two of us have done  
12 calculations using basically the same model -- same  
13 equations. It's just the differences that we have in the  
14 data that we've used. We believe that essentially trying to  
15 model a bird-in-flight heat transfer is a fool's errand, but  
16 we've been given that errand. But we think we do it in a  
17 less foolish way than the staff has.

18           Dr. Johnsen noted the concept of asphalt - I  
19 thought it was smooth mahogany table flying upside-down is  
20 what the staff was modeling. Mahogany, because it absorbs  
21 almost all the incoming radiation, smooth, because that was  
22 the equation they used for the heat transfer coefficient,  
23 and, oh, yes, there would be a lot of insulation on the  
24 other side, so no heat would get out the other side.

25           So, we basically believe that the staff, although

1 the fundamental equations were certainly correct and we  
2 would get the same results if we used their data, but their  
3 data and their assumptions are incorrect and do not lead to  
4 reasonable results for a flying bird.

5 HEARING OFFICER CELLI: (Off mic.) Okay, go  
6 ahead, Commissioner.

7 ASSOCIATE MEMBER HOCHSCHILD: Well, first of all,  
8 let me thank everyone on the panel for what has turned out  
9 to be a graduate seminar on biology, physics, and  
10 ornithology all at once.

11 (Laughter.)

12 Both Dr. Caretto and Dr. Johnsen did a very good  
13 job explaining to me the differences between your  
14 methodology and the staff's. However, there is 9.5  
15 kilowatts per meter squared between your own studies and Dr.  
16 Johnsen's. I was wondering if you could -- and that appears  
17 to be primarily because of the heat transfer coefficient.  
18 Dr. Johnsen, I was wondering if you could just speak to that  
19 and why you chose --

20 DR JOHNSEN: Yeah. I would love to speak to that.  
21 I actually I was torn, you know, which one to go with on  
22 the e-transfer coefficient. I know of both. There's a nice  
23 paper that looks at heat transfer coefficients in birds,  
24 usually in a number of these different models. And,  
25 actually, like Dr. Caretto, my original preference was the

1 one that came from the actual mechanical model of a bird.  
2 It's not as good as a real bird, but at least it involves  
3 something that looked like a bird and sort of moved like  
4 one. However, at the time we were more interested -- or, at  
5 least, I was more interested in the difference between the  
6 laminar and turbulent flow, and so I decided to use that one  
7 instead.

8           You could use both, and, like I said, the real  
9 number, if you read that paper, which is actually a very  
10 good paper. You see that they get heat transfer  
11 coefficients that go all the way from my value, which is  
12 actually very close to the lower end, well over one hundred.

13 I don't have the paper in front of me, so don't hold me to  
14 it, but it was quite high. The range was enormous, sort of  
15 highlighting the fact that this is a very difficult number  
16 to model accurately, especially once you start including  
17 flap in flight.

18           ASSOCIATE MEMBER HOCHSCHILD: Okay. So, to follow  
19 up on that from your paper, I will just ask the same  
20 question I asked staff earlier: what does this mean in terms  
21 of what a safe altitude or an altitude of threat might be?  
22 What's the import of this in terms of a bird flight around  
23 the receiver?

24           MR. RUBENSTEIN: Mr. Hochschild, we've actually  
25 got two more panel members who, I think, might be able --

1           ASSOCIATE MEMBER HOCHSCHILD: To address that  
2 question.

3           MR. RUBENSTEIN: -- to get more into that  
4 question.

5           ASSOCIATE MEMBER HOCHSCHILD: That's fine.

6           HEARING OFFICER CELLI: Let's -- thank you. I'm  
7 glad you brought that up, Mr. Rubenstein. So, let's hear  
8 from your other panel members, then, so we can get the full  
9 picture.

10          MR. SANTOLO: Thank you. My name is Gary Santolo.  
11 I have a master's degree in avian sciences from U.C. Davis,  
12 and I've worked for CH2MHill for over twenty-five years.  
13 And I've conducted field and laboratory studies on various  
14 avian species, primarily looking at contaminate effects in  
15 reproduction. I conduct research and surveys for federal,  
16 state, municipal, and private industry clients. I've  
17 published about a dozen journal articles and peer-reviewed  
18 professional publications --

19          HEARING OFFICER CELLI: Do we have Mr. Santolo's  
20 résumé in the record?

21          MR. SANTOLO: Yes, you do.

22          HEARING OFFICER CELLI: Okay. Then let's just get  
23 right to the facts because we have your background in the  
24 record already. Thank you.

25          MR. SANTOLO: Okay. I was just responding to some



1 things that have been said. So, anyway, I've spent the last  
2 thirty-five years working with animals, primarily birds, in  
3 education, animal care, recreation, and research. And I  
4 conducted a study at the SEDC facility in the Negev Desert  
5 in July of 2012.

6           The goal of this study was to determine a  
7 threshold solar flux level that causes bird feather  
8 singeing. I used dead and near-stationary birds of three  
9 size classes that range from 20 to 1,800 grams and exposed  
10 them to constant flux levels of a predetermined duration to  
11 provide a conservative estimate of an effect level.

12           Singeing was used as the metric for effect because  
13 singed feathers were indicators of damage and were easily  
14 identified in the field, because they were discolored,  
15 brittle, inflexible, and tended to easily break back to the  
16 point where evidence of singeing was observed.

17           Now, there has not been a study of elevated solar  
18 flux effects conducted before this study, so different  
19 methods were used and tested to try to provide empirical  
20 data on effects to decrease uncertainty. Two domestic bird  
21 species, chicken and quail, and one feral species, pigeon,  
22 were used for this study because they were readily available  
23 and do not require permits. And, I know of no reason that  
24 the feathers of birds at the Hidden Hills site or anywhere  
25 else would differ from these birds that I used in the test.

1           Any structural damage to the feathers, including  
2 damage not necessarily evidenced by carbonization, was  
3 obvious when it occurred, from visual observation and when  
4 feathers were examined by hand. When the structure of a  
5 feather was compromised, irrespective of carbonization, the  
6 barbs and barbules would no longer perform the function of  
7 holding the feather vane in place. No reduced functionality  
8 was observed in feathers and portions of feathers that were  
9 not singed.

10           I found singed feathers in birds exposed to 50  
11 kilowatts per meter squared and greater when they are  
12 exposed for twenty seconds or more. Birds exposed to 48.7  
13 kilowatts per meter squared and lower for twenty seconds  
14 were not affected and lower levels exposed for up to thirty  
15 seconds did not show signs of feather singeing. In fact, a  
16 chicken exposed to 15.8 kilowatts per meter squared for  
17 sixty seconds did not show signs of feather singeing.

18           My opinion is that 50 kilowatts per meter squared  
19 is a conservative flux level for feather singing based on  
20 dead, near-stationary birds exposed to a constant flux  
21 level. Feathers of live birds should not be affected at  
22 this flux level for similar times for the following reasons:  
23 solar flux is directional, only coming from the direction of  
24 the heliostat. A live bird exposed to 50 kilowatts per  
25 meter squared and lower flux in the airspace around the

1 upper end of the tower would be flying, which would  
2 constantly change the view factor for individual feathers in  
3 the areas of the bird that would be exposed, lowering the  
4 apparent flux level. In addition, a live, moving bird would  
5 be cooling feathers by convective cooling at the same time  
6 they are being heated by the flux.

7 Feather singeing was the most sensitive end-point  
8 to solar flux exposure found in my study and occurs in a  
9 step-up fashion, rather than in a gradual dose response  
10 manner. From singeing to carbonization is very rapid.

11 Other findings from this study were that plumage  
12 color makes a difference in the effect, likely due to white  
13 plumage reflecting solar flux and darker plumage absorbing  
14 it. Pigeons showed a greater effect from exposure to solar  
15 flux with larger and more severe areas of singeing, possibly  
16 due to the abundance of power down feathers that occurs in  
17 this family of birds. Although the solar flux level, where  
18 singeing was observed, was similar to the other species.

19 Temperature measurements, using an infrared  
20 thermometer, of feather surface fifteen to thirty seconds  
21 after exposure and thermocouples through tissue temperature  
22 provided limited but helpful information for interpreting  
23 the extent of speed of temperature responses to solar flux.

24 Despite issues with the thermocouple measurement, the data  
25 does facilitate statistical and other analyses that

1 otherwise might not be clear or might be overlooked.

2           These findings include, one, that larger birds  
3 were less affected than smaller birds and smaller birds  
4 showed a greater increase in body temperature than larger  
5 birds; two, the higher the flux level, the higher the  
6 measured feather surface temperature using the infrared  
7 thermometer; three, surface temperature decreased rapidly  
8 after exposure, even in birds that showed signs of singeing,  
9 where feather temperatures taken just fifteen to thirty  
10 seconds after exposure dropped well below levels that could  
11 damage feather structure; and four, feathers provide good  
12 insulation, as under-the-skin temperatures were  
13 significantly lower during exposure than the assumed feather  
14 temperatures for singeing from about 160°C to about 400°C  
15 for carbonization of feathers. Consequently, the  
16 thermocouple and infrared thermometer data did provide  
17 important information that was consistent with the observed  
18 feather effects.

19           The duration of the exposures did not represent  
20 all potential exposure periods of wild birds at a site;  
21 however, the study in no way precludes extrapolating to  
22 longer or shorter exposure periods. The exposure times used  
23 were expressed as a possible flight time and speed to  
24 provide contacts for the test duration. The testing  
25 timeframes represent a realistic period of exposure, given

1 typical flight behaviors based on my professional  
2 experience.

3           The important aspect is that the tests were  
4 conducted for predetermined and repeatable time periods, so  
5 that the potential effect levels could be identified under  
6 conditions that reduced the variability from ambient  
7 conditions and decreased uncertainty about the timing when  
8 an effect actually occurred.

9           Staff provided an unscientific analysis of the  
10 solar flux effect on birds using factually inaccurate  
11 statements about my study, other research, and potential  
12 solar flux effects on birds. Staff inaccurately  
13 extrapolates from other forms of radium flux, such as fire,  
14 and effects on other receptors, such as a house and a block  
15 of wood, and suggests that the effects would be the same on  
16 avian feathers and tissue. Staff has stated my results are  
17 in stark contrast with other published literature, although  
18 no literature was cited, and, in fact, there are no other  
19 studies of flux effects on bird feathers.

20           Staff has suggested that the risk analysis should  
21 be conducted like a toxicity assessment. It has also been  
22 suggested that unobservable effects may be occurring prior  
23 to singing. However, the standard practice in toxicity  
24 testing and risk assessment is to identify the lowest  
25 observed effect level or concentration.

1           There is always the uncertainty that there are  
2 effects that were not measured in this study, but  
3 uncertainty factors are not added for this type of  
4 uncertainty, which is inherent in all toxicity testing.  
5 Therefore, this is not a valid rationale for applying  
6 uncertainty factors to the solar flux study. In fact,  
7 Suder, et al., in 2000, indicates that the uncertainty  
8 factor method has little scientific basis and results in a  
9 number that is no longer clearly associated with a  
10 particular effect. Therefore, the extrapolated value is not  
11 particularly useful in definitive assessments, because it  
12 does not serve to estimate an effect and cannot indicate  
13 that a chemical is the cause of an observed affect.

14           Well, this is the case with staff's proposed  
15 threshold, which is at or near ambient concentrations. If  
16 this threshold is applied, the risks above those caused by  
17 natural sunlight cannot be identified. My study provides  
18 the best and most valid data available regarding solar flux  
19 effects on avian feathers, including empirical data on solar  
20 flux levels, exposure times, and effects observed for  
21 differently-sized species of birds. Staff's threshold of 5  
22 kilowatts per meter squared is simply incorrect. My test  
23 results of real, observed affects are in stark contrast to  
24 staff's unvalidated model.

25           This first study of solar flux effect to birds

1 provides a conservative level of effect of 50 kilowatts per  
2 meter squared for dead or near-stationary birds. This  
3 effect level, coupled with bird survey and behavior data,  
4 can be used as a basis for looking at the likelihood of  
5 birds at Hidden Hills being at risk from elevated levels of  
6 solar flux. Thank you.

7 HEARING OFFICER CELLI: Thank you. Any other  
8 members of applicant's expert team that needed to speak to  
9 this?

10 MR. ELLISON: Yes, we have one other panelist, and  
11 then I have a couple of follow-up questions, and then we'll  
12 be done. Yes, Mr. Phillips.

13 MR. PHILLIPS: Sure. My name is Dave Phillips. I  
14 will spare you my résumé, which I think is on record.

15 (Laughter.)

16 There is a great deal of speculation with all this  
17 -- kind of this question of what level of flux will affect  
18 birds, where the birds will fly when the project is built,  
19 and how those birds will be affected by varying levels, and  
20 it's all very interesting to me, but I think we -- it's  
21 important that we really look very closely at some of the  
22 specifics of the operating -- currently operating and past  
23 project, Solar One.

24 Some of the really important realities or facts  
25 related to these projects, I think, have been glossed over

1 very rapidly. So I just want to discuss them a little bit.

2           The first real life experience we have, I think,  
3 is the SEDC project. It has been monitored for three  
4 seasons, since this past spring of 2012, by an objective  
5 researcher, Zev Labinger with Biologic Consulting and the  
6 Society for the Protection of Nature in Israel. The author  
7 has presented papers on the results of the spring, summer,  
8 and fall work that he's conducted, and I just want to  
9 explain.

10           SEDC is a small-scale version of what we are  
11 dealing with here as it relates to flux. It has a wedge of  
12 heliostats, instead of a very large 360-degree-radius field.

13 It has a lower tower - the tower at SEDC is, I believe,  
14 seventy meters tall, or approximately. However, the flux  
15 density at the receiving face, as I understand it, is  
16 identical to what we would be -- as would be experienced at  
17 Hidden Hills.

18           So, in essence, we have a mini version operating  
19 right now. One of the researcher's goals in these studies  
20 was to document the bird use on and near the site. And it's  
21 really interesting. I mean, they have put a lot of time, a  
22 lot of hours in using different survey techniques to  
23 document the number of birds.

24           They've documented literally thousands of birds in  
25 and around the project site at that 100 meter, 200 meter,



1 300 hundred meter elevation above ground level and below.  
2 But they've documented very few near the tower within a 100  
3 meters with the exception of pigeons, where they have  
4 actually documented quite a few, particularly in the summer.

5           Also of note, they've documented a golden eagle,  
6 the exact same species -- same bird we have here in and near  
7 that site in the summer study. And they assume, in their  
8 paper, that it is likely breeding in the vicinity of the  
9 project.

10           So, after three seasons of very intensive study of  
11 the bird community, but also very robust fatality studies in  
12 which they are literally walking under the heliostats,  
13 searching the entire field, at consecutive day intervals,  
14 sometimes four days per week in a row - a whole field  
15 search. They're finding zero birds showing evidence of flux  
16 impacts.

17           Now, I totally recognize that this is a smaller  
18 site, but the risk profile is very similar in that we have  
19 this flux phenomenon present in the presence of quite a few  
20 birds. If all this modeling was true, it just was make --  
21 these results just totally defy the concept. I mean, birds  
22 would be falling out of the sky at this project and they  
23 would be documented.

24           HEARING OFFICER CELLI: Mr. Phillips, if I may.  
25 I'm hearkening back to what was said by staff in their

1 testimony, which is there's mortality and there's morbidity.

2 MR. PHILLIPS: Okay.

3 HEARING OFFICER CELLI: Okay, so birds are flying  
4 through this flux, and they aren't necessarily dying and  
5 dropping to the floor --

6 MR. PHILLIPS: Great point.

7 HEARING OFFICER CELLI: But we don't know what's  
8 happening to them for what durations they're in there, what  
9 the effects would be, and what that means to them a day or  
10 two weeks later.

11 MR. PHILLIPS: Yes. Correct.

12 HEARING OFFICER CELLI: Go ahead.

13 MR. PHILLIPS: In this study, they do observe  
14 birds in and around the tower. They don't observe  
15 behavioral response, they don't observe birds, kind of,  
16 having immediate -- you know, fluttering off the site and  
17 dying elsewhere, but I understand your question.

18 The Gemasolar site in Andalusia, Spain -- they  
19 also do the same types of observations of the study area.  
20 Unfortunately, they have not walked as frequently under the  
21 heliostats, but the two -- the sixty- and ninety-minute  
22 periods by two observers looking very closely did not  
23 document immediate mortality.

24 But they also are walking a great deal of  
25 transects on a monthly basis. They have since fall of 2011.

1 So 2011, the entire year of 2012, the last three months of  
2 this year. I should get my actual kilometers straight, but  
3 they walk 1.6 kilometers around the fence, the perimeter  
4 fence of the project, they walk 2.2 kilometers 500 meters  
5 away from the project, and they walk 2 kilometers away from  
6 the project every month. They're actually doing avian  
7 surveys of the bird community, but they also have people  
8 onsite and people in the vicinity who have been requested to  
9 report any sort of bird mortality, and they have one that is  
10 documented.

11 So, it's really kind of -- it's just a lot of  
12 effort being put towards trying to document that question,  
13 which is a really, really difficult question to document in  
14 real life. But we're just not seeing the arrows pointing in  
15 that direction.

16 The Solar One in Barstow, I think, is interesting,  
17 too, in that -- or, actually come -- Gemasolar is 530 acres,  
18 I believe, of heliostats. It is a very large, comparable-  
19 type risk profile in that it is a 360-degree flux scenario,  
20 very similar to these graphs, as I understand it, with  
21 regard to the flux distribution. The tower at that site is  
22 120 meters tall, so it is lower than that which is proposed  
23 at Hidden Hills, but we're definitely up off the ground a  
24 bit and into a bigger, much more similar, comparable type of  
25 site.

1           Solar One -- I think this project is really  
2 interesting because we're extrapolating or we've heard  
3 extrapolations from this project, and yet this is the  
4 project that has some very, very significant technological  
5 difference than what is proposed here. The Solar One  
6 project -- or, facility had an eighty-six-meter tall tower,  
7 but it also had four standby points around the tower  
8 approximately twenty-five meters away from the tower, sixty  
9 meters above the ground, that were super-intense  
10 concentrations of flux. They were entirely invisible to  
11 birds.

12           There are several studies -- McCrary, et al.,  
13 which is the published -- the peer-review study of 1986, but  
14 the studies leading up to that, McCrary, et al., 1984,  
15 Wagner, et al., and there were two other papers, I believe,  
16 which had reviewed -- but the author is not coming to me,  
17 preceding and presenting the kind of results leading up to  
18 1986 peer-review publication. All of them talk about  
19 mortality that is, to me, fascinatingly low, associated with  
20 flux, given the number of hours that they've observed and  
21 the number of birds that they report. Kind of losing my  
22 train of thought here, I'm sorry.

23           They only detected thirteen birds over the course  
24 of forty full-field searches on this project site with  
25 evidence of singing. They associated all those with the

1 standby points - not what we see, you know, at Hidden Hills,  
2 and that's --

3 HEARING OFFICER CELLI: Over what period of time  
4 was that?

5 MR. PHILLIPS: Forty weeks.

6 HEARING OFFICER CELLI: Thirteen deaths in forty  
7 weeks.

8 MR. PHILLIPS: Thirteen deaths with evidence of  
9 flux-related effects. Burning, singeing.

10 HEARING OFFICER CELLI: Okay.

11 MR. PHILLIPS: And I guess I should kind of re-  
12 point out, one, they documented golden eagles in the  
13 presence of the facility, and two, they documented 107  
14 species in and near the site, not all of which were flying  
15 over the heliostats. So it's a very uniquely different  
16 biological situation but also technological situation as it  
17 relates to the risk profile compared to Hidden Hills.

18 HEARING OFFICER CELLI: You know, I'm sorry. My  
19 apologies to all of you scientists. My undergraduate degree  
20 was in English.

21 (Laughter.)

22 So I think I'm sort of the common man here. And  
23 while I've been listening to this and working really hard to  
24 follow, I'm left with a couple of thoughts that I hope  
25 somebody can make really clear. One is that there has been

1 discussion about the mirrors as mimicking water, because we  
2 know that that's what water does - it bounces sunlight.  
3 Birds may or may not be able to make that determination that  
4 that's a mirror and not water down there.

5           This project is five miles square, which is  
6 approximately four or five times, I guess, bigger than Solar  
7 One you were just describing, Dr. Phillips. And these  
8 mirrors are aimed at one place to be hot enough to create  
9 steam. So it's hot up there. Real hot. And as a dumb  
10 English major, I'm thinking, boy, if it's hot enough to make  
11 steam, I bet it's hot enough to really singe a bird.

12           MR. FRANCK: Mr. Celli.

13           HEARING OFFICER CELLI: Mr. Franck, you've got --  
14 you're going to speak to the common man about all of this.  
15 Go ahead.

16           MR. FRANCK: Yes, it seems I am the least educated  
17 person on this panel.

18           HEARING OFFICER CELLI: I need you to speak slowly  
19 and clearly into that mic.

20           MR. FRANCK: Here's a few things. We concentrate  
21 many mirrors into an area, and only in the proximity of that  
22 area is where it's getting a really, really high concentrate  
23 of flux. So if a bird will come really, really close to the  
24 receiver, a few meters, it might -- probably, most probably  
25 it would be singed, and this is, I would think -- I consider

1 it, in my view - and I am not a biology person - as a  
2 collision with the receiver, because it's very bright, a  
3 very unnatural thing out there. Yes, if it gets that close,  
4 if it gets really, really close, it will.

5           If it will be in the lower flux, just to give some  
6 numbers, at the closest it can be at the receiver, it's six  
7 hundred kilowatts, or six hundred times the sun, but as you  
8 go out, it's decreased very rapidly. So, I didn't prepare  
9 that, but I have seen that the staff put a model I think  
10 that we can use. Actually, there was one in the -- I think  
11 it was a data request we gave and I've seen those images, a  
12 slide that we've seen before.

13           HEARING OFFICER CELLI: Are you talking about  
14 staff's Exhibit 330? Mr. Battles, can we get that -- the  
15 diagram up again that showed the Wells Fargo Bank building I  
16 think --

17           MR. FRANCK: That was -- no, no, no, that's the  
18 one we just saw. The one like a butterfly. So, I'll  
19 explain what it is. So, the first slide that Mr. Tyler  
20 showed us in the beginning was actually only a conceptual  
21 drawing that we gave in one of the workshops. Under the  
22 request of staff, we produced a model. So, what you see is  
23 very --

24           HEARING OFFICER CELLI: Stay with your microphone.

25           MR. FRANCK: Yeah, the blue lines here. This is -

1 - I think it's about ten kilowatts per square meter, okay?  
2 The fifty kilowatts per square meter is this light blue  
3 here, okay? So, to get the dimension, if we look on this  
4 one, which is, more or less, since I can't see the dimension  
5 from here, this is about fifty meters from the center, so  
6 that's about roughly thirty-five, forty meters from the face  
7 of the receiver. This is only when it's get to what I can  
8 think of as a danger zone, according to Mr. Santolo's  
9 measurement and my colleagues', here on the left,  
10 calculations. So this is where we're talking -- about fifty  
11 meters away. All the rest, about ten or some, will be  
12 twenty-five kilowatts per square meter.

13 I don't know if staff prepared it on that, but on  
14 the same data request -- it was on a joint workshop, there's  
15 actually a good image of a top view where you can see how,  
16 actually, this area is very small. So, yes, if it will get  
17 very close, it's really going to absorb a lot, but on a two  
18 hundred kilowatts per square meter, yes -- my belief, not my  
19 knowledge, but my belief is that it will die. My  
20 assumption. It doesn't mean it will -- any bird will fly  
21 above the solar field will do it? I don't think so. I --  
22 as I said in an earlier workshop, I've worked on those ones,  
23 smaller ones. I haven't seen any bird singeing.

24 HEARING OFFICER CELLI: Go ahead, Dr. Phillips.

25 MR. PHILLIPS: It's actually Mr.



1 HEARING OFFICER CELLI: Sorry, I didn't mean to  
2 promote you.

3 MR. PHILLIPS: I think your -- as an English  
4 major, your perception is actually very accurate. There is  
5 a zone -- very likely, a potential zone of risk up there. As  
6 an English major, it's probably also understandable that a  
7 very bright white light on an artificial, manmade structure  
8 in a location like this would be avoided by, probably, all  
9 birds. It is a very unique, manmade situation that we're  
10 talking about, and I think that is the concept that is very  
11 consistent with what we see at SEDC. Also what we see --  
12 or, what is reported at Solar One.

13 Dr. Franck can probably speak more accurately to  
14 this, but it is my understanding that standby points, where  
15 the flux-related mortality was occurring, are two or three  
16 times higher than what we're seeing at the boiler face. If  
17 you were to move twenty-five meters out from the boiler face  
18 of what is proposed at Hidden Hills, I'm not sure what the  
19 flux level is, but I just don't think we're going to see a  
20 lot of birds there. And that's entirely consistent with the  
21 studies that are available in these operating projects.

22 HEARING OFFICER CELLI: Thank you. Mr. Tyler.

23 MR. TYLER: First, I'd like to clear up a little  
24 bit of the contradictory information about SEDC and  
25 Gemasolar and the other facilities. The standby points at

1 Solar One were, at their focus, approximately six to eight  
2 feet across. So the bird goes through very rapidly. Flying  
3 at any speed, it goes through that very rapidly. At the  
4 SEDC facility, the size of the field is very, very small  
5 compared to this field. It's only a portion, a pie-shaped  
6 portion, and the bird goes through that field very, very  
7 rapidly as well.

8           So, we have no duration to allow the heating to  
9 occur, or much shorter durations to allow heating to occur.

10 Yet, we had birds that were burned so severely as to have  
11 nothing left but the rachis of their feather, the quill down  
12 the middle. Both vanes burnt completely off.

13           At Gemasolar, I looked at the information provided  
14 by the applicant. There was never documentation of any bird  
15 flying through a part of the field that would have high  
16 enough solar intensity to cause the injuries. So, that  
17 explains a whole lot of the contradictions between the  
18 facilities is duration of exposure is very different, size  
19 of the field is very different, and intensities are  
20 different. We analyzed all of that in our model. And you  
21 get, you know -- basically, you look at it all to come to  
22 the conclusion that, really, the only data that we can rely  
23 on is the Solar One data. That one demonstrated  
24 unequivocally that this can occur.

25           MR. ELLISON: Mr. Celli, if I could just ask. I'm

1 not sure if Mr. Phillips was finished with this  
2 presentation. I actually liked the idea of the panelists  
3 asking each other questions, but I just want to make sure  
4 that Mr. Phillips gets a chance to finish before we do that.

5 HEARING OFFICER CELLI: Very good. He will. We  
6 will open this exchange up some more, but I do think it's  
7 important for the applicant to finish their, opening  
8 presentation, is what we'll call it.

9 MR. PHILLIPS: I actually think that I can end,  
10 but I look forward to dialogue and discussion about the  
11 topics.

12 HEARING OFFICER CELLI: Good, because this is the  
13 perfect time, because it is now time for public comment, and  
14 that was kind of the reason why I wanted to get it to the  
15 level of birds flying through hot light because we have the  
16 locals here who probably have questions about that sort of  
17 thing and I don't know how many of them are physicists. Ms.  
18 Haskin? This is public comment.

19 MS. HASKIN: Okay. As I spoke before, I am a  
20 resident of Charleston View and I spoke up for my neighbors  
21 and my family. I'm going to speak up today, right now, for  
22 the residential birds who live where we are.

23 All you guys have all these figures about what  
24 you're finding on the project site, but not one person has  
25 said they did any kind of study on what actually lives in

1 our yards in Charleston View, which is directly across the  
2 street from all of this. And the residential birds is a  
3 huge population. There are doves and nighthawks that live  
4 out there. And the red tail hawks and the golden eagle we  
5 see all the time just standing in our yards. It's not a  
6 proposed thing, it is something we see.

7           When you're talking of what this is doing, you're  
8 only speaking of the area that they have allowed the orchard  
9 to die on so the birds can't stay there as much as they used  
10 to because the trees are gone. Oh, sorry.

11           HEARING OFFICE CELLI: How did you get connection  
12 here?

13           (Laughter.)

14           MS. HASKIN: Things are weird in the desert.

15           (Laughter.)

16           MS. HASKIN: But the thing is -- what I'm trying  
17 to say is not one person studied what's going to happen to  
18 the birds that live in our yard. And I have a huge flux of  
19 birds just in my yard. There's probably a thousand to two  
20 thousand birds in my yard in the summertime -- spring,  
21 summer, fall.

22           And when you talk about this thing being up in the  
23 daytime, the nighthawks regularly fly at your headlights in  
24 the desert. They go toward the light because that's where  
25 the bugs are, and where the bugs are in the desert, that's

1 where the nighthawks and the bats feed. So, all of this, as  
2 the sun is going down, and that light is diminishing, that's  
3 going to affect what lives in our area.

4           And nobody is speaking of this; nobody even  
5 considered it. And I think that needs to be addressed,  
6 because these animals that are in our yard that we enjoy and  
7 we teach our families about are going to be affected by a  
8 five-mile thing.

9           If you drive down the road in the summertime here,  
10 when you're going down that highway, you'll be confused  
11 because you think you'll see water on our asphalt because  
12 that's what heat does out here. You put this massive field  
13 of mirrors out there, you're going to be drawing things to  
14 that field because that's what they're going to see. We  
15 have birds that migrate from the north that are like ducks  
16 and geese and stuff. What do you think they're going to  
17 see? Because you just use common sense. I'm not technical  
18 like these people, I'm just a good old desert girl, but  
19 they're going to see this massive amount of reflection, just  
20 like you see driving down the highway, and they're going to  
21 be very, very drawn to that.

22           And, as I spoke before, I get crane in my yard. I  
23 get blue herons in my yard. I have doves in my yard year  
24 round. I have quail in my yard year round. I see sparrows;  
25 I see little, tiny birds with yellow bellies that I can't

1 tell you the technical name of, but I know they're there. I  
2 get woodpeckers in my yard. And all of this is not even  
3 being addressed by either side.

4           And I'm sorry, and you go to buy a house, and you  
5 move to the city, and you put your child that's a toddler on  
6 a main surface street, you better watch that child well,  
7 because if that child gets out your door, it can get harmed.

8           You put this massive structure next to where we live and,  
9 like I said, we're the green oasis out there. All the  
10 trees, all the shade are out there. You drive to the desert  
11 where these birds live, and when it's hot of a day, they're  
12 on the ground in our yards in the shade. The ravens will  
13 have their mouth open because this heat affects them, it  
14 bothers them. They do not run around flying through the  
15 desert when it's hot out here, and I'm talking our normal  
16 temperatures.

17           You put this massive microwave thing you're  
18 talking about out there, and you really cannot tell me  
19 that's not going to affect them. Drive to Furnace Creek,  
20 drive to Stovepipe Wells in Death Valley - the Ravens are on  
21 the ground where you stop to get your gas, and they're in  
22 the shade, and they're doing what I said - they have their  
23 mouths open, because the heat affects what's in the desert.

24           And you need to consider what is already there  
25 along with what might fly by because the golden eagle that

1 lives by our house is there all the time. We see it  
2 regularly. I have photographs of it that I'm going to bring  
3 you tomorrow. It's not what we're saying. It's real, and I  
4 wish you would have considered -- somebody should have  
5 studied what was there -- just like I said, somebody should  
6 have studied, and the amount of traffic on this highway  
7 that's going to be affected once this project goes into  
8 construction. And I thank you.

9 HEARING OFFICER CELLI: Thank you very much.  
10 Cassandra King, are you here? Would you please come forward  
11 to the podium and you may address the Committee and tell  
12 them what's on your mind.

13 MS. KING: My name is Cassandra King. I'm a  
14 resident of Charleston View and basically I have a few kind  
15 of questions about -- I heard Mr. Johnson talking about, you  
16 know, women in the fifties - they used those three little  
17 mirrors absolutely and I understand it only warms you up.  
18 But if you use a mirror that's the same ratio from you as to  
19 a bird, you use those three mirrors, you're going to get  
20 much more heat coming off of them. So, yes, it's going to  
21 affect birds at a larger ratio.

22 And whether they're flying through the air or not,  
23 I mean, put yourself in a car in our temperature, 110, 115  
24 degrees, which we get quite commonly, you're not going to be  
25 cooled off by the hot air flying past your skin no matter

1 how much you're sweating and this air is hitting you. So,  
2 these birds are going to be affected, which is going to  
3 affect our ecological system out there. And I just don't  
4 understand how you can sit here and rebut each other --  
5 which I understand that's what it's for, when nobody has  
6 taken into consideration that, at certain temperatures, it  
7 won't change. At certain temperatures, hot is hot. And  
8 that's basically what I had to say about the whole  
9 situation.

10 HEARING OFFICER CELLI: Thank you very much for  
11 coming and thank you for sharing your point of view. It's  
12 very important for the Committee to hear from the members of  
13 the community. Vernon Lee is here. Please come forward.

14 MR. LEE: Yeah. My name is Vernon Lee. I'm from  
15 Moapa. And I'm concerned about this because my mom is  
16 actually from Pahrump, so I am a potential tribal member in  
17 Pahrump. But, you know, I've been hearing a lot of  
18 comparisons. A lot of intelligent people here come up with  
19 two different total scenarios. And, I mean, to sound maybe  
20 overly simplistic, but has anybody ever taken a remote  
21 control helicopter or plane, attached a few sensors to it  
22 and probes, and flown it by the Solar One? Maybe even glue  
23 on a couple feathers and see what happens, because it's  
24 really going to damage something. So, you know, it's just a  
25 practical application. And all this analysis, they seem to



1 be nowhere with it, nothing really conclusive. But that's a  
2 simple little test.

3           And another thing is that, when you -- they was  
4 comparing this area to a different area in regards to the  
5 amount of birds and stuff. That area out there is nearly  
6 perfectly pristine; there's only a couple highways. And  
7 they got some solar things over by Stateline, and of course  
8 there's airplanes flying around, there's off-road races and  
9 cars, and all kinds of noise and stuff. If I was a bird, I  
10 wouldn't want to be around there, or at least, I think I  
11 would avoid the area.

12           And now, if they're in the Hidden Hills/Stump  
13 Springs area, it's just perfect habitat for birds. And  
14 then, of course, the towers can be really, really massive,  
15 or at least tall, and some of these hawks and stuff, they  
16 like to build their nests in high areas, and I just wonder  
17 if it would really attract them to go and see what it was as  
18 a potential place to build their nest, and, of course, they  
19 could be damaged.

20           The other thing is that I wonder about the  
21 brilliance. If a bird flew with all of the mirrors shining  
22 up there, if it would damage their eyes, because birds rely  
23 very, very heavily on their eyes, especially the hawks, who  
24 -- I think the ratio is two hundred to one compared to a  
25 human, so when they're soaring up there at a half mile or

1 something, they can actually see little rabbits and maybe  
2 even mice way down on the ground So if it damages their  
3 eyes just in the slightest, it could have a big impact on  
4 their survival.

5           There was something else, what was it? But  
6 anyway, I'll probably do a comment tomorrow, but it's  
7 cultural. But I think that the concerns of the natives,  
8 which basically will be more tomorrow, need to be taken with  
9 a little more gravity than people put on it. Native  
10 Americans are stewards of the earth and we respect it. A  
11 lot of stuff that Richard Arnold had said was true and we  
12 live by it. There's going to be ceremonial things that's  
13 going to come up tomorrow, so I'll just wait for a comment  
14 for tomorrow to respond to those things. But, I think  
15 there's some real practical applications you can put on  
16 testing these feathers, and I do think there's an impact on  
17 their site. Thank you.

18           HEARING OFFICER CELLI: Thank you, Mr. Lee. Thank  
19 you for your comments. I believe that we are going to hear  
20 from testimony later, are we not, about the eyes? There are  
21 some experts here about the birds, the eyes of the birds?

22           MR: RUBENSTEIN: Yes, Dr. Schwab can answer that  
23 question.

24           HEARING OFFICER CELLI: That's great. So we will  
25 get to that in further evidence as we go, Mr. Lee, so stick

1 around - you might hear some more interesting information.

2 Vivian Wilkinson, please come forward.

3 MS. WILKINSON: Yes. I got up this morning and I  
4 hiked up the mountain near where I live, and I sat there  
5 quietly for a while, and I realized there was some wonderful  
6 little songbirds sitting on the rocks, and I thought, how  
7 marvelous. And then I started thinking about this project  
8 and what I'd heard. Testimonies from the scientists, it  
9 seems there is always this -- quite a hard-line dichotomy  
10 between those people who are actually -- their research is  
11 supporting the company verses those who are more neutral on  
12 the staff. And I prefer to go with the neutral,  
13 conservative view that possibly is an influence.

14 It's like, you know when scientists do research  
15 and archeologists dig somewhere, you know? They usually  
16 find something to substantiate what they want to point out  
17 about primitive man and so forth. We've had a lot of that  
18 in the history of archeology, but I don't see the difference  
19 here. You know, you can do your research to find what you  
20 want to find, and I think that happens with -- when you have  
21 this situation. The dichotomy here between the two sides,  
22 basically.

23 So I'd really rather go with the neutral side that  
24 is really trying to use a bit more common sense. I go with  
25 what the gentleman said, from the tribe - you don't have to

1 be a scientist to have some common sense. This project  
2 being so huge -- I didn't know it was that huge. I was told  
3 it was a medium-sized plot. This project will have  
4 disastrous results, I believe. After a while. You won't  
5 see it at first, it might go slowly for quite some time, but  
6 it will leave behind an ecological disaster emanating from  
7 the water being drawn down. It's going to happen. And I  
8 think the springs will be the first to go. And we have this  
9 beautiful little ecosystem, the Amargosa -- it's a small  
10 ecosystem; can't we let it be the way it is?

11 We don't need this. Why aren't there any of these  
12 plants somewhere else? Why do we have to be the one? This  
13 precious jewel, this little ecosystem with all these  
14 beautiful biological things. Why do we have to be the ones  
15 to let that go? For the sake of not really very much energy  
16 created, from what I can see. As I said before, I don't  
17 think 178,000 homes in L.A. is a big deal compared to the  
18 devastation of an ecosystem. They're so fragile and tied to  
19 the water.

20 So, that's all I have to say. I started the day  
21 with a beautiful songbird, but I'm not feeling so happy this  
22 afternoon about the evidences. You have to err on the side  
23 of common sense, and common sense says those birds are going  
24 to be destroyed with the (unintelligible) were doing.

25 We heard someone say before, the other day --

1 that's what made me start thinking about it, because  
2 something about going along and looking at the light of some  
3 other plant somewhere and you shouldn't be looking at it.  
4 Well, we know what's going to happen, people do look.  
5 That's what happens. You can't -- it's an instinct to look  
6 at something that's glowing.

7           But anyway, I just wanted to put my speech on  
8 behalf of the environment. The animals, they can't speak  
9 for themselves. We're supposed to be the top predator here  
10 with a brain. We need to be a good steward to the  
11 environment and these animals. They've got nowhere else.  
12 We've got to be spokesmen for them.

13           Thank you for listening. I think it's just  
14 amazing how you sit and listen to all the evidence and you  
15 don't go to sleep. I've been watching you up there, which  
16 is amazing -- I think it's amazing, you know. I have to  
17 fight it. I have to get a little coffee and so forth. But  
18 anyway, thank you very much for letting me say something.

19           MS. WILKINSON: Thank you, Ms. Wilkinson, and I  
20 hope you get a little nap in for me. I appreciate that.  
21 Thank you for your comments. And thank you -- Ms. Wilkinson  
22 and Ms. Haskin have been here since day one and commenting  
23 and participating and that's just been great. And Eddie  
24 Jim. So thank you all for your participation and standing  
25 up for your community and standing up for your environment.

1           So, are there -- before I get to the phone, I want  
2 to know is there anyone else? Dr. Roberts, is there anyone  
3 else? He's shaking his head no. I have no other blue  
4 cards. Nobody else here in the room would like to make a  
5 public comment. I'd like to give you your blue cards back,  
6 Dr. Roberts.

7           I'm going to go to the phone now. I'm going to  
8 unmute the phone. (Off mic.) Oh, yes, thank you for raising  
9 that point. I just unmuted everybody, but we would like to  
10 hear from governmental agency people first. If there are  
11 any -- I'm talking to the people on the telephone. If there  
12 is anyone representing a government agency, would you please  
13 speak up?

14           I have Jacquelyn Leyva, who is with staff.

15           MS. LEYVA: Hi. (Unintelligible.)

16           HEARING OFFICER CELLI: Okay. Hello, Ann Chu. She  
17 is with staff. And Jacquelyn Leyva, if I understand, you're  
18 going to be testifying later. I hope you get a better  
19 phone, because that --

20           MS. LEYVA: (Unintelligible) -- hear me.

21           HEARING OFFICER CELLI: What's happening is we're  
22 hearing a buzzing, like static. If you're on a cell  
23 phone --

24           MS. LEYVA: I only have my cell phone, yeah.

25           HEARING OFFICER CELLI: Right now you sound fine.

1 As long as you stay far away enough from the microphone  
2 portion of your phone. We can turn up the volume here, but  
3 if you get to close, it will rattle.

4 MS. LEYVA: Oh, okay. Thanks for letting me know.

5 HEARING OFFICER CELLI: Thank you. So hang in  
6 there. I'm just taking comment at this time.

7 MS. LEYVA: (Unintelligible.) Okay.

8 HEARING OFFICER CELLI: So, no members of any of  
9 the governmental agencies. Wait, we have Ray Bransfield.  
10 Are you still here, Mr. Bransfield?

11 MR. BRANSFIELD: I am still here.

12 HEARING OFFICER CELLI: Did you wish to make a  
13 comment?

14 MR BRANSFIELD: I would. Again, I'm from the U.S.  
15 Fish and Wildlife Service, Ventura Office. The U.S. Fish  
16 and Wildlife Service remains concerned about flux. I  
17 understand you're going to get an eye discussion, which I  
18 may not be on for, but, besides what we talked about so far,  
19 we are also concerned about damage to eyes.

20 Right now, we have various power towers, and none  
21 of the studies really match what Hidden Hills is going to be  
22 like. I think comparison studies need to be taken with a  
23 good grain of salt. We also have different models that  
24 we're looking at. Quoting one of my old graduate  
25 professors, all models (unintelligible), although some are

1 useful.

2 (Laughter.)

3 MR. BRANSFIELD: But I think, if we really want to  
4 investigate what flux is doing, we need to do a study or two  
5 using a peer-based methodology so we know what we're doing.  
6 You have a big laboratory sitting down there next to I-15,  
7 so that's out there.

8 A couple of people have raised the issue of the  
9 mirrors looking like water. And that's a real concern. If  
10 one of the power plants in the southern desert has already  
11 had grebes, a water bird -- and once they get on the ground,  
12 they can't get back up in the air, so once they're down,  
13 they die. They are also not extremely discriminating about  
14 what they consider water when they're flying. A few months  
15 ago, thousands of grebes died in a parking lot in Utah when  
16 the atmospheric conditions caused them to confuse the  
17 parking lot and its lights for water.

18 So that is a real concern and it wouldn't  
19 necessarily be when the birds -- it wouldn't be a daytime  
20 thing necessarily. It could also occur at night, regardless  
21 of what position the mirrors are in. That's all I have to  
22 say at the moment.

23 HEARING OFFICER CELLI: Thank you very much for --  
24 and the power plant you were referring to was the Solar One.  
25 Is that correct?



1 MR. BRANSFIELD: For the grebe site?

2 HEARING OFFICER CELLI: No.

3 MR. BRANSFIELD: I can get that information. It's  
4 newly under construction; it's (unintelligible) Photovoltaic  
5 Plant in Riverside County.

6 HEARING OFFICER CELLI: Well, thank you very much  
7 for your comment, and I invite you to stay with us. We have  
8 more evidence to take in today. Thank you, Mr. Bransfield.

9 Any other agency -- Michael Garabedian, are you with an  
10 agency?

11 MR. GARABEDIAN: No.

12 HEARING OFFICER CELLI: Did you wish to make a  
13 comment?

14 MR. GARABEDIAN: Yeah, I'm glad to have a couple  
15 of flux models. (Unintelligible.)

16 HEARING OFFICER CELLI: Thank you. I just want to  
17 say, Mr. Garabedian, your phone is also a little bit -- it  
18 has a tad of static in it. It's a little hard to hear you.

19 So if you know if you have access to a more solid phone,  
20 that would be good.

21 MR. GARABEDIAN: Yeah, I can try it on my phone.

22 HEARING OFFICER CELLI: Thank you. Okay, anyone  
23 else on the phone who wishes to make a comment at this time?

24 Any member of the public who would like to make a public  
25 comment at this time with the Commissioner?

1 MR. BRADY: This is Ed Brady at the Energy  
2 Commission.

3 HEARING OFFICER CELLI: Yes, Mr. Brady?

4 MR. BRADY: I wanted to find out what the units of  
5 measurement for the heat transfer coefficient on the  
6 applicant's bar chart are.

7 HEARING OFFICER CELLI: Can somebody answer that?

8 MR. CARETTO: They're the same units that the --  
9 staff units, they're basically watts per square meter per  
10 degree Celsius.

11 HEARING OFFICER CELLI: Anything further, Mr. --

12 MR. BRADY: No, it's a nerd question. I just  
13 wanted to ask it.

14 (Laughter.)

15 HEARING OFFICER CELLI: Is there anyone else on  
16 the telephone who would like to ask a question or make a  
17 comment? Anyone at all? Member of the public, agencies,  
18 anyone? Okay, hearing none, I guess we are finished with  
19 the public comment part of our festivities. If I may, just  
20 give me a moment here.

21 Ladies and gentlemen, we are going to break for  
22 dinner now. It's 6:25 and we will return at 7:10 to resume  
23 taking evidence. Thank you.

24 (Off the record at 6:25 p.m.)

25 (On the record at 7:00 p.m.)

1           Okay, Tony? Welcome back, everybody. I hope  
2 everyone had an incredible dinner. Let's hear it for --  
3 what's the name of your restaurant again?

4           (Applause.)

5           HEARING OFFICER CELLI: I want to say the name of  
6 your restaurant on the record. Carmello's Restaurant in  
7 Pahrump.

8           We're on the record. It's 7:00. Back from dinner  
9 break. We had public comment before we broke for dinner and  
10 I see that many of the experts are still returning to their  
11 seats, but we have Dr. Schwab here, who is the bird retina  
12 expert and, since that was one of the questions from one of  
13 the members of the public, I thought it would be good if we  
14 could start with that, and then we'll get back into the flux  
15 question.

16           DR. SCHWAB: Thank you. My name is Ivan Schwab.  
17 I'm a professor of ophthalmology at the University of  
18 California, Davis. My research interests include  
19 comparative optics and visual physiology, and I've recently  
20 published a book on the evolution of the eye, which follows  
21 the evolutionary development of these processes.

22           I don't think birds will be harmed by this flux  
23 that we've been discussing, except perhaps in rare cases,  
24 which I'll get into in a moment. Here's why: no animal will  
25 intentionally harm itself with, perhaps, the exception of

1 humans and rats.

2 (Laughter.)

3 And in order to get humans to stare at the sun,  
4 they have to be imbibed with religious zealotries,  
5 psychiatric conditions, or psychedelic drugs, but this  
6 happens. So there are numerous cases of solar retinopathy,  
7 which are well documented and well-studied. The literature  
8 is variable and confusing, but there was a powerful paper  
9 done by Sliney, who is well known in this field, looking at  
10 just what happens. It is not a thermal injury to humans  
11 from the sun. It is done by the short wavelengths -- by the  
12 blue.

13 So, what he did then, was use the blue laser to  
14 find out what level it took to damage the retina of monkeys.  
15 And what he found was that it takes about a ninety second  
16 stare at light intense as the sun to get a threshold burn.

17 So, while I'm not recommending that we stare at  
18 the sun for ninety seconds, it appears, from his paper, and  
19 he states it, that sun gazers could probably look at the sun  
20 for ninety seconds safely. And this corresponds with the  
21 anecdotal literature of a few minutes to get a solar burn.

22 However, that's not what happens to birds or to  
23 the rest of us. We have an aversion response. If you're  
24 driving down the highway in a car, and you have a car in  
25 front of you and the rearview mirror reflects the sun in

1 your eye, you have an immediate aversion reaction. You'll  
2 close your eye on that side, you'll squint, you'll look  
3 away, you'll turn your head, you'll move something to block  
4 it, and you'll do something to get it out of your visual  
5 field immediately. It's painful.

6           Birds will do the same thing. They'll close their  
7 third eyelid, called the nictitans, and they can close it at  
8 about 0.12 seconds compared to your 0.15 to 0.2 seconds,  
9 they're even faster than you are, and their pupil gets  
10 smaller to limit the light flux in.

11           So their response to light will be faster than  
12 yours. But they have another element. They can turn their  
13 neck very easily and they can fly in three-dimensional  
14 space. That means they can fly up or down, right or left,  
15 speed up, turn around -- they will intentionally try to get  
16 out of this field of light.

17           Now, if they fly close enough to the receiver, it  
18 is possible, theoretically possible, that the light will  
19 blind them, at least temporarily, because we know many of  
20 the solar retinopathy cases in humans has gotten better  
21 spontaneously over four or five weeks, to sometimes three  
22 months. So, it is actually rather hard to damage eyes with  
23 light; possible, but it takes some effort.

24           So, what about this question of flux and intense  
25 flux and birds' eyes? Well, there's work in humans that

1 suggests that we can tolerate a brief glimpse - that is  
2 before our lids close - a 100 megawatts per meters squared  
3 or perhaps more, and that's when the sun is at the zenith  
4 and the solstice because as the sun goes down in the seasons  
5 and down during the day, there's blue light, which is the  
6 problem that Sliney showed us in the 70s what damages a  
7 retina.

8           So I suspect, although not proven, that both  
9 humans and birds can tolerate much greater time, duration,  
10 of the solar input, both the flux and the sun -- looking at  
11 the sun while the sun sets, and that's why you can go to the  
12 western horizon and watch the sun set at its closer horizon  
13 for several minutes with no damage, very little after-image,  
14 and if you're a photographer and you check your light meter,  
15 you'll notice, all of a sudden, the light drops  
16 dramatically, even though the sun is on the horizon, because  
17 all that blue light is scattered away. Scattered away by  
18 our atmosphere, by dust, by water vapor, and so on.

19           So I think it is theoretically possible that birds  
20 will have damage to their vision if they fly really close to  
21 the receivers, and I think they will be adverse to doing so,  
22 and I think it will be of little harm. It is my  
23 professional opinion that it will be of little harm to their  
24 vision or their eyes.

25           MR. ELLISON: Dr. Schwab, one clarifying question.

1 You mentioned the figure 100 kilowatts per meters squared,  
2 did you mean to say kilowatts?

3 DR SCHWAB: I'm sorry, kilowatts. Yes. If I said  
4 milliwatts, it's kilowatts.

5 HEARING OFFICER CELLI: Thank you, Dr. Schwab. I  
6 actually asked Dr. Schwab to give his presentation on the  
7 retina because we have members of the public here, and  
8 someone raised the question from Charleston View, and so I  
9 thought we should hear actual evidence on what the effect  
10 would be on the eye of the bird. Did staff have any other  
11 evidence on this, or can we get back to the question at  
12 hand, which is actually the difference in the modeling  
13 between the modeling between staff and applicant.

14 MR. BREHLER: Mr. Celli, Mr. Hass does have his  
15 rebuttal testimony on the ocular aspects.

16 HEARING OFFICER CELLI: Let's hear that.

17 MR. HASS: Oh, it's the same as my rebuttal  
18 testimony submitted. There's no testing, there's no  
19 empirical data. Maybe it makes sense, but there are other  
20 contrary concepts, so I would only tell you that if you, as  
21 a human, do get blinded by the car, you may be able to  
22 recover and you may drive off the road and into a ditch.

23 So, these analogies that try to make us feel fuzzy  
24 warm just don't cut it, from an scientific point of view.  
25 So, unless there's some empirical data, some literature that

1 we can look at, it's very difficult to take this kind of  
2 commentary seriously. That's my ocular comment.

3 HEARING OFFICER CELLI: Staff, let's take a look  
4 at the data that's been presented heretofore, because we --  
5 down at the --

6 MR. BATTLES: We need to pause for a minute.  
7 We're not hearing it through the phone line. I may have to  
8 reset it.

9 HEARING OFFICER CELLI: Okay. Let me just check  
10 something here. Okay, we're back. It's working. Now we're  
11 with staff.

12 MR. TYLER: I'd like to start quickly --

13 HEARING OFFICER CELLI: Mr. Tyler, I want you to  
14 pull that mic right up to you. Thanks.

15 MR. TYLER: There's a couple of things I'd like to  
16 address right off the bat. One was Dr. Johnsen's analogy of  
17 the plate that people held in front of them in the 50s. I  
18 can't conceive of a way that that device can concentrate  
19 solar energy. In other words, if you put a light behind it,  
20 yeah, it can cause one sun on one side and one sun on the  
21 other side of the face, and if it's behind you like this, it  
22 can cause one sun on this side of the face and one sun --  
23 and if the sun's directly overhead, one can be on the face,  
24 but it cannot produce three suns.

25 Secondly, I'd like to talk about the absolutely



1 outrageous statement about the frying pan. The frying pan  
2 is a metal -- is a piece of metal. Metal is a very good  
3 conductor of heat. Feathers are very bad conductors of  
4 heat; they're good insulators. That's why we have down  
5 jackets.

6           The other point I'd like to make is if I put a  
7 piece of firebrick on the top of a flame, I can put it on  
8 indefinitely and it will never get hot, because it's a good  
9 insulator.

10           That's precisely what's happening on the feathers.  
11       When you put energy into the bottom, if you have -- it's  
12 having the feathers on -- overlapping the over feathers.  
13 It's like having a blanket on. So it can't reradiate space  
14 and it can't produce convection on the top. Those are the  
15 reasons we're getting different answers, and at this time,  
16 I'd like to let Geoff Lesh go through it. He is the one  
17 that modeled this. These assertions are just not consistent  
18 with reality.

19           HEARING OFFICER CELLI: You're talking now, and  
20 you say these assertions --

21           MR. TYLER: These ones -- that these things that  
22 lead to the differences that we have on this diagram.

23           HEARING OFFICER CELLI: The diagram is Exhibit --  
24 now what is it called, Exhibit 85, and, since we're on the  
25 topic, I'm going to -- okay, now everybody, you're looking

1 at what has been marked for identification as Exhibit 85.

2 So let's stay with that. Go ahead. Mr. Lesh.

3 MR. LESH: Hi. This is Geoff Lesh.

4 HEARING OFFICER CELLI: Speak right into that mic,  
5 please. Don't look away. (Off mic.) Okay. Sounds better.

6 MR. LESH: It's been a tough day for me. And my  
7 needs right now are more urgent than they were earlier.  
8 Because at this time today, I've been given a failing grade  
9 by not one, but by two professors.

10 (Laughter.)

11 And so I expect that I'm, at the very least, on  
12 academic probation.

13 (Laughter.)

14 And come to think of it, Dr. Johnsen gave me a  
15 failing grade a couple of months ago and I failed to change  
16 my answer, and so twice I might be expelled by next week.  
17 So I would like a chance, if I can, to just redeem myself.

18 (Laughter.)

19 So, I'd like to review my reasoning and see if I  
20 can get credit for it. As we go by what we saw. Well, in  
21 spite of that, first of all, both the professors told me  
22 that this problem is far too complex to model. We used  
23 relatively simple techniques. They were piecemeal on the  
24 bird. So we took a piece of the bird's wing and modeled.  
25 But, in spite of both of them telling me that it can't be

1 done, it's too complex, they both then proceeded to do it  
2 using different numbers. But theirs were more right than  
3 mine. Okay.

4           So, I'd like to be able to address my reasoning  
5 and how we got there. There's three things that really  
6 matter here. If you look at either one of the second two  
7 bars up here, there's the thin red strips. One of them is  
8 sky temperature. It doesn't amount to too much. It only  
9 matters if you are radiating out the top. If you're not  
10 radiating out of the top, the temperature of the sky doesn't  
11 come into the whole equation.

12           The other one father down is the -- it's called  
13 alpha. It's the absorption. They've changed it to 0.95 to  
14 0.85 and that buys you about ten percent in whatever flux  
15 you're going to get. But staff had considered all these  
16 things before, and actually I think we heard all these  
17 things before. So I think we'd like to, if we can, go  
18 through why we're still using the numbers we had before.

19           And we've also learned something else today about  
20 where we should be looking for more reliable data from the  
21 paper that had modeled this before and the only, they say,  
22 best available data for heat transfer from a bird. So, as  
23 it was suggested by one of the professors, that all of us  
24 should take a look at that paper because it's really quite  
25 good. I'd like an opportunity to just take a quick look at

1 it.

2 HEARING OFFICER CELLI: Go ahead.

3 MR. LESH: All right. So, Dr. Johnsen mentioned  
4 that, in his analysis, which is the second bar up there, he  
5 focused his analysis on that part of the wing that was the  
6 most sensitive. That was, I think, the trailing edge  
7 feathers that were probably a thicket boundary layer, maybe.

8 But at the same time assuming that they might dry out, his  
9 analysis, by choosing those feathers at the very tail, means  
10 they're thin, so he was able to say the absorptivity isn't  
11 one minus the reflectivity, because they're so thin that  
12 some of the energy goes right on through.

13 Additionally, because they are so thin, the heat  
14 conducts right through. And so, at the same time, you can  
15 assure that you're getting backside convection losses and  
16 reradiation losses. And because of that, the conductor bar,  
17 as well as the yellow bar. See, the light blue one on the  
18 left and the one on the right come into play.

19 So my question would be, if by choosing those  
20 feathers, you're able to run a safe flux level from, say,  
21 five up to thirty-five, how is it those are the most  
22 sensitive feathers?

23 If you go farther up the wing, in the middle of  
24 the wing, the feathers are thicker. For a dark bird, you're  
25 not getting much transmission, and you're not getting

1 conductivity out the backside. Furthermore, his analysis  
2 assumed the top side of the feather was at the exact same  
3 temperature as the lower side. So he's getting equal  
4 amounts of transfer off the top and the bottom.

5           However, he's assuming, in conducting the heat  
6 from the bottom to the top, that the wing's thickness is  
7 zero. Otherwise, you can't be driving the heat through the  
8 thickness of the wing. But I don't know of any wing that  
9 has a zero thickness. It's reality.

10           So, my premise is that's not the most sensitive  
11 part of the wing, and it's not the appropriate part of the  
12 wing to analyze. Furthermore, in his analysis, he assumes a  
13 fully turbulent flow over the wing surface, but he offers no  
14 explanation of how it got to be fully turbulent. There's no  
15 transition level. There's no theory that qualifies this  
16 particular theory.

17           In staff's analysis, we look at the Reynolds  
18 number, take a theory that's commonly used and, I'm sure,  
19 taught by both of them in universities -- it should be. And  
20 we look at whether the theory predicts it's going to be  
21 laminar or turbulent, and we go with that.

22           Okay. So my point here is I don't think that's a  
23 rational analysis. Scientifically, it can't be justified  
24 and physically, I don't think you can justify it, for those  
25 reasons and you wouldn't pick that area and try to call it

1 the most sensitive.

2           The other factor that made a big difference up  
3 here is one we call view factor. That's the angle that the  
4 sun's coming in. And they, the applicant, claims we're  
5 being unreasonable by saying that. The angle is the cosine  
6 of seventy degrees, basically. Because we say it's coming  
7 straight onto the surface. But the thing that drives that  
8 particular decision on staff's part is that, by doing a  
9 transient model, what we found was that, at high flux  
10 densities, the time constant for the surface to rise to  
11 temperatures to damage the feathers is on the order of just  
12 two, three -- less than ten seconds.

13           So, what we're really looking at is a situation to  
14 damage feathers isn't a steady state situation. Or a bird  
15 that's flying level through the field like a 747, we're  
16 looking at birds like this in which you can produce an  
17 event.

18           Now, we're talking about exposure events that are  
19 plausible. In particular, if you take a three-dimensional  
20 bird with a body, with wings, and put it in any beam, always  
21 there is some portion of that object, which has a view  
22 factor of one, always. As the bird moves around, that point  
23 will vary and moves with the way the bird turns, but we can  
24 never say that any particular part of the bird is not going  
25 to get exposed to a view factor of one. It's just a matter

1 of time if it's a real bird that's not flying like an  
2 airplane.

3           Convection coefficient depends on, as I mentioned,  
4 the laminar to turbulent transition. For what we have read  
5 in the papers, the research papers, birds have a far better  
6 ability to manage the airflow over their wings than any  
7 airplane. In fact, when they look at birds in wind tunnels,  
8 oftentimes the drag and the turbulence on them is worse than  
9 you get on a real bird simply because we can't pose them, we  
10 can't manage them, as the bird has the ability to tweak and  
11 twist and control his wings for optimum flying conditions.

12           Okay. So the other factor we're talking about  
13 here is the middle of the wing is thicker because of  
14 multiple feathered layers. The bird can be dark, as we  
15 mentioned, we are talking about exposure events. A dark  
16 bird comes into the field, he twists and turns. The middle  
17 feathers don't have the luxury of rapidly conducting heat at  
18 the topside. Same is the analogy of the frying pan, if you  
19 take the frying pan and put it on a fire. Actually, you can  
20 put your hand on it for a few seconds, not for long, but  
21 because it's heating up and it takes time for that heat to  
22 diffuse through, the top and the bottom aren't the same  
23 temperature. In fact, for a few seconds, that egg won't  
24 fry. This is what's happening, or could happen on a bird's  
25 wing, because the transient is so short because of the

1 thermal mass of the feathers is so low.

2           So we're not, as the applicant has suggested,  
3 always demanding and always assuming that the view factor is  
4 one. We're not - we're assuming a bird comes in and  
5 twitters about, but if it glides with its wings up or down  
6 or banks, then it is going to be exposed on nearly all  
7 surfaces eventually to a view factor of 1. So we don't  
8 think it's in any way protective to assume it's never going  
9 to be better than 0.3 instead of 1. And then a factor  
10 actually has a direct impact, multiplicatively, on the level  
11 of the safe flux. Could I have my first slide? While he's  
12 looking for that --

13           MR. BREHLER: Mr. Battles, it would be in the --  
14 on that drive in the folder. Staff Flux Presentation  
15 Exhibits in the folder. No, the fourth one down, Staff  
16 Flux, and then Mr. Lesh's, Geoff Lesh's presentation card.  
17 Thank you.

18           MR. LESH: Mike, is it possible to go to the one  
19 that was just up without undoing this one? (Off mic.)  
20 That's good.

21           I wanted to mention in passing that Dr. Johnsen's  
22 analysis assumes a wing of zero thickness. Professor  
23 Caretto's analysis assumed a wing thickness of six hundred  
24 microns. That's a thickness of 0.6 millimeters. That's a  
25 wing thickness equivalent to the lead in our big pencil. If



1 you buy even a cheap, thick pencil, it's either 0.5 or 0.7  
2 millimeters. He's assuming, in order to transfer the heat  
3 out the backside at the rate he's doing it, in his  
4 calculations he's using 0.6 millimeters. For a realistic  
5 safe level of a bird's wing, then you're assuming that the  
6 wing is never thicker than a 0.6 line. I don't think that's  
7 reality. It's not protective of most parts of the bird's  
8 wing.

9           So, both of those things mean that the backside  
10 convection that they have estimated, where you're radiating  
11 off the top side, you're convecting off the top side, both  
12 of those numbers are way exaggerated from any kind of  
13 reality. But even more, in front parts of the wing, you're  
14 not getting -- you're not going to be getting any  
15 substantial convection out the backside at all, so you can  
16 take off all the backside in staff's opinion.

17           Okay. Part of what we also heard earlier was,  
18 when we had this slide up, is that staff's model is --  
19 doesn't calibrate, that it's not predictive of anything and  
20 hasn't been. As a career experimenter, I tend to be  
21 paranoid about most of these things, so I keep asking  
22 myself, where could I be fooling myself? Is this realistic?

23           Next. This is one of the things that's in staff's  
24 -- back one. Back one more. Good. This happens to be  
25 something that staff referenced. It's from a fire science

1 journal. And, basically, it refers to an ASTM test  
2 procedure. What you see here is a thing where they test  
3 materials with radiant energy. Along the bottom, as you  
4 heard earlier, you can multiply that number by ten. So the  
5 bottom scale on the x-axis goes from zero to fifty kilowatts  
6 per square meter. So, that's really what we're talking  
7 about, in the range of what staff and the applicant are  
8 saying, this is where we think the numbers -- somewhere  
9 between these two. Somewhere between zero and fifty.

10 Now, there's one other typo on here, which I've  
11 gone back and verified from the original paper, because this  
12 textbook referenced another paper, and they had -- they had  
13 a typo on this, so I went back to the original paper and  
14 made sure it made sense. There's another number up here, if  
15 you look at the box. At the very bottom, where it says  
16 theory, it has a convective heat transfer coefficient there.

17 That coefficient -- it says fifteen watts per centimeter  
18 squared. That should be per meter squared. Otherwise, it  
19 would be ten thousand times bigger than it really is. And  
20 the kind of numbers that we in staff are talking about for  
21 this convection -- staff is saying twenty-eight. The  
22 applicant is saying numbers up to sixty-three. So we're in  
23 that -- we're in that ballpark.

24 Now, the staff's model, because it includes  
25 convection off the front surface and radiation energy going

1 in, we can simulate that convective heat transfer  
2 coefficient. We can actually set it to fifteen. Everybody  
3 has the model who wants it; it's available. And what we get  
4 from the model, then, is exactly that line, the one they  
5 call theory. It matches identically. Now, the points along  
6 that line are materials test results from the fire industry,  
7 and they've tested the things that are listed in the box  
8 here. One of them says a perfect insulator; one of them  
9 says an aircraft panel that's 2.54 millimeters --  
10 centimeters, that's an inch -- an inch thick.

11           And what they do in this particular test is  
12 measure the fire resistance in materials, but they expose  
13 them to a radiant heat from a hot source that has a  
14 wavelength not the same as the sun, but the average of the  
15 wavelength is only off by a couple of microns. So it's very  
16 close, and there's substantial overlap in the spectra. What  
17 they find on here is, when you leave them in there, the  
18 surface goes to a temperature that matches the theory.

19           Pretty much -- I mean, you can see the effects  
20 that these things have different absorption coefficients.  
21 One of them is black. The other ones are -- one's particle  
22 board. They rise to a temperature, and what they -- what  
23 they measure on here is -- or, what they use this test for  
24 is determining the self-ignition temperature.

25           But the point is -- for us is that we can set our

1 model to those conditions and see if we get the same number.

2 And we do. All the way down to five, all the way up to  
3 fifty. That's -- that's one calibration. Still, it's not  
4 exactly the same, but we're experimenters and we're actually  
5 working with the only heat transfer model that we had  
6 available. That's why we developed our own - there was none  
7 available.

8           The other point of calibration on here would be  
9 the experiments done by Mr. Santolo, where he hung his birds  
10 at -- in the sun at fifty kilowatts. He had, for instance,  
11 a chicken or a pigeon. At fifty kilowatts and above, he got  
12 charring of the feathers. That temperature and the curve  
13 showed by Dr. Greenberg indicates a temperature where you  
14 pretty much carbonized everything. Things are stable, and  
15 now you're up to around -- close to 450, 550 degrees. And  
16 that pretty much correlates with what you get.

17           Now, when we modeled Dr. Santolo's experiment, we  
18 had to take, again, a view factor of one, but we actually  
19 set it to the real view factor that's just off of normal, so  
20 it would be -- twenty degrees off of straight on is actual  
21 test conditions. We set the wind speed down to, I think it  
22 was, one meter per second, because it was not flying - it  
23 was stable. And we got temperatures that were consistent  
24 with his results. So, another thing that said, okay, it's  
25 -- as far as we can tell it's pretty good for that.

1 Question?

2 PRESIDING MEMBER DOUGLAS: Yeah, Mr. Lesh. Many  
3 questions - several questions. If this is a good time,  
4 really, I'll ask questions of both you and applicants  
5 witness. Thank you, Mr. Celli. We spend so much time  
6 reminding people to use their microphones that sometimes I  
7 need help, too. One question on this chart: what's the time  
8 of exposure in this study?

9 MR. LESH: In this one, they leave it -- it's not  
10 a short duration. Because they're using things that are  
11 thick with a high thermal conductivity, it takes a while for  
12 their surface to come up to temperature.

13 PRESIDING MEMBER DOUGLAS: Okay. So, hours? Or  
14 minutes?

15 MR. LESH: I'm thinking it's like ten minutes.

16 PRESIDING MEMBER DOUGLAS: Okay. Something like  
17 ten minutes. All right.

18 MR. LESH: Well, actually, it's a time to come to  
19 equilibrium, and it would vary with the material.

20 PRESIDING MEMBER DOUGLAS: Got it. That makes  
21 sense. All right, a couple questions here, and what I'm  
22 really trying to do is just to make sure that I understand  
23 some of the primary difference and assumptions that are  
24 driving the differences in results. So, one question for  
25 you, Mr. Lesh. I think it was Dr. Johnsen who said that --

1 compare the 0.95 kind of absorption -- heat absorption  
2 number to something the color of asphalt, and he -- I think  
3 he suggested that the darkest bird that he could find might  
4 have had a .85 number?

5 MR. LESH: Yes.

6 PRESIDING MEMBER DOUGLAS: Can I ask you to  
7 respond to that assertion?

8 MR. LESH: Could I have two slides down? That was  
9 an eagle we just passed by, sort of -- it was just showing  
10 that it can bank. This is a -- a graph that was referenced  
11 by Dr. Johnsen in his rebuttal testimony, so this is from  
12 his particular paper. This is where he got his numbers.  
13 Now, what you see here is we're not looking at absorbance,  
14 we're looking at reflectance on feathers.

15 PRESIDING MEMBER DOUGLAS: Okay.

16 MR. LESH: So, one minus the absorbance is the  
17 reflectance. So, if you're concerned about an absorbance of  
18 0.85, then you're looking for a reflectance, as they show  
19 here, of 0.15, okay?

20 PRESIDING MEMBER DOUGLAS: Yes.

21 MR. LESH: So we're looking at the complement. As  
22 you go -- this is a logarithmic scale on the y-axis, and  
23 across the x-axis, we're looking at wavelength. So, this  
24 goes from four hundred microns -- or nanometers, rather, up  
25 to seven hundred and fifty, so this is essentially the

1 visible spectrum. I think, between staff and the applicant,  
2 they have agreed that, when you go up into the infrared  
3 wavelengths, most things are -- are freely-absorbing and  
4 freely-emissive as well. So, as you go up to the higher --  
5 let me not get ahead of myself. We're talking about  
6 absorbance.

7           As you go up into the infrared, I think we agree  
8 that most things are highly absorbent, so those numbers  
9 would be about 0.95, 0.9, somewhere like that. But things  
10 with color -- the reason you see the color in the visual  
11 spectrum is because there's a -- there's a notch in this  
12 curve. So, for instance, if the absorbance suddenly goes  
13 down for some particular wavelength, or, in this case, the  
14 reflectance goes up for a wavelength, when you see that  
15 thing in the sun, that's the color you see. Because the  
16 wavelengths of yellow are what it's reflecting, and it's  
17 absorbing the other ones.

18           PRESIDING MEMBER DOUGLAS: Okay. But, Mr. Lesh, I  
19 guess I'm going to ask my question even more simplistically.  
20 Why wouldn't you set a conservative assumption at, say, the  
21 darkest bird that you can identify, as opposed to a more-  
22 absorbing number than that?

23           MR. LESH: Okay. In this one, I think the bottom  
24 line there says black. It's a black bird -- I think it's  
25 running about -- about ninety-one percent absorbance.

1           PRESIDING MEMBER DOUGLAS: Okay.

2           MR. LESH: .91, roughly. I'm not certain why Dr.  
3 Johnsen couldn't find anything higher than 0.85, but this is  
4 from his reference. Could I have the next slide, please?  
5 This is another paper that -- on the bottom here -- all  
6 these things have been previously referenced in our  
7 testimony. The references are at the bottom. What you're  
8 looking at here is a feather. We're looking at reflectance  
9 again, and we have the feather in two different  
10 orientations. As it turns out, reflectance has a property  
11 they call anisotropy. So, it varies with the direction.  
12 That's why things can be iridescent, so that you look at it  
13 one way, it's brighter, and you walk around it and sometimes  
14 the color changes, sometimes the brightness changes. It's a  
15 property of certain optical absorbers; that's how you make  
16 certain kinds of filters.

17           In this one, you see the black line at the bottom.  
18 This is an integrated sphere, so you're looking at all the  
19 angles, basically. One of them, it looks like, on the left  
20 side, if you average across the visible spectrum on the  
21 bottom, it's about 0.93, maybe. If you look at the one on  
22 the right, maybe 0.95.

23           Now, another discussion that we put into our  
24 testimony, as well as references to justify, is that any  
25 surface that gets dirt and dust, roughness on it, the



1 absorbance goes up. The reflectance goes down. So, if  
2 something is shiny and you throw a bunch of dust on it, it's  
3 not so shiny anymore. And we -- our conservative assumption  
4 is a bird's black.

5           So that gets us to these numbers that are above  
6 ninety, and, if you assume that it's not taking a regular  
7 bath in the desert, it might be dusty. It might be up to  
8 0.95. We didn't say a hundred, we just pushed it a couple  
9 of percent.

10           PRESIDING MEMBER DOUGLAS: So, even if the dust is  
11 a lighter color than the bird, the dust will still raise the  
12 absorbance on the bird?

13           MR. LESH: Yes.

14           PRESIDING MEMBER DOUGLAS: Okay. Dr. Johnsen --

15           MR. LESH: Yes, it -- as it turns out, you have a  
16 surface with multiple reflections going on, so a light  
17 particle comes in and can be reflected from multiple  
18 surfaces, and, each time it gets reflected, it absorbs some  
19 of the energy.

20           PRESIDING MEMBER DOUGLAS: Okay. Thank you. Dr.  
21 Johnsen, same question -- actually, did you have any  
22 response to Mr. Lesh's response to my question? And then  
23 I've got another one for you.

24           DR. JOHNSEN: Yeah, I do. My --

25           PRESIDING MEMBER DOUGLAS: Microphone, please.

1 DR. JOHNSEN: Am I loud enough?

2 PRESIDING MEMBER DOUGLAS: No.

3 DR. JOHNSEN: Yeah, I'm still talking. One, two,  
4 three - nothing?

5 PRESIDING MEMBER DOUGLAS: Go ahead.

6 DR. JOHNSEN: All right, keep going?

7 PRESIDING MEMBER DOUGLAS: Yep.

8 DR. JOHNSEN: All right. Yeah, actually, I do,  
9 and, sort of in the interests of time, I'll just hit them  
10 really briefly.

11 PRESIDING MEMBER DOUGLAS: Please do.

12 DR. JOHNSEN: So, first of all, as far as people  
13 holding mirrors -- I mean, my feeling is that BrightSource  
14 can aim 80,000 mirrors on a tower from a mile away; somebody  
15 sunbathing can aim three mirrors from a foot away.

16 PRESIDING MEMBER DOUGLAS: Dr. Johnsen, I wasn't  
17 actually asking you about everything.

18 DR. JOHNSEN: Oh, I thought you wanted me to.

19 PRESIDING MEMBER DOUGLAS: I was asking about  
20 absorption.

21 DR. JOHNSEN: Oh. Actually, the values that I put  
22 the most stock in are from a classical text called  
23 "Biophysical Ecology." And what they actually do is they  
24 look at the spectrum and they create what's called a solar-  
25 weighted absorptivity, which is the absolute correct thing

1 to do. And they provide a large table for mammals and  
2 birds. And in that table, the highest absorbance I found  
3 was .85.

4 PRESIDING MEMBER DOUGLAS: Okay.

5 DR. JOHNSEN: I'm not saying that there isn't a  
6 bird out there that isn't higher - I'm sure there are, but  
7 it's also very important to realize that one minus -- you  
8 know, a hundred percent minus reflectance is not absorbance,  
9 because, if you're talking about a thin layer of feathers,  
10 then you can also have transmittance.

11 PRESIDING MEMBER DOUGLAS: Right.

12 DR. JOHNSEN: And absorbed light is what is not  
13 transmitted or reflected, not just what's not reflected.

14 PRESIDING MEMBER DOUGLAS: Right, and you went  
15 straight into what was going to be my question, because  
16 Mr. Lesh mentioned that you had assumed a -- either very  
17 thin feather, or a feather that had, what, no thickness?  
18 What was the thickness of the feather that you assumed, or  
19 you used?

20 DR. JOHNSEN: Oh. So, I assumed that it was about  
21 a feather or two thick, and this is, I suppose -- you know,  
22 in some ways, the heart of the matter is that the staff  
23 chooses a threshold of 160 degrees Celsius. And, at that  
24 temperature, the one thing they can point to is that the  
25 mechanical properties of the feather may be different, and

1 that this may affect life. For that to occur, it has to be  
2 on the main flight surface of the wing in the back, where  
3 the changing mechanical properties of one feather would  
4 significantly affect flight, and so if they want that -- you  
5 know, if they want that assumption, and we're granting them  
6 that assumption, you have to assume that you're modeling the  
7 back half of the wing, which is a feather or two thick. And  
8 then, if you, let's say --

9 PRESIDING MEMBER DOUGLAS: Mr. Johnsen, let me see  
10 if I just understood what you said so far, and I'm sorry to  
11 interrupt. In the interest of time, you said you chose a  
12 very thin feather because you were looking for a part of the  
13 bird where injury to one feather would affect its flying?

14 DR. JOHNSEN: Well, also where injury to the  
15 mechanical properties of a feather would affect flight. If  
16 you change, let's say, the stiffness of a plumage feather on  
17 the body, that's going to have a minimal effect. If you  
18 change the stiffness of one of the feathers on the leading  
19 edge, it will likely have a minimal effect. However,  
20 changing the stiffness of the feathers farther back may have  
21 an effect.

22 So this the only region that should really be  
23 modeled if you use 160 degrees Celsius as a threshold point.

24 If you choose a higher threshold, where you start getting,  
25 yes, singeing, carbonization, so on, then you might want to

1 start thinking about other parts of the body.

2 PRESIDING MEMBER DOUGLAS: Okay. That's all --  
3 and so the effect of backside convection, you know,  
4 convection from essentially the top of the wing, do you  
5 agree with Mr. Lesh that that would occur more -- I'm going  
6 to start over.

7 Okay, so, it seems pretty obvious that a single  
8 feather is more translucent, allows more light through than  
9 a wing, and so less of the energy would be captured,  
10 essentially, by the wing, if you're looking at a feather as  
11 opposed to the wing. So, I'm, I guess, questioning whether  
12 that's a point of agreement, that if you had used a thicker  
13 feather or the wing, would you have assumed more heat being  
14 captured and less being transferred?

15 DR. JOHNSEN: Yes.

16 PRESIDING MEMBER DOUGLAS: Okay.

17 DR. JOHNSEN: But I would have chosen a different  
18 threshold.

19 PRESIDING MEMBER DOUGLAS: Understood. That's  
20 very helpful. Okay. Let's see. So, another question I  
21 have is this issue of assumptions about turbulence, and so  
22 this question -- I guess I'll go to Mr. Lesh just to mix  
23 things up. I kind of understood from the discussion that  
24 each of you used the laminar versus turbulent kind of  
25 dichotomy as a binary choice, but I wanted to verify that.

1 I mean, did -- Mr. Lesh, did you choose kind of fully-  
2 laminar - in other words, completely smooth, not factoring  
3 in turbulence - in your model?

4 MR. LESH: We looked at the -- yes.

5 PRESIDING MEMBER DOUGLAS: Yes.

6 MR. LESH: Well, we don't assume it. We look at  
7 the flight speed, the cord length -- you're assuming a flat  
8 plate, and you get a number for a Reynolds number. The  
9 Reynolds number, before -- as you go back along the wing,  
10 the Reynolds number goes up, and we're talking about a six-  
11 inch wing here. So, as you go from the front to the back,  
12 the Reynolds number actually goes up with position as you go  
13 back. On a six-inch bird flying eighteen miles an hour, it  
14 goes from roughly zero to 68,000 at the very back.

15 PRESIDING MEMBER DOUGLAS: Okay.

16 MR. LESH: And the threshold is conventionally  
17 used in all the textbooks and taught and has been largely  
18 unchanged for a long time. If you're assuming, again, a  
19 simple model of a flat plate, the threshold is around  
20 500,000 - so it's half a million. We're at a fraction of  
21 100,000. You know, we're less than a tenth of that. So, we  
22 conservatively and confidently assumed that this bottom  
23 surface of the wing - that's what we're talking -- not the  
24 top surface, the bottom surface, which has an attack angle,  
25 so the air is coming in at the surface, will be laminar.

1           PRESIDING MEMBER DOUGLAS: Okay. Thank you. You  
2 answered both questions - very good. So, Dr. Johnsen, same  
3 question, really.

4           DR. JOHNSEN: Yeah.

5           PRESIDING MEMBER DOUGLAS: You said that you  
6 assumed turbulence, and turbulence dissipates heat more, but  
7 is this a binary choice? How reasonable is the --

8           DR. JOHNSEN: Okay. Yes, so, first of all,  
9 Reynolds number does not change as you move down a wing.  
10 The other thing is that the 500,000 value for Reynolds  
11 number - that's for a perfectly flat plate. This is a  
12 condition where it -- you know, it's almost like damping  
13 turbulence, it's so difficult to get to. The most natural  
14 situation, switching over to turbulence, happens with much  
15 lower Reynolds numbers. And, in addition, you have to  
16 remember the wing's flat, and what you usually see in these  
17 things is that, at the leading edge, the flow is relatively  
18 laminar.

19           Then, as you move down the wing, it becomes more  
20 and more turbulent, and then you end up with a turbulent  
21 wake. And so, again, because I was interested in sort of  
22 the back two-thirds of the wing under the main flight  
23 surface, this is the area where you have turbulent flow.

24           The difference in how this affects a model is  
25 actually not that large, because they come up with a number

1 of 28.5 and I came up with a number of 35.9, so it may be a  
2 bit of a tempest in a teapot to argue about it, especially  
3 since, to my knowledge, nobody has actually measured the  
4 exact flow over a wing. They've definitely measured the  
5 turbulence of the wake and I've -- because I sort of  
6 obsessed about this for a while for this hearing, I asked,  
7 you know, really the top experts in the world on bird  
8 flight, and their basic answer was, yeah, it'll be somewhat  
9 laminar at the leading edge and then it'll become turbulent  
10 from there on. That's sort of the best answer anybody can  
11 give at the moment, because it's actually a very difficult  
12 thing to model or to even measure.

13           PRESIDING MEMBER DOUGLAS: All right. But that's  
14 helpful to understanding that better. Okay, another  
15 question. I guess I'll start with Mr. Lesh. You know, Mr.  
16 Lesh, you had said that, you know, in terms of birds flying  
17 and banking and shifting and so on, you're not assuming the  
18 bird's going through this field like a jet plane - you  
19 recognize that it's moving in various and unpredictable ways  
20 and your assertion, which sounds very reasonable, is that  
21 some part of this bird is exposed to a view factor of one at  
22 all times, and it's sort of a matter of getting to, I think  
23 you said, two to ten seconds of exposure.

24           I guess I've got two questions on that. One is,  
25 is this really a beam that we're talking about? Because the



1 picture that you put up -- or that staff put up kind of  
2 looks like a field. It kind of looks like energy's coming  
3 from mirrors from a lot of different directions, and it's,  
4 you know -- it doesn't particularly look like the shape of a  
5 beam to me, and so I'm just kind of wondering how that  
6 works. Let me start with that.

7 MR. LESH: Okay. My understanding is that each --  
8 each heliostat produces, essentially, a beam that has a long  
9 focal length, coming from each mirror. So each one produces  
10 a beam. All those beams are pointed towards the boiler.

11 PRESIDING MEMBER DOUGLAS: Yes.

12 MR. LESH: So, as you go from the outer side of  
13 the field - if you were, for instance, at the last row in  
14 the outside of the field and you were flying at the right  
15 height where you're intercepting the beams, you would see  
16 one beam, no beam, one beam, no beam as you went between  
17 mirrors.

18 PRESIDING MEMBER DOUGLAS: Yes.

19 MR. LESH: As you go closer to the tower, the  
20 beams overlap. They're coming from an angle, a spread angle,  
21 because, if you've ever seen a picture of the light coming  
22 -- coming towards a tower in a picture taken from the tower,  
23 you see bright mirrors from a range -- an angle, it's like a  
24 pie shape. Essentially, you're getting -- you're standing  
25 in the zone where all those individual beams have converged.

1 So, from the picture you saw earlier it's -- it's a cloud,  
2 but all the beams are pointed from the outside to the  
3 inside.

4 PRESIDING MEMBER DOUGLAS: It's a cloud, and, I  
5 guess, thinking about beams, I would have expected the shape  
6 to be kind of like a cone, and instead it looked like a  
7 cloud. I was just trying to understand that, and -- and I  
8 see applicant's witness -- go ahead, Mr. Franck.

9 MR. FRANCK: I want to refer about that image  
10 because I think it is misleading. The first image that  
11 Mr. Tyler showed was from a very early workshop as a  
12 conceptual image of what it's going to be, and after that  
13 image that -- they were not satisfied by that, which I can  
14 understand why. We actually worked on a model, which was  
15 not actually satisfying enough, and worked on a very  
16 accurate model, which we presented. It was a joint workshop  
17 - I don't know the number, but I think we can find it. I  
18 know staff have it, because on their presentation of today,  
19 on Ms. -- I forgot your name, you'll have to excuse me.

20 MS. WATSON: Carol.

21 MR. FRANCK: Yes. Carol. She used those analyses  
22 - I'll be happy to explain them. They're much more  
23 explanatory you can see that the area covered by flux there  
24 is lower, smaller -- the high-density flux, which is where  
25 the problem lays, the fifty kilowatt, is really in a very

1 small portion near the tower. So I'll be happy if we can  
2 show it to them, because I think that will clear to the  
3 Committee much better. What is a flux, what we're talking  
4 about, what is in the section, what is the size of it?

5 PRESIDING MEMBER DOUGLAS: Okay. Thank you.

6 MR. ELLISON: Actually, Mr. Franck, if I could  
7 just clarify: when you referred to the first image that the  
8 staff showed, you were referring to the one with the  
9 building?

10 MR. FRANCK: Yes, I referred with the one with the  
11 building that looks like clouds.

12 MR. ELLISON: And so what you were saying is that  
13 that was simply not a to-scale model, it was simply a  
14 conceptual --

15 MR. FRANCK: This is not for -- it was not a model  
16 at all. It was -- the only scale thing there is the height  
17 of the tower. All the rest there is a conceptual idea that  
18 was to explain in a very -- one of the first workshops, to  
19 explain what it is.

20 MR. ELLISON: So it doesn't represent the size of  
21 the flux field relative to the building at all, is that  
22 correct?

23 MR. FRANCK: Not size or shape.

24 MR. ELLISON: Okay. Thank you.

25 HEARING OFFICER CELLI: Mr. Brehler.

1           MR. BREHLER: Yes, I would point out that the  
2 image that Mr. Franck is referring to that Ms. Watson used  
3 in her testimony is the one that BrightSource provided. And  
4 we took the data that was provided for that image and  
5 converted it into Exhibits, I believe, 306 through 309, and  
6 we'd be happy to put those up on the screen -- 304 through  
7 309, and we'd be happy to put those up, which show the, I  
8 guess, the more refined model, and some of it's academic  
9 anyway, because the point of the image is simply to show  
10 that the volume of airspace at or above fifty kilowatts per  
11 square meter versus five or ten kilowatts per square meter  
12 changes dramatically at this proposed facility.

13           PRESIDING MEMBER DOUGLAS: Okay, but thank you,  
14 Mr. Brehler. I don't have a burning desire to see the  
15 image, but I see that this has sparked some desire to  
16 participate among some of our witnesses. Let's start with  
17 staff and then we'll go to Mr. Rubenstein. Go ahead.

18           MR. TYLER: If I had actually --

19           HEARING OFFICER CELLI: Mr. Battles, let's put  
20 that image up.

21           PRESIDING MEMBER DOUGLAS: Go ahead and put the  
22 image up.

23           MR. TYLER: I had been the person that actually  
24 added that building to that -- to that depiction. Actually,  
25 if I added that building to the depiction they're talking

1 about, it wouldn't look dramatically different. As a matter  
2 of fact, the field would look even larger, because it would  
3 show it clear out to five.

4 PRESIDING MEMBER DOUGLAS: I understand. It's  
5 just -- it definitely -- it looks more like an umbrella  
6 than, you know, a cone, and that's what I was curious about,  
7 but my question has been answered, I think, the best it can  
8 be. Go ahead.

9 MS. WATSON: I believe if you look at staff's  
10 Exhibit 311, that's a little bit better depiction. It was  
11 in my presentation, Mike, it should be the third slide, the  
12 third PDF. That's fine. Oh, sorry, no, that was it. It's  
13 a little hard to see, but if you look at it below, say, at  
14 the top figure, below the flux field, well below it, you can  
15 see a little notch out that says the top of the SEDC tower,  
16 and then the pink shading to the right indicates, I believe,  
17 the size of the flux field, so I think, perhaps, that's a  
18 bit better depiction of the sizes in relation to each other.

19 And another good point that we haven't really been bringing  
20 out today is that there's two towers, not just one.

21 PRESIDING MEMBER DOUGLAS: Mr. Franck.

22 MR. FRANCK: Well, I want to -- first of all, on  
23 that picture, I would just comment that if you can see from  
24 there the light blue or teal color, that's the fifty  
25 kilowatt, meaning that is anything above twenty-five,

1 because what we've done is ten kilowatt -- everything  
2 between ten and twenty-five, we've marked it as twenty-five.

3 Anything between twenty-five -- twenty-six and fifty was  
4 marked as fifty, and so on. So the teal color, very close  
5 to the tower, that's actually the fifty kilowatt. That's  
6 not a good resolution on that.

7 MR. ELLISON: Mr. Franck, can I ask you to use the  
8 laser pointer, just so that we're --

9 MR. FRANCK: It's too small - I don't know if I  
10 can. Actually, what I would appreciate if -- what I can  
11 appreciate if we can do, this is the fifty --

12 MR. RUBENSTEIN: Mr. Battles, can you blow that  
13 up, expand it further? Zoom in to it?

14 MR. BATTLES: Zoom in?

15 MR. RUBENSTEIN: Just the top. Zoom in to the top  
16 on it, because it will be better to -- easier to see the  
17 color distinctions.

18 MR. FRANCK: Thank you. So, this area here, this  
19 is the teal that I was talking about - that's the area of  
20 fifty kilowatts per square meter. This is the area of  
21 twenty-five, this is the -- so between -- the rest is five  
22 and ten, but on this projection, we can't really see the  
23 difference. Between the five and the ten kilowatt, I think  
24 there's about -- well, I can't really tell that, but if we  
25 can -- we have a slide there with the top view. It is on

1 the same data response; although it's Rio Mesa south tower,  
2 it's the same technology, the same facts. We took a worst  
3 case scenario there. If we can see that, we can actually  
4 see from a top view what it is. It's not on this slide --  
5 can you direct --

6 MR. RUBENSTEIN: Mr. Celli, if I can help with the  
7 record as to what this document is --

8 HEARING OFFICER CELLI: Please.

9 MR. RUBENSTEIN: Both the graphic that was in the  
10 staff's presentation today and the graphic that Mr. Battles  
11 is about to show - both come from a document that was  
12 Transaction Number 66280, and that was a data response filed  
13 in Rio Mesa on the same issue. It was presented at a joint  
14 workshop on both projects, and it was Data Response Number  
15 159. And I would suggest, since both parties are using it,  
16 perhaps you might want to --

17 HEARING OFFICER CELLI: Mr. Carrier, can you look  
18 that up and then give us an exhibit number? That would be  
19 great. Thank you for -- I appreciate that. We just want to  
20 know that whatever we're talking about in the record is  
21 identified.

22 MR. FRANCK: Did you find the slide?

23 MR. BREHLER: I'm sorry, what's the exhibit and  
24 transaction number again?

25 MR. RUBENSTEIN: It was submitted in the Rio Mesa

1 proceeding. It was Transaction Number 66280. And the  
2 narrative is that it was July 20<sup>th</sup>, 2012, Data Response Set  
3 2A, Number 159.

4 MR. ZELLHOEFER: Mr. Celli --

5 PRESIDING MEMBER DOUGLAS: Who's speaking?

6 MR. ZELLHOEFER: Jon Zellhoefer. While he's  
7 looking that up, would -- would the -- would the chair  
8 indulge me one question, which, if I was in the legal  
9 (unintelligible) would definitely go to relevance, but one  
10 question that I would like to address to our bird ocular  
11 specialist. Because it may make --

12 HEARING OFFICER CELLI: You know, I -- it's just  
13 that we're in the middle of something right now. If I can  
14 finish the thought before we get to -- I'd like to have some  
15 closure on this question.

16 PRESIDING MEMBER DOUGLAS: Have we found this  
17 document, this picture yet?

18 MR. FRANCK: Yes. Okay. This is the top view,  
19 and this is also answer the question, okay, there's two  
20 towers. Yes, this is two towers. So, what do we see here?  
21 That -- I don't know how to call it, that kind of a darker  
22 blue color, that's the five kilowatt per square meter.  
23 Anything above that is less than five. That teal color here  
24 is the ten; then we have the twenty-five, the green one.  
25 And if he can really enlarge that one -- okay, and go



1 actually lower than that one. Below that one there's a zoom  
2 in that we made on a high resolution - just the same page,  
3 below this image. Here it is. Okay. This is three hundred  
4 meters -- the fifty is the only -- the yellow one. Twenty-  
5 five kilowatt is the green one, and, again, it's everything  
6 -- if I say fifty, it's everything between twenty-six and  
7 fifty. If I say twenty-five, it's everything between ten  
8 and twenty-five. Ten is -- is this area. So, you only get  
9 you only get closer to the fifty if you are less than fifty  
10 meters away from the receiver, and just to put things in  
11 perspective and above (un), maximum permitted -- I'm not  
12 going to go into maximum permitted exposure on eyes, you  
13 know what, that's -- we have another expert. But just --  
14 this is just to make things in perspective. We're talking  
15 about a very small area inside this project. Okay?

16 PRESIDING MEMBER DOUGLAS: Thank you. Thank you.  
17 That's very helpful. So, Mr. Tyler, you've been patient,  
18 and we'll go to you -- we'll go to you now. Go ahead.

19 MR. TYLER: Okay, the -- the one thing that I want  
20 to make very clear here is the point I made before. This is  
21 like a mountain. Each one of those lines is an isopleth.  
22 So, when you go from the green to the light green, you're  
23 transitioning all along that to the higher flux level. So  
24 that's not a -- that's not a volume that's at a fixed flux  
25 level.

1 PRESIDING MEMBER DOUGLAS: Understood.

2 MR. TYLER: Okay?

3 PRESIDING MEMBER DOUGLAS: Thank you. All right  
4 question for Mr. Lesh. I'm just going back and wrapping up  
5 the two- to ten-second exposure issue, so -- so your  
6 position -- this could be for anyone on staff, whoever is  
7 appropriate to answer, your position was that 160 degrees  
8 Celsius for two to ten seconds, that's the kind of threshold  
9 where you might see damage to the bird's wing?

10 MR. LESH: That time depends on the intensity of  
11 the flux. So, the higher the intensity, the faster you get  
12 to 160.

13 PRESIDING MEMBER DOUGLAS: Right.

14 MR. LESH: In staff's appendix Bio 2 -- Bio 1,  
15 rather, we offer graphs done from the model that show the  
16 temperature versus time, and you can actually see rise  
17 times. It also tells you the exact time from flying from  
18 the edge of the field to where we would predict you would  
19 hit 160. If you look at the slope on those graphs, they  
20 actually show you the flux at any position in the field;  
21 they show you the temperature at any position in the field.  
22 If you look at the slope of the temperature curve, it'll  
23 tell you, using one of the axes at the bottom, the exact  
24 rise time in degrees per second.

25 PRESIDING MEMBER DOUGLAS: Okay.

1 MR. LESH: And I don't know those numbers off the  
2 top of my head.

3 PRESIDING MEMBER DOUGLAS: Okay.

4 MR. LESH: But they do vary with flux intensity,  
5 of course, and we don't know where the bird is.

6 PRESIDING MEMBER DOUGLAS: Does anyone on  
7 applicant's side want to address that question, just the two  
8 to ten second question?

9 MR. SANTOLO: Yes.

10 PRESIDING MEMBER DOUGLAS: Yes?

11 MR. SANTOLO: This is Gary Santolo. Well, I  
12 looked at birds, thirty-six of them, and, below fifty  
13 kilowatts per meter squared, at times longer than two to ten  
14 seconds, I found no effects. And I think that -- I have a  
15 lot of experience with birds, and I think that, if there was  
16 an effect on a feather that would keep the bird from being  
17 able to fly, I would be able to observe it.

18 Now, the singeing, it's a very small band of  
19 singeing. These are very obvious effects. The small band  
20 of singeing is when the feather first starts to be damaged.  
21 Then it goes rapidly to carbonized. So that thin area of  
22 singeing is likely where the water is pulled out of the  
23 feather, and it's probably very rapid, and it has to get up  
24 to a temperature to break the tight bonds that hold the  
25 water to the feather. But, you know, holding a bird in

1 fifty kilowatts per meter squared, stationary, for twenty  
2 seconds, means that some part of that bird had a view factor  
3 of one for the whole time, and, like I say, below fifty, we  
4 did not see any singeing.

5 PRESIDING MEMBER DOUGLAS: Thank you.

6 HEARING OFFICER CELLI: At this time, I'm going to  
7 open it up to the other parties and we're -- I want to limit  
8 this to the modeling, because we just want to get through  
9 this avian flux modeling --

10 MR. ELLISON: Mr. Celli, if I could. I apologize,  
11 but I know that our panel had a couple of responses to  
12 things that staff had said previously, and you were going to  
13 start with staff, and then we got into questions. If we  
14 could have just a moment for them to respond to staff, I  
15 would appreciate it.

16 PRESIDING MEMBER DOUGLAS: Let's do that, but I'd  
17 like to encourage the entire panel to refrain from any more  
18 comparisons to frying pans and mirrors and stuff and just  
19 stick to the models, please.

20 (Laughter.)

21 MR. CARETTO: Also, I wanted to apologize just for  
22 using some --

23 HEARING OFFICER CELLI: I need to hear -- we need  
24 you to use your microphone.

25 MR. CARETTO: I wanted to apologize just for the

1 example of the frying pan. I didn't say it was an extreme  
2 case, because certainly it was what it is. But people said,  
3 gee, you know, they -- where'd they get these data? The  
4 feathers were so thin -- they're the staff's data.  
5 Basically, most of the data that I've used comes from the  
6 staff report. The thickness of the feather, the  
7 (unintelligible) in the feather, which led to my calculation  
8 that the top of the temperature is the temperature of 120  
9 degrees Celsius, which is why there's such heat transferred  
10 with the air at 45 degrees Celsius, comes from their data,  
11 so if their data were wrong, I apologize, but I used their  
12 data. The (unintelligible) degrees, that comes from their  
13 data as well, so, again, most of my calculations have been  
14 based on their data. Well, the staff said that the bird was  
15 not an airplane -- we agree completely. In fact, that's the  
16 whole basis of our argument. That's why we're using  
17 measured heat transfer coefficients for a flying bird.

18 HEARING OFFICER CELLI: Can you hold that mic up  
19 closer to you? You're fading out.

20 MR. CARETTO: We agree with the staff that a bird  
21 is not like an airplane. And that basis is why we're using  
22 -- why I use an experimental heat transfer coefficient. The  
23 test that the staff says that their model agreed with - our  
24 model agreed with that as well. Why is that? Because that  
25 is a model where the view factor is truly one.

1           If, basically, we ran our model with a view factor  
2 of one, with those radiation tests and with that same heat  
3 transfer coefficient, we would get the same result. So  
4 there's nothing magic about the fact that their model,  
5 which, again, as I say, comes out of a junior course in heat  
6 transfer, works. That's a very simple model. It's the  
7 steady state model, so there's nothing miraculous about the  
8 fact it matches data. The fact it matches fire test data  
9 does not mean it'll match data for a flying bird.

10           And then, finally, the issue of laminar versus  
11 turbulent flow, staff correctly says that the traditional  
12 number for transition from laminar to turbulent flow, or  
13 smooth, flat plate, is five hundred thousand. However,  
14 every textbook will say that you can trip and have turbulent  
15 flow starting at the leading edge. If you have a rough  
16 wing, if you have feathers, if you have a wing where --  
17 that's flapping, so you're having vertical velocity  
18 components on both sides that can disturb the boundary  
19 layer, you can have all kinds of turbulent flow situations  
20 coming up. You know, a bird's wing is not a smooth, flat  
21 plate that is just moving in one direction.

22           HEARING OFFICER CELLI: Any other comments from  
23 staff in response to what the -- from applicant in response  
24 to what staff said?

25           DR. JOHNSEN: Yeah, just one quick one. Tell you

1 about, you know, the fact that feathers are such amazing  
2 insulators, which is why we use them for down jackets - that  
3 has nothing to do with the properties of feathers. It has  
4 to do with the fact that feathers trap air. And you get a  
5 good insulation because of the trapped air. If you actually  
6 have a bunch of compacted feathers, yes, they are  
7 insulators. They are not metal conductors - you wouldn't  
8 want to use them for a frying pan. But, they are actually  
9 not great insulators. It's the air in between, which is why  
10 a down sleeping bag fails when it gets wet, which is why  
11 your down jacket fails as it gets old and it starts to  
12 compact. That's it.

13 HEARING OFFICER CELLI: Go ahead.

14 MR. FRANCK: One last thing that was referred  
15 before about the standby points at the Solar One, which was  
16 also, according to the study there, one of the main reasons  
17 for singeing of birds. I ran an estimation, because there's  
18 no numbers from that project regarding what is the flux on  
19 the standby. On my estimation, and I took it that the beam  
20 is pretty wide there, because of the size of the mirrors,  
21 which were really big mirrors, big heliostats, that was in  
22 the range of 1,500 kilowatts per square meter. So, one-five-  
23 zero-zero. And excuse my -- I have to repeat it because of  
24 my accent. That is three hundred times higher than the  
25 suggested threshold of five kilowatts per square meter. I

1 can definitely imagine -- something can happen in there.  
2 It's more than twice the density of the maximum flux falling  
3 on our receiver, and definitely a few times higher on the  
4 standby that we are using in our technology, which is not  
5 (unintelligible) exactly for that reason.

6 HEARING OFFICER CELLI: All right, staff, go  
7 ahead.

8 MS. WATSON: Well, I need to make a response to  
9 that, and I think what Danny Franck was saying earlier about  
10 how the size of the fifty-kilowatt field was very small - I  
11 believe those were his exact words, small to very small.  
12 And I think this is the exact nature of the question, in  
13 comparison to the SEDC site -- or the Solar One site, how  
14 very small - very, very small - in comparison were those  
15 flux fields, and how very small, perhaps, was that standby  
16 point, and so, then, what was the chance of birds actually  
17 getting inside it? And, if they did, how quickly could they  
18 fly through it without damage, versus the size of the flux  
19 field at the proposed Hidden Hills site.

20 MR. FRANCK: I want to answer that. Absolutely  
21 correct. The SEDC plant is smaller and the flux levels are  
22 the same, but in a smaller space. The Gemasolar, however,  
23 which also has studies that show there's nothing there, more  
24 is the same size of, let's say, half that of Rio Mesa - a  
25 little bit more, actually. The actual density there is



1 higher because they use molten salt, or, so -- I don't know  
2 the numbers, but molten salt. If you talk on conventional,  
3 or we're talking to papers, it would be seven hundred, seven  
4 hundred fifty kilowatts per square meter, so they are higher  
5 than what we're suggesting. Therefore, the area with higher  
6 density will be bigger, so -- and they don't observe there,  
7 so I do think we have a real-world case that operates in the  
8 world those days with scientists looking at it with no  
9 impact.

10 HEARING OFFICER CELLI: Okay, let's -- Mr. Lesh,  
11 let's just let you finish this one up. You had raised your  
12 hand.

13 MR. LESH: Thank you. Mr. Battles, could I go  
14 back to my previous slide? The one that was last up. If  
15 you recall, I was just responding to what we heard earlier  
16 from the applicant in terms of the justifications or the  
17 assumptions that we used in our particular model and why we  
18 think they are reasonable.

19 Next slide, please. This is another slide from a  
20 paper that was referenced by staff in their Bio 2 testimony  
21 -- Bio 1 testimony. Basically, this is showing the visible  
22 spectrum. This is short wavelength, or the infrared, of the  
23 colors of many different birds by yet another author who had  
24 done this particular measurement of the reflectance as a  
25 function of wavelength. If you average across here, you'll

1 get the average for the visible spectrum. And the color of  
2 the line is roughly the color of the bird in this particular  
3 paper, so you see kind of a color wheel here.

4           If you look at the three o'clock position, there's  
5 -- there's one of interest, which is essentially a black  
6 bird. The species is listed, and, as far as we can tell,  
7 that line is -- is hugging the bottom line, so it's maybe  
8 ninety-eight, ninety-seven - it's hard to tell, but it's, we  
9 think, yet another data point that says, yes, there are  
10 birds out there and multiple species that are more than 0.9,  
11 more than 0.85.

12           So we think, if we're trying to protect  
13 populations, especially in the desert where I'm told by  
14 biologists that many of the birds are black or dark-colored,  
15 and they might be dusty, we're not being unreasonably or  
16 beyond conservative in choosing this number.

17           HEARING OFFICER CELLI: Thank you

18           MR. LESH: Next slide, please.

19           HEARING OFFICER CELLI: Oh, go ahead.

20           MR. LESH: Okay. Earlier today - I heard it from  
21 applicant's panel - the particular paper they referenced in  
22 their most recent testimony was a very big one, had the best  
23 available data, and that, if we hadn't read it, we should.  
24 I'd like to point out some of the highlights from that  
25 particular paper, because we have it here.

1           In particular, the way the authors of that paper  
2 did -- or what they were trying to figure out was the  
3 average heat transfer coefficient by region on a bird. They  
4 also made a wooden bird, covered it with heating wires,  
5 covered it with leather, put it in a wind tunnel, measured  
6 it optically, and then tried to make one that looked like a  
7 real bird.

8           Essentially, what staff has done -- if you look at  
9 the top picture here, this is a starling. So, from head to  
10 tail, it's about nine inches long, and the wing cord - that  
11 would be from the forwardmost part of the wing where you see  
12 something that maybe you'd call a wrist, I don't know, to  
13 the back - that's the cord length. On a starling, that  
14 length is somewhere between 4-1/2 and 6 inches. Not very  
15 long. Staff used six inches in their modeling, not  
16 particularly targeting this bird or this paper. It just  
17 turned out that way. If you look at the region where staff  
18 tried the model, we took kind of the midpoint of the wing in  
19 the area here that I've marked up and put that red squiggle  
20 in, so this is -- these are the secondaries, and I think  
21 they call them the ventral secondaries on the bottom side of  
22 the wing. Next slide, please.

23           PRESIDING MEMBER DOUGLAS: Mr. Lesh, are you  
24 summarizing this paper, or can you tell us why --

25           HEARING OFFICER CELLI: What's the point?

1           MR. LESH: Ah. It goes to the heat transfer  
2 coefficient, and to the value that the applicant is now  
3 relying on - sixty-three - as the most representative as the  
4 part of the wing that we're addressing, and the fact that  
5 we're suggesting that that number is twenty-eight -- they're  
6 saying it's now sixty-three, the best available data, and  
7 we're questioning that.

8           MR. BREHLER: Mr. Lesh, if I suggest that you just  
9 jump ahead to slide ten?

10          MR. LESH: Okay. Next slide, right there. This  
11 is one where the -- actually, these authors modeled a bird  
12 using flat-plate, laminar-flow theory. They broke the bird  
13 up into those panels you saw earlier. When you look at the  
14 wing part that we've modeled, it turns out that staff got  
15 28.5. In this particular model, they got twenty-eight. So  
16 they're using the same theory - the same equations, as it  
17 turned out - and they get the same number. Skip on to the  
18 next slide, please.

19          MR. CARETTO: What's the difference between method  
20 one and method two in that table?

21          MR. LESH: Method one, where they assume that each  
22 flat plate initiates flow at the beginning of itself - they  
23 found that, when they did that, they were overestimating the  
24 heat transfer out of the bird, because the laminar flow  
25 layers were too thin. So, in method two, they used the

1 upstream length beyond -- that's in front of that plate to  
2 account for extra length. They also went on to a method  
3 three where they corrected for legs and then went on -- next  
4 slide, please.

5           So, method two -- I should mention, method two,  
6 for most of the modeling of the panels, is the one they  
7 decided was most valid. Here, they say the heat transfer  
8 coefficient is calculated by method three. The difference  
9 between two and three was that three actually made the legs  
10 look like legs. They took a simple model from a college  
11 heat transfer book - cylinders, thin cylinders - and they  
12 said the legs are those, and they modeled those. When they  
13 do that for the legs - which they didn't see in method two -  
14 method three says, for the legs and the feet, instead of  
15 getting the low numbers they had before where they modeled  
16 the legs as flat plates - which, clearly, they admitted  
17 that's not right, it doesn't work - when they went to the  
18 legs here, they get 180 -- they get 261, as opposed to  
19 twenty-eight. Now, when they go down to the next slide, and  
20 you see the average for an entire starling is sixty-three,  
21 what that is is a weighted average. They take the  
22 coefficient times the area, they add it all up, divide by  
23 the area, and they get sixty-three. So the sixty-three  
24 includes numbers that are up to ten times, almost, the  
25 number that's on the area that staff is worried about damage

1 to.

2 HEARING OFFICER CELLI: Okay.

3 MR. LESH: On the bottom of the wing.

4 HEARING OFFICER CELLI: Thank you. I'm going to  
5 ask Ms. MacDonald. We're talking about all of this  
6 modeling. Ms. MacDonald, do you have any question or any  
7 points you'd like to raise regarding just the modeling?

8 MS. MacDONALD: Just the modeling?

9 HEARING OFFICER CELLI: Yes.

10 MS. MacDONALD: I wasn't ready for that question.  
11 I do have some -- some questions, can you give me a moment  
12 to think about that?

13 HEARING OFFICER CELLI: Sure. Ms. Belenky? I'm  
14 just going to go to Ms. Belenky, then, okay? While you're  
15 organizing your thoughts.

16 MS. BELENKY: No, but our expert, Ms. Anderson,  
17 may have some questions about it.

18 HEARING OFFICER CELLI: Thank you.

19 MS. BELENKY: I would defer to her on that.

20 HEARING OFFICER CELLI: Ms. Anderson, let's hear  
21 about your point of view about the modeling.

22 MS. ANDERSON: I have no questions or comments at  
23 this time.

24 PRESIDING MEMBER DOUGLAS: Thank you, Ms.  
25 Anderson.

1 MS. HAWK: Hearing Officer Celli?

2 HEARING OFFICER CELLI: Yes, so you had no  
3 questions, Ms. Anderson?

4 MS. ANDERSON: Correct.

5 HEARING OFFICER CELLI: Okay, go ahead, Ms. Hawk.

6 MS. HAWK: Thank you. I'm not sure how you're  
7 feeling. I'm exhausted. I'd like to point out that,  
8 earlier this afternoon, the applicant testified that staff  
9 and the applicant agree that there is a high degree of  
10 uncertainty with regard to solar flux. I think that's  
11 readily apparent.

12 HEARING OFFICER CELLI: Yes.

13 PRESIDING MEMBER DOUGLAS: Now, Ms. Hawk, we're  
14 going to go to conditions next. We're going to go around  
15 the room, see what questions there are about the models, and  
16 then we're going to ask the parties to talk about  
17 conditions. Is that where you were going?

18 MS. HAWK: No.

19 PRESIDING MEMBER DOUGLAS: Oh. Go ahead, then.

20 MS. HAWK: It's actually just a simple point. Ray  
21 Bransfield with U.S. Fish and Wildlife Service spoke on the  
22 phone earlier.

23 HEARING OFFICER CELLI: Yes.

24 MS. HAWK: And I'd like to (unintelligible) his  
25 point with regard to -- the applicant is using a sample set

1 of three -- that is to say, three solar facilities in  
2 operation currently, with regard to assumptions on bird  
3 mortality. And so, I'd like to point out that a sample set  
4 of three is not scientifically useful, and I'm quite certain  
5 that most of the experts on this panel would agree. In  
6 summary, I would just like to say that when there are a lack  
7 of empirical data, and we are relying on assumptions that  
8 cannot be agreed upon, the position that the Department of  
9 Fish and Wildlife takes in this circumstance is, in fact,  
10 one of a very conservative approach, and that the CEC's  
11 conservative assumptions, which we agree, with regard to the  
12 assertions made by the applicant. These are conservative  
13 assumptions; they're warranted here. And that the CEC model  
14 is an appropriate conservative model, and it identifies real  
15 hazards. Thank you.

16 HEARING OFFICER CELLI: Thank you. We were on Ms.  
17 MacDonald.

18 MS. MacDONALD: Well, I'm kind of in between, and  
19 in a lot of ways it kind of answered things, way back when,  
20 when you were talking about the layperson, can you explain  
21 this, well, nobody would understand this better than me. As  
22 I'm sure they would point out, I have been trying and  
23 struggling to follow all of this. They have covered some of  
24 the points, and I'm going to make a really big leap here.

25 I will do my best to check to make sure this is



1 all right, but I still don't think that they have done a --  
2 a good illustration of kind of the general principle that I  
3 understand, which, at any point, they could correct me on.  
4 But, if -- it seemed the Commission was -- or, the Committee  
5 was getting it quicker, but maybe there's other people here.

6           So, just real briefly, I wanted to run over what  
7 the general idea of what this flux is, to my understanding,  
8 which I know is pretty strong of me, but, um -- basically,  
9 you've got all these mirrors coming in, and each individual  
10 mirror is not really very potent in and of itself.

11           And then, as they concentrate, that becomes the  
12 flux, and it's the concentration that becomes the issue.  
13 The reason it's kind of small around the tower is because of  
14 the concentration, and I wanted to check with Mr. Franck. I  
15 believe you say two hundred meters is when we hit the fifty  
16 kilowatts - what was the number?

17           MR. FRANCK: I didn't say two hundred meters for  
18 sure, but, if we look again at the picture, I can tell you.

19           MS. MacDONALD: Okay.

20           MR. FRANCK: And that picture is also available  
21 because it was -- it was provided, and you can look at it  
22 the same as I'm going to look now.

23           MS. MacDONALD: All right. My general  
24 understanding was -- is that, at least as it was -- as I  
25 understood it in the August workshop, I believe it was, is

1 that the actual field of flux that they -- that's supposed  
2 to be the concentrated part - that's this threshold of fifty  
3 kilowatts per meter squared - is relatively small. I  
4 thought it was two hundred meters, but, anyway, what I  
5 thought -- and then the other thing is -- what I thought was  
6 important to also relay is one of the reasons why it's a  
7 little wider than just being totally concentrated at the  
8 receiver is that they have standby points from the mirrors  
9 so that they can control the amount of kilowatts per meter  
10 squared on the receiver. Have I messed anything up yet, so  
11 far?

12 MR. FRANCK: A little bit. Not a lot.

13 MS. MacDONALD: Okay. Thank you. I'm just trying  
14 to do it general because what happens is you guys start  
15 talking about so many complicated things that I didn't think  
16 the general idea --

17 MR. FRANCK: So may I answer and try to make it  
18 simple?

19 HEARING OFFICER CELLI: Go ahead.

20 MS. MacDONALD: Okay.

21 MR. FRANCK: Okay, first of all, the flux -- the  
22 area of flux - that is fifty kilowatts, if you look at the  
23 map provided - is about a hundred meters away from the  
24 center of the receiver, meaning there is about, it's less  
25 than a hundred, but it's really hard for me to tell. It's

1 less than a hundred, meaning that it's less than -- it's  
2 about somewhere between fifty to eighty meters away from the  
3 surface of the receiver itself and that's again meaning that  
4 everything is about twenty-five to fifty there.

5 MS. MacDONALD: Okay.

6 MR. FRANCK: Okay? It doesn't have to be fifty,  
7 but we call it fifty for the sake of simplicity. Regarding  
8 the standby points, we do not use standby points. We use  
9 what we call the standby zone or ring. It's a ring around  
10 the receiver and slightly above it that allows us to take  
11 heliostats in and out if we need to reduce the amount of  
12 load on the receiver. The reason to go to that ring and not  
13 standby points was the request of lowering the flux in the  
14 air, and this way we're lowering the amount of flux  
15 concentrated in a single point.

16 MS. MacDONALD: That was my understanding. Now,  
17 again, it's been a while since I've looked at flux numbers.  
18 I've been very busy and I will constantly refer back to you  
19 for correction, but one of the things that I think is  
20 important to understand is the context of what we're looking  
21 at with -- in terms of kilowatts per meter squared, because  
22 it took me a long time to even grasp what are they talking  
23 about.

24 Now, the applicant had made a reference to  
25 something that staff had used. It was the first thing that

1 I had seen that I thought put context to what we're looking  
2 at with kilowatts per meter squared, and that is -- it's in  
3 Biological Resources, Table 11, the FSA Exhibit 300, page  
4 4.2-100. It's called "The Effects of Thermal Radiation,"  
5 and they have like a -- like a list of radiant heat flux and  
6 kilowatt per meter squared of different things. Number one  
7 of a kilowatt per meter squared is the maximum for  
8 indefinite skin exposure. Then they go to like 6.4, it says  
9 you can have pain after eight seconds. 10.4, pain after  
10 three seconds.

11           Now, this leads me to the next -- well, before I  
12 jump too far 12.5 kilowatts per meter squared, volatiles  
13 from wood may be ignited by pilot after prolonged exposure.  
14 Twenty-nine kilowatts per meter squared would ignite  
15 spontaneously after prolonged exposure. And then the fifty  
16 kilowatt per meter squared, which is the threshold.

17           And I think -- I wanted to get that in kind of  
18 earlier so, when you were looking at the avian solar flux  
19 calculations, where everybody's arguing about, you know,  
20 where the five kilowatt and the yellow lines and stuff like  
21 that, that you're looking at some very, very hot  
22 temperatures even so. I mean, at twenty-nine kilowatts per  
23 meter squared, we've got wood igniting spontaneously. So I  
24 just thought some sort of context -- I know that's not the  
25 same as a moving bird, but it does kind of give context.

1           And the next thing I wanted to ask, because this  
2 is from memory only, but, staff what kilowatt per meter  
3 squared -- I thought you said it was ten kilowatts per meter  
4 squared that a human went blind at, but I am totally open --  
5 what is the correct kilowatt per meter squared that you  
6 could go blind at? Nobody knows? Because I thought, in one  
7 of the workshops, that that was stated, and then I asked,  
8 well, what's the kilowatts per meter squared that a bird can  
9 go blind in, and the answer I got was we don't know. Does  
10 that one sound familiar?

11           DR. SCHWAB: If I can answer that, you can't ask  
12 the question without knowing the amount of short wavelength  
13 in the beam or knowing the amount of vapor in the air or  
14 dust in the air. It depends more on the short wavelength,  
15 particularly the blue or ultraviolet but, again, it also  
16 depends on duration. A brief glance could be a hundred  
17 kilowatts, maybe more, and no harm done, but a prolonged  
18 glance will harm vision and will blind a central area, and  
19 even that central area will not take away all vision, but  
20 basically all useful vision.

21           MS. MacDONALD: Okay. Then, obviously, I  
22 remembered that incorrectly, so I guess that -- that's not  
23 relevant at the moment. I apologize for wasting anybody's  
24 time. Anyway, I just wanted to get like the general model  
25 of what it is that we're kind of talking about and some

1 relationship in terms of what these things mean.

2 I did have some questions about some of the things  
3 that they have been saying. The first one was, I think it's  
4 Dr. Rubenstein - this was quite a while ago, but you said  
5 that you referenced three studies, three separate,  
6 independent studies that -- that validated, you know, what  
7 -- what your position is. It was very -- you know, quite a  
8 ways back, but I wanted -- you didn't cite which studies  
9 those were, and I was wondering if you would cite the  
10 studies you were referring to.

11 MR. RUBENSTEIN: Yes. Those were -- and it's not  
12 Dr. Rubenstein, it's Mr. Rubenstein.

13 MS. MacDONALD: Excuse me.

14 MR. RUBENSTEIN: The doctors are to my left.

15 MS. MacDONALD: Okay.

16 MR. RUBENSTEIN: The three studies were the SEDC  
17 study in Israel --

18 MS. MacDONALD: Okay.

19 MR. RUBENSTEIN: Done by Mr. Santolo, the  
20 Gemasolar study that was done in Spain --

21 MS. MacDONALD: Okay.

22 MR. RUBENSTEIN: And then the original study that  
23 was done at Solar One.

24 MS. MacDONALD: Okay. Thank you. Now, my next  
25 question about that is, because I have heard some back-and-

1 forth questioning about everybody's credentials and models,  
2 et cetera, and so my question to you - actually, I would  
3 like to question you all with the same question - in your  
4 opinion, do those three studies that you cited meet the  
5 standardized, scientifically-defensible criteria that you  
6 had ranked staff's analysis on? Because there was the  
7 failing grade, et cetera. Do you think those three studies  
8 would pass the same bar?

9 MR. RUBENSTEIN: I do not have the ability to  
10 issue grades at all and I am not the one to ask about those  
11 studies. That would be Mr. Phillips and Mr. Santolo.

12 MS. MacDONALD: Okay. Thank you. All right. The  
13 same question to Mr. Johnsen: would the three studies that  
14 he referenced -- would those pass your class or your test or  
15 -- do those have scientifically-defensible criteria?

16 DR. JOHNSEN: I'm not really the best person to  
17 ask that, either. It's out of my expertise, those  
18 particular things.

19 MS. MacDONALD: Okay. And --

20 HEARING OFFICER CELLI: Who on applicant's panel  
21 can answer this question, please?

22 (Laughter.)

23 MS. MacDONALD: Thank you. Sorry.

24 MR. RUBENSTEIN: Mr. Phillips and Mr. Santolo.

25 HEARING OFFICER CELLI: Let's hear from you.

1 Mr. Phillips.

2 MR. PHILLIPS: Well, I would comment that I don't  
3 believe they've been put forth for consideration as  
4 publications by peer-reviewed situation. They are completed  
5 by, certainly, objective, independent scientists or  
6 researchers, but, just like the three studies, the papers,  
7 the reports that were prepared for Solar One leading up to  
8 the actual publication in the Journal of Field Ornithology,  
9 we couldn't answer that question about those papers because  
10 they were not put forth to peer review.

11 MS. MacDONALD: But you answered --

12 MR. PHILLIPS: But eventually they did result in  
13 that work product of McCrary, et al., 1986.

14 HEARING OFFICER CELLI: Ms. MacDonald, go ahead.

15 MS. MacDONALD: Okay, I just wanted to say that  
16 they were capable of issuing that decision about staff's  
17 paper, that it would fail and that it didn't meet criteria,  
18 and so I just wanted to see if the studies that they were  
19 emphatically referencing that supports their position, if  
20 they had reviewed it and if it had, you know, met their  
21 criteria, so that, I guess, that was -- I understand --

22 HEARING OFFICER CELLI: I understand your  
23 question. I'm waiting for you to get an answer.

24 MS. MacDONALD: Thank you, sir, that's --

25 HEARING OFFICER CELLI: So, anyone else from



1 applicant's expert panel want to take this one on, or should  
2 I just go on to the next --

3 MR. CARETTO: I think there are two separate kinds  
4 of issues here. The question about the modeling that we're  
5 discussing is really the question of what is an appropriate  
6 model? So that, in any sense, there really are limited data  
7 that are available. But the question of what is a  
8 scientific study - I think there -- that's a separate issue,  
9 so I don't think you can ask the same question about both of  
10 them.

11 HEARING OFFICER CELLI: I think you've got the  
12 best answer you're going to get there, Ms. MacDonald, in  
13 terms of responsiveness.

14 MS. MacDONALD: Thank you very much. Thank you  
15 for that opportunity. Let's see, the next thing that I had  
16 -- this was from Mr. Phillips. I believe he was referencing  
17 the study in Spain as one of the -- as one that was cited  
18 and, again, it's been a while since I've looked at flux  
19 issues, but I remember looking through that and -- the  
20 numbers you had said about -- that there was a sixty-minute  
21 and a ninety-minute walkthrough, I guess, of the plant, did  
22 -- I wrote it down, but that's correct, that was cited in  
23 that study, the Spain study?

24 MR. PHILLIPS: Correct. During the fall of 2011  
25 operational period.

1 MS. MacDONALD: Okay.

2 MR. PHILLIPS: Two observers walked for sixty  
3 minutes each and ninety minutes each, on two separate  
4 occasions.

5 MS. MacDONALD: Okay.

6 MR. PHILLIPS: And, as they described it, you  
7 know, paraphrasing, intensively searching.

8 MS. MacDONALD: Okay. I -- so, I did remember  
9 that correctly, and I just wanted to point out that, if  
10 memory serves me correct, that those -- that they -- the  
11 people that made the study made comment that they had to  
12 wait to get into the facility. They had to get permission,  
13 and it was fairly late, and I thought that just two small  
14 walkthroughs after it'd been open for a while was just kind  
15 of not really very credible, and then they also added  
16 something to the effect of they asked the workers if they  
17 had seen any dead birds, so I just wanted to kind of throw  
18 that out there about that was what I remembered as the data  
19 that went behind that study.

20 Also, I hope the Committee recognizes now why I've  
21 been so adamant about trying to pursue the acreage of the  
22 SEDC facility, because the staff has been trying to point  
23 out that there really is no comparison in terms of the size,  
24 and the more we've looked into this, at least the SEDC area,  
25 it keeps shrinking.

1           And I believe Carol hit upon the point that I've  
2 been kind of trying to get to, you know, trying to find out,  
3 and it looks like it's coming out that, you know, the size  
4 of that flux field is so small that I think a bird can fly  
5 through that pretty quickly.

6           Anyway, I don't want to take up too much time. I  
7 know we're all really tired. Now, my next question is for  
8 Dr. Schwab, and you had already -- you already answered that  
9 one. All right. You had said, in your professional  
10 opinion, that you did not think that you had -- that there  
11 was going to be any impact to birds.

12           And so my question was to you: have you submitted  
13 any data or any modeling or anything that substantiated your  
14 professional opinion, outside of what you've stated here?

15           DR. SCHWAB: No.

16           MS. MacDONALD: Okay. Thank you. And, let's see  
17 -- oh. I don't want to waste people's time, but I think  
18 this is really important. This conversation shows how new  
19 this is, and how little we know and I wanted to thank staff  
20 for making such an effort to really try, for the first time  
21 ever, to really kind of get some movement on some scientific  
22 data about this. And I just wanted to thank them for that  
23 effort, because I think that's really important.

24           HEARING OFFICER CELLI: Thank you, Ms. MacDonald.

25           MS. MacDONALD: Thank you.

1 HEARING OFFICER CELLI: Mr. Zellhoefer, are you  
2 still in the room? Mr. Zellhoefer? No? Okay. Then  
3 Richard Arnold?

4 MR. ARNOLD: Yes, I hate to be the fly in the  
5 ointment, but I do have a couple of comments here --

6 HEARING OFFICER CELLI: We want to keep it pretty  
7 much focused on what we've been talking about, which is this  
8 avian flux modeling.

9 MR. ARNOLD: Yeah, that's perfect, because that's  
10 what I'm going to be talking about.

11 HEARING OFFICER CELLI: Excellent.

12 MR. ARNOLD: You and I are on the same boat. But,  
13 before I say that, I have to preface it with that you know,  
14 sometimes, I think I feel like Will Rogers here, that I have  
15 to -- I'm almost compelled to kind of ground the discussion.  
16 And I think the discussion has been going on a long time  
17 and, when I look at my purpose and obligation as the first  
18 Indian intervenor, I think I need to provide some clarity  
19 about Southern Paiute culture.

20 As such, I'm determined to share some things about  
21 the knowledge and perspectives, about talking with  
22 conviction that you've seen today and you've heard tonight,  
23 but always remembering that the Creator gave us a certain  
24 number of breaths that we need for our lifetime, and we're  
25 not supposed to waste those breaths because, at some time,

1 we're going to need that air when we survive.

2           So, being mindful of that, I offer the following  
3 discussions -- or discussion points, I should say, and then,  
4 hopefully, this will help guide us throughout the remainder  
5 of the evening. I share this important message because it's  
6 contained in some of our traditional stories.

7           Our people have been here since the beginning of  
8 time that we define -- excuse me, since the beginning of  
9 time as we define it, and we've seen many changes.  
10 Temperatures are important to all resources in the desert.  
11 Specifically, increased solar flux - there's the key word -  
12 from unnatural source causes culturally adverse impacts to  
13 birds, and disrupts cultural continuity. As a traditional  
14 practitioner and Salt Singer -- you call it manmade avian  
15 solar flux, and we call it bird sickness. Bird sickness can  
16 affect the feathers, which in turn affect their ability to  
17 survive and to keep our delicate world whole. Sickness does  
18 not have to be limited to physical factors, but spiritual  
19 impacts.

20           Like all sickness, there are residential effects  
21 -- residual, excuse me, effects, that will have adverse  
22 effects not only on the particular birds that are killed or  
23 injured that are important to our culture, but, moreover,  
24 the traditional practitioners, doctors, and singers,  
25 including the Salt Singers, the grieving families, and the

1 resources within the cultural landscapes identified in the  
2 FSA.

3           The implications not only cause an imbalance to  
4 the world but to a -- the three cultural landscapes,  
5 including the Salt Song landscape that consists of hundreds  
6 of songs that describe the cultural and ecological  
7 landscapes. Inside of these numerous landscapes are  
8 numerous resources, including the avian resources.

9           Each area is responsible for singing the songs and  
10 making sure that everything is complete. If this does not  
11 occur, problems will exist, and unsettled souls will cause  
12 disturbance and imbalance in the world. If sick feathers  
13 are obtained and/or gathered, people will become sick,  
14 because the practitioners take on the properties of the  
15 animals, like the desert tortoise that we talked about today  
16 and going long distances without water and the like. The  
17 cumulative effects on dead or injured birds, eaten or --  
18 other animals will continue to have long-term effects that  
19 do have cultural -- that do not have a cultural remedy.  
20 With that, I offer that as my conviction and saving my  
21 breaths. Thank you.

22           HEARING OFFICER CELLI: Thank you very much. Ms.  
23 -- I'm sorry, Ms. Crom.

24           MS. CROM: I have nothing.

25           HEARING OFFICER CELLI: Ms. MacDonald?

1 MS. MacDONALD: I'm sorry, there was -- it was the  
2 only question I came in here with before I got entranced by  
3 the conversation. If you would indulge me with one more,  
4 please?

5 HEARING OFFICER CELLI: Make it quick.

6 MS. MacDONALD: Thank you. All right, the  
7 question is for Mr. Franck, and it regards two things, two  
8 quotes that Mr. Santolo made with respect to his -- his  
9 study, and the first quote that he said during the August  
10 28<sup>th</sup> workshop was, "As I understand it, solar flux -- the  
11 efficiency of the energy isn't very efficient for heating  
12 water molecules." And the second quote was, "What this  
13 tells me is that this is not a very efficient way to heat  
14 something up." Mr. Franck, I'd like to know if you agree  
15 with Mr. Santolo's statements.

16 MR. FRANCK: Regarding heating water molecules, I  
17 tend to agree. We don't heat water; we heat metal that  
18 heats water. Regarding if it's efficient, nuclear is a more  
19 efficient source of heat. There's other things that are  
20 more efficient. We think it's efficient enough to produce  
21 electricity - that's why we do that.

22 MS. MacDONALD: Thank you.

23 MR. BREHLER: Mr. Celli, I want to point out that  
24 Mr. Hass, for staff, has had his hand up throughout  
25 Ms. MacDonald's testimony, and should be given an --

1 HEARING OFFICER CELLI: We're pretty much about to  
2 be done with this whole area

3 MR. BREHLER: Except that it does answer the  
4 question that she had.

5 HEARING OFFICER CELLI: Okay. Make it quick and  
6 put that microphone right up to your mouth, please.

7 MR. HASS: All of this comes from testimony,  
8 previously documented. This first paragraph comes from TN-  
9 69495, Commission's rebuttal testimony, 2-11-2013. After a  
10 site visit to the Solar One facility, which is now barren of  
11 the old project infrastructure, I estimated the time and  
12 person-power it would take to adequately survey for  
13 carcasses of North American species that might be expected  
14 to occur at the Hidden Hills and/or Solar One sites, which  
15 include several species of hummingbirds, the aforementioned  
16 warblers, kinglets, swallows, swifts, noting that the latter  
17 two were actually found as carcasses at the site.

18 I estimated that it would require a four-person  
19 team working for six to eight hours a day to adequately  
20 search for carcasses of these six- to twenty-gram birds, had  
21 they been charred, burned, whatever, in the solar flux  
22 field. So, with that in mind, then looking at -- I'm only  
23 going to look at SEDC, because I've been asked to be brief,  
24 so looking only at the SEDC site, I would agree with  
25 something previously stated. The studies there are robust,



1 but, if you haven't, everyone needs to look at the  
2 conformation of the SEDC site. It is not only small, but it  
3 is not a complete 360-degree circular facility.

4 HEARING OFFICER CELLI: Right, we've heard this  
5 before.

6 MR. HASS: Fine. Inadequacy of the carcass  
7 searches are the primary reason why carcasses were not  
8 found, but there are secondary reasons beyond that. So,  
9 there have been many individuals, and this comes from the  
10 reports -- the first report back in fall, there were many  
11 thousands of individuals that were observed during bird  
12 surveys - 8,540 of them, to be exact. However, 5,330 of  
13 those were steppe buzzards on one day, and 1,431 of those  
14 were honey buzzards on another day.

15 Those were single migration passages. In the  
16 second report, 5,807 total birds were counted in migration.  
17 4,291 were honey buzzards; 1,485 were white storks, leaving  
18 471 birds observed in migration. Keep in mind that,  
19 annually, more than five million birds pass through Israel  
20 in migration, both northwards and southwards.

21 And, importantly, eighty-seven percent of the  
22 observed birds were flying above one hundred meters. The  
23 height of the SEDC tower was seventy-five meters. The  
24 injured and dead bird search at that facility -- at least  
25 four times per week, a thorough search was made through the

1 plant area during the morning hours, beginning at six-thirty  
2 to seven-thirty.

3 That is lasting approximately one hour. One or  
4 two persons. Six mortalities were found there. A Tristram's  
5 starling was found under a tower; they suspect -- the bird  
6 appeared to have collided with a mirror. Five little  
7 bitterns were found dead on 3 September; cause of death  
8 could not be determined, although evidence suggests  
9 collision with the perimeter fence for at least one of the  
10 five birds, which was physically stuck on the fence.

11 PRESIDING MEMBER DOUGLAS: Mr. Hass --

12 MR. HASS: The birds were photographed and  
13 remained one day, likely removed by scavengers. So the last  
14 one is --

15 PRESIDING MEMBER DOUGLAS: Mr. Hass, are you  
16 reading something to us that's in the record?

17 MR. HASS: Yes, I told you that it came right out  
18 of those reports.

19 PRESIDING MEMBER DOUGLAS: But you're reading  
20 something to us that's --

21 MR. HASS: Oh, yeah, I just cut it because I was  
22 told to do it brief. Sorry.

23 HEARING OFFICER CELLI: Thank you. So, now we're  
24 going to switch the focus, because, earlier on, we heard  
25 from the parties that -- the parties were not that far off

1 with regard to conditions. That was sort of the starring  
2 point, I believe, that happened. Is that correct? A long  
3 time ago?

4 MR. ELLISON: Yes, I did say that. For the record  
5 I would like the opportunity to ask two very short  
6 questions. I think we can do it now.

7 HEARING OFFICER CELLI: What questions would you  
8 be asking?

9 MR. ELLISON: I want to ask if it's true that  
10 birds molt annually, so that feathers are replaced.

11 HEARING OFFICER CELLI: I'll give you that one.

12 MR. ELLISON: All right.

13 HEARING OFFICER CELLI: Official notice.

14 MR. ELLISON: Take official notice of that. And I  
15 wanted to ask staff - that's probably Mr. Lesh - in staff's  
16 testimony, they testify that the safe threshold is four  
17 kilowatts per meter squared for sixty seconds, and Mr. Lesh  
18 also testified that feathers reach a temperature of 160  
19 degrees in two to ten seconds.

20 And I wanted to ask him if he could reconcile  
21 those things, or perhaps to ask the question differently:  
22 how long does it take, under staff's model, for the  
23 temperature to rise to 160 degrees at four kilowatts per  
24 meter squared, or 4.9 or whatever the threshold -- what I'm  
25 getting at is what is -- at what flux intensity are we

1 talking about to get to 160 degrees in two to ten seconds,  
2 versus a minute? And I think you understand the question.

3 MR. LESH: I do. I would have to put that into  
4 the model to get that particular question, but I would have  
5 to also ask how is the bird going to get from zero to five  
6 kilowatts per meter squared instantaneously?

7 MR. ELLISON: Well, I'm just asking from staff's -  
8 -

9 MR. LESH: So, I guess --

10 MR. ELLISON: So, in staff's model, did you -- did  
11 you generate -- well, let me ask this --

12 MR. LESH: Actually, I can tell you what we have  
13 modeled. We do have a model - I think it's in our Bio  
14 testimony - that shows a trajectory of a bird going from  
15 zero up to five kilowatts and then back down again. It  
16 shows the temperature rise on a linear gradation scale as  
17 though you're flying in from the edge of the field to five  
18 kilowatts and back out again. That time is longer because  
19 he spends much of his time --

20 MR. ELLISON: So what -- you know something, I  
21 don't want to argue. I'm just trying to understand, when  
22 you said two to ten seconds, at what intensity level were  
23 you talking about?

24 MR. TYLER: I think one of the things that's  
25 confused everybody here is those isopleth maps that show

1 broad areas at one flux density. The fact is, when the  
2 bird's moving through the flux scale, it's going from one  
3 flux intensity to another, to another, to another, to  
4 another, and it's heating all the way along the flight. So,  
5 to rise from 150 to 160, occurs like that. It's fast. Once  
6 it's already at 150, it's like that.

7 MR. ELLISON: Is that what you meant by rising in  
8 two to ten seconds? Rising from 150 to 160? Is that what  
9 you're saying?

10 MR. LESH: I think what I meant was, if I recall -  
11 I don't have it in my graphs here - it's easy to get  
12 temperature rises of above roughly twenty degrees per second  
13 at relatively low levels. Those are fudgy numbers, but I  
14 don't have them in front of me. If you had a specific  
15 question, we could put it in the model and run it.

16 HEARING OFFICER CELLI: Well, he did, and that was  
17 it, and we're going to move on to a different area.

18 MR. ELLISON: Okay. The only other thing I wanted  
19 to offer -- it's entirely up to the Committee, but we do  
20 have photographs, aerial photographs of both this technology  
21 -- this goes to the issue of does it look like a lake. This  
22 technology from a bird's perspective as well as a PV  
23 facility for comparison, and we can put those up in, I  
24 think, thirty seconds if you wish to see them.

25 HEARING OFFICER CELLI: Put them up. Let's see

1 them.

2 MS. BELENKY: Are those already in the record,  
3 too? I'm just checking.

4 HEARING OFFICER CELLI: I'm sorry?

5 MS. BELENKY: Are these already in the record,  
6 also, or are these new?

7 MR. ELLISON: They're new.

8 HEARING OFFICER CELLI: Let's just see what they  
9 look like. Okay.

10 MR. ELLISON: That's this technology. I'm  
11 informed it's Ivanpah.

12 HEARING OFFICER CELLI: Okay. So, that's -- so  
13 you're saying, Mr. Ellison, that's -- that was an overhead  
14 of Ivanpah?

15 MR. ELLISON: That's an overhead of Ivanpah.  
16 That's a photo of a PV facility. Okay, we're done. Thank  
17 you. We do need to move -- and that's in the record, but --

18 HEARING OFFICER CELLI: Not yet.

19 MR. ELLISON: Okay.

20 HEARING OFFICER CELLI: Because we -- the way  
21 we're going to tie this up, because the parties have been  
22 talking about their divergent models and their disagreements  
23 over it, and I don't know what we're going to do about that,  
24 but we want to kind of sum it up by saying that it's --  
25 staff talked about the impacts in mitigation. That's what

1 we want to get around modeling. And what was the conclusion  
2 that staff came to with regard to avian impacts, and what  
3 mitigation was proposed, if any?

4 MR. HUNTLEY: Certainly, I'd be happy to answer  
5 that. Using the data provided by our engineers, we  
6 concluded that there are solar flux fields that are high  
7 enough to pose a risk to birds, should they fly through  
8 that. We also believe, based on the data on the project  
9 site, that there are large numbers of birds that occur in  
10 the project area and have the potential to fly through the  
11 flux field, including species such as golden eagle.

12 We believe that, based on this data, there's a  
13 risk to these birds, and we believe that risk, over the  
14 thirty-year lifespan of the project, would be significant  
15 and unavoidable.

16 We've proposed a suite of conditions, where  
17 possible, to minimize these impacts, including recommending  
18 land acquisition, you know, as part of our desert tortoise  
19 condition. We've included Bio 15, which is our, in a sense,  
20 avian plan, where we require or recommend that the applicant  
21 prepare an avian risk plan -- or, pardon me, like an eagle  
22 conservation plan, implement avoidance measures, and do  
23 things such as retrofitting power lines, et cetera. So, we  
24 have proposed a condition. We also know the applicant has  
25 proposed an alternative condition, and I think there are

1 components of both that can be incorporated into a  
2 reasonable condition.

3 HEARING OFFICER CELLI: So, significant,  
4 unavoidable?

5 MR. HUNTLEY: We do believe that it's significant  
6 and unavoidable over the thirty-year lifespan of the  
7 project.

8 HEARING OFFICER CELLI: Unmitigable.

9 MR. HUNTLEY: Yes, sir.

10 HEARING OFFICER CELLI: Okay. And applicant --  
11 what's applicant's position on that?

12 MR. PHILLIPS: This is Dave Phillips speaking.  
13 The lighting is challenging me here, I apologize. Excuse  
14 me, the lighting is challenging me. Let me switch things  
15 around. It seems that the, with regard to eagles, the  
16 significant criteria that is being used is presence. If  
17 eagles are there, there is risk. Take is therefore likely  
18 -- or impact is likely. We would not -- that -- I have not  
19 heard of that being used. You would not even use that for  
20 something as rare as a condor or a whooping crane to assess  
21 significance. You would have to consider the nature of the  
22 technology or the disturbance, and really look at a whole  
23 bunch of other things, not just presence. So, it'll --  
24 we're just -- significance, it eludes me how we get there  
25 from the fact that we do have eagles documented on this



1 site.

2 HEARING OFFICER CELLI: Well, isn't it so that  
3 eagles are attracted to taller structures, and that they're  
4 likely to be flying at those heights where other birds  
5 wouldn't?

6 MR. PHILLIPS: They -- and that's actually a great  
7 point. The presence of eagles on this site -- in the  
8 absence of the project, their behavior and their movement is  
9 one thing. Once we put heliostats -- a field of heliostats,  
10 the habitat and its interest to eagles becomes dramatically  
11 different. I would suspect they would not be interested in  
12 that habitat any more. We're talking about a pretty large  
13 area. They do fly near cliffs. They don't tend to fly near  
14 large structures with bright lights -- super-bright lights  
15 are actually used as a deterrent, experimentally, for many  
16 avian species, to cause a behavioral avoidance response to  
17 high-risk features. So, we actually have that in place at  
18 the highest flux levels that would be presented by Hidden  
19 Hills.

20 So, presence of eagles now -- you have to consider  
21 a lot more variables before you get to the project presents  
22 risk because they're there now. The take of one eagle being  
23 significant at the population level, or killing one, I think  
24 the phrase was, is a substantial impact on the environment  
25 and I actually really don't even understand what that means.

1 It's just kind of an interesting phrase, but the killing of  
2 one bird -- it just defies the criteria that we would  
3 typically use to evaluate whether that is significant. So  
4 that's with eagles.

5 The criteria for migratory birds in general, as I  
6 understand it, really just hasn't been stated, what that  
7 threshold of significance is, but, as I understand it, the  
8 staff is saying, because it's a really big number, it's  
9 significant. Again, we wouldn't use that concept without  
10 the context of a denominator. McCrary, et al., came up with  
11 a rate of fatality, 1.29 to 2.2 birds per week, and then  
12 they compared it to their estimates to abundance of birds on  
13 site, and they concluded -- I should probably read their  
14 conclusion - however, it is in the record - that it's not  
15 significant.

16 The staff has taken those numbers, extrapolated  
17 them in a manner which is, I don't think, defensible, but  
18 they did not extrapolate the denominator. They did not put  
19 their big number in the context of what's going on at Hidden  
20 Hills. And I think that's a really important consideration.

21 It's kind of a, in my opinion, a manipulative use of a  
22 statistic. It's not something that would be done -- or  
23 would be credible in any sort of, kind of, impact assessment  
24 exercise for important biological resources.

25 MR. ELLISON: Mr. Celli, if I could just ask you,

1 I thought that what you were getting at was the positions on  
2 conditions, and you wanted to compare what our -- not what  
3 our arguments in favor of our side were, but basically just  
4 what's the difference in the conditions of certification? Is  
5 that --

6 HEARING OFFICER CELLI: That's true. I was trying  
7 to stay high-level. I basically wanted to hear, okay, staff  
8 finds that it's an unmitigable, significant impact.  
9 Advocate doesn't. Here's why, and this is where we're at  
10 with regard to mitigation, and this is where we are  
11 differing in terms of conditions.

12 MR. ELLISON: If you would like, I can address  
13 that.

14 HEARING OFFICER CELLI: Well, I'm interested in  
15 hearing the experts, really, because you're not under oath.

16 MR. ELLISON: That's fine.

17 HEARING OFFICER CELLI: But if your experts can't,  
18 maybe, you know -- can your experts address that question?

19 MR. ELLISON: Well, the experts have not been  
20 involved -- they can certainly address all the rationale, as  
21 Mr. Phillips just did, and I'm happy to have them do it.  
22 Believe me, I'm not trying to be an expert. I'm not, you're  
23 right, and I'm not under oath. In terms of what we have  
24 proposed as a condition of certification, and what our legal  
25 position is, I can summarize that very quickly.

1 HEARING OFFICER CELLI: Why don't you?

2 MS. BELENKY: Objection. Why are we having him  
3 summarize their legal position?

4 HEARING OFFICER CELLI: We're interested in  
5 hearing what his position is on this, so let's -- go ahead,  
6 Mr. Ellison.

7 MR. ELLISON: Okay. Staff's position, as just  
8 stated, was that there was a significant, unavoidable  
9 impact. They had proposed mitigation. I presume that they  
10 believe that, even with that mitigation, you have to do a  
11 CEQA override. Our position -- and they have proposed  
12 certain conditions of certification, which include things  
13 like the eagle protection plan that we already talked about.  
14 BrightSource's position -- we have proposed an alternative  
15 condition of certification, which staff referenced. It  
16 includes habitat, as staff pointed out earlier. We believe  
17 that that habitat should be nested with other habitat,  
18 assuming that it is valid habitat for avian species.

19 If it's not, that's different, but, if it is, we  
20 think (unintelligible) should be able to nest. We've  
21 proposed, a significant amount of money - \$300,000, I  
22 believe is the number, subject to correction. We differ on  
23 the eagle protection plan, but you heard today that perhaps  
24 we can solve for that.

25 The principle difference between us, assuming we

1 do solve for that, is that we believe that, with that  
2 package of mitigation, and I've left out other things -  
3 there's monitoring, there's adaptive management, there's a  
4 lot of other things, but I was focusing on the one where we  
5 disagreed - that with the whole package of conditions of  
6 certification, we believe that the Committee and the  
7 Commission can find that there is not a significant  
8 environmental impact, and you do not need to do a CEQA  
9 override.

10           So, when I said we were close, I think it's the  
11 same thing I heard staff say when they said we thought the  
12 conditions that have been proposed could be melded into one.

13       We're not there yet, but, hopefully, perhaps by briefing  
14 time, we will be.

15           HEARING OFFICER CELLI: Miss Watson, you were  
16 indicating that you wanted to say something earlier, but  
17 only if it's germane to the -- what we're talking about now,  
18 which is the conditions and where the parties are at.

19           MS. WATSON: Can you hear me now?

20           HEARING OFFICER CELLI: Yes.

21           MS. WATSON: I do want to point out, in terms of  
22 the characterization that Mr. Ellison had made in regards to  
23 the habitat compensation, I believe that the selection  
24 criteria of Bio, I believe it was, A, which covered the  
25 selection criteria - the wording of that says that the

1 habitat to be purchased must be biologically the same or  
2 similar to the site, so that would simply guarantee that it  
3 has to be (unintelligible), such that you're not going to  
4 get any extra mitigation out of this. And somebody else  
5 could probably pull it up on the screen.

6 HEARING OFFICER CELLI: Okay. Thank you. Ms.  
7 Belenky.

8 MS. BELENKY: Yes. Thank you. I think this is  
9 very interesting that we're having a legal discussion about  
10 whether this meets some significant criteria, and I think it  
11 should be brief. However, I did want to ask staff one  
12 question about a word that they used, which was unavoidable.

13 And the fact is that we have not yet talked about  
14 alternatives, so I am a little bit concerned about the  
15 record reflecting a conclusion of unavoidable when we  
16 haven't yet talked about alternatives. So, my question to  
17 staff would be are there any alternatives that would avoid  
18 these impacts that were studies in the FSA?

19 MS. WATSON: That's a rather complex question. In  
20 terms of avian --

21 MS. BELENKY: In terms of the avian flux impacts  
22 that we've just been talking about.

23 MS. WATSON: Well, flux would be --

24 HEARING OFFICER CELLI: Before you answer that  
25 question -- Ms. Belenky, I think that that really is an

1 alternatives question, and we're going to have to -- we will  
2 have to deal with the alternatives. I think we're talking  
3 about that on Monday, so I, you know, I'm not -- even sure  
4 whether that's necessary.

5 MS. BELENKY: It is not clear to me that every  
6 staff person who has actually testified on every issue that  
7 has been siloed will be there on Monday to discuss  
8 alternatives. In fact, generally, that is not the case.  
9 And this is the first time that I have participated in a  
10 hearing before the Commission --

11 HEARING OFFICER CELLI: Let me ask this --

12 MS. BELENKY: Where we were not allowed to ask  
13 questions about alternatives during each resource area, and  
14 without that, we will not have the appropriate staff.

15 HEARING OFFICER CELLI: Well, since we're going to  
16 be in Sacramento, it's going to be really hard for staff to  
17 claim that somebody's not available.

18 MR. RATLIFF: The reason for having it in  
19 Sacramento was so we would have the staff available, so we  
20 hope to have our biological staff as well as other staff  
21 available for that.

22 HEARING OFFICER CELLI: Will you be there,  
23 Ms. Watson, on Monday?

24 MS. WATSON: Absolutely.

25 HEARING OFFICER CELLI: Okay.

1 MS. WATSON: Thank you.

2 HEARING OFFICER CELLI: I just think that -- you  
3 know what, that takes us in a direction we really don't want  
4 to go in.

5 MS. BELENKY: I understand you don't want to go in  
6 that direction. I also am very concerned that we're having  
7 legal dialogue here -- or legal monologue here, and other  
8 parties are not being given the same chance to discuss these  
9 legal issues. Either we're having factual hearings or we're  
10 having legal hearings. And I feel that the chair has  
11 actually -- that you have actually deferred to allowing the  
12 applicant to go very far on legal issues that were not  
13 afforded an opportunity to other parties, and I just want to  
14 say, for the record, I believe that's unfair. In addition,  
15 I believe that --

16 HEARING OFFICER CELLI: It would be if -- For  
17 instance, if you weren't --

18 MS. BELENKY: Cutting me off when I'm asking a  
19 question directly of the panel is inappropriate. I am  
20 asking this panel about a word that they use, the word  
21 unavoidable.

22 PRESIDING MEMBER DOUGLAS: Okay.

23 HEARING OFFICER CELLI: That's fair enough. About  
24 the word -- but not in a context of alternatives, if you  
25 want to ask what they mean by that with regard to biological



1 resources then go ahead and ask that question.

2 MS. BELENKY: I can ask them what you meant by the  
3 word unavoidable.

4 MR. HUNTLEY: For implementation of the proposed  
5 project consisting of this technology, we believe that the  
6 risk to avian species is unavoidable and that it will occur.

7 MS. BELENKY: Thank you.

8 HEARING OFFICER CELLI: (Off-mic.) Ms. MacDonald,  
9 did you have any further questions with regards to the  
10 recommendations of these experts with regard to  
11 significance?

12 PRESIDING MEMBER DOUGLAS: Or mitigation.

13 HEARING OFFICER CELLI: Or mitigation?

14 MS. MacDONALD: Thank you very much for asking.  
15 Not at this time.

16 HEARING OFFICER CELLI: Mr. Arnold?

17 MR. ARNOLD: No, sir. I'm ready to go home.

18 HEARING OFFICER CELLI: Okay. One moment.

19 PRESIDING MEMBER DOUGLAS: Ilenee?

20 HEARING OFFICER CELLI: Ms. Anderson, go ahead.

21 MS. ANDERSON: And thanks, Hearing Officer Celli,  
22 I know it's late and I just want to make a comment on --  
23 with regards to the new sort of conditions that staff and  
24 the applicant have talked about in the workshop, and wanted  
25 to weigh in on that so that the Committee understood our

1 position on it.

2           As was spoken about, it's basically a one-to-one  
3 mitigation for avian impacts, and we still disagree that  
4 this is adequate mitigation for avian impacts, because,  
5 basically, I haven't found any data that indicates that we  
6 ultimately know what the impacts are going to be from the  
7 project.

8           And so I think, until adequate monitoring is  
9 implemented at some site -- until we actually get those  
10 data, there's no way to actually be able to evaluate the  
11 mitigation for adequacy. Certainly, I believe that,  
12 acquiring mitigation land and nesting it within other  
13 acquired lands for desert tortoise certainly doesn't add any  
14 extra value or any additional mitigation over and above what  
15 is being required for desert tortoise, so it doesn't really  
16 effectively mitigate -- even potentially mitigate any,  
17 additional avian impacts.

18           And then -- getting sort of down into the weeds a  
19 bit, but I'll make it quick. One of the, suggestions was  
20 replacing power poles, that have caused avian mortality. We  
21 certainly support replacing power poles that are causing  
22 avian mortality, but we think that that is the  
23 responsibility of the transmission company, not, a  
24 mitigation for avian impacts from this project.

25           We do think that there's other options out there,

1 as I've spoken about before, permitting a much smaller  
2 project to see exactly what the effects are in this area  
3 would be one of them. Another one would be enhancing  
4 riparian resources in the area so that, the avian species  
5 actually have more sort of oases to go to.

6 We think that might help direct them away from the  
7 impact area as well. And certainly I think a key component  
8 to all of this would be rigorous long-term monitoring for  
9 the life of the project to see exactly what kind of an avian  
10 sink we have -- would have been created by the project, if,  
11 in fact, there is one. So I just wanted to have that out  
12 there. Thank you.

13 HEARING OFFICER CELLI: Thank you.

14 PRESIDING MEMBER DOUGLAS: So I've got a couple --  
15 thank you, Ms. Anderson, for that. Okay, I had a couple  
16 questions -- I saw some of you raising your hands, so this  
17 might be a chance for you to answer or not. You said that  
18 you believe there will be a significant, unavoidable impact  
19 to birds from the project that's currently proposed, and I  
20 just wanted to break that down and understand if you mean  
21 migratory birds, eagles, or the mix of bird species that,  
22 from Mr. Haas's testimony, we reasonably think we might find  
23 around the site.

24 MR. HUNTLEY: Yes, ma'am. And if I may also  
25 expand on something, staff considers this legitimate risk,

1 based on our engineering data, that there's going to be  
2 areas where, if birds fly through there, they'll be subject  
3 to either, you know, immediate mortality or morbidity. If  
4 the engineering analysis is correct, we believe this is  
5 going to be a large field.

6           We believe this facility is located in an area  
7 that has a large number of birds, but, more importantly, as  
8 our colleague has pointed out, it's in an area that could be  
9 subject to large pulses of migratory birds at any given time  
10 - thousands of birds. We believe these risks are  
11 predictable; they're uncertain because we just don't know --  
12 we can't see ahead of time, but we believe they're  
13 predictable.

14           And because we believe they're predictable, and we  
15 believe they have the potential to kill thousands of birds  
16 annually, we believe that that's a significant and  
17 unavoidable impact.

18           Mr. Phillips made a comment that - and correct me  
19 if I misquote you - that, you know, many projects don't have  
20 a significant and unavoidable impact to -- to eagles or  
21 other species. Numerous transmission lines, completed by  
22 the CPUC, have classified impacts to avian species, raptors  
23 in general, as significant and unavoidable because of the  
24 long-term risks of placing a transmission line across areas  
25 where these birds soar, recognizing that they don't hit it

1 all the time, but they hit it. Dare I say, wind farms have  
2 significant and immitigable impacts, and these are approved  
3 by Kern County. And there's significant and unavoidable  
4 impacts (unintelligible).

5 So, there is evidence in the record to suggest  
6 that, when there's a predictable risk - it, in our minds and  
7 in our eyes, based on the data we have, it's predictable -  
8 that that's a reasonable basis for us to make these  
9 conclusions. We're not trying to just draw them out of air.

10 And so, we believe a variety of songbirds,  
11 resident birds, you know, migratory birds, resident eagles,  
12 raptors are going to be subject to this predictable risk,  
13 and that's how we drew our conclusions for significance.

14 PRESIDING MEMBER DOUGLAS: Okay. Thank you. So  
15 that means, really, all the categories that you mentioned  
16 would be included in that find.

17 MR. HUNTLEY: Yes, ma'am. There's probably -- I'm  
18 not naming every single bird, because there's probably going  
19 to be guilds of birds or groups of birds that are just never  
20 going to get into the flux field, into those elevations, and  
21 things of that nature.

22 PRESIDING MEMBER DOUGLAS: Sure. Okay. So, I  
23 guess another question I have for you is are you applying  
24 the same threshold of significance to eagles as you are to  
25 migratory birds or other birds, or are you applying a

1 different threshold?

2 MR. HUNTLEY: I know there's been some comment  
3 that Rick made, and I want to be clear -- you know, Rick is  
4 an engineer, he's not a biologist, and perhaps he spoke out  
5 of turn. We didn't identify a number of golden eagles. We  
6 believe the risk is predictable and will occur, and it's  
7 based on the ecology and the behavior of the animals.

8 I know that Bill can articulate this better,  
9 about, you know, the risk to juvenile eagles and other  
10 species, floaters that are coming in -- they have -- they're  
11 not -- they're approximate teenagers. They make poor  
12 decisions. We also believe that the placement of the  
13 facility in and of itself will not exclude birds, especially  
14 not golden eagles. This isn't the same as a housing  
15 development; we have golden eagles occupying the areas near  
16 housing developments, and I don't know if there's a note or  
17 anything you'd like to -- anything else you'd like to  
18 comment on.

19 PRESIDING MEMBER DOUGLAS: Okay. All right, I  
20 guess what I was particularly going to was there was some  
21 comment about one eagle or more than one eagle or a  
22 predictable risk over thirty years to some unknown number of  
23 eagles -- I'm just trying to understand whether there's --  
24 how that threshold is articulated, and if it's articulated  
25 differently for one type of bird than another.

1           MR. HUNTLEY: I don't think we were able to say,  
2 well, for this species, there's seven birds, for that  
3 species, there's forty-two birds. I think it's fair to say  
4 that golden eagles are not a common bird. You know, they're  
5 certainly present in this area. We would feel that the loss  
6 of these birds is a significant impact.

7           But we're really basing this, again, on the  
8 predictability in our minds that this is going to become an  
9 annual occurrence. And so, we believe, over the life of the  
10 project, we're going to lose multiple birds. We did not  
11 define two eagles, three eagles, four eagles. So --

12           MR. RATLIFF: Commissioner, if I may -- also , I  
13 think the staff position on this was informed by discussions  
14 with the Department of Fish and Game on the fully-protected  
15 status of eagles, and their position, as they expressed to  
16 me, is that they would not take legal action --- I should  
17 say, although they would not take legal action with regard  
18 to the killing of golden eagles, it is illegal, and if  
19 mortality occurs with golden eagles, they consider projects  
20 that may have that impact to be projects that should be  
21 regarded as having a potentially significant impact.

22           That was their legal interpretation of how they  
23 enforce the fully-protected status of golden eagles, and  
24 they probably wouldn't appreciate it that I said they don't  
25 go around enforcing the law by taking people to court for

1 doing it, but, obviously, we know that doesn't happen with  
2 wind projects, and -- and I think they were speaking, if  
3 this project were to have impacts, and maybe this project  
4 would have impacts that were far below, you know, what a  
5 wind project would have, but if this project were to have  
6 similar impacts of that nature, that was their opinion of  
7 how it should be regarded by our agency. And I think that  
8 is reflected in our determination of the sensitivity of the  
9 take of eagles.

10 PRESIDING MEMBER DOUGLAS: Thank you. That's --

11 MR. ELLISON: Commissioner Douglas, I'm sorry - I  
12 know we're going late, but I do think this is a really  
13 critical issue, and I'd like to take a moment to comment on  
14 it as well.

15 PRESIDING MEMBER DOUGLAS: I'd like to give you  
16 that moment. I'm going to ask one more question - it's a  
17 direct follow-up - and then you'll have that moment. The  
18 question is about LORS consistency. Does staff have a  
19 position regarding LORS consistency, particularly with  
20 regards to avian impacts.

21 MR. HUNTLEY: We did, and I'll -- to be honest,  
22 I'll have to open up the FSA and look, because my mind is a  
23 little bit muddled at the moment.

24 PRESIDING MEMBER DOUGLAS: All right, I'll give  
25 you a moment to do that, and we'll go to Mr. Ellison.



1 MR. ELLISON: First of all, in the interest of  
2 time, I'm not going to make a -- staff made a sort of  
3 discussion why they felt their position was reasonable. I'm  
4 not going to do that; we'll save that for our brief.

5 But this question of what is the CEQA significance  
6 threshold is something that we've been trying to figure out  
7 from staff, right up to right now. And, if the CEQA  
8 significance threshold is a single bird -- first of all, we  
9 don't think that's right, legally, but secondly, that would,  
10 if you'll apply that threshold to all of the projects that  
11 come before this Commission or all the projects that come  
12 before other -- you know, similar kinds of projects, I think  
13 you'd find that you have significant, unavoidable impacts on  
14 avian species from practically anything that gets built  
15 anywhere. If, on the other hand, the -- what we think -- if  
16 you're just saying, as staff just said a moment ago, there  
17 will be annual, multiple - more than one - impacts to birds,  
18 again, that's -- birds collide with conventional power  
19 plants all the time, you know, dry cooling structures in  
20 particular. We --

21 MS. BELENKY: Objection. He's testifying. He's  
22 not a witness.

23 HEARING OFFICER CELLI: Excuse me, he's actually  
24 answering the Commissioner's question, so let's let him  
25 finish.

1 MR. ELLISON: In any event --

2 PRESIDING MEMBER DOUGLAS: However, we're not  
3 going to cite the facts about birds crashing into dry  
4 cooling towers --

5 MR. ELLISON: Okay, fair enough. I'm sorry. I  
6 withdraw that. I shouldn't have said that. I apologize.  
7 The point -- what I was trying to say is what we think the  
8 traditional CEQA threshold of significance is -- is are you  
9 having a significant, adverse impact on the environment.  
10 And, in the case of avian species, the question becomes are  
11 you having a significant, adverse impact on populations of  
12 birds, such that, you are --

13 MS. BELENKY: Objection. He's again testifying.  
14 That's actually a biological question. It's a question for  
15 DMG, perhaps, as an expert. I really -- I object.

16 HEARING OFFICER CELLI: Sustained.

17 PRESIDING MEMBER DOUGLAS: Let's see if staff has  
18 an answer to the question on LORS consistency.

19 MR. HUNTLEY: I have not found it. We concluded,  
20 and Carol can speak in a second if she would like, that we  
21 didn't consider the loss of habitat to constitute a take  
22 under state or federal LORS. We did comment that we  
23 expected golden eagles to be subject to mortality.

24 We considered these impacts to be significant and  
25 unavoidable. We note that take of any bald or golden

1 eagles, even if mitigated as required under CEQA, would  
2 violate the state fish and game code, due to the species  
3 status as a fully-protected species. We acknowledge it that  
4 the species became covered under such as the HCP -- as the  
5 DRECP have a conservation plan or another plan meeting these  
6 requirements, a take could be authorized under state law.

7 PRESIDING MEMBER DOUGLAS: We found the section in  
8 the FSA that we were looking for --

9 MR. HUNTLEY: Sorry.

10 PRESIDING MEMBER DOUGLAS: So, thank you. Page  
11 4.2-217. All right.

12 MR. RATLIFF: Again, Commissioners, I don't want  
13 to belabor it, but, you know, in our discussions with the  
14 Department of Fish and Wildlife, I think the position was  
15 nuanced and it seemed reasonable to us. And that was that  
16 they do not consider -- they would not find this to be a  
17 LORS incompatibility, and that's what we concluded as well.

18 They would find that the take of a fully-protected  
19 species, such as the golden eagle, would be a significant  
20 impact in the same way that a transmission line -- if you  
21 would expect a transmission line to take you, you would say  
22 that that would be a significant impact. And the risk of  
23 mortality to eagles is therefore, in their view, a  
24 significant impact, and that was what we --

25 PRESIDING MEMBER DOUGLAS: Mr. Ratliff, I think

1 that we sustained Ms. Belenky's -- well -- I think we've got  
2 it. Thank you.

3 ASSOCIATE MEMBER HOCHSCHILD: Just a quick  
4 question for Mr. Huntley. Earlier today, you said your  
5 conclusion is -- you were expecting about in the  
6 neighborhood of three thousand bird deaths a year from  
7 collision, correct?

8 MR. HUNTLEY: Yes.

9 ASSOCIATE MEMBER HOCHSCHILD: You don't have a  
10 number, though, for the deaths associated with flux?

11 MR. HUNTLEY: No, we do not.

12 ASSOCIATE MEMBER HOCHSCHILD: Okay, so why are you  
13 able to generate a number for collision but not for flux?

14 MR. HUNTLEY: The number that was generated for  
15 collision was a direct scale-up from the collision  
16 mortalities that were at least documented at the Daggett  
17 Solar One facility. We were trying to come up with some  
18 metric. We fully acknowledged in our analysis that this may  
19 not be linear, this may not even be accurate. It was just  
20 an effort to say, if collision was uniform and we scaled the  
21 project up from a small one with x amount of collision to a  
22 large one, could we expect this number of birds?

23 ASSOCIATE MEMBER HOCHSCHILD: Got it. Great.  
24 Thank you.

25 MR. ELLISON: Just to clarify, did you just scale

1 up the collision numbers in the McCrary study, or all of the  
2 mortality in the --

3 MR. HUNTLEY: Yes. Correct.

4 MR. ELLISON: Oh, I'm not trying to be hostile.  
5 I'm just trying to understand --

6 MS. WATSON: There I am. I'm sorry, can you  
7 repeat your question? I wasn't expecting a question from  
8 your side.

9 MR. ELLISON: No, I -- well, my question was did  
10 you scale up only the collision -- the McCrary study has  
11 some mortality that they believe is purely collision, and  
12 then they have some additional mortality they believe is  
13 from -- they have a total mortality number and I'm wondering  
14 which --

15 MS. WATSON: Yes. McCrary did separate out their  
16 birds by both collision as well as what they determined --  
17 what they believed was death by solar flux. But I need to  
18 point out something here that we did talk about earlier is  
19 that collisions may be secondary to exposure to solar flux,  
20 and you wouldn't be able to know that.

21 MR. ELLISON: I'm just asking what number you  
22 scaled up.

23 MR. HUNTLEY: I'm trying to find that real quick.

24 HEARING OFFICER CELLI: I would also be --

25 ASSOCIATE MEMBER HOCHSCHILD: Well, if this is

1 going to take time, I'll withdraw.

2 HEARING OFFICER CELLI: While you're looking that  
3 up, Mr. Huntley, I'm just going to ask Ms. MacDonald. We  
4 had planned on doing air quality, GHG, and public health  
5 tonight, because we're not going to get to it tomorrow.  
6 There wasn't going to be a witness available. We would  
7 otherwise put it over to Monday, but you wouldn't be there  
8 on Monday, because we're going to be doing it in Sacramento.  
9 So, the question we have -- and there are people online on  
10 the phone from staff, for instance, that are here tonight as  
11 witnesses, I believe to talk about air quality and public  
12 health and GHG, and so, I wonder, how much time do you think  
13 we need to do that? Do you want us to -- do you want to do  
14 it on Monday by phone when you're more rested? Do you want  
15 us to do it tonight? What do you think?

16 MR. ELLISON: Mr. Celli, I will point out our  
17 witness is not available Monday.

18 HEARING OFFICER CELLI: Okay, well, that affects  
19 some of us.

20 MS. MacDONALD: First off, let me thank you so  
21 much for enquiring. I would be okay with going with it on  
22 Monday through the phone, as long as the phone works. I  
23 don't think it should take more than fifteen minutes --

24 HEARING OFFICER CELLI: We'll do it tonight, then.  
25 We're just wrapping this up on bio, and we'll just do it

1 really quickly.

2 MS. MacDONALD: Also, I know time is an issue.  
3 I'm just as tired as everybody else, but, before the  
4 biological panel leaves, I had like three or four points  
5 about other biological points that hadn't come up yet that I  
6 would like --

7 HEARING OFFICER CELLI: What -- what are those?  
8 Tell us what those are, because maybe --

9 MS. MacDONALD: The first one was in my first set  
10 of comments on -- in March. It has to do with tarantulas.  
11 I know that may sound strange, but we have a tarantula  
12 migration that goes through there every year, and I've been  
13 watching them decline. So I started looking it up online  
14 and I found out that our area looks like it may host a  
15 distinct population segment of tarantulas that were  
16 discovered in 1997. And I had asked staff to do, you know,  
17 some analysis on that back in March, and I wanted to ask if  
18 they had, and the second part of it was -- I thought it  
19 might be important as well is that I found out that  
20 tarantulas breed -- or they find mates by vibration in the  
21 ground. So I was concerned, perhaps with the vibrational  
22 impacts of the long-term of operations, because I figure it  
23 can be argued reasonably that the short-term impacts of  
24 construction may not affect species reproduction. So the  
25 first question was about tarantulas. Did they look into

1 that, and, if so, what were their conclusions?

2 HEARING OFFICER CELLI: So staff -- I don't know  
3 who would be able to answer this. Did you do a tarantula  
4 analysis, and if not, why not?

5 MR. HUNTLEY: I don't believe we did a tarantula  
6 analysis. It may be that it was an oversight or that we did  
7 some initial looking and found there were no listed or  
8 sensitive tarantulas. Nonetheless, we will look into it and  
9 make sure we have a response for you.

10 MS. MacDONALD: Thank you very much. The second  
11 issue, and I know this is not a popular issue among  
12 biologists today, but they had noted that there were burros  
13 on the site. There were burro droppings on the site. And I  
14 know that there's a California Fish and Game Code 4600 that  
15 protects burros, and so I'd asked them how they were going  
16 to deal with them because they have a similar thing -- like  
17 wild horses and burros, so -- you can't capture, harass, et  
18 cetera. So did staff in any way -- I never saw it included  
19 in the LORS. Did staff in any way deal with how they were  
20 going to deal with burros if they were on the site?

21 MR. HUNTLEY: That's a good question. I don't  
22 believe we specifically mentioned it, but I'll have to go  
23 back and look at the testimony and see.

24 MS. MacDONALD: Okay, thank you. The third  
25 question was with Gila monsters. In my second set of



1 comments in July, I had made a list of all the different  
2 species that we had seen -- or, actually, that my mother had  
3 seen in the time that she lived out there on her lot. And,  
4 both my mother and my brother have seen Gila monsters.

5           Staff had concluded something about the banded  
6 Gila monster's considered rare in California, with only  
7 twenty-six credible records of the species documented within  
8 the past 153 years. They have a low potential to occur on  
9 the site. It may be just because of where we're at, the  
10 moisture, but, I didn't see any mention of the fact that  
11 they had, at least -- they had been sighted in the area, so,  
12 I wanted to make note of that on the record. Okay? The  
13 last thing is this really strange thing. I don't think  
14 there's a category this fits, so I'm going to try this in  
15 public health, but you -- I think you're the more logical  
16 one, and that is we have a concern that the project is going  
17 to cause a big migration of snakes out of the area.

18           And we have a very poisonous snake called the  
19 Mojave green, and I'm -- we're not -- when I was looking  
20 through the Ivanpah stuff, I noticed that, quite often,  
21 there were pictures of snakes that had to be relocated. And  
22 so, we have concerns that these snakes, if, you know -- to  
23 what extent they're on there, I don't know, but that they're  
24 going to come out and into our places where we have animals  
25 and water, et cetera, and pose threats to our domestic pets

1 and even ourselves.

2           And, of course, I'm especially concerned since my  
3 mother is by herself now, and we really don't have a very  
4 good way of dealing with it, so I just wanted that noted. I  
5 don't know who's going to deal with that; it's not your  
6 common public health question, but we live in an uncommon  
7 place. Those were my four issues, and thank you very much  
8 for asking.

9           HEARING OFFICER CELLI: Thank you. Now, Mr.  
10 Huntley, you were looking something up for Mr. Ellison.

11           MR. HUNTLEY: Yes, sir, and I believe I've found  
12 it. I do not believe we scaled up for the solar flux  
13 mortalities. I think it was limited to collisions.

14           MR. ELLISON: Thank you.

15           HEARING OFFICER CELLI: Thank you. With that, we  
16 are going to start taking evidence, first with applicant.  
17 We have a motion with regard to biology.

18           MR. ELLISON: We do. We would move the  
19 applicant's biology exhibits, and Mr. Carrier can identify  
20 them by exhibit number.

21           MR. CARRIER: Would you like all of them, or just  
22 those that have not already been entered into the record?

23           HEARING OFFICER CELLI: All biology.

24           MR. CARRIER: Okay.

25           HEARING OFFICER CELLI: Well --

1 MR. CARRIER: I mean, some have been already  
2 entered in throughout --

3 HEARING OFFICER CELLI: Oh, I understand what  
4 you're saying.

5 MR. CARRIER: Throughout the prior day. So, do  
6 you want just the ones that haven't --

7 HEARING OFFICER CELLI: Yeah, that makes it  
8 easier.

9 MR. CARRIER: Okay. So, these are the new  
10 exhibits. Number 3, number 8, 9, 10, 11, 12, 13, 14, 15,  
11 16, 18, 20, 35, 36, 37, 38, 39, 40, 41, 44, 51 - 51, by the  
12 way, is the exhibit that we had mentioned -- you had asked  
13 me to look up earlier, that had the flux models. That was  
14 Exhibit 51 - 66, 67, 68, 69, 73, 74, 75, 76, 77, 78, 81, 83,  
15 84, and 85.

16 HEARING OFFICER CELLI: Okay, let me just read  
17 those back to you. So, we're on -- we have -- the motion is  
18 to move into evidence the following exhibits marked for  
19 identification: Exhibit 3, 8, 9, 10, 11, 12, 13, 14, 15, 16,  
20 18, 20, 35, 36, 37, 38, 39, 40, 41, 44, 51, 66, 67, 68, 69,  
21 73, 74, 75, 76, 77, 78, 81, 83, 84, and 85. Any objection,  
22 staff?

23 MR. BREHLER: No.

24 HEARING OFFICER CELLI: Any objection -- is there  
25 anyone here from the County of Inyo?

1           Seeing none, Mr. Arnold, do you have any  
2 objection?

3           MR. ARNOLD: No objections.

4           HEARING OFFICER CELLI: Okay. It appears that  
5 Mr. Zellhoefer is here. Is there anyone here from the Old  
6 Spanish Trail Association? No longer? Okay. Anyone here  
7 from Amargosa Conservancy? I think not any longer.  
8 Southern Inyo Fire Department, Larry Levy, is he here? No.  
9 Ms. Belenky, any objection?

10          MS. BELENKY: No objection.

11          HEARING OFFICER CELLI: Ms. MacDonald, any  
12 objection?

13          MS. MacDONALD: No objection.

14          HEARING OFFICER CELLI: Okay, those exhibits will  
15 be received into evidence. Staff, you have a motion.

16          MR. CARRIER: Mr. Celli, just to make sure, those  
17 were the ones that have not been previously entered into  
18 evidence.

19          HEARING OFFICER CELLI: Okay, correct.

20          MR. CARRIER: So, other ones, like Exhibit 1,  
21 Exhibit 2, that are entered, I did not read.

22          HEARING OFFICER CELLI: Thank you. That would be  
23 unnecessary. Staff, is there a motion with regard to  
24 exhibits for biology?

25          MR. BREHLER: Yes, there are. Yes, there are.

1 There are -- Exhibits 300, 301, 302, 304, 305, 306, 307,  
2 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319,  
3 323, 324, 329, and 330.

4 HEARING OFFICER CELLI: 323, 324, 329, and 330,  
5 which was your last proffered evidence, right?

6 MR. BREHLER: I'm sorry, also 320.

7 HEARING OFFICER CELLI: Okay. So, the motion is  
8 to move into evidence exhibits marked for identification:  
9 300 through 320 consecutively, 323, 324, 329, and 330. Is  
10 there any objection from applicant?

11 MR. ELLISON: We do object to one. We are  
12 objecting to Exhibit 330 on two grounds. One, it was new  
13 evidence introduced today, but, more importantly, this is  
14 the picture of the solar flux field, horizontal-view, with  
15 the Wells Fargo building. The purpose of the exhibit as  
16 presented by staff was to show the scale of the solar flux  
17 field. As you heard Mr. Franck testify, that solar flux  
18 field was conceptual and not to scale, and, on that basis,  
19 we object.

20 MR. BREHLER: May I make my record?

21 HEARING OFFICER CELLI: Offer proof, go ahead.

22 MR. BREHLER: Yes. The images were provided by  
23 applicant; the size of the Wells Fargo building is subject  
24 to traditional notice as offered for the scale only, and  
25 the, that's our offer.

1 HEARING OFFICER CELLI: Did I understand that, in  
2 the record -- there's an admission that it was not to scale.  
3 Was that a point made, Mr. Ellison?

4 MR. ELLISON: It was offered by the applicant as a  
5 -- as a conceptual, not-to-scale image of the solar flux  
6 field. It was used by staff to show scale.

7 MR. BREHLER: My point about the scale is that the  
8 Wells Fargo building is scaled relative to the other image,  
9 and the scale of the image as provided by the applicant was  
10 not changed.

11 HEARING OFFICER CELLI: The -- the evidence will  
12 be received; the objection's overruled.

13 MR. ELLISON: Just -- just for clarity of the  
14 record, Mr. Celli, I do want to make very clear here that,  
15 when the applicant showed a scale on that conceptual figure,  
16 it was conceptual. It was not modeled. Staff asked us  
17 later to model it to see the exact, actual size of the -- of  
18 the field. We did that. That's in the record, staff  
19 introduced that - we have no objection to that. But the  
20 fact that this was offered by the applicant and then has a  
21 scale on it is being used to imply that that's the scale of  
22 the actual flux field. It is not.

23 HEARING OFFICER CELLI: I understand that. And  
24 let me explain the basis for this admission into evidence so  
25 -- so you understand. There's -- by admitting this piece of

1 evidence into the record, there's nothing that -- at all  
2 that says that the Committee gives it any credence, any  
3 credibility whatsoever.

4           It's just that it's been talked about on the  
5 record, it's been referred to as this Exhibit 330, we all  
6 have been talking about this same thing - and so, for the  
7 purposes of consistency within the record, we want to know  
8 what was discussed, what we were talking about.

9           Whether we give it any weight whatsoever,  
10 that's -- that's not a part of this question, so we're  
11 allowing it in. We understand the frustration and -- and I  
12 don't even need to go there, but with regard to  
13 untimeliness of evidence, but since it's been talked about,  
14 since it's been used, and since your experts have referred  
15 to it - all the experts referred to it - we're going to  
16 allow it in. So, other than that, there's no objection from  
17 applicant with regard to these exhibits. Any objection from  
18 Mr. Arnold?

19           MR. ARNOLD: No, sir.

20           HEARING OFFICER CELLI: Ms. Belenky?

21           MS. BELENKY: No.

22           HEARING OFFICER CELLI: Ms. MacDonald?

23           MS. MacDONALD: No objection.

24           HEARING OFFICER CELLI: Then those exhibits, 300  
25 through 320 inclusive, 323, 324, 329, and 330 will be

1 received into evidence. Next, Mr. Arnold had no evidence.

2 Ms. Belenky, you have some evidence on biology, I take it?

3 MS. BELENKY: Yes, and these are only things that  
4 haven't already been admitted. 501 inclusive, so we don't  
5 have to say all the numbers, to 534, and then one other,  
6 which is 563.

7 HEARING OFFICER CELLI: So, the motion by Center  
8 for Biological Diversity is to introduce into the record  
9 Exhibits 501 through 534 inclusive and Exhibit 563. Is  
10 there any objection by the applicant? Any objection?

11 MR. ELLISON: No objections.

12 HEARING OFFICER CELLI: Staff, any objection?

13 MR. BREHLER: No, sir. Thank you.

14 HEARING OFFICER CELLI: Mr. Arnold, any objection?

15 MR. ARNOLD: No objections.

16 HEARING OFFICER CELLI: And Ms. MacDonald, any  
17 objection?

18 MS. MacDONALD: No objections.

19 HEARING OFFICER CELLI: And the record should  
20 reflect that the reason I'm only asking these parties is  
21 because, at this late hour - and the record should reflect  
22 that it's five minutes to 10 p.m. - the only intervenors who  
23 have stuck it out are Mr. Arnold, Ms. Belenky, Ms.  
24 MacDonald, staff, and applicant. Everyone else seems to  
25 have gone home.



1 MR. ARNOLD: For the record, I saved my breath.  
2 That's why.

3 (Laughter.)

4 HEARING OFFICER CELLI: Exhibits 501 through 534  
5 inclusive and Exhibit 563 are received. Ms. MacDonald, did  
6 you have exhibits regarding --

7 MS. MacDONALD: Yes.

8 HEARING OFFICER CELLI: Biology --

9 MS. MacDONALD: Yes, I did. I'm sorry, I didn't  
10 get them down to what has been submitted and what hasn't, so  
11 I'm going to have to go through the whole list, but I'll  
12 skip saying the exhibit part. 700, 701, 702, 708, 709 --

13 HEARING OFFICER CELLI: Can -- I'm sorry, let  
14 me --

15 MS. MacDONALD: Okay.

16 HEARING OFFICER CELLI: Interrupt you for a  
17 moment, because I've been tracking. Just one moment, Ms.  
18 MacDonald.

19 MS. MacDONALD: Take whatever time you need.

20 HEARING OFFICER CELLI: Okay. It might be easier  
21 to talk about the exhibits that are not in the record versus  
22 what is, and I can tell you exactly what they are.

23 MS. MacDONALD: Okay.

24 HEARING OFFICER CELLI: We have not received --

25 MS. MacDONALD: Hang on, can you get a little

1 closer to the microphone, please? Thank you. Sorry.

2 (Laughter.)

3 HEARING OFFICER CELLI: Oh, boy.

4 MS. MacDONALD: Sorry, thank you.

5 HEARING OFFICER CELLI: Touché.

6 MS. MacDONALD: It wasn't a touché, I just  
7 couldn't hear you.

8 (Laughter.)

9 HEARING OFFICER CELLI: Okay. I don't have -- so,  
10 I have already in the record 701 through 703, so 704 is not  
11 in the record. 705 is not in the record. 714 is not in the  
12 record.

13 MS. MacDONALD: Hang on. Okay.

14 HEARING OFFICER CELLI: 714, 716, and 717 are not  
15 in the record. 721 is not in the record. I hope you're  
16 writing these down.

17 MS. MacDONALD: I am. I would like to enter 721.

18 HEARING OFFICER CELLI: Hold on, there's more.  
19 735 has not been entered into the record. Exhibit 738,  
20 Exhibit 740, 745, 751, 753, 755, and 760. Everything else  
21 is in the record already.

22 MS. MacDONALD: Sweet.

23 HEARING OFFICER CELLI: So, of those that I just  
24 gave you, what are you going to move into evidence for  
25 biology at this time?

1 MS. MacDONALD: I missed a couple. Did I have 742  
2 in there?

3 HEARING OFFICER CELLI: 742 has been received. It  
4 was a water -- But we've received the whole document, so  
5 it's in for all purposes.

6 MS. MacDONALD: Okay. (Off-mic.) 749? I want to  
7 submit that.

8 HEARING OFFICER CELLI: Was received when you  
9 moved -- made your motion under project description, but, as  
10 I said, all of these are in for all purposes if we've  
11 received --

12 MS. MacDONALD: Okay. All right. 754, I'd like  
13 to submit that.

14 HEARING OFFICER CELLI: 754.

15 MS. MacDONALD: And 760 I'd like to submit.

16 HEARING OFFICER CELLI: 760.

17 MS. MacDONALD: And that's it. Thank you.

18 HEARING OFFICER CELLI: Okay. The motion would be  
19 to -- by Ms. MacDonald is to move into evidence exhibits  
20 marked for identification as 754 and 760. Is there any  
21 objection by the applicant?

22 MR. ELLISON: No.

23 HEARING OFFICER CELLI: Any objection, staff?

24 MR. BREHLER: No objection.

25 HEARING OFFICER CELLI: Any objection, Mr. Arnold?

1 MR. ARNOLD: No objection.

2 HEARING OFFICER CELLI: CBD, any objection, Ms.  
3 Belenky?

4 MS. BELENKY: No objection.

5 HEARING OFFICER CELLI: Okay. Exhibits 754 and  
6 760 are received. Okay, one moment. (Off-mic.) Experts on  
7 biology, we want to thank you for your hard work today. You  
8 put in a lot of time, and you are excused at this time.

9 MR. BREHLER: Excuse me, Mr. Celli, I don't mean  
10 to speak for Ms. MacDonald, but I thought 709 was not in the  
11 record and she wanted to offer that one.

12 HEARING OFFICER CELLI: For biology?

13 MR. BREHLER: Unless I misunderstood. Because you  
14 just said 754 and 760.

15 HEARING OFFICER CELLI: Right. That's all I took  
16 in so far were those two for biology.

17 MS. MacDONALD: Yes, 709. I'm sorry. Thank you  
18 so much.

19 HEARING OFFICER CELLI: Did you also say 721?

20 MS. MacDONALD: Did I?

21 HEARING OFFICER CELLI: For bio?

22 MS. MacDONALD: Yes, I did. Thank you.

23 HEARING OFFICER CELLI: So, any objection to 709  
24 and 721, applicant?

25 MR. ELLISON: No.

1 HEARING OFFICER CELLI: Staff?

2 MR. BREHLER: No.

3 HEARING OFFICER CELLI: Ms. Belenky?

4 MS. BELENKY: No.

5 HEARING OFFICER CELLI: Okay, so --

6 PRESIDING MEMBER DOUGLAS: Mr. Arnold?

7 MR. ARNOLD: No objection.

8 HEARING OFFICER CELLI: Ms. MacDonald, I have  
9 received into evidence as -- Exhibits 709, 721, 754, and 760  
10 for biology.

11 MS. MacDONALD: Yes. Thank you.

12 HEARING OFFICER CELLI: Now, we -- we are going to  
13 take a five-minute break to let everybody break down -- we  
14 want your air quality, public health, greenhouse gases.  
15 Experts, please sit at the experts' table. If we have any  
16 that are on the phone --

17 MS. BELENKY: Mr. Celli?

18 HEARING OFFICER CELLI: We're going to have to  
19 unmute them. Go ahead, Ms. Belenky.

20 MS. BELENKY: Yes, I'm -- since I'm here, I'm  
21 certainly going to stay, but I do have to make a standing  
22 objection to having hearings at ten o'clock at night. I  
23 think it is unfair to all the parties, and I've said that  
24 before, but I just have to say it now as well. I realize  
25 you are trying to be efficient, but it is ten o'clock at

1 night and we've been going for more than twelve hours.

2 HEARING OFFICER CELLI: Yes. Boy, much as I'd  
3 like to sustain that objection, because it is late, we have  
4 been going a long time. Ms. MacDonald thinks we can do this  
5 in fifteen minutes, and the inconvenience to her is such  
6 that I think it's best -- we're here now, we better take  
7 care of things while the Committee is here in the  
8 neighborhood, so we'll take care of it. Your objection's  
9 noted and preserved for the record. We'll be off the record  
10 for about five minutes and then we will resume at 10:05.

11 AIR QUALITY, PUBLIC HEALTH, AND GREENHOUSE GAS PANEL

12 HEARING OFFICER CELLI: Am I on the air? Thank  
13 you. My understanding is that the applicant staff have  
14 reached agreement in air quality, greenhouse gases --

15 MS. WILLIS: That is correct.

16 HEARING OFFICER CELLI: And public health.

17 MS. WILLIS: Correct.

18 HEARING OFFICER CELLI: Which is the only reason I  
19 was willing to continue to do this tonight, because that  
20 means that all we have to deal with tonight are the issues  
21 that are raised by Ms. MacDonald.

22 MS. WILLIS: And that's correct, and we do have  
23 our staff for public health and air quality on the line.

24 HEARING OFFICER CELLI: Okay.

25 MS. WILLIS: On WebEx.

1 HEARING OFFICER CELLI: And is that Ann Chu?

2 MS. WILLIS: Ann Chu and Jacquelyn Leyva.

3 HEARING OFFICER CELLI: Ann Chu, would you just  
4 say hello and speak up so we can hear your voice? I have --  
5 I see Ms. Leyva is speaking -- there. Give me more on the  
6 phone. What's Ms. Leyva's first name?

7 MS. WILLIS: Jackie.

8 HEARING OFFICER CELLI: Jackie Leyva, are you  
9 there?

10 MS. LEYVA: Yes. Yes, I am on the line. I heard  
11 Ann earlier, (unintelligible).

12 HEARING OFFICER CELLI: Is Ann Chu on the line? I  
13 see that she's --

14 MS. CHU: Yes.

15 HEARING OFFICER CELLI: Oh, you are? Is that you,  
16 Ms. Chu?

17 MS. CHU: (Unintelligible.)

18 HEARING OFFICER CELLI: I'm -- we're going to need  
19 you to speak -- say that again, Ms. Chu?

20 MS. CHU: Hi, (unintelligible).

21 HEARING OFFICER CELLI: Okay. Now, this process  
22 isn't going to work very well if we can't hear the people on  
23 the phone, and Ms. Chu, you're not coming through very  
24 clearly. Are you talking to us through the microphone on  
25 your computer?

1 MS. CHU: (Unintelligible.)

2 HEARING OFFICER CELLI: I didn't hear what she  
3 just said, because there's a lot of static.

4 MS. CHU: Let me try (unintelligible).

5 HEARING OFFICER CELLI: That's better.

6 MS. CHU: (Unintelligible.)

7 HEARING OFFICER CELLI: That's not better.

8 MS. CHU: Hello?

9 HEARING OFFICER CELLI: Hello, who's speaking?

10 MS. CHU: (Unintelligible.)

11 (Off-mic.)

12 HEARING OFFICER CELLI: Okay. Everybody who's on  
13 the phone -- I'm going to mute everybody except Ann Chu.  
14 Amir Ali, is he with staff or applicant? Okay, I'm going to  
15 mute you. Mr. Vidaver -- are you going to be using Mr.  
16 Vidaver for public health, GHG, or -- GHG, okay, so I won't  
17 mute him. Gerry Bemis, are you going to be using Mr. -- air  
18 quality. This may not work at all, but, Ms. MacDonald,  
19 we're going to do our best to make this work, because some  
20 of these people on the phone just are almost unintelligible.

21 MS. MacDONALD: Just for the record, most of the  
22 issues that I had identified were mostly directed towards  
23 staff, but, of course, I don't -- you know, I -- the  
24 applicant may want to weigh in. I know there was something  
25 I mentioned about temperature changes. Anyway, the whole



1 idea is that the witnesses have to be there, so, since they  
2 said that they can't do it on Monday -- but most of my stuff  
3 was directed towards staff, just so you know.

4 HEARING OFFICER CELLI: Okay. I have Ann Chu, and  
5 I have Ms. Leyva on the phone. And do you have any other  
6 staff witnesses?

7 MS. WILLIS: We don't, but Mr. Leighton is here  
8 who is their supervisor, or, actually, the manager for the  
9 section. If for some reason he needs to -- he's not a  
10 witness, however.

11 HEARING OFFICER CELLI: Maybe he can help  
12 translate some of the buzzing and Martian noises that are  
13 coming from the phone. Ms. MacDonald, what -- can you start  
14 with your line of questioning, or perhaps tell the Committee  
15 what it is you want to enquire about, and we'll see if we  
16 can get that information.

17 MS. MacDONALD: Which subject: public health,  
18 greenhouse gases, or air quality?

19 HEARING OFFICER CELLI: Let's start with air  
20 quality.

21 MS. MacDONALD: The big one, huh? Okay, I kind of  
22 -- I wanted it noted that the project area is in a --  
23 located in a non-attainment area. And that originally I had  
24 a dispute regarding staff and applicant's use of PM-10,  
25 particulate matter data, from the Gene site, because I felt

1 that that was not representative of our site.

2           The staff and I resolved that by them showing me  
3 what the PM-10 data was for Pahrump, but I think it's  
4 important to note that one of the major reasons that was  
5 cited in the AFC as to why they did not use the fugitive  
6 dust -- or the PM-10 data from Pahrump is that a lot of  
7 construction and growth activity had occurred in Pahrump,  
8 starting in the mid-1990's through 2006, and because of that  
9 there was a lot of localized dust disturbances, and I  
10 thought it was a very important point that, according to the  
11 applicant themselves, it had been five or six years since  
12 that construction and development had happened, and there  
13 was -- it was still causing a lot of local dust and a lot of  
14 airborne particulate matter in the area.

15           So, this is important to me because it leads to  
16 the larger subject of what I think are going to be  
17 ultimately cumulative impacts to air quality from PM-10  
18 emissions. I know I'm not an expert, but I have to have  
19 experts here to discuss this, which leads me to my third  
20 point is that I'm not sure if construction mitigation  
21 measures are going to be sufficient, and this is -- of the  
22 specific on this is it's recently come to light, or it was  
23 confirmed by applicant at our last workshop that they do not  
24 plan to use water trucks during the operational portion of  
25 the project.

1           And the question that I wanted to ask Ms. Leyva is  
2 that, according to the FSA, she had said that the modeling  
3 analysis showed that, after implementation of the  
4 recommended fugitive dust mitigation measures, the project's  
5 operation is not predicted to cause violations of the state  
6 or federal AQS. And what I wanted to know is if she had  
7 used water in the modeling for operations or if they had  
8 relied strictly on other controls, such as chemical dust  
9 suppressants and slow speeds.

10           HEARING OFFICER CELLI: Okay. Now, Ms. Leyva, can  
11 you hear me? Do you -- This is Hearing Advisor Ken Celli.  
12 Please stand and raise your right hand.

13           Whereupon,

14                           JACQUELYN LEYVA

15           Was called as a witness herein, and after being  
16 duly sworn, was examined and testified as follows.

17           HEARING OFFICER CELLI: Okay. Did you hear the  
18 question from Ms. MacDonald? We're having a hard time  
19 hearing you. One moment. Volume up. Go ahead, start  
20 speaking, Ms. Leyva.

21           MS. LEYVA: Okay. So, AQSC 7 is the staff  
22 position that is proposed for mitigation and that is going  
23 to use whatever means the applicant feels is appropriate.  
24 And, water is basically one of the ways that we control --  
25 we would consider controlling fugitive dust. And, yes, that

1 was possibly -- that was part of the control measure.

2 HEARING OFFICER CELLI: Did you get that, Ms.  
3 MacDonald? Did you hear that?

4 MS. MacDONALD: I apologize. No, I couldn't quite  
5 understand. Could you repeat it, if you could?

6 HEARING OFFICER CELLI: Please repeat, Ms. Leyva.

7 MS. WILLIS: If I may, I think she was referring  
8 to AQSC 7 --

9 HEARING OFFICER CELLI: Yeah, let her -- go ahead,  
10 Ms. Leyva.

11 MS. LEYVA: There is a dust control plan and they  
12 are allowed to use either chemical dust suppressants or the  
13 use of -- just to use any way possible so (unintelligible)  
14 any way that they can control dust.

15 MS. MacDONALD: Okay. Did I understand correctly  
16 that the operational dust control plan will be up to the  
17 applicant, whether they use -- you know, and it's up to  
18 their discretion whether they use water or not? Did I  
19 understand that correctly?

20 HEARING OFFICER CELLI: Ms. Leyva?

21 MS. LEYVA: Well, they're going to have to submit  
22 their operations plan, and in that plan, they're also  
23 discussing with water trucks in AQSC 7.

24 MS. MacDONALD: Okay. I think I understand what's  
25 going on. She's speaking of the construction plan and that

1 the operations plan will not be developed until shortly  
2 before operations, and -- did I understand that correctly?  
3 So we're talking two different things?

4 MS. LEYVA: Yes. Was I talking about operations  
5 or during construction?

6 MS. MacDONALD: Okay, so --

7 MS. LEYVA: It was about operations.

8 MS. MacDONALD: All right, so when you said the  
9 modeling showed that there was a -- no -- the project would  
10 -- well, what it said was the project's operation is not  
11 predicted to cause violations of the state or federal AQS.  
12 That's why I was asking about operations, because I know  
13 there is a difference in the percentage of dust control when  
14 -- applications of both dust suppressants -- chemical dust  
15 suppressants and water are applied, it increases the  
16 effectiveness of it, so the issue was it says project's  
17 operation is not predicted to cause violations.

18 MS. LEYVA: Correct. And, they will probably only  
19 be using water trucks during construction. So, during the  
20 operation, they will have the option to use dust  
21 stabilizers, and that's what was used -- that's part of the  
22 emissions control estimate.

23 MS. MacDONALD: I'm not a hundred percent sure I  
24 understood that. Could somebody else hear it clearer?

25 HEARING OFFICER CELLI: Let's have her repeat that

1 answer, please, Ms. Leyva?

2 MS. LEYVA: Okay. During -- during construction,  
3 they can use the water trucks whenever -- when they need to  
4 control dust. However, during operations, they will not --  
5 that was not used as part of the emissions estimate. There  
6 is -- they're allowed to use soil stabilizers, non-toxic  
7 soil stabilizers during operations.

8 MS. MacDONALD: Okay. So, when you modeled for  
9 operations, you did not include water trucks? That's the  
10 question.

11 MS. LEYVA: No. No.

12 MS. MacDONALD: Okay. All right, thank you for  
13 that. The next issue is the chemical dust suppressants, and  
14 the applicant, in the rebuttal testimony, had said that I  
15 presented no proof regarding the fact that I'd made a  
16 statement about -- from mostly what I'd seen, that industry  
17 had done the studies and that there was little follow-up,  
18 and so I wanted an opportunity to respond on that.

19 Two reasons for that statement. The first was in  
20 my March comments. I had quoted a EPA expert panel that  
21 occurred in 2002 titled "Potential Environmental Impacts of  
22 Dust Suppressants: Avoiding Another Times Beach." And the  
23 specific quote was, "Most of the research on dust  
24 suppressants has been conducted by industry and has focused  
25 on the effectiveness or performance of dust suppressants,

1 that is, the ability to abate dust. Little information is  
2 available on the potential environmental and health impacts  
3 of these compounds. Potential environmental impacts include  
4 surface and ground water quality deterioration, soil  
5 contamination, toxicity to soil and water biota, toxicity to  
6 humans during and after application, air pollution from  
7 volatile dust suppressant components, accumulation in soils,  
8 changes in hydraulic characteristics of the soils, and  
9 impacts on native flora and fauna populations."

10 Now, I wanted that entered into the record because  
11 that was the basis of -- I just kind of repeated what the  
12 EPA had said, but I also substantiated that through my own  
13 review. Staff, in response to questions that I had about  
14 that, provided a website link that had like a list of a  
15 variety of dust suppressants that were on there, and, in  
16 review, it looked like they had been mostly issued by  
17 industry and maybe one single test.

18 HEARING OFFICER CELLI: My question to you is --  
19 because we had Ms. Leyva on so she can answer your  
20 questions, so, rather than you testifying, we want to hear  
21 your -- her answer your questions, because she's -- that's  
22 what she's here to do.

23 MS. MacDONALD: Okay, well -- I kind of understand  
24 that, but, at the same time, I can't testify unless there's  
25 -- everybody has the opportunity to testify, correct?

1 HEARING OFFICER CELLI: Right.

2 MS. MacDONALD: Okay. So, that's --

3 HEARING OFFICER CELLI: We received your testimony  
4 already, right? Have we already received this into the  
5 record?

6 MS. MacDONALD: I have not been given an  
7 opportunity to rebut applicant's statement that I provided  
8 no proof for my statement about dust suppressants, so I just  
9 looked at this as my opportunity to say why and to show that  
10 there was evidence in the record that supported that  
11 statement.

12 HEARING OFFICER CELLI: Okay.

13 MS. MacDONALD: Okay.

14 HEARING OFFICER CELLI: But now that's in the  
15 record.

16 MS. MacDONALD: Okay, thank you. The other thing  
17 that I'm concerned with -- well, I guess if you want it  
18 framed in a question, Ms. Leyva, do you have any idea what  
19 the financial cost might be to use chemical dust  
20 suppressants annually to control dust on a project site that  
21 size?

22 MS. LEYVA: No, I do not.

23 MS. MacDONALD: Okay. The other point -- well,  
24 I've already made that point, so you don't want to hear  
25 that. The reason why I think this is important is because I



1 had issued some questions to the Great Basin Unified Air  
2 Pollution Control District, and had cited a -- some LORS  
3 that I thought applied. And Great Basin came back and said,  
4 no, those LORS only apply to agricultural projects.

5           And I wanted to bring this to the Committee's  
6 attention, and I appreciate your indulgence - I know it's  
7 late, but I think this is really important - and that is --  
8 I think that they should apply, and the reason that they  
9 should apply is that the reason agriculture has a separate  
10 set of regulations all on its own is it is the only industry  
11 that I'm aware of that has wide-scale soil disturbance, and,  
12 because of that, it -- my understanding is it originated  
13 from the Dust Bowl issues.

14           And one of my concerns is -- is that, if we start  
15 doing a lot of wide-scale disturbances of soil, that we  
16 might end up creating another Dust Bowl. So, I would --  
17 because the Commission, or the Committee has a lot of wide  
18 latitude, I would like them to at least consider looking  
19 into applying agricultural LORS, or at least using them in  
20 evaluations in these kinds of projects, and -- I know, I  
21 know, you want me to hurry.

22           HEARING OFFICER CELLI: Well, I would tell you  
23 this, though. That is something that you would -- you could  
24 put in your brief.

25           MS. MacDONALD: Okay.

1 HEARING OFFICER CELLI: To argue that these rules  
2 and regulations should apply, and here's my reasoning why.

3 MS. MacDONALD: Okay.

4 HEARING OFFICER CELLI: Because I'm just trying to  
5 make maximum use of having Ms. Leyva on the phone.

6 MS. MacDONALD: I understand very much, and I felt  
7 really bad for leaving her there. I guess the -- okay, the  
8 next question or, I guess, issue is, in Ms. Leyva's opinion,  
9 should the mirror washing machine emissions be included in  
10 the permit to operate, or should, um -- I know that the LORS  
11 -- well, there's some ambiguity about the LORS.

12 HEARING OFFICER CELLI: Well, that's a good  
13 question. Let's ask her that.

14 MS. MacDONALD: Okay.

15 HEARING OFFICER CELLI: Ms. Leyva, did you hear  
16 the question?

17 MS. LEYVA: I did not hear the full question.

18 HEARING OFFICER CELLI: Go ahead and ask that  
19 question one more time.

20 MS. MacDONALD: Okay. In your opinion, Ms. Leyva,  
21 do you believe that the mirror washing machines, which are  
22 dedicated vehicles to the power plant, should their  
23 emissions be included in the permit to operate?

24 MS. LEYVA: I evaluated the local LORS with the  
25 Great Basin Unified Air Pollution Control District and they

1 do not have LORS that would require the mirror washing  
2 emissions to be included into the conditions.

3 MS. MacDONALD: I -- okay, I understand that. My  
4 question was, in your expert opinion, do you think that they  
5 should be included as part of the stationary source  
6 emissions?

7 MS. LEYVA: In my opinion, I would have to go by  
8 what the law says.

9 MS. MacDONALD: Okay.

10 MS. LEYVA: And I do not believe so.

11 MS. MacDONALD: Okay. I think that's -- that's  
12 it. The other argument that I could make, and that I can  
13 make in my brief.

14 HEARING OFFICER CELLI: Thank you.

15 MS. MacDONALD: Yes.

16 HEARING OFFICER CELLI: So, is that -- does that  
17 cover air quality for you?

18 MS. MacDONALD: Yes, sir.

19 HEARING OFFICER CELLI: Okay.

20 MS. MacDONALD: Thank you.

21 HEARING OFFICER CELLI: And then did you separate  
22 out greenhouse gases in your questions?

23 MS. MacDONALD: I only have one issue related to  
24 greenhouse gases.

25 HEARING OFFICER CELLI: And who's staff's witness

1 for greenhouse gases?

2 MS. WILLIS: That's also Ms. Leyva.

3 HEARING OFFICER CELLI: Okay, Ms. Leyva's on the  
4 phone, so stay with us, Ms. Leyva.

5 MS. LEYVA: Yes.

6 MS. MacDONALD: Okay, very similar issue, and what  
7 this came from is when they did the greenhouse gas  
8 computation for the power plant, staff had the foresight to  
9 separate the plant, and also request an analysis which was  
10 incorporated for the vehicle -- the mirror washing machines.

11 And what they determined was, approximately, about  
12 sixty-six percent of the greenhouse gases come from the  
13 plant, and thirty-three percent of the greenhouse gases come  
14 from the mirror washing machines. And, so, one of my  
15 concerns is that because these greenhouse gases aren't  
16 really being acknowledged, because they're through mobile  
17 equipment, I don't think that the recording is accurately  
18 reflecting their impacts to the environment, even though I  
19 know that they're much lower than others.

20 So, my question would be, to Ms. Leyva, that, do  
21 you think that, in your expert opinion, would it be a  
22 benefit to include the greenhouse gases in the stationary  
23 source emissions permit offer - I don't know exactly what  
24 the technical term would be - so that it accurately reflects  
25 the greenhouse gas emissions of the plant as a whole?

1 MS. POTTENGER: Mr. Celli, may I ask a question  
2 please?

3 MS. LEYVA: I only evaluated -- I evaluated the  
4 total product emissions from the stationary sources of the  
5 GHGs, and the mobile sources -- their mobile sources, and  
6 they're regulated by the Air Base. So, that's a tough one.  
7 They are not included but, as part of their performance  
8 standards, the facility (unintelligible) GHG performance  
9 standard.

10 MS. MacDONALD: Okay, if I understood you  
11 correctly, you were saying that the greenhouse gas emissions  
12 from the mirror washing machines were not tied to a  
13 performance standard.

14 MS. LEYVA: No, they were not.

15 MS. MacDONALD: Okay. In your expert opinion, do  
16 you think that they should be, given the fact that we're  
17 moving ahead with so many of these solar projects that we'll  
18 be requiring some sort of equipment to clean these mirrors  
19 that are evading greenhouse gases reporting?

20 MS. LEYVA: In my opinion, they probably should  
21 be.

22 MS. MacDONALD: Okay, thank you. I do understand  
23 there's no current LORS, but I also understand that we're  
24 still all kind of trying to figure out how to transition and  
25 mix all this, so thank you for sharing that opinion. That

1 was the only thing I had on greenhouse gases.

2 HEARING OFFICER CELLI: Okay, let's go to --  
3 what's left is public health. Who is staff's public health  
4 expert?

5 MS. CHU: Hi, this is Ann speaking.

6 HEARING OFFICER CELLI: Hello, Ann.

7 MS. CHU: Can you hear me?

8 HEARING OFFICER CELLI: Yes, we can. At this time  
9 I need you to stand, raise your right hand.

10 Whereupon,

11 ANN CHU

12 Was called as a witness herein, and after being  
13 duly sworn, was examined and testified as follows.

14 HEARING OFFICER CELLI: Ms. MacDonald, do you have  
15 any questions for Ms. Chu?

16 MS. MacDONALD: Yes. I basically wanted it on  
17 record, Ms. Chu and I had a brief conversation last Monday  
18 about this, and we disagreed, but what it specifically is  
19 about is Valley Fever. And originally it started with  
20 knowing that it had been identified in the Pahrump Valley,  
21 and then I asked staff what happens if the dust isn't  
22 mitigated.

23 And, in the FSA, the response was something that I  
24 was really unhappy with, which was, essentially, the CDC  
25 recommended, if we had any problems with dust, that we could

1 purchase special masks. We could buy home air infiltration  
2 systems, and we could procure anti-fungal medication.

3 I thought that was an incredible burden to the  
4 public, as well as I expressed concern about the visitors  
5 that were going -- perhaps going to see Teresa, as well as  
6 Front Site. And, essentially, it needed to be on record, I  
7 -- Ms. Chu, how many instances have there been of reported  
8 Valley Fever in the Pahrump area?

9 MS. CHU: There was only one case. One case in the  
10 year 2006, and there's no case since then.

11 MS. MacDONALD: Okay. And, so, my issue with that  
12 is, one, a lot of the people there probably don't go to the  
13 doctor, and so, just because there's only been one case  
14 doesn't mean -- I think that it might be underreported.  
15 And, two, I think a lot of the area that is about to get  
16 disturbed hasn't really been disturbed before, and so it  
17 could be an increase, so I just wanted to -- I really object  
18 to the idea that, in order to protect ourselves, that we  
19 have to go buy masks, and air infiltration systems, and  
20 anti-fungal medication.

21 HEARING OFFICER CELLI: There again is something  
22 that I expect we will see in your brief.

23 MS. MacDONALD: Yes.

24 HEARING OFFICER CELLI: So, let's take more in  
25 terms of the questions that Ms. Chu can answer since we have

1 her.

2 MS. MacDONALD: That was the only thing that I  
3 had, but I had to get it into the record because we had had  
4 a conversation, and she said there was only, you know, one  
5 reported case and she didn't think that was significant, so,  
6 I had to bring that into the record so I could put it in my  
7 brief. I apologize, but it's the only thing I could think  
8 of. That was it.

9 HEARING OFFICER CELLI: No apology necessary.  
10 Thank you. Does staff have any questions for Ms. Chu at  
11 this time?

12 MS. WILLIS: We do not.

13 HEARING OFFICER CELLI: Applicant?

14 MS. POTTENGER: Mr. Celli, I would like to ask Mr.  
15 Rubenstein to respond to any of the questions that he deems  
16 appropriate. I know we kind of skipped around the topics,  
17 but since he is part of the panel, I'd like him to be able  
18 to respond to anything that he needs to.

19 HEARING OFFICER CELLI: Before we do, let me ask  
20 if Mr. Arnold has any questions for Ms. Chu on the phone.

21 MR. ARNOLD: No questions.

22 HEARING OFFICER CELLI: Okay. Have I got  
23 everybody. Ms. Belenky? Nothing? The record should  
24 reflect she said "no" and shook her head in the negative.

25 MS. BELENKY: I'm sorry. No, I don't have any



1 questions for Ms. Chu.

2 HEARING OFFICER CELLI: Okay, then I'm just going  
3 to ask Ms. Leyva and Ms. Chu to stand by just in case there  
4 are any further questions for you, but --

5 MS. LEYVA: Okay.

6 HEARING OFFICER CELLI: Ms. Pottenger, did you  
7 have a question for Mr. Rubenstein?

8 MS. POTTENGER: The question was, Mr. Rubenstein,  
9 did you hear anything that needed clarification on either  
10 topics of air quality, greenhouse gas, or public health?

11 RUBENSTEIN: You all will be relieved to know the  
12 answer is no.

13 MS. POTTENGER: Thank you.

14 HEARING OFFICER CELLI: Anything further for Mr.  
15 Rubenstein, from staff?

16 MS. WILLIS: None.

17 HEARING OFFICER CELLI: Mr. Arnold?

18 MR. ARNOLD: No, sir.

19 HEARING OFFICER CELLI: Ms. Belenky?

20 MS. BELENKY: Yes. We actually hadn't heard about  
21 these mirror washing machines being so -- having so much  
22 emissions, and I'm wondering if the applicant considered  
23 using low-emission vehicles, or electric vehicles for the  
24 mirror washing machines?

25 MR. RUBENSTEIN: We have not, and I'm not sure

1 what you mean by so much emissions.

2 MS. BELENKY: Relative to the general -- the  
3 overall emissions of the project; or, whether or not it's  
4 relative to the overall emissions of the project. Have you  
5 considered using low-emissions vehicles or electric vehicles  
6 for the mirror washing machines?

7 MR. RUBENSTEIN: I'm not aware of any low-emission  
8 greenhouse gas vehicles that could be used as an  
9 alternative, and, no, I don't believe that electric mirror  
10 washing machines are feasible.

11 MS. MacDONALD: That would lead me to a  
12 question --

13 HEARING OFFICER CELLI: Before you do,  
14 Ms. MacDonald, questioning is with Ms. Belenky, and I just  
15 want to know if she's finished or not.

16 MS. BELENKY: Yes, thank you.

17 HEARING OFFICER CELLI: Okay. Go ahead,  
18 Ms. MacDonald.

19 MS. MacDONALD: Sorry, I didn't mean to be rude.  
20 Thank you. I do remember that they had asked you about that  
21 -- or they had asked applicant about that, using electrical  
22 vehicles. But I don't remember them asking about using bio-  
23 diesel in the mirror washing machines, because they're going  
24 to be using diesel, and I know that that could possibly be a  
25 complimentary program with California's goals. There was a

1 rebuttal testimony about differences in emissions. Could  
2 you explain why bio-diesel may not be an appropriate choice  
3 for the mirror washing machines, please?

4 MR. RUBENSTEIN: Certainly. Most of the data I've  
5 seen indicate that bio-diesel actually results in the slight  
6 increase in NO<sub>x</sub> emissions compared to conventional diesel  
7 fuel. It consequently -- even if bio-diesel were available  
8 for use at the site, I think that the net environmental  
9 impact would actually be worse if we were to use it.

10 MS. MacDONALD: Are they carbon-neutral, like, in  
11 terms of greenhouse gas? I mean, is it only a slight  
12 emission in the NO<sub>x</sub>, or --

13 MR. RUBENSTEIN: Well, the -- whether the emission  
14 increase in NO<sub>x</sub> is slight or not is going to be a judgment  
15 call, depending on whether you think a ten or twenty percent  
16 increase is significant. But, whether it, bio-diesel, is  
17 carbon-neutral is completely a function of what is meant by  
18 the word-- bio-diesel, because a lot of people mean  
19 different things by it, and how the bio-diesel is used.  
20 Some bio-diesel fuels can, in fact, have an adverse effect  
21 on greenhouse gas emissions, because of the energy it takes  
22 to create the bio-diesel.

23 MS. MacDONALD: Okay. I don't know that much  
24 about this, but are you saying that the State of California  
25 is trying to promote certain alternative fuel use that might

1 actually be more harmful?

2 MR. RUBENSTEIN: I'm not sure what you're  
3 referring to.

4 MS. MacDONALD: Well, I know that they're looking  
5 for an alternative fuel use, like bio-gas, bio-diesel, as  
6 part of a component to their transformative, renewable  
7 changes, and so that's why I thought that might be a good  
8 way to blend. But, you're saying that the bio-diesels - it  
9 depends on different grades, I understand that - but that  
10 they may actually cause more adverse impacts?

11 MR. RUBENSTEIN: Yes, the best way to explain it  
12 is that the way that the Air Resources Board is trying to  
13 implement that goal is through what is referred to as their  
14 low-carbon fuel standard. And, in the low-carbon fuel  
15 standard, they will not simply accept someone's  
16 representation that a bio-fuel is, in fact, low-carbon.  
17 There is a very lengthy and complex certification process  
18 you have to go through.

19 And so, any bio-fuel that goes through that  
20 certification process will probably result in a net benefit  
21 in terms of greenhouse gas emissions, and will not have any  
22 adverse impacts in terms of NO<sub>x</sub>.

23 MS. MacDONALD: All right, I don't know if this  
24 is your particular -- this question would be correct for  
25 you, but, since the diesel is being stored in a ten-thousand

1 gallon tank, why couldn't the applicant just store certified  
2 bio-diesel on the site just like they're going to store  
3 diesel, and you just bring it in in trucks, right?

4 MR. RUBENSTEIN: Well, the low-carbon fuel  
5 standard applies to all diesel fuel, not just bio-diesel.  
6 And, consequently, any fuel that the applicant purchases for  
7 use in these vehicles will be compliant with the low-carbon  
8 fuel standard.

9 MS. MacDONALD: All right, thank you.

10 HEARING OFFICER CELLI: Anything further of this  
11 witness?

12 MS. MacDONALD: No, and thank you so much. I  
13 appreciate it.

14 HEARING OFFICER CELLI: Are we done, Ms. Pottenger,  
15 with your witness?

16 MS. POTTENGER: Yes, thank you.

17 HEARING OFFICER CELLI: Thank you. And, at this  
18 time, I'm going to start with the applicant motion with  
19 regard to air quality, greenhouse gases, and public health.

20 MS. POTTENGER: The applicant would move  
21 applicant's exhibits relating to air quality, greenhouse  
22 gas, and public health as read by John Carrier.

23 MR. CARRIER: For air quality and greenhouse gas,  
24 the ones that have not already been entered into the record  
25 are Exhibits 32, 33, 50, 52, 53, 55, 56, 57, 58, 59, and 60.

1 And for public health, all those have already been read  
2 into the -- have already been read into the record.

3 HEARING OFFICER CELLI: Thank you. There is a  
4 motion by applicant to move into evidence exhibits marked  
5 for identification 32, 33, 50, 52, 53, 55, 56, 57, 58, 59,  
6 and 60. Is there any objection by staff?

7 MS. WILLIS: No objection.

8 HEARING OFFICER CELLI: Mr. Arnold?

9 MR. ARNOLD: No objection.

10 HEARING OFFICER CELLI: Ms. Belenky?

11 MS. BELENKY: No objection.

12 HEARING OFFICER CELLI: Ms. MacDonald?

13 MS. MacDONALD: No objection.

14 HEARING OFFICER CELLI: Those exhibits are  
15 received. Staff? Motion?

16 MS. WILLIS: Yes, staff would like to move the  
17 portion of Exhibit 300, the FSA, relating to air quality,  
18 public health, and greenhouse gas. And also Exhibit number  
19 303, which is the FDOC.

20 HEARING OFFICER CELLI: Any objection, applicant,  
21 to the receipt into evidence of exhibits marked for  
22 identification 300 and 303?

23 MS. POTTENGER: No objection.

24 HEARING OFFICER CELLI: Mr. Arnold, any objection?

25 MR. ARNOLD: No, sir.

1 HEARING OFFICER CELLI: Any objection, CBD?

2 CBD: No objection.

3 HEARING OFFICER CELLI: Ms. MacDonald?

4 MS. MacDONALD: No objection.

5 HEARING OFFICER CELLI: Exhibits 300 and 303 are  
6 received. Mr. Arnold, you had no further -

7 MR. ARNOLD: No, sir.

8 HEARING OFFICER CELLI: Ms. Belenky, did -- Ms.  
9 MacDonald -- a motion with regard to air quality, public  
10 health, and greenhouse gases?

11 MS. MacDONALD: I'm sorry, what?

12 HEARING OFFICER CELLI: Do you have evidence that  
13 you want to move into the record for air quality, public  
14 health, or GHG?

15 MS. MacDONALD: Yes, but I don't have it narrowed  
16 down to what I have not submitted.

17 HEARING OFFICER CELLI: I can give that to you  
18 again.

19 MS. MacDONALD: Okay.

20 HEARING OFFICER CELLI: It's probably faster to  
21 tell you what you haven't put in.

22 MS. MACDONAD: I tried to put it all in.

23 (Laughter.)

24 HEARING OFFICER CELLI: Well, you've done a good  
25 job. So, what is still outstanding in terms of a motion to

1 be moved into evidence for Ms. MacDonald is Exhibits 704,  
2 705, 714, 716, 717, 721, 735, 738, 740, 745, 751, and 753.  
3 That's all.

4 MS. MacDONALD: Okay. I almost made it as fast as  
5 you, which gave me appreciation for what you're doing.  
6 Okay, I need 721 also entered into the record. I need 740,  
7 736 -- 735, 736, 751, and do I have 760 in?

8 HEARING OFFICER CELLI: Yes. That came in with  
9 biology.

10 MS. MacDONALD: Okay. Thank you. Those -- that's  
11 -- that's it.

12 HEARING OFFICER CELLI: Okay, the motion to move  
13 into evidence exhibits marked for identification: Exhibits  
14 721, 735, 736, 740, and 751. Any objection by the  
15 applicant?

16 MS. POTTENGER: No, thank you.

17 HEARING OFFICER CELLI: Any objection, staff?

18 MS. WILLIS: No objection.

19 HEARING OFFICER CELLI: Mr. Arnold?

20 MR. ARNOLD: No objections.

21 HEARING OFFICER CELLI: Ms. Belenky?

22 MS. BELENKY: No objection.

23 HEARING OFFICER CELLI: \*Exhibits 721, 735, 736,  
24 740, and 751 are received. And that closes air quality,  
25 greenhouse gases, public health, and we closed the record on



1 biology as well. With that the witnesses are excused.  
2 Thank you very much for remaining on the phone, Ms. Chu and  
3 Ms. Leyva.

4 PRESIDING MEMBER DOUGLAS: All right. So, thank  
5 you, everyone, for sticking with us through a long day. I  
6 have one brief question of staff before we adjourn. Does  
7 staff have any illustrative PowerPoints for topics tomorrow?

8 (Laughter.)

9 MS. WILLIS: We will have (unintelligible) for  
10 cultural, and we will have some PowerPoints, but it's  
11 actually -- all except, I think, two were -- are just  
12 exhibits from the FSA, just photos, you know, maps and such.

13 PRESIDING MEMBER DOUGLAS: Okay.

14 MS. WILLIS: And the other two are -- are not  
15 anything that we're -- we don't intend on -- we don't even  
16 need to move them into the record.

17 PRESIDING MEMBER DOUGLAS: Okay. Could you make  
18 sure that all the parties have an opportunity to see your  
19 PowerPoints?

20 MS. WILLIS: I don't know if we have -- do we have  
21 a way to copy them or to make sure?

22 MS. POTTENGER: If they're on your computer, I  
23 have a jump drive, and you can take them that way.

24 MS. WILLIS: They -- except for, I think, just two  
25 or three kind of graphy diagrams that he drew, they're all

1 in their FSA.

2 PRESIDING MEMBER DOUGLAS: Do any of the parties  
3 have interest in seeing the two or three graphy diagrams  
4 before we start?

5 MS. POTTENGER: We would like to see the two or  
6 three graphy diagrams as well as the PowerPoints, referenced  
7 as well as possible. Thank you.

8 PRESIDING MEMBER DOUGLAS: All right. Can we make  
9 that happen tomorrow morning?

10 MS. WILLIS: And you can email them.

11 MS. POTTENGER: Or I can take them tonight, as  
12 well.

13 MS. WILLIS: We don't have any printing --

14 MS. POTTENGER: Oh, I can put them on my --

15 MS. WILLIS: Oh, can you -- we don't have a hard  
16 copy of them. They're just on a -- they're on a flash  
17 drive.

18 MS. POTTENGER: Oh, I have a little flash drive.  
19 Thanks.

20 PRESIDING MEMBER DOUGLAS: All right, it seems  
21 like the technical difficulties can be worked out. Other  
22 parties? Ms. Belenky?

23 MS. BELENKY: Well, I just have a question about  
24 tomorrow about the order because we are on native land here,  
25 and this is the cultural portion, I'm just hoping that we

1 are not -- that we would have -- maybe have them go first  
2 tomorrow, because I feel like it's -- it's really important  
3 to have their presentation in the right context, and -- and  
4 I -- just a request from myself, that I think it would be  
5 actually more -- it would -- the day would go better if we  
6 could have them go first, and then --

7 PRESIDING MEMBER DOUGLAS: Ms. Belenky?  
8 Ms. Belenky, we've discussed this and my understanding -- I  
9 don't want to speak for Mr. Arnold, but my understanding is  
10 that he said that a number of people are coming from long  
11 distances and that he preferred the start time.

12 MR. ARNOLD: That is correct.

13 MS. BELENKY: Okay. Thanks.

14 PRESIDING MEMBER DOUGLAS: All right. So, with --  
15 with that settled, and with the parties -- staff in  
16 particular -- under direction to please share their  
17 PowerPoint and their graphs with the parties that would like  
18 to see them, we'll adjourn for tonight. Thank you.

19 The Evidentiary Hearing was  
20 adjourned at 10:14 p.m.)

21 --oOo--

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## CERTIFICATE OF REPORTER

I, TROY A. RAY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Evidentiary Hearing; that it was thereafter transcribed.

I further certify that I am not of counsel or attorney for any of the parties to said hearing or in any way interested in the outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of March, 2013.

/s/ Troy A. Ray

TROY A. RAY, CER\*\*369

## CERTIFICATE OF TRANSCRIBER

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

/s/ Mary C. Clark  
MARY C. CLARK, CERT\*D-214

March 25, 2013