EVIDENTIARY HEARING

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Application for	)	
Certification for	)	Docket No.
The Ivanpah Solar Electric	)	07-AFC-5
Generating System	)	
_____	)	

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

TUESDAY, JANUARY 12, 2010

9:08 A.M.

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PROCEEDINGS

COMMISSIONER BYRON: Good morning, everyone, once again. This is Commissioner Jeff Byron.

I'd like to welcome you all back to our second day of evidentiary hearings here at the Energy Commission in Sacramento on the Ivanpah Energy -- Ivanpah Solar Collection Generating System.

Mr. Boyd is detained. He's giving a speech this morning I believe until 8:00 or 8:30, so we should see him shortly.

I would like to thank you all very much for your tremendous efforts yesterday here in helping us get through collections of evidence for this case. The panels were just excellent, and I thought everyone's approach to hang in there to get through that was very, very helpful. I'm going to ask you to do the same thing today.

I'd like to welcome you all back. I hope you all between 10:00 last night and 8:00 this morning found some time to get some exercise, some food, get some sleep, and that you're well rested. I know there were a lot of e-mails that I saw last night that were circulating already. But it's time to get back to Ivanpah.

And I'll turn it over to our Hearing Officer, Mr. Paul Kramer.

HEARING OFFICER KRAMER: All I can say is I'm

glad this isn't being televised.

We're going to finish up with the tortoise issues, I believe.

Well, let me ask, do we have any more questions for -- I think there were a couple of questions for the remaining of that panel. And then we'll move on to the biotic portion of biological resources.

Before we do that, I want to make one thing clear, and that's about -- which may guide you in providing testimony here and provide for the rest of the hearings. And that's on the issue of overriding considerations.

As I suggested yesterday in my comments about the relevance -- potential relevance of the ARRA -- that's ARRA, Peter -- stimulus funding issues, that may be relevant to, among other things, the question of overriding considerations.

In my comments, I don't mean to imply that the Panel has decided anything about whether there are going to be unmitigated significant impacts or LORS inconsistencies that would require overrides. But the staff has certainly in its report suggested -- well, recommends that we find that in several areas. And given that possibility, it's appropriate for the parties to address -- I think it will mostly be in your briefs in the

form of argument -- but to address whether the Committee finds the situation either on mitigated impacts or LORS inconsistencies that would require an override in order to approve the project.

We will be looking for you to address whether or not the Committee should recommend an override to the Energy Commission. Actually, which is what these hearings are for, introduction of evidence for facts. They're one and the same. That may cause you to want to make an additional evidentiary point or two to support what you would eventually argue of overrides in your briefs.

I think it's fair to say that the burden for the most part is on the applicant there. They have to make a case for overrides. But I suspect that the other parties may have a fact or two that they want to make sure is in the record to support their arguments. So that's just a heads-up.

We are hoping to receive all that evidence during these hearings. Unless it becomes necessary for some reason, we're not planning or holding a separate hearing down the road. In other words, we're not anticipating a two-step process where the Committee decides that overrides are necessary, we're going to call everyone back together to take more evidence and argue about that. We are looking to receive a complete package of evidence and

then argument in your briefs so that we can decide that issue or decision without further hearings.

So are there any questions about that point? I don't think it's exactly new information, but I just wanted to make sure we were all on the same page with regard to that.

Seeing none, can we reconstitute the portion of the biology panel from last night that we did not dismiss?

Okay. So we have -- we all know each other in the room here. I don't know that we need to take roll again. But just for the sake of us here in the room, can the people who are on the telephone identify themselves?

MS. ROCEK: Hana Rocek, Clark County Aviation.

HEARING OFFICER KRAMER: Okay, Ms. Rocek.

Anyone else?

MR. AARDAHL: Jeff Aardahl, Defenders of Wildlife.

MR. MECKFESSEL: George Meckfessell, Bureau of Land Management.

HEARING OFFICER KRAMER: Okay. Hold on one second. The gentleman from Defenders of Wildlife --

MR. AARDAHL: Yes?

HEARING OFFICER KRAMER: Could you spell your name for us?

MR. AARDAHL: Sure. Last name is Aardahl,

A-a-r-d-a-h-l.

HEARING OFFICER KRAMER: A-a-r-b, as in boy?

MR. AARDAHL: A-a-r-d, as in delta.

HEARING OFFICER KRAMER: Okay. And that was Jeff?

MR. AARDAHL: That's correct.

HEARING OFFICER KRAMER: And from Defenders of Wildlife. Thank you.

MR. BRIZZEE: Mark Brizzee with County of San Bernardino.

HEARING OFFICER KRAMER: Good morning.

We have Ms. Rocek. And I believe there was one other person on the phone.

MR. SULLIVAN: Yes. This is Sid Sullivan, Sierra Club.

HEARING OFFICER KRAMER: And then there was somebody from BLM?

MR. MECKFESSEL: George Meckfessel.

HEARING OFFICER KRAMER: Okay. George, your last name, if I recall correctly from last time, is M-e-c-k-f-e -- double s -- e-l?

MR. MECKFESSEL: Correct.

HEARING OFFICER KRAMER: Anyone else on the telephone?

MS. MOORE: Sharlissa Moore, Arizona State

University.

HEARING OFFICER KRAMER: Your name was garbled.

MS. MOORE: Sharlissa, S-h-a-r-l-i-s-s-a.

HEARING OFFICER KRAMER: And your last name?

MS. MOORE: Moore, M-o-o-r-e.

HEARING OFFICER KRAMER: And you're with Arizona State?

MS. MOORE: Yes.

HEARING OFFICER KRAMER: Okay. Anyone else?

Okay. Thank you, all.

Some of you are new, or at least from yesterday. I'm going to remind you to not put us on hold on your telephone, because sometimes that plays music into our ears and it's disruptive during the hearing.

And if you can mute your telephone microphone if you have noise in the vicinity of your office, that would be helpful. If you don't have a mute button on your phone, you can hit star six and the call-in system will mute you that way and star six again to unmute yourself.

So with that, we will continue our questioning of the panel. And I'm sorry, but I've forgotten who -- I think -- did we finish with Mr. Harris last night; is that correct?

MR. HARRIS: I'm not sure how you forgot that, but yes, we did.

HEARING OFFICER KRAMER: I apologize. So then let me ask among the interviewers which of you have questions.

We'll start with Mr. Andre.

MS. BELENKY: Kevin Emmerich.

HEARING OFFICER KRAMER: I'm sorry, Kevin. Go ahead.

CROSS-EXAMINATION

BY MR. EMMERICK:

Q I have a -- there we go. I have a couple of questions for Dr. Connor briefly.

Question number one, we're curious about global cumulative impacts of all the projects, not only the Ivanpah project that's been talked about here, but the rest of them in the same area. How would that impede the connectivity in the northeastern Mojave tortoise population?

A Yesterday afternoon, I showed a map of desert tortoise habitat from the California National Diversity database showing the habitat in the northeastern Mojave Recovery Unit in California.

The area north Ivanpah Valley where the project is located accounts for about 24 percent of that area. So approximately a quarter of the area is in Ivanpah Valley. And we have a large number of projects that are slated for

that particular area. We have a number of solar plants. We have obviously the current application. We have a train line, and we have these developments that are going along by the freeway.

So I'm really concerned that that entire portion of the Ivanpah Valley isn't going to go as far as being available for tortoises, because the extensive fragmentation that's going to occur and the habitat loss that's going to occur is going to leave pockets of tortoises in a nonviable population in that area. That would effectively remove about 25 percent of the available area in California, which I think is quite a considerable cumulative effect in itself.

One of the issues of concern is connectivity between populations. The northeastern Mojave recovery unit, the tortoises in that area are clearly not the same as tortoises on the other side of the hill in the eastern Mojave Recovery Unit. There's been very little communication between the tortoises in those groups, which is why the northeastern Mojave Recovery Unit has such a distinctive genetic background compared to the eastern Mojave Recovery Unit. So we know that movement between these populations is a rare event.

The 2008 draft revised Recovery Plan proposes Mountain Pass as the route between the northeastern Mojave

Recovery Unit and the eastern Mojave Recovery Unit. And that's the area that gene flow would occur.

The north Ivanpah Valley goes up to the Mountain Pass area, and there are some possible passes through that area that maybe could get up into Mountain Pass. So I'm concerned that the loss of the north Ivanpah Valley itself could actually reduce connectivity -- or the opportunity of connectivity between tortoises in these two populations. And that would have an impact for the entire listed population in California.

Does that answer your question?

Q Yeah. I just had one more. Given the unique distinct genetics of this population here on the project site and the surrounding area, do you believe that the cumulative impact of all of these projects could actually upgrade the desert tortoise, that particular population, from federally threatened to federally endangered?

A Well, I think the federal issues and state issue are not quite the same. We talked yesterday -- or various witnesses talked yesterday about the recovery unit and distinct population segments and so on.

The Recovery Plan itself proposed recovery units which are areas -- geographic areas in which you find an evolution significant population. And the reason they did this is because the desert tortoise goes over a huge

range. It goes from Utah through Nevada into Arizona and California, and the only way the recovery team could envision the desert tortoise ever getting delisted was if they could delist parts of that area.

So they scribe these evolutionary significant unit and recovery units, and the idea was that potentially you get delisting the species by recovery unit itself.

And now we have the situation where we have a large recovery unit. The recovery unit goes from California through Nevada down in Arizona. So it is a huge recovery unit.

Population is very low. We have a situation now where there are tortoises at the south end, including tortoises in the Ivanpah Valley, and we have tortoises in the northern end of the recovery unit. There's some connectivity between, but very few protected areas. So I think there are -- we are in a situation where the cumulative impacts on the recovery unit itself could be potentially a federal concern. But certainly I think it's an issue the population of tortoises in California.

So does that answer your question? Or I've confused it more.

Q No, that's it. Thank you.

I don't have anything else.

HEARING OFFICER KRAMER: Ms. Belenky.

CROSS-EXAMINATION

BY MS. BELENKY:

Q Yes, good morning. I just have a couple of questions, follow-on on the cumulative impact.

I think we've talked a little bit at various times in the past few days about the scope of the cumulative analysis. I know this came up with the visual resources.

So for the tortoise, I think you've just spoken about the northeastern recovery unit and sort of the cumulative impact there. There's another scale that I'd like you to discuss, which is just the Ivanpah Valley. I think you touched on that. And then -- I don't want to ask a compound question so I'll --

A Okay. You want me to -- I'm sorry. Could you repeat the question?

Q Yes.

Could you just discuss the impact on the tortoises just within the Ivanpah Valley of the cumulative projects? So not just on the California side, but also on the Nevada side, the Ivanpah Valley as a whole.

A Okay. What we have in the Ivanpah Valley is we have -- there's a number of existing impacts. We have a large number of impacts that have been there for a long period of time. There are impacts such as cattle raising.

There are impacts from urbanization development. There are housing tracks. We have the casinos, of course. There are lots of roads. We have the I-15. We have a number of other major roads that go through the area. There are prisons. There are all kinds of structures in that area. And there are actually a very small amount of habitat in that area that's actually protected.

In the 1994 Recovery Plan, there were a number of DWMAs proposed for that area that included the Ivanpah Valley and the valley that you mentioned yesterday. The Bureau of Land Management opted not to make those areas DWMAs. It excluded the north Ivanpah Valley. It excluded the habitat in Nevada north of the state line.

So we do have a situation where the tortoises within the Ivanpah Valley itself could potentially become isolated from the tortoises further north because of development, not just in the Ivanpah Valley in California, but in the development in what is called the Kern Valley on the other side of the border could have an impact, too.

Q Thank you.

And then looking at a different scope using the border then as the California/Nevada border looking at the desert tortoise across its range only in California, there are also cumulative projects there, existing projects, plus quite a large set of solar and other renewable

projects.

Can you discuss at all what your expert opinion about the cumulative impact to the desert tortoise from those projects just in the California side?

A Yeah. One of the situations we face is that desert tortoises -- the kind of habitat that a Mojave Desert tortoise likes to live in, these nice broad valleys and on the bajatas, that's the kind of habitat that tortoises want to live in.

These are areas that typically have been disturbed by human activities. That's why we put our roads down in the valleys. We don't put our roads over the mountains if we can avoid it. That's where we put most of our activities.

That's also the area where solar plants are often proposed to be located these days, because, you know, it's a nice relatively flat area. And that's what you need if you're going to develop these solar plants. There are a large number of these plants being proposed in California right now.

And I think that another situation where the state lists the desert tortoise -- basically the entire population of California is listed. We have this situation where this particular project is going to impact tortoises in the northeastern Mojave recovery unit, this

unique to California population that has repercussions for the populations elsewhere. And then we have all these other projects that are going on throughout the California desert that might be impacting the other recovery units.

And I'm very concerned about the whole scale of this. I think you really need to take a strong comprehensive look at what's going on here. It's a very complex situation, and there's a lot of actors involved, and it really needs a wide sweeping programmatic look.

Q Thank you.

I have one more question for you just to clarify something that was said yesterday. This goes to what you just said about tortoises liking the sort of bajada. In my understanding, tortoises can be found at various elevations, but there are some areas that are more likely to be tortoise habitat. Could you just explain that a little bit?

A Certainly. Tortoises tend to occur in the valleys and bajadas at sort of distinct elevational range. They don't go -- they typically won't be found at very high elevations. They will occur at very high elevations. And as I mentioned earlier, the connectivity between the northeastern Mojave Recovery Unit and the eastern Mojave Recovery Unit is a pass area. For a tortoise to get from one side to the other, it has to climb up towards 5,000

feet to get to the other side. It would take a long time to do it.

But there is a difference between a tortoise actually -- an individual tortoise moving around and actually having a breeding population. And one of the issues that was mentioned in the FSA itself is the fact that the northern Ivanpah Valley has this tortoise population actually a breeding population. It's one of the few breeding populations that are at a relatively high elevation.

Q What is the elevation?

A The elevation there, I think the population goes up to about 32 -- 3200 feet and possibly higher.

The bajata also extends its fingers into the wilderness. So we really don't know very much about what's going on with the tortoises outside of the project area. I mean, that's always typical in these kinds of situations. Somebody always comes in and slices the project. We focus attention because we have to. We need to know what resources are going to be impacted. So we do generate a lot of information about that area and sort of highlights what we know about what's going on out there.

Q I just want to follow up to make sure I understand. So tortoises can be found at high elevations, but the general breeding populations are generally found within a

smaller range?

A Yes. Yeah. Exactly.

Q That's right?

And then I understand that -- okay. Well, I think that's fine.

And then I had a question for Ms. Anderson, but I believe she's going to be on the next panel as well. And we could wrap that into that, because she had a number of --

HEARING OFFICER KRAMER: Questions about biotic?

MS. BELENKY: Well, she's going to be testifying on general wildlife issues as well as some of the plant and rehabilitation issues.

HEARING OFFICER KRAMER: If it relates to wildlife, I think it's best to ask it now.

MS. BELENKY: Okay. So the question -- I have to find the page.

I think this goes to some of the questions we were talking about yesterday with the nesting issues that Scott Flint was discussing how he envisioned the nesting working. And in your testimony, which you haven't been able to give yet, and that's why I wanted to -- I'm sorry.

So Ms. Anderson did put testimony in the record that we'll be discussing. Should we do that now? I'm just a little confused about process right now.

HEARING OFFICER KRAMER: Um, Mr. Harris --

MR. HARRIS: Well, I understand the confusion. She's got testimony about wildlife and about botany issues.

My understanding is we're doing everything but botany now so I can hopefully release my non-botanists from the room. And I've already crossed the witness on the wildlife issues that I had. So I'd like to button up everything but botany if we could so I can release my folks.

MS. BELENKY: That would be fine. But then I would like to have Ms. Anderson give her testimony now this morning on this panel, which she hasn't --

HEARING OFFICER KRAMER: With regard to?

MS. BELENKY: With regard to several wildlife species that we've been discussing.

HEARING OFFICER KRAMER: Okay. And then Mr. Harris can cross-examine her, if necessary.

MS. BELENKY: Thank you.

DIRECT EXAMINATION

BY MS. BELENKY:

Q Can you state your name for the record?

A My name is Ileene Anderson.

Q And did you prepare the written testimony that was submitted in this matter entitled, "Testimony of Ileene

Anderson" and also the rebuttal testimony that was submitted on your behalf?

A I did.

Q Do you adopt that testimony and the rebuttal testimony?

A I do.

Q Do you have any additions or corrections to your testimony at this time?

A No.

MS. BELENKY: The Center for Biological Diversity will move the testimony into the record and we will assign it a number later today hopefully.

BY MS. BELENKY:

Q Would you like to give a quick summary of some of the wildlife issues that you discuss in your testimony, please?

A Sure. I have several issues that I still remain concerned about: The effects of the proposed project on the migratory birds with respect of them flying into the heliostats and as well as flying into the concentrated sun beams and being burned.

I have concerns there are no mean daily counts of the birds that were done on the site. There are studies out there that estimate bird mortality from these impacts from a site that's about 1/50th of the size of the

proposed project. And we have single tower. In that project, I have found 1.7 birds per week die.

I think there are prawns on the golf course that are an attractant to the birds that will lure them close into the site.

Clark Mountain is also known as an important bird area for nesting as identified by the Audubon Society. And my concern is that in their migration patterns that the project site is right in that pathway and would potentially increase mortality from these migrating birds.

I also have concerns that the proposed mitigation of picking up and identifying dead birds doesn't do anything to offset the impacts to those birds, as has been proposed in the staff's rebuttal.

I still have concerns with regards to the golden eagles. I was pleased to see that additional data was provided in the staff rebuttal about the location of the golden eagle nests. However, I still feel that the FSA fails to analyze the use of the proposed project site by golden eagles, especially during the crucial breeding season where the literature shows us that activities can become more concentrated instead of being spread out across their home ranges. And because no bird surveys were done, we don't really have the data on that and therefore no analysis can be performed.

I have concern about the Banded Gila Monster relocation. I still haven't seen any relocation plan. And as the scientific literature shows that Gila Monster relocation has been a bismol failure every time they've tried because they have such tight fidelity to their own ranges.

I do remain concerned about the compensatory mitigation, but I support compensatory mitigation for unmitigable impacts. I still have seen oftentimes when mitigation is proposed for a high-profile species like the desert tortoise, other species that are impacted do not always get a fair shake through the mitigation process.

And this comes back to the nesting issue that was discussed yesterday with regards to if you mitigate for one species, that may or may not cover mitigation for all of the species that were impacted. So that becomes very important here is the appropriate siting of that acquisition and mitigation lands so that it can actually mitigate for the species it's supposed to.

I also remain concerned about the revegetation success criteria. I really liked what I saw in the bioresources B appendix to the FSA that gave some very strong clear definitions of those success criteria. And I understand -- at least it's my understanding that that issue is somewhat still in flux. And in order for the

revegetation to be considered a serious effort, those stringent standards definitely need to be adopted.

And, lastly, I still remain concerned about fire threat. And my concerns are primarily focused on the effects of any fire that occurs on the site spreading to the wild lands adjacent to the site and the incredible detrimental impacts to the desert landscape, because it's not adopting to enduring fires that it will have on the adjacent surrounding habitat.

And that concludes my summary of my testimony.

Q Thank you. I just want to ask a few clarifying questions on direct.

You said -- just to clarify, you said that unmitigable impacts need to be mitigated. Did you mean unavoidable?

A I'm sorry. Yes, I meant unavoidable.

Q And just as a basic matter, you're saying -- I think that I'll just go to the next question. It's too confusing.

Going back to the birds, the migratory birds and the possibility they would be injured or killed by the project, the McCrary study that we submitted and that you reference in your testimony shows that there is a high level of bird mortality at the Daggett site, that there had been; is that correct?

A Yes.

Q Now, the applicant's rebuttal testimony implies that the only reason for the high bird mortality was the presence of the water treatment pond. In your scientific opinion from reading the study, is that a fair assessment of the paper's conclusions?

A No. I believe that while -- that there can be an attractive nuisance and undoubtedly the ponds were an attractive nuisance. I don't think that's the only reason the birds were through that site. Certainly could have been migratory pathways and other attractants to the birds on the sites.

Q Just to clarify. The study itself does not have the information that would eliminate other reasons; is that correct?

A That's correct.

Q Thank you.

And the applicant yesterday morning corrected their testimony stating that there were no winter or spring bird surveys. And from your review of the FSA and the various testimonies from different parties, is that your understanding as well?

A There was no mean daily count of birds on the project site. However, there was a list of species that was accounted on the site during some kind of survey. I would

assume wildlife surveys.

Q A list, but not -- I mean, they say they didn't do surveys, but there was a listing there. And you don't know the source of the list; is that correct?

A Yes, that's correct. I don't unequivocally know the source.

Q Okay. But as far as the documents show, there were no actual surveys of birds on the site?

A Except for burrowing owls, which are --

Q Burrowing owls.

In yesterday's testimony, we went through a little bit about the holding basin. The applicant's explanation was that there will likely not be water in the holding basins and that there would be a limit of no more than 24 hours on having water in those basins. Did you hear that testimony?

A I did.

Q Would a project condition limiting the water held in the holding basins to 24 hours or less tend to minimize the potential impacts that you were concerned about from those basins?

A Yes, it would.

Q Thank you.

And I just want to clarify again one more thing about the bird impacts. The staff has suggested that

there be a condition that dead birds that are found on the site be picked up and logged and that there be some reporting on that, which you just stated would not be an actual mitigation measure; is that correct?

A Yes. It wouldn't offset the impact to those dead birds. It would simply identify the birds, some of the birds.

Q In your opinion, would it be possible -- I'm not asking you to do so right now. But would it be possible to develop a mitigation measure regarding impacts to birds given the amount of evidence or lack of evidence in this record? I'm not sure that was a good question.

A Can you repeat that, please?

Q You've said that there is a lack of evidence on the potential impacts to bird; is that correct?

A Yes.

Q In order to develop a mitigation measure, you need to know what the impacts are first; is that correct?

A Yes.

Q So in order to develop a mitigation measure for the likely or possible impacts to birds, you would need some documentation or at least some analysis of the likely impacts to the birds; is that correct?

A Yes, that's correct.

Q Thank you.

I think that's all my questions at this time. Thank you.

HEARING OFFICER KRAMER: Let's see. Ms. Smith, any questions?

MS. SMITH: I have no questions.

HEARING OFFICER KRAMER: Okay. Mr. Suba?

Mr. SUBA: I have no questions.

HEARING OFFICER KRAMER: Anyone else from our interviewers? Staff?

STAFF COUNSEL RATLIFF: No.

HEARING OFFICER KRAMER: Mr. Harris?

MR. HARRIS: Just a couple.

CROSS-EXAMINATION

BY MR. HARRIS:

Q I guess for Ms. Cunningham. I want to talk about -- oh, is it Anderson? I apologize to the witness, Anderson.

A couple of questions. First one is related to political boundaries. And by political, I mean boundaries say two states, okay. So a border.

So I'm going to put a hypothetical before you, not this project. And to make that clear, the hypothetical is I have a project that's on the border of California and Arizona, okay. Half the project is in California; half the project is in Arizona. And Mr. Cochran wants to know the crazy developer who wants to get

two sets of permits. Do you have that hypothetical in mind, a project half in California and half in Arizona?

A I can imagine that.

Q As a biologist working on the California project, would you consider only the project's impact on California from a biological perspective?

A No.

Q What would you consider?

A I would consider the impacts of the project in totality of the Arizona side and the California side.

Q Thank you.

Other than the desert tortoise -- I'm switching topics. You can leave the horrible hypo behind now.

Other than the desert tortoise, is there any species listed as threatened or endangered under the federal Endangered Species Act occur on the project site?

MS. BELENKY: Objection. This doesn't go to the witness's testimony. And it's a legal conclusion.

MR. HARRIS: I'm asking a biologist about a listing. If she doesn't know, she can say she doesn't know. I'm just asking the status.

HEARING OFFICER KRAMER: Yeah. It's asking for a fact, a listing. So overruled.

MR. HARRIS: She referred to a listed species in the FSA.

BY MR. HARRIS:

Q Did you review that list of species?

A Yes.

Q Okay. So let me -- I'm going to ask the question now. Sorry about that. Again, other than the desert tortoise, are there any species listed as threatened or endangered under the Endangered Species Act?

A Are you speaking about on this project site or in general?

Q Let me -- I'll try it again. I'm sorry for the confusion. I'm really not trying to be difficult. I'm trying to establish a couple facts here.

Other than the desert tortoise, are there any species listed as threatened or endangered under the federal Endangered Species Act on the Ivanpah project site?

MS. BELENKY: I'm going to renew my objection, because Mr. Anderson did not do surveys of the site, did not do comprehensive surveys. There may be other migratory birds that come through this area that nobody surveyed for that could be listed under the federal Endangered Species Acted and other species. This question simply is improper.

MR. HARRIS: I'll ask it to the best of her knowledge and belief.

HEARING OFFICER KRAMER: Are you withdrawing your objection then?

MS. BELENKY: If you ask the question to the best of her knowledge and belief.

BY MR. HARRIS:

Q I'm sorry. I thought I only had two questions. I'll try it again carefully.

To the best of your knowledge and belief, other than the desert tortoise, are there any species listed as threatened or endangered under the Federal Endangered Species Act on the Ivanpah project site?

A Not to my knowledge.

Q To the best of your knowledge and belief, other than the desert tortoise, are there any species listed as threatened or endangered under the California Endangered Species Act on the Ivanpah site?

A Not to my knowledge.

Q That's it. Thank you very much.

HEARING OFFICER KRAMER: Okay. County of San Bernardino, I sort of left it to the intervenors, but I wanted to make sure you didn't have any questions.

MR. BRIZZEE: Thank you, Mr. Kramer. I do not have any questions.

HEARING OFFICER KRAMER: Okay. I think that takes care of this panel.

And as a point of order, Mr. Harris last night said he was going to be asking that some of the exhibits that have been listed by the various parties not be accepted into evidence on various grounds. I don't know if he's provided that, that list.

My point is that a part of that determination will be determining whether or not any of those documents were used by somebody when they testified either to help their testimony or another purpose. And I'm suggesting that parties may want to keep some of their witnesses around or at least available to be able to address some of those points when we get into the point of discussion of Mr. Harris' request.

Since we haven't finished the biological testimony and some of these documents may also relate to alternatives, I don't think we can go through this exercise until after that testimony is completed. And so I'm not proposing to dig into his list now, if you have it available. I'm just suggesting to parties that you may want to keep your expert witnesses available by phone or here to help you go through that exercise when we do it. Is that semi-clear?

MR. BASOFIN: I need a little bit of clarification on Mr. Harris' objection. Our party submitted a number of exhibits, some of which we've used

as exhibits on cross-examination and intend to use other of those exhibits on cross-examination. We haven't requested that all of them be submitted into evidence, although we will request that those exhibits that were relied upon by Mr. Marlow be submitted, including his testimony, which we'll have to mark as an exhibit. I'm assuming we'll do that at the end of the biological resources section. But I think his objection is untimely.

HEARING OFFICER KRAMER: Well, I don't think it's untimely, because until he has an opportunity to -- I think you're correct in that he has not asked specific questions as well as your witnesses as to which document -- which of those documents on the exhibit list he relied upon. But that's I think a dialogue we'll have to have after you've heard all the testimony. To have it now would be premature and confusing.

So, again, I'm simply giving you that heads-up to be prepared for that discussion, because he appears to be interested in initiating that.

STAFF COUNSEL RATLIFF: Mr. Kramer, if I may, I'm sympathetic to the applicant's concern to some degree, but it would seem to me that if there are portions of testimony that have not been relied on and are essentially hearsay in various filings of the parties, then would not that testimony just have the weight at best as hearsay

testimony or basically not testimony at all? It's just hearsay evidence. Couldn't you just make that distinction when you write your opinion -- my fear is that we may end up spending an hour or more trying to figure out -- trying to pull apart these different filings to find out which ones are actually in the evidentiary record and which ones aren't. And I think we might have a rather unproductive session of trying to do that. And I'm not sure it's worth the chase, frankly.

HEARING OFFICER KRAMER: Well, I think you're starting to argue a motion that hasn't been made yet on the basis of the list of documents. And Mr. Harris is going to have to go through and explain for each document the nature of his concerns. So I think it probably will take a little bit of time.

But it would not be appropriate for us to rule as you suggest prior to the discussion. And as I said earlier, until we get all the testimony, I think the discussion would be premature.

STAFF COUNSEL RATLIFF: Yeah. I'm just questioning whether this is all necessary and maybe -- perhaps if we discussed it further with Mr. Harris, then we can understand the concern is one that we need to take seriously.

MS. SMITH: Mr. Kramer, I echo Mr. Ratliff's

concerns. I've never been involved in a proceeding where the plaintiffs didn't provide the scientific information their experts relied on. I used this protocol and here is this site but this is the standard. We're not offering that as separate testimony. It's just the supporting documentation for our work.

So if we are going to get into -- because we supplied a number of studies, I'd like to get some idea what it is we're going to be fighting about so I can work with my expert and he and I don't have to sit here with all of you and hash this out.

So, you know, this could be a really lengthy song and dance that I've never seen in a proceeding before. So I have the same concern as Mr. Ratliff. Thank you.

HEARING OFFICER KRAMER: I think we have to wait until later in the proceeding I think for a couple other reasons here. I think you're probably correct this is going to use up some time. Whether it's a half an hour, hour, two hours, I don't know. But today we're trying to finish biology and hopefully finish alternatives. And those are the key topics to which almost all your documents relate. There's not much on visual, for instance. So I'd rather not spend any more time on that right now.

Mr. Harris, do you have the list of documents?

MR. HARRIS: I do have a list, yes.

HEARING OFFICER KRAMER: So during the break, if you could share it with parties so they could start to look it over. I don't think it would be fair to present that to them right before the discussion. And that would probably add to the length of discussion. Just need to get up to speed.

MR. HARRIS: I do agree with Mr. Basofin that it may be premature on the issue and actually may be better just to hold that until after the testimony is in. It may change some tactics and lead to further delay. I actually prefer to hold that until they're ready to move the documents in, if that's okay with you.

HEARING OFFICER KRAMER: You prefer to hold than sharing the list?

MR. HARRIS: Well, I may have to modify the list based upon the fact that I put it together last night at 11:30 and haven't had a chance to sit and look at it closely. I'd like to go through that with my colleague and make sure that we haven't included things that are not objectionable.

So how about after the first break? I just need 20 minutes to make sure that I haven't mischaracterized any of the exhibits.

HEARING OFFICER KRAMER: That's fine. Okay.

Let's move onto the biotic -- let's go off the record for a second.

(Thereupon there was a pause in the proceedings.)

HEARING OFFICER KRAMER: We have come up with an additional line of inquiry that the parties haven't touched on to our knowledge. And that's simply about -- it's a relatively simple question, but we would like to bring the experts from each of the sides who have an opinion to ask a relatively simple question.

That is, what is -- if they can describe for us the impact of climate change on the species in the project vicinity, if they know.

Of course, we'll allow others and parties to ask follow-up questions if they feel the need.

STAFF COUNSEL RATLIFF: Is it possible for the Committee to use the informal hearing procedure for this to make it more expeditious?

HEARING OFFICER KRAMER: Assuming there's no objection, that would be fine.

MS. BELENKY: Good morning.

The biologists are wondering if we could do this after the plant part and then do all of it together on the question of global warming impacts to all species, not just the wildlife. Would that be all right?

HEARING OFFICER KRAMER: Um, some of the

parties -- for instance, the applicant, I believe, would like to cover some species experts laws. So they may prefer to answer the question now.

MS. BELENKY: You mean wildlife experts?

HEARING OFFICER KRAMER: Right. Wildlife. Sorry.

MS. BELENKY: Thank you. Sorry. Well, I don't think --

MR. HARRIS: Let me check with my experts about their availability real quick.

MS. BELENKY: The problem is that the botanists are saying that the wildlife actually depend on the plants, which is one of those things -- you know, botanists are always saying crazy things like that. So if we don't discuss how the plants would be affected by global warming, it's hard to also --

HEARING OFFICER KRAMER: I'm presuming that they would also answer that question. But we were talking about dismissing people, and I didn't want to ambush the applicant by bringing this up after he had sent his folks home.

VICE CHAIRPERSON BOYD: Yes, actually, we recognize that. Our fear was we were going to lose people before we get the time to answer the questions. If everybody will stay, then yes.

MR. HARRIS: We've re-arranged travel issues and the witnesses will be available. We have I think three folks available to answer questions, the desert tortoise specialists and botanist who's been actively involved in these discussions. So we could accommodate you even an hour after the botany, I guess with the caveat that we have a pretty tight schedule with our alternatives witnesses. As indicated before, 5:00 shoe bombers flight is another thing. They probably need to be out sooner than 5 o'clock.

HEARING OFFICER KRAMER: Shoe bombers is last.

MR. HARRIS: I'm constantly behind so --

HEARING OFFICER KRAMER: Okay. Well, Ms. Belenky, is there any reason we can't bring up your --

MS. BELENKY: No, not at all.

HEARING OFFICER KRAMER: So let's just do that. There's no reason for those people to sit around the rest of the day just to answer what I may have, as I realize, a relatively simple question.

So we have our panel consisting of most -- all of the witnesses who testified yesterday and this morning with the exception of the couple that were dismissed. And ma'a, in the brown jacket, you did not testify yesterday. Could you give us your name and spell your name for the record?

MS. HOWALD: My name is Ann Howald. That's A-n-n, H-o-w-a-l-d. H-o-w-a-l-d.

HEARING OFFICER KRAMER: Okay. You were listed as one of the applicant's witnesses?

MS. HOWALD: Yes.

HEARING OFFICER KRAMER: Okay. And then we have Dr. Connor, Ms. Anderson, Mr. -- is that Cochran?

MR. COCHRAN: Mark Cochran.

HEARING OFFICER KRAMER: Okay. Mr. Cochran. And Mr. Spaulding, along with -- and we have staff's witness, Mr. Flint and we have Susan Sanders.

MS. SANDERS: We also have more staff.

MS. MILLIRON: I'm Misa Milliron, M-i-l-l-i-r-o-n. Misa is spelled M-i-s-a.

HEARING OFFICER KRAMER: Okay. So Ms. Milliron and Ms. Howard, were you sworn yesterday? Ms. Howald, were you sworn yesterday? Did you take an oath as a witnessed yesterday?

MS. HOWALD: Yes.

HEARING OFFICER KRAMER: Okay. Both of them indicate they did.

EXAMINATION

HEARING OFFICER KRAMER: Okay. The question for the group one at a time -- starting with Mr. Connor all the way around the group there.

The question is: Please describe the effects, if any, that climate change is expected to have on the species in the project, on the project site, or in the vicinity of the project site.

MS. BELENKY: I'm sorry. Can I just ask one question? Ms. Howald is the -- I had a plant expert. I just want to make sure, because our plant experts are not on this panel now. So we're still going to do this question with plants later again?

HEARING OFFICER KRAMER: We're talking about wildlife to the extent there is a connection between the two. I think it's as you've described a few moments ago, that the food source is perfectly okay to cross over into that area. But we're primarily asking the effects on wildlife.

MR. HARRIS: And, Mr. Kramer, we don't object if CDD wants to have their lot in this joint as well. Ms. Howald has some qualifications she should lay out before she makes her comments on this particular subject, which is why we've asked her to join the panel. But we certainly would not object to the botanists joining the panel for any of the witnesses.

MS. BELENKY: Just to be clear, I just want to be clear, because there was that discussion before about bifurcating it and now we're not. We're semi-bifurcating

it, it sounds like.

HEARING OFFICER KRAMER: Well, I'm perfectly open to bringing everyone up and letting them discuss it.

VICE CHAIRPERSON BOYD: Mr. Kramer, can't we have these folks identify a link and then pursue the link?

HEARING OFFICER KRAMER: We could do that. Or if they talk about all of the species, plant and animal, at this point in time, that might save some time rather than covering that ground again later. So do we have all of the -- or we're now going to identify all of the wildlife or plant witnesses who wish to offer an opinion about the question we posed?

MR. SUBA: Yes. You know, I have a question. I'm not identified as a witness and I have not been sworn in, but if we're going to talk about this, I kind of would like the opportunity to do that. Maybe it's just as a cross --

HEARING OFFICER KRAMER: Well, if you --

MR. SUBA: We do have a witness.

HEARING OFFICER KRAMER: But you would have -- this is Mr. Suba speaking. You were not identified as a witness early on in the proceedings, so I would not expect you to be testifying one way or the other.

MR. SUBA: Then I'll just add questions into the process that way. But Mr. Andre will be our witness --

HEARING OFFICER KRAMER: Okay.

MR. SUBA: -- participating in this panel.

HEARING OFFICER KRAMER: Okay. So that I can keep things in order then, we've added Mr. Andre.

Anyone else? I gather not.

So, Mr. Andre, why don't you now go first so I can follow cross for reference? Do you understand the question?

MR. ANDRE: No. I'd like to have that re-addressed.

HEARING OFFICER KRAMER: We'd like you to discuss your opinion -- first your opinion about and description of the effects as you understand them of climate change on both the wildlife and the plant species and any other species regarding on the project site or in the vicinity of the project site.

MR. ANDRE: This was in our testimony. And I just want to make that clear.

My background is not in climate change studies and wildlife but as a paleoecologist. That is issues and effects just about aspects of the science of paleoecology and is particularly a major issue of course in the desert where climate is quite variable both naturally and subject to extreme variations with global change.

Populations are not static in place and time.

Climate change requires large systems to be available for plants to migrate, disabuse, for meta populations to survive.

And what I mean by meta population is populations may be extinct, but they interact with other populations. And to sustain those larger meta populations over time, which is necessary for the species, you need large areas. And you need those programs.

The area that we're talking about, Ivanpah Valley, lies within a very significant relatively undisturbed and intact ecosystem, the eastern Mojave Desert ecosystem. And this ecosystem at this point is fairly well intact in terms of public land management practices being primarily, resident, national park. Joshua Park National Preserve all the way up to Death Valley in the eastern Mojave Desert from south to north is globally recognized for its significance in terms of being an intact ecosystem or natural processes on the landscape level which is still functioning quite well. That's actually becoming a rarity on our planet at this time.

Climate change in combination with fragmentation of these intact ecosystems compounds the problem of species being able to maintain meta populations. That includes gene flow among populations. So genetics is a very key component. It's very difficult to gather data on

and time consuming. So often the impacts are not realized, not even after the fact. You know, the plant community provides the foundation for the majority of the vertebrate and invertebrate animal committees. And the alteration to vegetation is certainly going to be felt in wildlife as we've heard, discussed frequently; processes, nutrients, availability to desert tortoises, et cetera, et cetera.

VICE CHAIRPERSON BOYD: Mr. Andre, I'm not sure I'm familiar with your background. Are you an expert botanist? Please describe what your background is.

MR. ANDRE: Yes. I'm the director of the Granite Mountains Desert Research Center located in eastern Mojave Desert. That's the University of California Riverside. It's a 9,000-acre research center. Presently has about 165 to 170 multi-disciplinary research projects from scientists throughout the world. I'm involved in a number of those projects. My expertise is paleoecology, conservation, biology, and plants and floristics.

I'm one of the most active botanists in the California deserts in conducting inventory and floristic analyses and have been working on flora of the Mojave National Reserve Preserve that encircles the southern and western end of Ivanpah Valley.

VICE CHAIRPERSON BOYD: Well -- and there are

many others here that could ask far more questions about a subject that I know little.

But I think my interest here is, you know, I would think that the plants -- the vegetation in the desert is some of the most resilient in the world in terms of putting up with doubt and direct sunlight. But how does climate change effect that vegetation?

MR. ANDRE: You know, we're still learning quite a bit about resiliency and each species has its own individual tolerances to environmental change. Several ecologists have been very surprised by the effects that have been seen in some of the dry years that have occurred recently.

2002 was on average about ten percent of the rainfall from across the desert southwest, ten percent of average. And during that year, there was massive die-off of very long-lived shrubs, such as juniperus osteosperma, which, you know, they're 500 years old. Thirty percent of those died throughout large areas.

Ambrosa Dumosa communities, which is one of the very common dominant shrubs of the Mojave, suffered near total mortality over large areas between Blythe and Phoenix.

So one year you have a mortality event which suggests that, one, naturally species die off and

recolonize. This is part of the system, but it also says something if you're thinking about conservation and trying to set up a large preserve, you need a large area so it can accommodate localized or even severe climate events that are actually the things that define the evolutionary process.

So it's a very dynamic and quite stochastic system, not necessarily I would say as a system resilient. Resiliency is something you can -- you can assign to large ecosystems and try to compare them on that. But it's a pretty complicated thing to apply to something other than organisms.

But, overall, I think yeah, the desert is a tough cookie. It deals with a lot of tough environments, but I think that's true of almost any habitat. If you're living in the shade of a tree fern and several other layers of canopy in the tropical rain forest, you have your work cut out for you to try to survive in that environment as well.

VICE CHAIRPERSON BOYD: And I think Ms. Belenky also wanted you on this panel so you could address the interaction between vegetation and wildlife. Do you have anything you want to add there?

MR. ANDRE: No. I would defer to some of the other witnesses I think with a little more expertise in that.

HEARING OFFICER KRAMER: Mr. Connor -- and just to be clear here, what I'm really looking for is information that might be relevant on the topic of overlaps. In other words, is there -- I think it's generally assumed that renewable projects offer benefits as far as climate change goes in that they're not producing greenhouse gases. So what we're wondering is whether the contribution of a project such as this to the slight mitigation of global warming problem offers benefits for these species. So to the extent you can direct your answers to that, I think that would be helpful.

MS. SMITH: Mr. Kramer, could I make a point? You may have covered this when I was out of the room, but I'm not sure at least our witnesses actually understand the override principles. Would you explain that to them, sort of what you mean when you say override? Just so we're all on the same page.

HEARING OFFICER KRAMER: I can do that. That might be helpful.

If the Commission finds that significant unmitigated impacts to the project that are unmitigable or there is an inconsistency with the state, local -- state and local laws -- laws, ordinances, or standards, the Commission can still approve a project if it finds that --

I don't have the precise language in front of me.

But, in essence, that the benefits of a project outweigh the detriments if you will, either the significant impacts or the inconsistency of law.

So what we are asking in effect is, is there some kind of benefit to the species which is the area of your expertise that if there is -- if it's found that the project being a renewal project will to some degree mitigate climate change that effects would play upon the species.

Mr. Connor, if you can go ahead.

DR. CONNOR: Yeah. I'm not sure I can really address the issue of how this particular plant would benefit species and climate change. I'm not qualified to determine what the contribution of the reduction in renewable energy by this plant would actually have.

HEARING OFFICER KRAMER: Well, let me treat this as a hypothetical. Assume that the project will by virtue of it's emitting greenhouse houses, yet generating electricity that might otherwise be created by a plant that doesn't have greenhouse gases, is to some degree mitigating the effects of global warming climate change, if you can call it.

And what we're trying to find out from you is we're not trying to get a complete answer to the question.

We're trying to get an answer to the part about whether climate change has some of that on species. If it doesn't, then there's probably no benefit. But if it does, then perhaps there is. And arguing how much and whether that's worthwhile, that's left to the parties. But we're looking for some factual information from you to the extent that you can provide it.

DR. CONNOR: Thank you for the explanation. There are a couple of areas relating to desert tortoise population and the population at the project site and climate change.

First of all, desert tortoises, if their habitat moves, the tortoises will move with that habitat. So we have a situation where the Ivanpah Valley if rainfall increases, which I think is possible, some of the climate change scenarios, it's conceivable that tortoises could spread onto the areas now covered by the dry (inaudible). If it decreases, then tortoises may have no option but to follow their habitat up the hill to higher elevation, which is kind of hard for me to predict what's going to happen on the ground. And I'm not really into that with local climate change models and to work on that level.

But there's some concern -- the other issue of desert tortoises is somewhat unusual for wildlife species that you usually think about in the context of climate

change, because the sex of desert tortoises is determined by environment. It's not determined genetically. They have this thing called environmental sex determination. Sometimes called temperature sex determination.

What happens is desert tortoises females dig their nest, lay their eggs in it, and sometime down the road, 19 days or so later, then the eggs hatch. The sex of the offspring is determined by how hot it was during that incubation period. Is it critical temperature pivotal temperature, above that, all the offspring tend to be female, and below that all the offspring tend to be male.

So if temperatures do change, if temperatures increase, then the tortoises will either have to move up the hill to a place where there is an average cooler temperature so they can get back to this pivotal 50/50 split on their offspring or otherwise we would be faced with this scenario down the road of populations of tortoises that are dominated by one sex. So it's sort of an unusual thing about desert tortoises.

VICE CHAIRPERSON BOYD: Is there any chance that tortoises know this?

DR. CONNOR: The reality is that tortoises go over a huge range. We've talked about this before. So they're found in Las Vegas. They're found in Ivanpah.

They're found in California. And the average temperatures obviously vary across that range. So throughout that range there obviously -- different populations have different pivotal temperatures. They're not fixed. Otherwise, we would have a situation where some populations would already be -- it would be skewed one sex.

I guess it's sort of an advantage that if we are going to have an increase in temperature it would actually be more females produced. Potentially make things better, but that's pure speculation.

VICE CHAIRPERSON BOYD: Lead to total loss of the species though.

DR. CONNOR: Ultimately. Yeah, I did have a citation in my testimony a quotation from the draft revised recovery plan in which they alluded to this issue of the need to be cognizant that populations may be moving out of conservation areas and may be moving up hill or may be moving. I can read that if you wish, but it's in my testify. It's a quotation.

HEARING OFFICER KRAMER: I think you've made your point.

Ms. Howald.

MS. HOWALD: Well, first let me say I'm not a climate change researcher. The familiarity that I have

with the issues comes from having to consider that in other projects, development projects that I have worked on and also from organizing a seminar about a year ago for the California Native Plant Society Symposium on the effects of climate change on the California flora. So given that I have not given any testimony yet, and having said that, would you like me to go through my general qualifications? Just my background?

HEARING OFFICER KRAMER: Certainly. And then we won't have to do it again.

MS. HOWALD: And then I won't have to do it again. That's right.

So I'm a senior botanist with Garcia and Associates. I've had that job since 2002. I have more than 25 years of experience as a professional botanist. My expertise includes plant identification, production methods, botanical surveys techniques, paleoecology, habitat restoration, monitoring, and invasive lead surveys, and management.

I have completed more than 100 work plant surveys for CEQA, including several very large projects in the Mojave Desert.

I served as the volunteer work plant program director for the California Native Plant Society for two years. And I was a founding director and president

for one term for the California Invasive Plant Council.

And at this time do you want to hear about my involvement in the project itself, or would it be best to put that off until we talk about plants?

HEARING OFFICER KRAMER: Go ahead. That will set the context.

MS. HOWALD: Okay. So with regard to the Ivanpah project in 2007 and 2008, I was the co-plant supervisor for the work plant lead surveys and the barrel cactus census. 2007, I worked the in-house botanical survey report that CH2M HILL used to prepare the AFC.

In 2008, I worked the technical work plant survey report on the botanical resources of the ISEGS site. CH2M HILL collaborated on this report and that is exhibit number 35.

I collaborated with Amy Hiss from CH2M HILL to prepare the special status plant avoidance and protection plan which is the exhibit number 85.

So with regard to your specific question what I would say is that first you need to realize -- and I think this was brought up by Dr. Connor that the temperature effects and the precipitation affects at the Ivanpah site that were heard as a result of local climate change are unknown. We don't really know if it's going to get hotter there or dryer there or wetter or what. We don't know at

this point. So specifically with regard to work plants and I would just address that because that's been my purpose on this project, I don't think that we can say exactly what the effects will be.

I would point out that there is a group of scientists at U.C. Berkeley and other academic institutions who have done some modeling with regard to specific plant species in California attempting to determine what's going to happen to those species in terms of potential migration or movement. And they have modeled not the entire California flora but a number of species. I don't actually know whether they have modeled any of the work plants that we are concerned about on the Ivanpah site. I don't have a copy of that article with me. It was published online in open access journal. I can certainly get that reference for you.

And there may be some specific information in their modeling that would deal with the question of movement. But that still I think is not going to tell you precisely what's going to happen to the work plant species on the Ivanpah site. It's conceivable that because all plants occur within a range where conditions may be what they sometimes call prime or optimum and other areas not so good, it's conceivable that conditions could improve in terms of what the physiological requirements of the

species are. But it's also conceivable that they could not improve, that they could become worse. And because we know so very little about those individual species, none of them have had any kind of in depth study. It's just very difficult to answer that question with any kind of specificity.

HEARING OFFICER KRAMER: Thank you.

MS. ANDERSON: I'm certainly not an expert on global climate change, but I do keep an eye on literature with regards to its effect, not only on wildlife, but on wildlife habitat. And it's my opinion that we're clearly already seeing significant changes in how these animals are acting on the planet. They're moving around a lot right now.

And it's also my opinion that we as humans are not going to be able to save the species. The species are going to have to do that themselves. And as far as I can see, we've already had significant amount of impact on them as humans. The Ivanpah site hasn't had that much impact except for directly adjacent to the golf course, the I-15 freeway, so functioning is still fairly good. Intellectual habitat as represented by the number of species that were found on site.

These areas are going to be the key I think in having the species save themselves. It gives them room to

move. They're going to be the ones to sort out where their habitat is moving to under global climate change. As I like to call it, global climate chaos. Because to date the modeling I've seen has essentially been pretty much wrong.

So my opinion is we need to be very careful and mindful of where projects, regardless of what type of projects, are sited, where we site these so we can maintain these intact habitat so the species have a chance to figure it out and move appropriately where they need to survive.

HEARING OFFICER KRAMER: Thank you.

MR. COCHRAN: Right. I was just taking a look at the Fish and Wildlife Services Revised Recovery Plan referenced earlier just to get their take on it. But they're citing an intergovernmental panel on climate change and obviously looking at the question just a short paragraph as to the effect it may have on the desert tortoise. The Information they're looking at is generally predicting or modeled to predict just in crude terms less rain and higher temperatures in the Mojave Desert. So that's what I know about climate change.

Segue off of that. It's my opinion that the original precipitation or the need for listing the desert tortoise threatened was the result of about ten years of

drought in the Mojave Desert. Basically a situation where the tortoise come out of their bureaus in the spring looking for something to eat. There's nothing to eat. They go back in their bureaus and they get in poor health. Basically they starve to death and they catch an upper respiratory disease before they die. But basically they're starving to death. I would agree there's very little we can do about it if something like that is happening on that scale.

The Ivanpah site specifically, I would just make one observation that I remember from a desert tortoise counsel meeting. And I believe it was in Ivanpah Valley. It was kind of like a rainy day, and they showed a downpour. It was just a downpour over one square mile area where it was just a deluge. And that was an opportunity for a study to see what response the vegetation had in that spot and see how the tortoises responded there.

So I just point out that kind of a cryogenic increasing temperatures, there could be a rain downfall right next to the site. So there's that level of unpredictability as to what's going to be happening in the future. But certainly increased temperatures and drought would be a bad thing for tortoises, even with large areas of protected habitat.

DR. SPAULDING: With your indulgence, I'd like to mention that prior to joining private industry, my primary field of research was in quaternary paleoecology lands ecosystems. And I specialized in the response of Mojave Desert ecosystems to natural climate change, icing fossil record over the last 20,000 years to understand the last major episode of climate change at the end of the last ice age, the thermal maximum that occurred between 9,000, 6,000 years ago and the aggressive cooling that has occurred since then and up to the beginning of the industrial revolution.

What quaternary paleo-ecologists has identified as being the responses of both plant and animal species to climate change can be essentially characterized as three modes of responses. One mode is, of course, into warming temperatures is an increase in the elevational range of the species so the species essentially moves up in response to warming temperatures to maintain its thermal tolerance.

Another response is the latitude national response, whereas I alluded to yesterday during the last glacial age creosote was a refugim down in Mexico near the border with the U.S. and since the end of the last glacial age has moved northward to occupy other places, the current Mojave Desert.

The third is intriguing and suggested by a limited number of studies and that might apply primarily to endemic plants is on rocky slopes is that they have a tendency to be found in the fossil record on south-facing slopes. Today, they're found primarily on north-facing slopes. So they can shift their range from north to south facing slopes.

And a central element in all of these responses to climate change of plant species is the fact they shift their ranges. At the advent of humans into of course American west as well as elsewhere has considerable barriers to those types of movements both in terms of urbanized centers as well as long linear features such as I-15 in the local area.

Our particular area one might expect to see plants and animals moving to higher elevations in response to warmer climates.

One of the additional things I would like to add with respect to what may happen as a consequence of climate change and various of my colleagues general statement that it's rather unpredictable and perhaps you've seen some of the popular literature talk about how there might also be a substantial cooling of northern hemisphere temperatures if there is a catastrophic melting of the polar ice caps and a catastrophic cooling of the

north Atlantic. This might not persist for more than a thousands years, but a thousand years is plenty of time to do the damage.

For example, the extinction of the megafauna camels, native American horses, the native American lion, the list goes on and on and on, more or less took place just at the time during the last major cooling expected with the last major warming about 11,000 to 13,000 years ago.

I believe that we can predict changes in temperature fairly reliably. The temperature is going to increase. It's going to increase more unless something is done to control greenhouse gas emissions. But the temperature is very reliably likely to increase.

Precipitation patterns is a different matter. Precipitation patterns is much more difficult to predict in response to changes in the temperature regimen. About 9,000 years ago, for example, there appears to have been more monsoon rains in the Mojave Desert. That's one of the reasons I was originally attracted to studies in and around the Clark Mountain range is that it has a summer precipitation seniority today. It's characterized on the rocky slopes by a large diversity of the succulent species as a consequence.

So one of the central factors of climate change

is that it's unpredictable and it's detailed. It's essentially accompanied by extinction primarily of animals, but no doubt there are some plants involved, too. And the typical mechanisms, if you will, that have been used by organisms in the past to adapt to this more or less cyclic interglacial climate change that's characterized the last two million years of evolutionary time we've now compounded substantially by the imposition of human features on the landscape.

HEARING OFFICER KRAMER: Thank you.

Mr. Flint.

MR. FLINT: Thanks for the opportunity to speak to this issue.

Yesterday when I gave testimony, I was focused on primarily permitting history and my experience with the department on that. So I'm going to cover on my qualifications on this subject, my educational background.

I have a Bachelor's Degree in biological conservation. And I also have Master level work in biological conservation with an emphasis in plant ecology and evolution.

Part of my responsibility for the department in the last year and a half or two years -- the department, first of all, has taken on a major role in California in establishing a climate change program and trying to work

with the Resource Agency to advise them and others on the potential climate change impacts and specifically adaptation strategies to deal with those impacts for fish and wildlife resources in the state. We've been given that charge and taken that charge on.

To such end, we have commented on the Resource Agency climate change assessment report both contributing portions to those chapters on wildlife and other natural resource issues and reviewing that document.

We also are developing internally a DFS climate change adaptation strategy document, and I work actively with the primary person in charge of developing that document within the department.

One of the issues that we embark on dealing with directly in relation to permitting was adapting our mitigation strategies to be able to accommodate again are be adaptive or think about -- start thinking about adaptive strategies about how we roll out mitigation to deal with climate change.

As you've already heard, the silence around climate change is influx and different research is in direct conflict with each other on what the results will be actually happening and given the fact that we have a combination of both manmade processes that are impacting the global climate through greenhouse gas emissions and

natural processes. It's often difficult to predict exactly what will happen when. And again what we do predict is limited by the quality of the models we're using and the data into those models. So all that makes it highly variable and speculative to some degree.

To try to assess what's happening out there, I've done some independent research on -- back up a minute.

The Desert Renewable Energy Conservation Plan, we have stated in our planning agreement that we will discuss and address climate change in that planning effort to the best of our ability during the time frame of that planning effort.

Also, BLM, who's partnering in that planning effort, has direction coming from the federal government to incorporate climate change in their analysis in land use decisions. So we're working together on that front.

So a couple of things specifically for the Mojave that I have seen in research. One is it can go either way. But some of the modelings towards a general drying trend in the Mojave -- and that means less frequent precipitation regardless of the pattern, less frequent dryer climate. The direct impact on species would be, first of all, such as the desert tortoise would reduce the quality and quantity of their forage. They forage primarily on forbs and seasonal grasses. So that would be

directly affected and most likely reduced if that drying occurs.

Coming along with that, the additional potential frequency of fire is expected to increase if the drying trend occurs. And also any place where there is a disturbance in the desert (inaudible) replacement or shift from invasive species.

From natural to increasive species which now compete the other species for those -- in those changing conditions. So there are going to be changes to the habitats that directly will impact the species.

To, again, the comments we heard here earlier, I agree with the whole premise of the NCCP program and the DRECP. Desert enemy conservation planning effort is based on the premises of trying to maintain natural landscape and natural landscape processes. The area of this project in the Mojave as a whole, especially in the eastern portion, are some of the most intact systems that function to a large degree on their own. Many places in California there's been so much disturbance even on mitigation lands and other things like that we cannot sustain systems and species without active management. And that's why we actively manage mitigation lands that we take that plans intervention needed to put a species to persist on those systems.

And we had an opportunity -- I think we still have an opportunity here through this planning process to work on siting renewable energy projects in the least sensitive or least impactful areas and by actively directing the mitigation obligations for those projects going out there, particularly to maintain connectivity. I think we still have the option to configure things properly in the desert, which is why we're so committed to attaining the DREC plan. But we still have an opportunity out there.

And the key is again the species -- you ask if the tortoise knows about the temperatures. They do. Species know their optimal habitat ranges. And the best thing we can do is to help them just to maintain connectivity and let them be able to move and find that habitat as they need to. Whether it's moving up slope or north which our predictions if it becomes dryer that climate would generally -- the ideal habitat in a certain area would essentially shift northward and up slope northwestward eastward to some degree and up slope. So that's things that may happen out there.

So the other thing that effects this, too, and the species' ability to do that and what the ultimate outcome will be is the rate of climate changes on certain -- if it's slow enough, the species will be able

to adapt and move. If it's rapidly accelerating, which research does indicate, we may actually have to take more active intervention to help species move to appropriate habitats if we choose to take that on as a mission, because the rate of change will be so fast that their optimal habitat will not establish or projects and other things that are will be moving to that habitat. So connectivity is one of the primary goals.

One more thing that I want to talk about -- two more things, but I'll try to be quick and cover things others haven't.

Having read some research, I believe we heard land folks from University of Arizona -- I can find the paper. I don't have it with me -- on whether the desert is a source for carbon emissions. And that particular research I read says right now the desert may be functioning as a sink. So therefore, the desert as is explained in this particular paper through complex interactions of vegetation, desert crust, microbiotics in the soil and soil chemical processes that actually tying up carbon and making it not available.

If we put large plants out there that take up four to 5,000 acres at a time of this habitat, we are going to affect the desert's natural ability to function as a carbon sink. So that's a negative impact of having

these large projects in the desert.

That paper does go on to explain what the uncertainties of climate change, either if it were to become wetter in the desert or dryer, that will totally change the interaction of those chemical processes with the soil. May eliminate those microbial organisms that are tying up the carbon and may become a huge source at that time. So, again, that's unequivocal, but could be happening either way. And there is some evidence to support that it is acting as a sink right now.

So speaking to the one last item, we have -- the department is working on siting removal projects throughout the state. The department is working on at least upwards of 80 projects. Some of those are not in CEC's jurisdiction.

So we are involved in quite a few projects, and we are able to configure some of those projects to allow animal movement through that and we are working hard to do that. That was discussed with the applicant for Ivanpah that sort of -- and this was alluded to yesterday I think by the Committee members. This sort of allowing movement through the Ivanpah site is really not practicable given the technology and the operations that go on there for these kinds of projects. So we did discuss those possibilities, but doesn't seem to be workable at this

project site. We probably could not --

MR. HARRIS: I hate to interrupt, but we've left global warming. We're back to criticizing the Ivanpah project and biological issues.

MR. FLINT: No, I'm not. We were asked to talk about how specifically the project would be impacted either way by global warming. I'm just trying to finish that.

HEARING OFFICER KRAMER: The species.

MR. FLINT: So the only issue there is without the impact to plants location as related to species movement. That's the point I wanted to make.

We have worked in general with the renewable industry to try to get our arms around with their help and quantify the climate change benefits or carbon reduction benefits of the renewable technologies that are being put out there on the ground. And this is difficult to do also right now.

What we are having working and asking is can we have -- can we develop a useful metric that you can communicate to the public about your project that has -- that gives us a way to really measure the -- measure or at least estimate or have some sort of qualitative discussion about the amount of carbon reduction from these different plants and adding up that and looking at the hole we're

putting out there; what does it really do?

But there is some literature starting to be out there on this, but it's difficult to understand and it's all in different metrics. So we've asked to work on this. It's something we would want to talk about in our DRECP plan to try to quantify the effects.

There is some literature that I've seen also. We are looking at a tipping -- right now given the current rate of greenhouse gas emission and assuming making assumptions that's not significantly reduced as we go forward, there has been some predictable nature about renewables actually providing a tipping point against where we start seeing some real reduction effects in maybe 30 years. So that's been discussed in the literature.

So we have to weigh this over the long term. And that's difficult to do in looking at an individual plant and its contribution to reduction in greenhouse gases and then coupled with the uncertainty of the loss of the habitat that's acting as a sink. These are the difficult issues we are trying to weigh and deal with that the Commission must deal within its decision-making process on the project.

HEARING OFFICER KRAMER: Thank you.

Ms. Sanders.

MS. SANDERS: I think Mr. Flint and others have

covered this topic very well. I've got nothing to add that wouldn't be repetitive and speculative.

HEARING OFFICER KRAMER: Ms. Milliron?

MS. MILLIRON: Same for me. I don't have anything to add.

HEARING OFFICER KRAMER: Okay. Do any of the parties wish to ask the panel questions?

MR. SUBA: Good morning, everyone. I just have follow-up question to Dr. Spaulding, actually.

CROSS-EXAMINATION

BY MR. SUBA:

Q Good morning, Dr. Spaulding.

A Good morning.

Q I just want to let you know that I agree with everything you said.

A I urge you not to take my statements too far. One of the things that occurred to me after I finished talking that I want to emphasize is that types of movement on the landscape --

HEARING OFFICER KRAMER: I'm sorry?

MR. SUBA: I didn't mean to get into a conversation. I'm sorry about that.

BY MR. SUBA:

Q But my question is in your point that you were raising about how animals and plants over geologic time have found

ways to shift their ranges -- thanks. I've got a sound track -- to adapt to climate change. Based on what you know about this project and your expertise in the geologic history of range shifts, do you feel that the project -- siting a project where it is helps or hinders the ability of the species in this area to shift their ranges?

A Thank you very much for asking that question. I do appreciate it, because that was a concern of mine that my statements were being misinterpreted.

The geometry of that particular project and the placement of the Ivanpah site actually to my mind doesn't is more or less -- it's neutral. I can't imagine any species that is down slope of the project area that would be hindered in its up slope movement. And similarly, I can't think of anything that's south of the project that the project would hinder in its northward migration. In terms of human facilities interfering with migratory behavior. And we're looking at things like an I-15 or Los Angeles or Las Vegas as being those types of things that really interfere.

MR. SUBA: Thank you.

HEARING OFFICER KRAMER: I hope nothing broke. Someone might have just come back from putting us on hold. Is that the case? You may not want to admit it, but whoever you might have been, your system -- you don't know

it -- has music on hold. Pleasant music, mind you, but --

MR. BRIZZEE: County of San Bernardino would admit to that. Apologize to the Commission.

HEARING OFFICER KRAMER: Thank you, yeah. I think the first time I discovered it back in the '80s when I worked for the county was when I called into my office and I was put on hold. That's the only way you learn, because you don't hear it if you're internal. Anyway, apology accepted.

Any other questions for the panel?

Ms. Cunningham?

CROSS-EXAMINATION

MS. BELENKY: Yeah, I'd like to ask Ms. Anderson, Dr. Connor, and Dr. Andre, in your opinion, do you think removal of large intact functional blocks of habitat for plants, tortoises, Gila Monsters, does that outweigh or what's the balance in your opinion of keeping those -- removing those versus possible climate change effects from renewable energy?

MR. HARRIS: I guess I'd ask Mr. Kramer if that's the scope of what the Committee is looking for. She did use the word climate change, but it didn't sound like it to me. So I guess I'm objecting to the question.

HEARING OFFICER KRAMER: The question is slightly beyond the scope of the testimony we elicited. However,

it is responsive to the theme we are trying to receive information about. So --

MR. HARRIS: I'll withdraw the objection then and ask that anybody on the panel be allowed to answer that, not just her witnesses.

HEARING OFFICER KRAMER: I think that will go for my question. But the individual she identified first should answer first.

MS. ANDERSON: I was hoping that that was what my original testimony inferred, is that these large plots of habitat are the key to keeping species on the planet and being able to move around, whether it's through the Ivanpah site or elsewhere. But the level of fragmentation in the habitat throughout California, these areas become even more important in allowing that movement to take place.

HEARING OFFICER KRAMER: Always be as clear as you can. Sometimes it goes over our heads.

Dr. Connor.

DR. CONNOR: I think we had some discussion yesterday over an attempt to sort of come out with a relative merit of difference or conservation measures for desert tortoise. For example, acquiring habitat, building fences, stuff like that. It's pretty difficult to sort of consider counteracting the loss of 12,000 acres of habitat

by some kind of minor change in climate change. It's pretty difficult for me to sort of get around that.

One of the big problems facing our species is loss of habitat. That's the major reason why species get listed under both the California Endangered Species Act and the federal Endangered Species Act.

And one other issue that's related to this is the actual location of a project. It's not simply the loss of the habitat. It's where that project is located. A lot of the issues that were raised in the FSA with regard to this particular project site and the desert tortoise occupying that is this is one of the higher elevation breeding populations of desert tortoises. And these higher elevation populations, if we're in this scenario where populations are going to be shifting to higher elevations due to climate change, then these are the kinds of populations that we need to be thinking very strongly about protecting, because these are populations that we know, you know, are somewhat adapted to these slightly higher elevations. So that's one consideration I think we need to think about.

HEARING OFFICER KRAMER: Thank you.

MR. ARDAHL: I think the question was fairly well addressed by the panel through most of the answers. I can add some potentials, you know, as to, for instance,

options for plants to respond to removal of habitat in the valley by moving up hill may be limited if they're a plant that relies on sand in the valley. It may be a plant such as Androstephium breviflorum, which is a sand plant, or a plant that's endemic, for instance, to some of the silky soils around the Ivanpah Valley. You don't find that substrate as it moves up the hill in the rocky habitat. So even though it may have a temperature change, it is forced out of the range of tolerances in which it has adapted to in terms of soils in a different soil type. So it's not as simple as shifts in plants, you know, moving up and down or south to north. They may be pushed out of their habitat. So it really accelerates extinction, as Mr. Flint pointed out.

HEARING OFFICER KRAMER: Does anyone else on the panel want to address the balance, as I understand the question, between removing this habitat versus the climate change benefits that there might be from putting a solar power plant there?

MR. SUBA: I can only say I have -- I just can't see any direct relevance.

HEARING OFFICER KRAMER: Thank you.

Any other questions for staff or the applicant?

Do we have any questions on the follow up?

STAFF COUNSEL RATLIFF: No.

MR. HARRIS: No, thank you.

COMMISSIONER BYRON: Panelists, thank you very much.

Mr. Harris, if you'd like to go ahead and introduce your panel and we can get started.

STAFF COUNSEL RATLIFF: Mr. Kramer, before that, could I just mention that we've had apparently two people who have wanted to make comments in the area of plant life since yesterday. I think that they have agreed to call in in the afternoon now today. I just wanted to keep it on your -- I wanted to keep it on your scope for their potential ability to make those comments, because they've waited already since yesterday.

HEARING OFFICER KRAMER: Well, I think normally we would accept public comments after the experts have discussed. That sounds like a good time. But if I forget, please feel free to remind me.

MR. HARRIS: Mr. Kramer, we're ready to proceed. Dr. Spaulding is on this panel and it is the biology panel. And he'll be here immediately.

All the witnesses have been sworn before. I will start by asking them all to state their names for the record and spell it for the court reporter.

And then I'll ask -- what am I asking on this one? I guess maybe Amy on behalf of the panel to respond

to any questions.

So would you all please state your name for the record and spell it for the court reporter, please?

MS. HOWALD: Ann Howald. A-n-n, H-o-w-a-l-d.

HEARING OFFICER KRAMER: It would help us if you spoke up a little louder.

MS. HISS: I'm Amy Hiss. A-m-y. H-i-s-s, s as in Sam.

MR. SANDERS: Andrew Sanders. A-n-d-r-e-w, S-a-n-d-e-r-s.

MR. HUDDLESTON: Russell Huddleston. R-u-s-s-e-l-l, H-u-d-d-l-e-s-t-o-n.

DR. SPAULDING: W. Geoffrey, G-e-o-f-f-r-e-y, Spaulding, S-p-a-u-l-d-i-n-g.

MR. CARRIERS: John Carrier. J-o-h-n, C-a-r-r-i-e-r.

DIRECT EXAMINATION

By MR. HARRIS:

Q And, Amy, on behalf of the panel, I'd like to respond to the questions. And that particular microphone seems not as sensitive or something. So you're all going to have to keep -- it's fine, but just keep it fairly close to your mouth.

What subject matter testimony are you here to respond to today?

A Rare plants.
Q And was your testimony pre-filed as -- was the documents in response part of your pre-filed testimony?
A We filed testimony November 16, January 5th, and section of the AFC and other documents related to the plant. In particular, exhibits 35 and exhibit 81.
Q And all those documents are identified in Section 1(c) of the opening testimony -- rebuttal testimony of the witnesses. Again on behalf of the panel, were those documents prepared either by you, working with a panel, or at their direction?
A Yes.
Q Are the facts stated therein true to the best of your knowledge?
A Yes.
Q And on behalf of the panel, are the opinions there the opinions of the panel?
A Yes.
Q And does the panel adopt this as their testimony?
A Yes, we do.
Q Okay. And I think we are going to start with the botanists, Amy and with Andy. And could you three briefly state your qualifications before making your presentation on the plants?
A Sure. Ann has already provided her qualifications, so

we probably don't need to go through them again.

Q Move a little closer. Sorry. That microphone I think is just not as sensitive.

A Is that any better?

Q Yes.

A Okay. Technical test we used on botanists surveys for the project and the resume and qualifications are in the testimony. But I've worked as a professional botanist for about 20 years, first with the Nature Conservancy and also with the Forest Service.

I worked with the Department of Fish and Game's Natural Database and also with CNPS. And I've been with CH2M HILL since 1991.

I started rare plants surveys at the Ivanpah site and gave direction to the team that conducted the rare plant surveys and wrote the field survey reports. I prepared some sections of the AFC that related to biology and in particular botany and some sections of responses to data requests on botany. I collaborated with Ann Howald's 2008 rare plant report. That's Exhibit 35. And the rare plant avoidance of protection plan that we submitted is exhibit 81.

MR. HARRIS: Okay. Thank you.

Ann already presented her qualification.

Andy, could you briefly describe yourself as

well?

MR. SANDERS: Yes. I'm the curator at the University of California Riverside. Been in that position since 1979. I have a total of 35 years of experience as a professional biologist. Previously, I was manager of the U.C. James Mountain Reserve. And prior to that, I was a biologist with the Federal Bureau of Land Management.

In connection with this project, I was involved very heavily with crude training, especially making sure that everybody is familiar with all the plants on the site and how to identify them. In addition, I was participant in quite a few transects. I contribute only marginally to the report preparation. I'm expert primarily on southern California. I've collected over 38,000 specimens with the UCR program from small size to being the fifth largest in California. I've identified literally several hundred thousand specimens for professional biologists, consultants, and agency biologists, scientists.

MR. HARRIS: Okay. Thank you. I'm going to turn to my first question.

BY MR. HARRIS:

Q Amy, can you describe the field work that you completed with record to botany?

A Sure. I'll just quickly recap. Most of you are already familiar with our reports and our work. And I

have asked to show exhibit 81. This is a map. At the end of that report to shows a distribution of some of the rare plants on site just to help us visually identify what we're looking at and what I'm talking about.

We conducted protocol level rare plant surveys in March through June of spring 2007. And because 2007 was a dry year, we repeated the surveys again in 2008. In both years, we surveyed systemic transect spaced 50 feet apart mapping our current localities as we found. I cannot tell how many linear miles we walked, but it's probably equivalent from California to South Dakota or somewhere thereabouts.

We saw eight rare plants. Rare plant survey area. Jay Modray who is here today, the Intervenor today, he assisted with the project in 2008. He found one additional rare plant species within the site boundary in fall '07. The project greatly benefited from his expertise.

2008 botanical resource report a list of the nine class that we found a map showing, the distribution, and also put it in 35 that can go into the files that we have just for that they're included in the report. I don't need to list them here. None of the nine rare plant species found on the site are federally or state listed by the Fish and Wildlife Service or California State Fish and

Game -- Department of Fish and Game.

Plant species were found on the native plant society's CNPS as one, two, or four. What this means is CNPS species are species that are considered rare and endangered throughout the range. Species on List 2 are rare endangered within California that are more common outside. CNPS 4 species are on the watch list and are limited distribution. One of the rare plants we found was the desert mallow is also sensitive species.

MR. HARRIS: Okay. Andy, can you take a minute and describe the process for adding a species to the California Native Plant Society List, please?

MR. SANDERS: Yes. It's primarily a process of pro-professional botanists and various other individuals will submit.

Usually what I've usually done is I'll write a letter suggesting addition of a species and providing justification information. That submitted information is then reviewed by the CNPS botanist and the rare plant committees.

CNPS was the original -- pardon me -- the original organization that began to compile information on the rare flora of California. Later, their list was adopted by Department of Fish and Game and has become the basis for the natural database list of rare plants. An

additional source, by the way, besides submitted public comment made subsequent based on whatever information they compiled. People then subsequently send in additional information of sitings and one thing or another.

An important source what I consider to be one of the more reliable once is the Consortium of California Herbaria online database, which is essentially -- it's not completed yet but in the process. All the specimen sort in herbaria will hopefully databased and available online so that information can be reviewed and used in listing processes and so on.

MR. HARRIS: Okay. Thank you.

BY MR. HARRIS:

Q Ann, now in response to the FSA and the DEIS, did you prepare a plan to avoid or minimize impacts to special status plants?

A Yes. The FSA DEIS required mitigation for five special status plant species. We prepared a draft special status plant avoidance and protection plan which is submitted as exhibit 81.

The purpose of this plan is to identify the steps and procedures that will be implemented to avoid their plant localities and minimize the extent of rare plant impacts to the maximum degree practicable while achieving energy generation objectives. The intent over the long

term is to have the Ivanpah site support a healthy self-sustaining population of the avoided rare plants that have local distributions similar to pre-project conditions. The draft plan will be finalized and submitted to the California Energy Commission compliance project manager, CPM, and the Bureau of Land Management no later than 60 days prior to the start of ground disturbing activities.

Q So, in preparing the plan to avoid minimize impacts, what constraints did you consider in preparing that plan?

A Well, we considered both engineering and biological constraints. Engineering constraints include pre-construction site modifications, facility layout constraints, and operations constraints. Biological constraints include seasonal limitations on detecting rare plant presence, disbursal of rare plants from avoidant localities into new areas, and the lack of basic ecological information for the rare plant species that are covered by the plan.

Q Can you describe the basic components of the plan from a pre-construction perspective first?

A Yes. The basic pre-construction components of the plan include -- this is kind of a long list here -- an initial selection and mapping of rare plant localities that can potentially be avoided in open areas or through

minor modifications in project design. And the map of these localities is what's up on the screen that Amy referred to earlier and that is in the back pocket of exhibit 81.

In the draft plan, this initial selection includes 100 percent of the localities for Rusby's desert mallow. So that's eleven individuals, 100 percent of those localities; 86 percent of the localities for Mojave milkweed; 45 percent of the localities for desert contrition; and 22 percent of the localities for parish's club cholla.

Q And, Ann, just to clarify, those percentages you just gave, those are avoidance percentages?

A Those are percentages of localities. The percentages of all of those known on the site, those are the percentages of localities that are proposed for avoidance in the draft plan.

Q So with the Rusby in particular, you're proposing to avoid every one of them?

A One-hundred percent.

Q Okay. Please continue.

A Okay. Other pre-construction elements of the plan include: Project design changes in order to accommodate these avoided rare plant localities, the relocation mapping and fencing of avoided rare plant localities and

rare plant individuals before the start of on the ground pre-construction or construction activities, salvaged of rare plants that can't be avoided, including relocation of the salvaged plants to the on-site rare plant transplantation area.

Q Thank you. Can you talk about the basic components of the plan from a post-constructive perspective as well?

A Yes. Post-construction means after construction is over. So those elements of the plan include a post-construction baseline survey to verify which rare plant localities and individuals have actually been avoided and protected from direct impacts during construction; removal of construction fencing and marking these avoided localities. These tasks are going to be completed or plan to be completed at the same time as the post construction baseline survey. So concurrently.

The use of performance standards for actions that are needed to avoid rare plants as the plan describes. And what I mean by that, for example, is the marking and protecting of avoided rare plant localities prior to ground disturbing activities; regularly scheduled and periodic maintenance actions that could effect avoided rare plant localities during operations and others. So we will have performance standards for those actions.

Also the use of biological success criteria to

determine whether avoided rare plants survive and grow over the long term and the delineation of rare plant avoidance zones as the geographic units within which biological success criteria will be applied.

Q So this is the draft plan you provided; is that correct?

A Yes. This is the draft plan that describes a general approach to rare plant avoidance. We'll finalize this plan concurrent with the final project design and it will be submitted to the CEC and BLM for review and approval. The final plan will be included in a condition of approval. The engineering team has made a commitment to avoid rare plant localities identified in the plan.

Q Now this plan includes some long-term monitoring?

A Yes. The plan also includes a long-term monitoring program to assess the long-term persistence of each rare plant species. In addition, the plan uses an adaptive management approach and also includes remedial measures that can be considered in the event that long-term monitoring determines that the success criteria have not been attained.

Q So what's your overall conclusion about the potential effectiveness of the plan?

A This project will be constructed in compliance with the final approved rare plant avoidance and protection

plan. The rare plant avoidance will be included in the conditions of certification for the project and the compliance with those conditions will be checked over time. When properly implemented, the plan could meet the rare plant avoidance and minimization goals. If results of long-term monitoring show that we did not meet success criteria, remedial measures will be implemented as described in the draft plan and they'll be finalized in the final plan.

Q So it does include adaptive management approach; is that correct?

A Yes.

MR. HARRIS: I want to put one more witness on. That would be Dr. Spaulding, and then we'll make the panel available for cross-examination.

BY MR. HARRIS:

Q Dr. Spaulding, there's been a lot of discussion about this existing state of the Ivanpah state. And in particular, one of my concerns is the baseline for that existing site and what are the existing conditions on the ground. We've mentioned the site is currently an active cattle grazing and we've been met with some resistance to that possibility.

So, Dr. Spaulding, have you observed cattle grazing activities on the site personally?

A Yes, I have.

Q Can you describe that, please?

A Certainly. On January 9, last week, I was outside with Mr. Cochran, and we visited both the north end of the area known as Ivanpah 3, the area between Ivanpahs, if you will, 1 and 2 and the area of between I-15 and Ivanpah one. In all three areas, we saw evidence of cattle grazing, including relatively fresh dung, which is distinguishable from burrow dung, and common trampling particularly in the washes on preexisting trails. Furthermore, there is a coral near the I-15 and southern boundary of Ivanpah 1 where the grazing permitee had just been that day apparently working on the well. The pump was operational and pumping water for the cattle at the time we visited the site and there was more trampling and grazing around the coral area than we had seen in the past.

Q Thank you. Appreciate that.

So we're going to make the panel available for cross-examination at this point. There are no questions of the panel.

HEARING OFFICER KRAMER: Thank you, staff.

STAFF COUNSEL RATLIFF: I have a few questions for the witnesses.

CROSS-EXAMINATION

BY STAFF COUNSEL RATLIFF:

Q And since the issues regarding the plant avoidance plan were from Ms. Howald, I will address them to you, is it --

A Howald.

Q I wanted to ask you if you see any problems with this kind of an approach to observation of those kinds of plants that we're talking about.

MR. HARRIS: Dick, can you be more specific about what do you mean by this kind of approach?

BY STAFF COUNSEL RATLIFF:

Q Well, approach that's set forth in the plan itself.

A I guess I'm still not sure exactly what you're asking.

Q Well, what kinds of problems do you perceive with the success of this plan? What could go wrong, in other words?

A Well, good question. There are biological conditions over which we have no control. And I think we've already discussed one of those, which is climate change. When you ask what could go wrong, I guess the problem I'm having is you know, there are many, many elements of this plan and those all need to be incremented properly for the plan to have a chance of success. And so I'm not sure if that's what you're getting at or something else.

Q Well, maybe I should back up and just ask you. I

mean, how much do we really know about these particular plants? And I realize we're talking about a collection of plants and not just one. Are some of them really well defined in terms of --

A You mean their ecological knowledge that we have of them?

Q Yes.

A I would say -- and this is just my own experience. Other people might know more. But we don't know very much about these plants. It's not that we don't know anything. I mean, we know how big they are. We know what they look like. We know whether they're ever green or drought deciduous. We know a little bit, but not specifics about their pollination mechanisms. We know from what we've seen on the Ivanpah site, we know some of the characteristics of the habitat in which we found them. So by that I mean we observed the type of plant community that they were growing in. We observed something about the micro habitat. But that's certainly not everything there is to know about those plants.

So one of them on the site, just for example, you know we did not see that plant flower while we were out there. I'm sure it does. And it has been seen at other locations, but we didn't observe that on this site. So we can't really see completely what the flowering time of

that species is. But just the process of pollination and seed production, we don't know a lot about that.

Q Do we know anything about the genetic diversity of these particular species at the site?

A I guess I would have to say not to my knowledge. Someone else might know -- on the panel might know more than I do. I'm not aware of any. For example, DNA studies that have been done the way they've been done with the tortoise and other organisms to indicate the genetic diversity on that site or how it compares to another site. That's a big unknown.

Q Would I be correct in saying that the intent here really isn't to save necessarily plant individuals but to preserve the plant as a species: Is that --

A Well, the intent as I think I said and described in more detail in the draft plan is to preserve each one of those species on the site in a distribution that is more or less similar to what's there now. So prior to the project. With the exception of Rusby's desert mallow, we are making the attempt to protect and preserve every individual and every localities of that plant.

With the other ones, it's simply not possible for the project to achieve its overall goals to avoid every single one of those plants. So -- but it is necessary in order to protect that distribution. I mean, yes, you have

to protect individual plants.

I don't know if I'm being clear.

Ms. HISS: Maybe I could add a little bit. If you look at the map, you'll see localities of rare plants scattered across the site. And some of the dimensions of each individual localities are fairly large. They contain several plant individuals, whereas others are quite small and they only have one plant. And so we're constrained by the size and the dimension of the heliostat layout.

And to achieve energy generation objectives, we are going to be limited to saving scattered localities within the heliostat array. There's other portions of the site that would be graded where it's not possible to save every locality, nor will it be possible to save every individual plant on site. But the goal is to try to preserve the distribution of the plants within those localities across the site, but not every individual plant. Did that help clarify that at all?

STAFF COUNSEL RATLIFF: Yes. Thank you.

BY STAFF COUNSEL RATLIFF:

Q To your knowledge, do we have experience with similar kinds of conservation projects with rare plants?

A To my knowledge, there is nothing in the Mojave Desert similar to this project for which a mitigation program has

been designed, implemented, and monitored. So in that sense, no.

There are other projects scattered throughout the state of California where avoidance of rare plants has been incorporated in the design of the project. And one large project -- it's certainly not comparable. Strictly is -- you know, Mendocino Redwood Company has very large acreages. They do have rare plants on their property. They have an active timber harvest plan. They have identified their rare plant locations throughout their property, and they are attempting to preserve those through avoidance. And they do that by mapping and marking the localities of the avoided plants. And I don't think there is much of a record yet of monitoring of those species. But that is an ongoing effort of what I would call a very large project. An extremely different kind of habitat, of course.

And then there are smaller projects. One I worked on a couple years ago was a transmission line project in Sonoma County, the Sonoma transmission line upgrade. And we avoided a rare plant on that site and went back and monitored two years, I think. And that was successfully avoided on that project. And I'm sure there are others I could think of if that would be important.

So this kind of thing has been attempted.

Nothing exactly like this. But it has been attempted on other projects.

Q With regards to the project construction -- I don't know if this is better addressed to you or Ms. Hiss or someone else -- but would it be likely that you would mow or clip the existing vegetation down to a much lower level before you would begin to install the features of the project?

A Could you ask me that again? Because I have a feeling I'm --

Q The site preparation presumably is going to involve some cutback of the existing vegetation. And my question goes to what is contemplated for that kind of reduction in the height of the plants.

A I think -- I think the answer to your question that you're looking for -- but tell me if it isn't -- involves this: The areas where these rare plants will be avoided, the plan is before there is any ground-disturbing activity -- and that includes the mowing of vegetation, that those areas will be -- the individual plants will be relocated using the data that we have from our surveys in 2007 and 2008. So those areas will be relocated.

And this is where it's a draft plan. It's not a final plan. But working with the engineers, we will fence or using some kind of very visible material, we will fence

those localities.

And I just have to say from the standpoint of the botanists who prepared the plan, it's our understanding that those kinds of activities, ground-disturbing activities, will not occur within those avoided areas. So this would be something probably that the engineers should talk about. But it's our understanding when we prepared the plan there would not be mowing; there would not be other ground disturbing activities within those fenced avoidance areas.

MR. HARRIS: I'm sorry. Those on the panel, Amy, do you want to add anything to that or anybody else? I know Dick is kind of addressing those questions towards Ann. But I thought you might actually have something to say on that issue.

MS. HISS: I would add a little bit to what Ann said is that within these avoided areas -- avoided means faster construction during operation, knowing of a vegetation would only become an issue during -- if it interfered with the swing of the mirrors. The mirrors -- the mirrors have to be able to tilt and swivel during the data capture electricity. And if the swing of the mirror is imputed, then they would need to go in and remove vegetation in select areas just for that purpose.

STAFF COUNSEL RATLIFF: What height are the

mirrors which you would have to --

MS. HISS: Tom or Steve De Young I think could probably get the -- it's my understanding they're 8 feet off the ground.

Mr. CARRIER: The bottom is part is about a foot to two feet up. About two feet up.

MS. HISS: And tilted up height.

Mr. CARRIER: Let me make one other thing just -- one other part to make sure it's perfectly clear, because we just got through talking about tortoises and some part about relocation of tortoises.

When you're talking about relocating the plants, I mean re-finding the plants, not moving, not relocating. So it's one of those words that has dual meaning. So we'll go out and find where they are again on our GPS and then fence them in.

STAFF COUNSEL RATLIFF: Okay. I thought you were talking about a round up. Thank you for clarifying.

Could you tell us in a vernacular sense how rare is the Mojave milkweed?

MR. SANDERS: In California, it's very rare. Basically in the vicinity of Clark Mountains. I forget the exact number of records, but it's not very great. The species is more widespread to the southeast. It's one of these CNPS category two things that is in this case fairly

common or fairly widespread in Arizona. Barely gets into California in the relatively wet limestone substrate area around Clark Mountain.

STAFF COUNSEL RATLIFF: Do you know how many occurrences there are in the California natural -- wait a minute. I'm going to stumble over that acronym I think. Natural Diversity Database?

MS. HOWALD: Yes, but I would like to look it up before I misspeak.

HEARING OFFICER KRAMER: Excuse me, Mr. Ratliff. How many more questions do you have?

STAFF COUNSEL RATLIFF: Not a lot.

HEARING OFFICER KRAMER: Do you think you'll finish in five minutes?

STAFF COUNSEL RATLIFF: Well, I don't know. Perhaps.

HEARING OFFICER KRAMER: We'll be breaking for lunch about noon.

MS. HISS: Assume less than 25 occurrences occur in the Ivanpah Valley.

And there are others in this audience that may have additional information on occurrences that have been put into the data bases and tracked. This is what's in the FSA, so it's probably the most current that we have.

STAFF COUNSEL RATLIFF: How many occurrences? I

didn't hear.

MS. HISS: Twenty-five a occurrences, 16 of which are in the Ivanpah Valley.

STAFF COUNSEL RATLIFF: And those occurrences that we do know of, do you know to what extent they're in the path of land projects or projects that might be in the cumulative impact analysis?

MS. HISS: I'm not familiar with that spread of Mojave milkweed at that level of detail.

I do know that Mojave milkweed is mapped to the northeast in another solar power project. But I'm not certain about any other projects that Mojave milkweed occurs within the footprint or not.

STAFF COUNSEL RATLIFF: When I looked at the AFC on this section, it says that impacts to rare plants were significant and required mitigation. That's in the AFC.

MR. HARRIS: Do you have a reference?

STAFF COUNSEL RATLIFF: Yes. Page 5.2-45.

And then it goes on to discuss the kinds of mitigations subsequent to that that you would recommend. And I say "you" collectively. I mean the applicant would recommend to mitigate these the disturbance of these populations or occurrences. And one of those was translocation of the species to an off-site location. Is that going to occur for these species, do you think?

MS. HOWALD: The draft plan relies primarily as a first step on avoidance, purely on avoidance. However, all of the individuals cannot be avoided. The ones that are not avoided will be salvaged. Meaning, they will be dug up or removed from the place where they're naturally growing and transported to the on-site rare plant transplantation area and maintained in that area.

So in the event that avoidance is not successful after having been evaluated through the biological success criteria that are proposed, translocation is suggested as one possible remedial measure that could be used to help achieve overall mitigation success.

So there's nothing specific in the plan at this time. It is a draft plan about exactly how translocation would be done. That's the role it has in the draft plan as it exists right now.

MS. HISS: I just wanted to add that there are other elements described in the plan. And one of those is to collect food from the rare plants. In the event that protection fails, we'd be able to propagate these plants -- at least hope to propagate these plants.

HEARING OFFICER KRAMER: I'm not sure this is a great stopping point, but we need to break for lunch.

STAFF COUNSEL RATLIFF: I can probably be done in five minutes.

HEARING OFFICER KRAMER: Okay. Go ahead.

STAFF COUNSEL RATLIFF: You also discuss in the AFC, the applicant does, in its list of proposed mitigation permanent protection of an existing off-site native population. Is this one of the proposals you are now making for mitigation?

MS. HISS: It is not. And the reason why I believe that was evaluated in the FSA, it was determined to be very difficult to find populations of these plants on private property. So acquiring land with these populations is difficult.

STAFF COUNSEL RATLIFF: Another measure in the list -- and this is a list -- that is, by the way, 5.2-61 -- is a fee in-lieu of litigation that would be worked out with the agencies that are responsible here, the CEC, BLM, Fish and Game, U.S. Fish and Wildlife Services. Are you still proposing to pay an in-lieu mitigation fee for these kinds of impacts?

MS. HISS: That is not described in the rare plant protection plan. Somebody else on this panel may want to describe the in-lieu fee program that is proposed, because I'm not familiar with that. It's outside my area.

MR. HARRIS: I'm not sure it's within the scope of the direct testimony.

But you're right. It is referenced in the AFC,

which is also our prior design in the AFC. This does not reflect the low impact design. So I guess I'm not surprised that the witnesses wouldn't have a view on the former design of the project.

STAFF COUNSEL RATLIFF: My question was very simple. You gave a list of proposed mitigation in the AFC and I'm asking -- investigating as to which ones are actually now proposed. I saw this as one of the things that was proposed as a mitigation measure and I wanted to see if, in fact, there was any follow through on that particular mitigation measure.

MR. HARRIS: I just want to make a point about the change of design. If the witnesses don't know, they can say they don't know.

HEARING OFFICER KRAMER: Mr. Harris, are you you saying that because you understand that's no longer on the table in --

MR. HARRIS: That's fine. I'm not sure either, frankly, but I can check during the break, I guess.

HEARING OFFICER KRAMER: I think the Committee would be interested just to know.

STAFF COUNSEL RATLIFF: I have a few more questions. I don't think they're too difficult, but I'm not sure who should answer them.

The first one is how has cattle grazing affected

the plant diversity on the site in question?

MR. SANDERS: My view is that it's not obvious it's having a significant affect whatsoever. The site is not obviously severely over-grazed. I did not see when I was out there a lot of severe trampling or other effects. Maybe localizing that could -- it wasn't obvious to me there was major impacts.

COMMISSIONER BYRON: What are they eating? What are the cattle eating?

MR. SANDERS: This is one of those places where somebody once said this is used for grazing for no more apparent reason than because it's out of doors.

COMMISSIONER BYRON: So they're eating the rare plants?

MR. SANDERS: Presumably, when they come upon them.

But they're most -- well, two of them are cacti, basically unpalatable to cattle. One of them is a summer annual grass presumably palatable and edible during season in the fall when it's available. The milkweed may not be very pleasant to eat. It's filled most cardiac glycoside, which make them -- well, you don't want to eat them.

Let's see. Oh, yeah. Rusby's mallow is probably relatively palatable. And they probably eight it. There's not much of it out there.

DR. SPAULDING: I would agree with my colleague and only add that there's one, the Grusonia parishii, in areas known as devil's cholla is easily disbursed by cattle and probably drives -- at least not this species, but other species in southern Arizona become more widespread with increased grazing. But that's speculative and not necessarily the case at this site.

COMMISSIONER BYRON: Thank you.

Mr. Ratliff, go ahead.

STAFF COUNSEL RATLIFF: Final question, and that is what is -- and perhaps this calls for some degree of speculation. But can you address the issue of how shading from the mirrors on this product might affect the survivability of these species?

MR. SANDERS: Given the estimates we have of the level of shading, which is to say there might be something in the neighborhood of ten percent reduction -- and one of the engineers can correct me if I'm wrong in my understanding of that -- I don't personally see any reason this should have a major impact. Within the desert system they have a variation of slope exposures. That is, you have north facing slopes, which probably have much more than a ten percent reduction in insulation.

The other thing to consider is that in desert systems typically sunlight is not a major controlling

factor for plant growth. Plants are overwhelmingly being restricted by lack of moisture. They have long periods of the year when they are effectively shut down simply because there is no soil moisture available. They've got lots of sun, but they can't use it because they can't photosynthesize -- they can't open their systems. So a lot of them -- the Rusby's mallow is ciduous. It's dropping all of its leaves during the dark season so it's sitting there dormant for a significant period. I doubt that the loss of a little bit of sunlight is going to make a significant impact on any of these.

STAFF COUNSEL RATLIFF: Thank you.

HEARING OFFICER KRAMER: Okay. We'll go take our lunch breaks and be back here by 1:10 by the clock in the back of the room.

(Thereupon a lunch recess was taken at 12:05 p.m.)

AFTERNOON SESSION

1:14 p.m.

HEARING OFFICER KRAMER: Okay. We're back on the record.

Mr. Ratliff, are you finished with your questions?

STAFF COUNSEL RATLIFF: Yes.

HEARING OFFICER KRAMER: So now we will go down to -- let's go down the row again.

Mr. Basofin, any questions for the panel?

MR. BASOFIN: No.

HEARING OFFICER KRAMER: He says no for the record.

Dr. Connor?

DR. CONNOR: I have no questions.

HEARING OFFICER KRAMER: Representatives for the Marine Corps.

California Native Plant Society, do I have to ask?

MR. SUBA: Just a couple.

CROSS-EXAMINATION

BY MR. SUBA:

Q Really. And this is to Andy Sanders. I'll address it to you, because I think you're the one that brought it up.

The rebuttal testimony in the applicant's rebuttal testimony -- this is page B5 -- states that the Ivanpah site surveys successfully located in map eight species of rare plants previously unknown in the Ivanpah Valley. Do you agree with that?

A Let's see.

HEARING OFFICER KRAMER: Your microphone.

MR. SANDERS: Some are known from the vicinity farther up the mountains (inaudible).

BY MR. SUBA:

Q Were they known on the site or documented?

A No, I don't think any of the plants that have been mapped on the site or even close by prior to the survey.

Q When you say any of the plants --

A Any of the rare.

Q Were there actually any -- based on your experience, any vascular plants documented on the site?

A There are even today not all that many vascular plants documented along that corridor. The number of species -- as you go east in California and get away from population centers in southern California, the intensity of survey effort has not been great. And so it's pretty easy to go out and find a place and find interesting new references.

The oenothera caverna, which we did not find on the site but we found it nearby, I think Jim had just

found it for the first time in California the year before.
Q Thank you. So is it fair to say one of the most common plants there on site is the Laria, the creosote bush?
A Yes.
Q Was that documented on site?
A I don't remember.
Q Prior --
A I don't think anything had been documented in the sense of nobody had made a voucher for much of anything from the actual site.
Q And that would have been in records at that point?
A Right.
Q And then into the CNDDB if it were --
A If it were a sensitive species they were tracking.
MR. SUBA: Okay. Thank you. I have a question about the mowing under the heliostat field. I'm not sure who best to address that to. Dr. Spaulding.
During the testimony, it was a little confusing to me whether just when the plants under the mirrors would get mowed. Is it as soon as -- are there people that will be out there looking to see if something gets above ten inches and then clip that area? Or is it going to be a regular practice or will it be a regular practice that generically the heliostat fields will be clipped?

DR. SPAULDING: I'll defer to Dr. Carrier.

MR. SUBA: Thank you.

Mr. CARRIER: The mowing of the field will be done I believe prior to the construction to make it so the equipment can move across the field. But once they mow it, they would just trim areas by the mirrors that needed to be trimmed to keep free flow. But the field itself would be mowed just initially at the beginning of construction work.

MR. SUBA: I understand that part. It's the latter point that you were making that I'm questioning is clipping then so it doesn't interfere with the bottom of the mirrors, is that going to be a standard practice where on the regular, say, every two weeks or so someone is going to go out and do that?

MR. CARRIER: No. More like every year or two.

MR. SUBA: And how will that be accomplished?

MR. CARRIER: I don't know that's been determined. I'm assuming it would be hand done, but I don't know if that's been determined.

DR. SPAULDING: The alternatives currently being considered are a smaller hand-held mower and a bar mower, the latter being favored at this point in time because of its ease of control.

MR. SUBA: And just to be clear, the mower like

that with the bar is traveling on the roads -- the roads I guess the maintenance roads in between the rings of mirrors. So there is a ring of heliostats and then a road that's been graded, and then a ring of heliostats?

MR. CARRIER: The maintenance roads between the heliostats they use for washing the mirrors is not graded.

MR. SUBA: I see. And that's the area that the mower will be driving along?

MR. CARRIER: Correct.

MR. SUBA: So in the draft rare plant exhibit 81, there are measures that are being proposed to address rare plants that are on the site, identify and fence or otherwise isolate standard individual plants within the heliostat field. And then based on the remedial measures if the protection measures that you're proposing aren't working, then the plants would be addressed in some new way, either collecting the seeds and storing them, collecting the seeds and trying to grow them in a nursery, or digging up the plant and planting it someplace else? Is that -- do I have that correct as remedial measures?

MS. HOWALD: Yes.

MR. SUBA: What happens if those don't work?

MS. HOWALD: We haven't thought about that.

HEARING OFFICER KRAMER: Thank you. I don't have any other questions.

HEARING OFFICER KRAMER: Ms. Belenky?

MR. HARRIS: I'm sorry. Before you start, I forgot to ask Mr. Kramer at the beginning about possibly crossing Mr. Woolard. I apologize for interrupting you. It was from in the past. Mr. Woolard is available by telephone around 2:00. And the closer to 2:00, the better. I think there may be some flexibility in that. I know Ms. Belenky has some questions for him and we wanted to see if we could do that around 2:00.

HEARING OFFICER KRAMER: Does that work for you, Ms. Belenky?

MS. BELENKY: It's fine with me, if it works for the Panel, the Commissioners.

HEARING OFFICER KRAMER: Okay. Let's do that.

MS. BELENKY: The Center has a few questions. I will ask one and then Ms. Anderson will ask a few others.

CROSS-EXAMINATION

BY MS. BELENKY:

Q I just had one question, and I believe -- I'm not sure exactly who, but Ms. Howald or Dr. Howald? I can't remember.

A Ms.

Q I believe that you testified you were involved in the development of the plant surveys; is that correct?

A I don't think I said that, because what I did do was I

was the co-field supervisor of the surveys. So my role was mainly in the field. In other words, you know, getting the work done in the field, not so much planning the surveys themselves.

MS. BELENKY: Thank you.

Is there someone on the panel who was involved in planning of surveys?

MS. HISS: Yes.

MS. BELENKY: Okay. I got that wrong.

So my question is, did you suggest doing fall surveys?

MS. HISS: In 2008, we discussed the possibility of doing fall surveys. In 2007, we did not.

MS. BELENKY: And were any fall surveys done?

MS. HISS: No, they were not.

MS. BELENKY: Thank you.

MS. ANDERSON: I'd like to ask the botanists on the panel if any of you can answer this.

Is it true that the on-site rare plant avoidance basically isolates fragments of habitat within the sea of heliostats and roads?

MR. HARRIS: Can you ask the question a little less pejoratively maybe? You lost me about isolation in the season and that kind of thing. How about a factual question? I don't want them saying yes or no to a

question that's loaded with those terms. Can you rephrase the question, is my request? It's not an objection.

MS. ANDERSON: Yes. Is it true that the on-site rare plant avoidance basically isolates fragments of rare plant habitat?

MR. HARRIS: I guess I'd restate my objection.

HEARING OFFICER KRAMER: What's your objection?

MR. HARRIS: I don't think my witness should have to answer a question about isolation fragments and whatever other pejoratives are in the question.

If he wants to ask about rare plant zones and where they are, that kind of stuff, that's fine. But I don't think it's fair to have a record that suggests that we agree with the premises in that question.

HEARING OFFICER KRAMER: Well, if the witnesses are unclear what is meant by "fragment," they can ask for that to be clarified. But otherwise we'll overrule the objection.

MR. SANDERS: I would say the answer is no, we are trying to minimize fragmentation. It's true that we are identifying the sites for preservation and that to some degree you're going to have removal of plants in the existing population. But the goal is in fact to maintain the spatial distribution of each of the species as close as possible to what is out there today.

DR. SPAULDING: And I'd add as well that I just in my professional opinion don't see it as fragmentation because of the low impact design which involves mowing of the heliostat fields rather than grading. We have reason to believe that a great majority of plants that will be mowed because they are adapted to grazing or clipping or whatever you want to call it will continue to exist and therefore habitat -- if you characterize habitat as supporting living plants and in the rest of the -- components of an ecosystem will not be factored to any great extent.

MS. ANDERSON: Thank you.

Do you know the pollinators for these rare plants?

MR. SANDERS: No.

MS. ANDERSON: Um, since this strategy for rare plant conservation hasn't been done at this scale in this environment, would you agree that this is an experiment?

MR. HARRIS: I'm going to object to the characterization of experiment. You can ask a question without that term.

HEARING OFFICER KRAMER: Objection sustained.

MS. ANDERSON: I'll withdraw that question.

This is for Ms. Howald. And are you aware of the success of transplantation of rare plants?

MS. HOWALD: I'm aware of the results of studies that were done in the past to evaluate the results of what we usually refer to as translocation in the rare plants. And I think that's enough.

DR. SPAULDING: I could add that my particular focus -- one of my focuses on this project has been looking at the possibilities of translocation or transplanting in the more simple terms, parishii, or grusonia perishii, and of course that species in general. And we have reason to believe that both our -- especially the parishii is imminently translocatable to the point it will need extra handling, but I also am optimistic about the possibilities for those two. The others I'm not aware of.

MS. ANDERSON: Thank you.

BY MS. ANDERSON:

Q Back again to Ms. Howald.

Is it true that rare plant transplantation or translocation as you like to call it has had a pretty poor success rate?

A Yes, it is, based on the information that we have available, which is limited. I'm sure not all the results of all studies have been documented. But yes, there is a low rate of success of rare plant translocation in California.

Q Thank you.

And I just have a couple more questions.

Ms. Hiss, I have question for you with regards to it seemed like you were in charge of the surveys. If I'm wrong on that, maybe this isn't for you.

Did you do any additional surveys outside of the project site to locate off-site rare plant locations?

A We performed a reconnaissance level assessment within the one-mile buffer surrounding the project footprint. And that was done in 2007.

DR. SPAULDING: If I could add that there were additional surveys done in 2009 to characterize the desert tortoise translocation -- desert tortoise translocation candidate areas.

MS. ANDERSON: Did that target rare plants?

DR. SPAULDING: No, it did not.

MS. ANDERSON: And are you aware that other projects have done extensive off-site rare plant surveys to try to document additional rare plant populations that could be protected if unavoidable impacts to on site plants were unmitigable?

MS. HISS: Would you mind rephrasing that question?

MS. ANDERSON: Sure. Are you aware that other projects have done extensive off-site surveys to find

populations of rare plants that could be protected in case the impacts to on-site rare plants were unmitigable?

MR. SANDERS: I'm not aware of any cases of anybody searching extensively on cases as we did in this case.

And, no, I'm not aware of any -- there may be some, but I've never heard of a case of somebody doing extensive searching off site looking for additional populations. Typically, the funding is not there.

MS. ANDERSON: Thank you. That's all my questions.

HEARING OFFICER KRAMER: Ms. Smith?

MS. SMITH: I have just one question.

CROSS-EXAMINATION

BY MS. SMITH:

Q Mr. Sanders.

A Yes.

Q You mentioned that salarity is not a limiting factor in the valley for the target plant species that we're talking about.

A Yeah. I think for plants in general it's probably not a limiting factor.

Q Is it correct -- it's your testimony that moisture in summer is a limiting factor for these target species?

A Yes.

Q Is that specific to just Mojave milkweed you mentioned in that context? Or all the target species we're talking about?

A That's for basically all of the plants on site. I mean, I think in general in the desert that is the rule how acceptance would be spread. Annuals are all dead by the time summer arrives. But I think in general, moisture -- I mean, the reason deserts are deserts is that there's the severe limitation on all living things. There's lack of moisture.

Q Can you describe for me the water availability for these target species as you move away from the mountains? So just the water availability as you move down slope.

A Yeah. In general, as you drop elevation, the temperature increases and the amount of available -- amount of rainfall declines, and therefore the water availability is greater as you go up slope.

Q Thank you.

HEARING OFFICER KRAMER: Ms. Howald, I just wanted to ask a clarifying question.

In the final staff assessment draft EIS on page 6.2-40, staff makes a statement that general consensus in the scientific community is that transplantation is not a viable strategy for special status plant mitigation. And they site an article, Howald 1996, which the reference

is -- the author is A.M. Howald, and the title is "Since Location is a Mitigation Strategy, Lessons from California." Is that your work?

MS. HOWALD: Yes, it is.

HEARING OFFICER KRAMER: And has anything come to your attention since you wrote that to cause you to change the conclusions you drew?

MS. HOWALD: Well, let me say that the conclusion that's in the FSA -- is that what you're quoting?

HEARING OFFICER KRAMER: Yeah.

MS. HOWALD: I don't have that in front of me right now. But I do remember reading that, and I would say that that is not exactly how I phrased it.

So maybe I could just elaborate a tiny bit and say that at the time I wrote that, I was a paleoecologist with the Department of Fish and Game. And it was my job to evaluate whether or not translocations were successful. That was part of my job. And so we reviewed, you know, a lot of information that was available at that time. And that's 1996. So if I remember right, that paper was actually completed in something like 1994 or 1995. And there was a low rate of success of translocations, but there are many reasons for that. And a lot of those reasons had to do with the way those translocations were performed at the time.

So one thing I would say in terms of have things changed since then, which I think is your question, is yes, they have. And we've learned a lot that we didn't know then about what is the best way to do these. You know, do you use seeds? Do you useful plants? Whatever. And how to monitor and how long you need to monitor in order to figure out whether you even have success. So all of those things have changed.

However, I would say that my basic conclusion, which is not exactly as it was stated in the FSA, was more like, you know, if this method is used, it should be implemented properly. It should be monitored properly and so on. That would be a more accurate summary of what I said in that article, because this is the information that we have so far. But the rate of success is not --

MR. SUBA: Mr. Kramer, may I ask a follow-up question on that just to clarify?

HEARING OFFICER KRAMER: Certainly. I think it opened the door.

RE-CROSS EXAMINATION

BY MR. SUBA:

Q So we've learned a lot since even uyou wrote the paper about whether to use seeds, whether to use whole plants, these are some of the measures that have improved knowledge.

To the best of your knowledge, do we have the information we need to determine whether to use -- whether seeds are the best thing to use or the whole plant is the best thing to use or which stage of the life history is best to use if we're going to transplant any of these plants on this site?

A Well, the general answer is going to be species specific.

I want to just mention again that what's in our plan is a draft. We haven't really had the opportunity to fully research those particular species. There is a little bit known about them that I would say for any translocation approach you need to consider a particular species that you're dealing with. You need to find out everything you can. And I think our plan does say that translocation is in fact -- if this is, in fact, going to be used at that time, we will prepare a plan that will consider the best available evidence and --

Q Thank you.

HEARING OFFICER KRAMER: So then are you saying that you're not -- because of the lack of information and experience that you cannot be certain whether or not you can fully mitigate the loss of the plants on the site that they have to be -- I guess the term you used is salvaged?

MS. HOWALD: Okay. Now I'm not quite sure what

you're asking. Could you just please repeat that for me?

HEARING OFFICER KRAMER: Well, salvaged plants I gather are going to attempt to replace at some other site by other transplantation, planting of seeds or some method, I thought I was hearing that, because of the uncertainties you described. You're not sure those methods will work or will successfully create a viable plant at the new location?

MS. HOWALD: Well, there's a couple things we're talking about. One is salvaged. And we're definitely going to salvage plants that cannot be avoided. And I do believe that between now and the time this project goes into implementation that we will know somewhat more than we know now about these species. There is a revegetation and -- help me out -- restoration --

MR. SUBA: Restoration rehabilitation plans.

MS. HOWALD: Right. And that plan is also a draft. But that plan is going to cover -- and Jeff, you correct me if I'm not getting this right.

But that plan is going to cover the details of how those plants would be salvaged. So that's sort of one component. They're going to be salvaged to a dedicated rare plant translocation area, which is on site. And so the best minds will attack the problem of how do we best propagate and allow these plants to survive.

And then it's a second question as far as translocating these species somewhere. And that we haven't even dealt with in the draft plan as far as using them for mitigation. So it's sort of a two-step thing.

I guess what I'm trying to say is avoidance is successful. If we achieved success through avoidance, then there really isn't any need to be translocating rare plants. And if we don't achieve success, translocation would be a possible remedial measure but you would need to write up a specific plan for that, do all of the research that we possibly can in order to make that as effective as possible, and we simply haven't done that.

DR. SPAULDING: Mr. Kramer, could I add to that testimony to the extent that it's been my observations that scientists are always uncertain. Regardless of how much data we do, scientists always feel that we need more.

In this particular case, it would be my assertion that we know a considerable amount about the life history and ecology of gensonia parishii in order to be quite confident with respect to success of potential translocation if for some reason avoidance is insufficient. And there is essentially a continuum of knowledge from the ones we know most about, the ones we know least about. But in each case we know, in my opinion, quite a bit more than the average layperson would

know and certainly enough to inform our inquiries going forward to have a good shot at being quite successful in this regard.

HEARING OFFICER KRAMER: Do I stand corrected that as mapped out in the map that you've shown us some plants we know are not going to be avoided and they've been marked as salvaged; correct?

MS. HOWALD: That's correct.

HEARING OFFICER KRAMER: So then in your answer a minute ago you suggested that you're waiting to see if avoidance works before you decide if you have to go further by way of mitigation. But don't you know at this point that avoidance is not going to work because not all the plants are going to be projected --

MR. HARRIS: That question is for all plants or for the first phase of the project? I thought you were making a more general --

HEARING OFFICER KRAMER: I guess I wasn't distinguishing.

MR. HARRIS: Okay. I think that's important, because -- sorry. I just want clarification on the scope of your question. Are you talking about the entire project site or the first phrase?

HEARING OFFICER KRAMER: I was talking the entire project site as it was mapped.

MS. HISS: I just wanted to add a few comments to this discussion is that we tried to avoid what we thought we could do to protect it from direct impacts during construction. And instead of not doing anything with the other plants that are in areas that would be graded for power, et cetera, we decided to salvage those and put them in a temporary holding area should we find that during monitoring our avoidance efforts fail. So that is a remedial measure proposed for that. But we know we can't save every plant on the site. That's not our goal.

HEARING OFFICER KRAMER: Okay. Thank you.

COMMISSIONER BYRON: Could I -- now that you opened the door, Mr. Kramer, a question.

Does the plan you're referencing include a possibility of returning some plants to their original location or closely thereby if the soils are right and et cetera, et cetera? Or do you feel all the plants that get removed are going to be in harm's way in perpetuity and couldn't be brought back?

DR. SPAULDING: Yes, sir. With respect to the revegetation and rehabilitation plan, we do have rather elaborate protocol. Protocol is probably not the best word, but plans to return plant species to areas that were disturbed.

HEARING OFFICER KRAMER: Well, that's the plan

for restoring the site after closure; correct?

DR. SPAULDING: As well as restoring temporary disturbance lands.

COMMISSIONER BYRON: I was thinking of a plant during its operational --

DR. SPAULDING: At this point in time during operation it's assumed that circumstances will be monitored and adaptive management will be implemented. But there are no scenarios such as you described during operation.

COMMISSIONER BYRON: I've seen it done elsewhere. I just wondered if it would work here.

HEARING OFFICER KRAMER: Mr. Harris, any redirect?

MR. HARRIS: I've got one question that I want to clarify.

RE-DIRECT EXAMINATION

BY MR. HARRIS:

Q Ann, in one of your responses to Mr. Suba -- I think it was on the issue of remedial measures. And Mr. Suba asked you something along the lines of what if those remedial measures don't work. Do you remember that line of questioning? Do you have that in your mind?

A Oops. I think so.

Q Any recollection of your response was that we hadn't

thought about that. My question to you is does the plan think about that? Is there -- and specifically are there adaptive management features in your plan that address the kind of questions and contingencies Mr. Suba raised in his question?

A Well, we wouldn't apply adaptive management throughout the plan. But as far as my interpretation of his question, which maybe was wrong, which is have you gone beyond proposing anything in the plan other than translocation as a remedial measure? So if that's the question -- there actually are a couple of other things that we did propose. And one of those has to do with offering plants as specimens in botanic gardens because these plants are not well represented. And another one is using plants to make herbarian specimen because they're also not well represented in herbaria. So those are the other two things that are in the plan. But that's what I left out.

Q Thank you for the clarification. That response struck me funny.

I have no other redirect.

MS. SMITH: Mr. Kramer, can I just ask a quick question? This is just -- I didn't understand a definition that was being used by Ms. Howald and Ms. Hiss. Would that be all right?

HEARING OFFICER KRAMER: Go ahead.

RECROSS-EXAMINATION

BY MS. SMITH:

Q What I think I heard you say, Ms. Hiss, when you were talking about avoidance that if you salvaged a plant and took its own place and planted it and it survived, then that met the definition of avoidance. And if you salvaged a plant and took its own place and it didn't survive, then that would not be avoidance?

A I'm sorry. I don't exactly understand your question exactly, but I can explain -- probably clarify what the misinterpretation is.

If you look at the map that's in exhibit 81, you'll see rare plant localities that are marked either as salvage or as avoided. The plants that are marked as avoided will be fenced and protected. The plants that would otherwise just be left to remain in the heliostat field and be mowed basically would be salvaged and taken to the plant transplantation area which is shown on the map.

And that is a remedial measure in the sense that if we find that our avoidance fails, we would at least have (inaudible) so that we could go back and put down either on site or to another site should that become available to us. I don't know if it will. And we would

also be collecting seeds as a remedial measure if we find our avoidance is wrong.

Does that help clarify the steps?

HEARING OFFICER KRAMER: Okay. It sounds as if they're finished with this panel. So now let's convene staff's panel of witnesses.

STAFF COUNSEL RATLIFF: Yes, Commissioner. I note two things are supposed to happen in a few minutes or at least two things could happen. One is that I think there was going to be a call to Mr. Woolard. Is that at 2:00?

MR. HARRIS: Yes, it is at 2:00. And Todd is calling even as we speak to figure out whether he's available, or maybe he's on the line already today.

Mr. STEWART: I gave John the call-in information, but I have not received any confirmation that he is calling in. So I've got -- I'll make some calls to Oakland and confirm that.

MR. HARRIS: Okay. But we had said 2:00, and I'm pretty sure that's going to work for Mr. Woolard. Is Mr. Woolard on the phone by any chance?

Mr. PAVLIK: I'm Bruce Pavlik.

STAFF COUNSEL RATLIFF: That was the other thing I was going to say. We have Mr. Pavlik on the line that's been waiting patiently since yesterday or calling back in

to try to find a time to give his public comment on this issue. So maybe this would be a good time to take his comment while we wait for Mr. Woolard to show up.

HEARING OFFICER KRAMER: Certainly.

Mr. Pavlik.

MR. PAVLIK: Yes.

HEARING OFFICER KRAMER: Please spell your name for the court reporter.

MR. PAVLIK: My first name is Bruce, B-r-u-c-e, Pavlik, P, as in Paul, A, as in apple, V, as in Victor, l-i-k.

HEARING OFFICER KRAMER: Do you have any particular affiliation you want to inform us of?

MR. PAVLIK: I'm a professor of biology at Mill College, and I'm a paleocologist by training with a specialty in restoration and conservation of plants. And I've done work in the desert for 30 years, various places. I'm maybe the only person in the room who actually has designed and installed and monitored artificial populations of plants -- rare plants in the field that are my special research interest. And I'm probably one of the few scientists in the entire state that's actually conducted a successful adaptive management program for rare plants over the last ten years.

So I know what's involved in creating populations

and also the idea of managing populations and going through the exercise of adaptive management and all three of these are great challenges and they're even greater challenges of the desert.

HEARING OFFICER KRAMER: Okay. Well, go ahead with the remainder of your public comment then.

MR. PAVLIK: Okay. I just want to say that the work that's been done out at Ivanpah, the survey work in particular, is really exceptional, really wonderful data set with which to work with. And I work with many people in the room and over the years, and I very much appreciate the amount of effort and the care that's gone into doing these rare plant surveys.

But when we get to this point of talking about what we're going to do about rare plants and the issue of avoidance and mitigation, then I have some concerns with the draft document that I reviewed only hastily over the last few days.

And my concern is that the science of plant conservation and restoration, which is really what we're talking about here, really relies upon two fundamental platforms. And the first platform is that if the population of a plant that we're trying to conserve and individual plants are only important as they indicate something about the population, but they don't indicate

everything about it. And particularly for desert plants, whether it's true for all plants, the population is really defined by seeds that are dormant in the seed bank. And if we're going to say that our standard or at least our goal is to have the species in question basically in the same condition as the end of the project as they were before the project, my concern is that we haven't defined what that pre-project condition is. If right now it's envisioned by everybody as an assemblage of individual plants, then my concerns on the population level is that really we need to conserve the population and we don't know what that is pre-project.

What has happened is the surveys that have been done quite extensively have uncovered the existing above-ground plants and that that is some fraction and we don't know what fraction of the total population for each of these species. So if we're erecting fences around individual plants, we're not conserving the population. And it's the population that's the fundamental unit of conservation. And that concerns me.

The word "population" in a 55-page document is only mentioned in a theoretical way about six times. And the emphasis is placed on conserving individual plants. And I think that's very bad precedent to set when Ivanpah is the first of many projects that are going to be built

in the desert.

So anyway, I think that in the same way when we talk about the nine-awned pappus grass, the documents talks about that specifically as having arisen out of the seed bank rather than miraculously one year in response to some summer rain producing thousands of individuals where there were none before.

It is entirely possible that the other species -- not so much the cacti, but the other two -- perennials could also rise out of the seed bank in a particularly good year and therefore define the actual population, the thing we're going to conserve.

Plants could come up just about anywhere. I don't think they're going to come up in the numbers that the nine-awned pappus grass did, because that's an annual. But nevertheless, the population is out there and it exists in some places that we don't know. And many of those places are going to be as affected by the discretion of -- and what will happen when we simply define our conservation as the existing plants and other plants that are popping up all around the site? I think that's a complication that is not addressed in this document.

Second of all, my second concern, the other platform of which I speak is the whole issue of genetic diversity, which sounds like it was an issue for the

desert tortoise. Well, it is an issue also for these plants. And then the term genetic occurs only twice in this document and in both cases in the most theoretical sense. I mean, it's recognized that genetic diversity is the key to resilience. It's the key to responding to climate change, for example. But there's nothing in this document that at least tries to address the question of genetic diversity. And we must maintain genetic diversity, and a lot of that could be residing in the seed bank for all we know.

So the emphasis on conserving individual plants is a very practical way for the applicant to sort of meet -- go through some conservation exercises. But my concern is that it is biologically not justified. And we have known about populations and genetic diversity for many, many, many years. So I think it's really important that we think through those two pillars when constructing a document like this that really is about restoration.

My third concern -- and it may have come up -- I may have missed this around the 1:30 point because I was coming back online. But I do know there was extensive salvaged and translocation and revegetation attempts that were made for the Viceroy Mines and Castle Mountains. Maybe some of the most extensive trials that were conducted in the eastern Mojave Desert. And I would like

to see the results of those efforts used to inform this plan for avoidance and restoration. I think that some of these core levels of performance for Viceroy may tell us what our prospects for success are at Ivanpah. And I think it's important that we examine the available data in that sense.

So those are my three main points that we need to focus on: Population for conservation purposes and think about the seed bank. We need to somehow address -- and I have a suggestion for addressing genetic diversity. And we must also then incorporate what is known from assumptive site production far away about revegetation and what we can learn to apply to these rare plants.

HEARING OFFICER KRAMER: So what is your suggestion regarding genetic diversity?

MR. PAVLIK: Well, this fall, my student and I ran a conservation biology lab using GIS data on the Ivanpah area plants, the five rare plants. And we took not an approach which was the best approach of course is what Ann Howald mentioned, you know, DNA to define what the genetic units are out there. In the absence of being able to do that, a GIS approach could tell us something about the essential for eco-geographic variation amongst the plant distribution.

And I have turned that paper over to the staff at

the Energy Commission for examination. It is not a complete analysis, because we didn't -- weren't able to get all of the data that would be used for a complete analysis.

But it is an excellent demonstration of an approach that asks the question how variable are the occurrences and will conservation and will avoidance basically conserve each of the genetic units that may be out there.

So I refer you to that information which is in the possession of the staff of the BRC staff.

HEARING OFFICER KRAMER: So I heard you say that you haven't drawn any conclusions from that information.

MR. PAVLIK: Well, there are some basic things. But again I would like a fuller analysis to be done. Some species like the mallow appears to occur on many different habitats across this range. And some of those differences in geology -- we looked at geology and vegetation differences. And so that might be a more differentiated species than some of the others and would require different measures.

Now if you're avoiding 100 percent of the existing individuals, that's fine. But if you're not avoiding all of the seed banks, then it's a whole other issue.

So it appears from this preliminary analysis that we did that vary in the potential for harboring genetic variations. And that could make something easier and it could make other things a little more difficult. But again we try to build it into the mitigation process. And I think it's totally doable.

HEARING OFFICER KRAMER: Now, when you talk about a seed bank, you're referring basically to the soil, I gather?

MR. PAVLIK: Yeah. I'm talking about the plants that they found on the survey were established plants. They're above ground. You can see them. That they're perennial. They may flower every year or every other year so they can be included in the survey. But what they can't see is all of the seeds that are scattered and residing in the upper two centimeters of the soil surface.

And other plants deal with a lot of uncertainty in the environment. We've heard about that. We don't know year to year what the rainfall is going to be and so they don't show themselves in unfavorable years. But then in favorable years, they do show themselves. That was the case for nine-awned pappus grass as mentioned in exhibit 81. Sometimes showing themselves in great numbers, which changes the entire picture of what they're dealing with here. And that's again saying that the seed bank itself

really defines these populations.

HEARING OFFICER KRAMER: So to your knowledge, is there any correlation between the location of the currently above-ground plants and the seeds are that in the soil?

MR. PAVLIK: There is a correlation. And I would guess that above-ground plants probably have a scattering of seeds around them some distance. But seed bank can be vary, very extensive compared to the above-ground plants.

For example, the above-ground plants of the mallow and of the milkweed, those may have been plants that were established in the last good rainfall year, which was 2004, 2005 I think out there. And so they have been perennial. They were established in a good year. But their counterparts may have died back or not established in that particular year. So they're fingers of where the population could be, but they don't tell you.

The milkweed, for example, you know milkweeds are known for their disbursal capability. They have seeds with this cusp of hair that can travel very long distances. So I wouldn't be surprised if the milkweed seed bank is very, very different in location from where the existing milkweed plants are.

And I would point out that the survey was done in two rather dry years, the years of below normal

precipitation. So I wouldn't expect that there would be many other plants -- young plants or it's been a while since that got established. It may be though this year is a better rainfall year out there and we may see plants come up in places that they were unknown before.

HEARING OFFICER KRAMER: Anything further?

MR. PAVLIK: No. I just want to reiterate what Jim Andre said that when you then look at the populations, you know that populations are not static and they respond and change their position with seed disbursal over the long term in response to the environmental change. And what they have to do is preserve the ability of those plant populations to respond. And genetic diversity is an important part of that. And being adjacent to open habitat is another important part of that. That is basically what I wanted to say.

HEARING OFFICER KRAMER: Okay. Thank you for your comments.

MR. PAVLIK: You're welcome.

HEARING OFFICER KRAMER: Is Mr. Woolard on the phone?

MR. WOOLARD: Yes, I am. Can you hear me?

HEARING OFFICER KRAMER: Yes. Loud and clear. Okay. We're going to break out of the biological resources discussion for a moment to return to the topic

of project description. Mr. Woolard, Ms. Belenky -- she and maybe others have some questions for you.

Go ahead, Ms. Belenky.

MR. HARRIS: Can I provide Mr. Woolard with Mr. context?

Mr. Woolard, the panel was continued. You were on the panel in December. The panel was continued to January. During that hearing -- it was only yesterday -- Ms. Belenky of the Center for Biological Diversity had a couple of questions on the DOE and ARRA stuff and wanted to cross-examine you on those questions. And so that's sort of the context. So you've been sworn previously as I recall. And we're making you available for cross-examination now. So that's the context.

MR. WOOLARD: Okay. Glad to help.

CROSS-EXAMINATION

BY MS. BELENKY:

Q Thank you. Good afternoon. I just had a few questions about the loan guaranty programs and the ARRA funding in terms of the project description. The project description as well as the applicant's testimony mentions the DOE loan guaranty program. And in the FSA, it states that project had applied for funds. And then I believe in your testimony it says the project had been selected by DOE to receive loan guaranty funds; is that correct?

A That is correct. But just to make sure it's clear, we were selected from numerous applicants. I believe there was well over a hundred. And at that point, the money is then allocated or available. But then there is a term sheet negotiation process and we are finalizing that now.

Q Can you tell us the amount of loan guaranty funds that Bright Source has supplied for this Ivanpah project?

A Unfortunately, we have some very strict confidentiality with the Department of Energy on the amount, and we cannot release that until they do. But I can say it's on the order of a billion dollars.

Q Was that with a "b"?

A With a "b."

Q Just wanted to make sure.

And in addition, Bright Source in both the FSA and I believe in your testimony you mentioned what is collegially called the ARRA grant funding, which are the payments for specified energy projects in lieu of tax credits under the American Recovery and Reinvestment Act of 2009; is that correct?

A Yes.

Q And the FSA states that the ARR grant fund provides for 30 percent of the capital cost. Is that -- what amount of the funding has Bright Source applied for through the ARR funding program?

A I'm sorry. To be precise, we don't apply for funding until the project is complete. There is a mechanism -- it's basically to replace the past equity challenge. So technically back when many U.S. companies had taxable income, they could own the project. And then upon completion of the project, they would receive tax credit to allow funding of the project -- allow them to receive tax credit off that 30 percent of that investment.

So the application for the grant is designed to replace that past equity, since a lot of previous participants don't have taxable income anymore. And you would not apply for the grant until the project is placed in service. So that would be 2011, 2012.

Q That's very helpful.

I just wanted to make sure I understand the 30 percent grant, which is not a loan, it's a grant, would be in the form of a tax credit or there would be actually funds granted?

A It replaces the tax credit. So there could be actual funds granted. So rather than have a tax credit that offsets taxable income under ARRA, they allowed you to meet all the same criteria for the investment tax credit but then apply directly to treasury for a grant that they would issue within 60 days of the qualifying project.

Q Thank you.

And the amount of that grant, is it correct to say, it would be approximately 30 percent of the capital cost?

A Yes, a qualified capital cost under the tax code.

Q And do you have an estimate of that amount, the qualified capital cost under the tax code?

A That's not -- that's not anything that is publicly accessable, no. In fact, it won't even be precise until the plan is finished in 2011 or '12.

Q Okay. Let me just skip a couple and go to the last one and then I'll come back.

I just want to make sure I understand you're saying that the grant under the ARRA would not be provided until the project is completed, the whole construction is completed, and it's ready to go on line. But my understanding of what has been collegially used, the fast track projects is that there is a deadline for the ARR that relates to beginning of December next year; is that correct? So that deadline --

A What you're describing is the eligibility to receive the grant. So in order to be eligible to receive the grant, your project has to have commenced construction by the end of 2010, by December of 2010. And that definition is a fairly rigorous definition and any project -- any available project that's going to participate in the ARRA

grant program regardless of when you receive the grant needs to qualify for the commencement of construction definition by December 2010.

Q Thank you. So those are two different dates. I now understand that the deadline for starting construction and receiving the funds are two different dates.

Given that the -- because of this December deadline, this project has been moving on what they call the fast track and there's a lot of emphasis on getting things done quickly, would you support an extension of that ARR deadline?

A Well, I think for the industry in general an extension of the deadline --

(Telephone interruption.)

A Can you hear me?

Q Sort of.

(Telephone interruption.)

HEARING OFFICER KRAMER: Okay. How we can get somebody's hang up notice is beyond me. Go ahead, Mr. Woolard.

MR. WOOLARD: Sorry. Could you repeat the question?

BY MS. BELENKY:

Q We were discussing whether you would support an extension of the deadline for the eligibility to commence

in December 2010.

A Yes. I think Bright Source supports the extension of the grants for many reasons, not just these projects but future projects for us and others. There's a lot of -- in order to do anything to deliver a meaningful amount of renewable power, the plant is an important piece of public policy. Extending it would be a very -- we believe good public policy.

Q Thank you. I just want to go back to the question of the loan and the grant just so that I understand. The loan is a loan guaranty and you would be getting a loan from somebody. And then the grant is an actual grant of funding. Now would that grant of funding be used to pay back the loans?

A When the grant comes in, you've already -- you're basically using project equity and project debt through a construction period as well as borrowing a third trunch of capital from banks in what's called a mezzanine or bridge financing. And the grant proceeds when they do come in will be used to pay back the bridge financing, and some of that could possibly be used to pay part of the DOE loan as well.

Q Thank you. So it's not additive necessarily. It's maybe offsetting.

A That's part of a capital structure that's fairly

complicated, but you'll have approved construction. You will have construction debt, some of it from DOE. You'll have mezzanine debt. You'll have mezzanine debt that is backed in part by the grant itself that comes in in placement and service, and then classic project equity.

So the project itself is actually complete, placed in service, and the grant is received. You also have the ability to qualify for tax equity. So there at that point in time is a component of debt, permanent debt from DOE, a component of equity and a component of tax equity. And the grant itself is used to make sure that you have a capital structure that's acceptable for the lenders in terms of debt covered ratios and then pays down various parts.

Q Thank you. I just have a couple questions in addition.

Could this project be constructed without the proposed loan guaranties?

A Without the proposed loan guaranties, what we've got is a situation in the world like financial markets where the credit markets are significantly impaired. So I don't think anybody knows what would happen without the proposed loan guaranties. If the credit markets or -- there's very little credit available out there. So I think it would be -- you know, I don't want to posit how difficult it

would be. But it would be very, very close to impossible. Very, very problematic.

Q Thank you. And could this --

A Until the credit market came back or things changed. Right now, we have a worldwide financial situation with frozen credit.

Q Thank you.

Could this project as it's now proposed be constructed without the ARRA funding?

A Well, once again, the ARRA funding is stepping in to replace a component of a capital structure called tax equity that is very, very constrained. So the taxable income of all of the groups that used to invest in projects is then dramatically diminished. The tax equity market is very similar to the credit market. It's significantly impaired.

So the ARRA grant component is a critical source of making a project viable for finance and the DOE loan guaranty is also a very important part of making sure a project is financable, given the fact those two worldwide markets are significantly impaired.

Q I just want to clarify. So as proposed, which is on this time line, so we're talking about the current markets, however you want to describe them, could this project be constructed as proposed without the DOE loan

guaranties?

A As proposed, I think it would be -- nobody ever wants to pull out terms like impossible. But with the DOE loan guaranty program and with the tax credit provision, it is a financable project. Without them, it becomes incredibly difficult, if not impossible. It's a very constrained situation in the world and it's very tough to get any projects that move forward. Building a building, commercial real estate, anything that requires debt and equity.

MS. BELENKY: Thank you. I think that's all of my questions on the loan and the grant issue for this witness.

COMMISSIONER BYRON: Are you still with us? Can you handle a few more questions?

MR. WOOLARD: Yes, I sure can.

EXAMINATION

COMMISSIONER BYRON: I think maybe just one follow-up.

Would you mind explaining to this Commission or this Committee how these ARRA funds, these various vehicles or mechanisms of AR funds are useful or helpful to the state of California?

MR. WOOLARD: Sure. I think the main importance is that they allow projects to move forward as public

binary. Without the ARRA funding, projects cannot move forward until the market can improve and nobody knows when that will happen.

With the ARRA funding, the projects can actually commence construction. There's also an element of allowing the utilities to deliver to their 20 percent renewable requirements by 2013 delivery is an important part of that.

COMMISSIONER BYRON: Anything else? Mr. Kramer will probably have other questions. I just wanted to see if you had anything else you wanted to add.

MR. WOOLARD: I would add one piece which is these projects are the first of several. And we don't have a problem of building tens or hundreds of megawatts. We have a problem of how to deliver gigawatts in the state between us and others.

And so I think it's vitally important to get the first project moving so that we can be actually working on a meaningful quantity in 2014 and '15 where we need to be if we're going to have any chance of getting close to 20 percent or 33 percent renewables. So these current projects are an important building block for the future.

HEARING OFFICER KRAMER: Okay. Thank you. This is Mr. Kramer. I have no questions, but I wanted to ask the other parties if any of them want to ask any questions

of Mr. Woolard.

MR. BASOFIN: I have a few.

HEARING OFFICER KRAMER: Okay.

MR. BASOFIN: Probably just one or two questions.

HEARING OFFICER KRAMER: This is Mr. Basofin of Defenders of Wildlife.

CROSS-EXAMINATION

BY MR. BASOFIN:

Q Thank you, Mr. Woolard, for joining us on the phone. I just have I think probably one or two questions.

You stated in order to be eligible for the ARRA funds Bright Source must begin construction by the end of 2010. Did I hear that correctly?

A Yes. By the end of 2010, you have to have met a definition of commencement of construction to qualify.

Q And is it your understanding that -- let me see. Could you begin construction on two of the ISEGs units in order to be eligible for the ARRA funding?

A Well, the challenge is the economics fall apart if you can only build two, because the EPC project or Bechtel projects and all of the project costs are predicated on three. So the three unit -- in order for funding to be financable, the revenues, the relationship between revenues and costs has to be one that's attractive for financial investors. And that relationship falls apart if

you don't have the efficiency with the EPC contractor. So all of the TPs were negotiated and the EPC contracts were negotiated with the three, with the cost structure of building three.

Q Notwithstanding the specific financing constraints, if you began construction on two of the ISEGs units, would you meet the regulatory definition for commencement of construction in order to be eligible?

A I guess you wouldn't be able to store it on the -- I'm a little confused on the question. You wouldn't be able to store it on any until they're financed. And to get them financed, the economics need to work. So --

Q Okay. Thank you.

HEARING OFFICER KRAMER: Any other -- Ms. Belenky.

CROSS-EXAMINATION

BY MS. BELENKY:

Q I just have a follow up, because I'm not sure I understood his answer on the one, two, three.

A Sure. I can hear you.

Q We can hear you too.

A My apologies. I'm getting ushered out of a taxi, so I'll be in a quiet area in about ten seconds.

Q I just want to make sure I understand your testimony that the financing for the project is tied to the one,

two, and three all being built and that you don't -- there's no alternative -- I'm not sure I understood what you were saying about one, two, and three and the financing. Is it possible to build Ivanpah one alone?

A Not under all of the current cost structure and negotiated agreements. So what has -- what you've got is you've got a site with three projects on it. These projects are the EPC contract with Bechtel in this case has been negotiated based on bid, for example, to acquire multiple turbans, multiple boilers. You get procurement and economies of scale, which is one reason why these -- and that cost structure is what that cost structure is locked in, that relative to the price of the TPAs presents you with a financable project.

And if you're to take away, for example, one of the three projects, you're taking all of your fixed cost and spreading them across two rather than three and you are losing your procurement efficiency. And so your cost is going up and the projects become in effect uneconomic and then difficult or impossible to finance.

Q Thank you.

HEARING OFFICER KRAMER: Ms. Cunningham.

CROSS-EXAMINATION

BY MR. CUNNINGHAM:

Q Laura Cunningham.

Could you give the definition of commencement of construction for the December 2010 deadline, please?

A I could -- I could give you a loose definition. I would prefer -- I believe Arthur Haubenstock or somebody might be able to give you the exact definition.

But basically it's beginning physical work of a significant nature. And they've got a lot of detail criteria behind it around, are you pouring foundations? What are the thresholds needed to do that? And then there is another, which is a five percent of the total cost of the unit, including the delivery, title, everything that -- assuming five percent of the construction cost.

Q Okay. Great. Thanks.

Mr. BASOFIN: Can I just ask him one question?

HEARING OFFICER KRAMER: It has to be generated by something that was said after you asked your last question.

MR. BASOFIN: It is.

HEARING OFFICER KRAMER: Okay. Go ahead.

MR. HARRIS: Or Mr. Woolard's testimony, either one of those.

MR. BASOFIN: It's a follow up to Ms. Belenky's question.

CROSS-EXAMINATION

BY MR. BASOFIN:

Q Mr. Woolard, you stated that I believe -- I'm no financial expert so I'm trying to follow you. I believe you stated it's infeasible to finance all three of the projects without the ARRA funding essentially; is that correct?

A Yes. It's basically the ARRA funding is a critical component of the capital structure to make them financable projects.

Q Is it correct that each of the three Ivanpah units are separately owned?

A Yes. Each one has a separate -- it's backed by a separate power purchase agreement and is a separate entity.

Q If it is not possible to finance, say, two of them together, considering that they're separately owned or even one of them?

A Right.

MR. HARRIS: I wanted to object to the question as having been asked before. But we're going to go over the same ground.

MR. BASOFIN: I do have one. I'm trying to understand his testimony.

MR. HARRIS: If you're looking for an objection, it wasn't asked for, that's all.

MR. BASOFIN: It's clarification questions.

HEARING OFFICER KRAMER: You're on a short line, because you do seem to be following the same old --

MR. HARRIS: Can you restate the question for the witness please, because he's --

BY MR. BASOFIN:

Q The question is: Bearing in mind that each of the Ivanpah units are separately owned, is it possible that two of them or even one of them could be financed with the ARRA funding separately?

A Let me come back to the basic challenge here is you've got to finance a project. You have to have a relationship between your costs and your revenues that provides a return that allows you to service your -- pay your debt down acceptable to the debt provider, acceptable debt coverage ratios and other financial criteria, and provide a return to the equity that allows them to deploy their capital and invest.

In order to do that, the key thing is on the revenue side is divided into three separate -- allows us to divide it into three separate entities. The cost piece, however, has been negotiated with an EPC contractor given the efficiency of constructing three units. So we are -- so you've got to take the relationship between revenue and cost is what's important in making a project financable and the cost side of the equation is all

predicated on efficiencies of procurement, efficiencies of mobilization of workforce, and the efficiencies of site construction as well as the ability to replicate and spread your engineering costs over three units.

MR. BASOFIN: Thank you.

HEARING OFFICER KRAMER: Any further questions?

Seeing none, any redirect Mr. Harris?

MR. HARRIS: No.

HEARING OFFICER KRAMER: Thank you for calling in, Mr. Woolard.

MR. WOOLARD: Okay. Glad to help. Let me know if there's anything else. Thanks.

STAFF COUNSEL RATLIFF: I'm sorry. I think I jumped in where Jeff had a cue there. Whatever you can do to keep me off the record. Thank you for covering Mr. Woolard.

MR. WOOLARD: All right. Thank you, everyone.

HEARING OFFICER KRAMER: Thank you.

Okay. Back to biological resources. They're assembling staff's panel of witnesses. So if you could state your names and spell them for the court reporter.

MS. MILLIRON: Misa Milliron. M-i-s-a, M-i-l-l-i-r-o-n.

MS. CHAINEY-DAVIS: Carolyn Chainey-Davis. That's C-a-r-o-l-y-n, C-h-a-i-n-e-y, h-y-p-h-e-n,

D-a-v-i-s.

HEARING OFFICER KRAMER: Wow. What's it going to be like tonight?

(Laughter)

HEARING OFFICER KRAMER: Mr. Ratliff.

STAFF COUNSEL RATLIFF: Yes, Ms. Davis. You aren't guilty of being a low talker like I am, I don't believe. But you're going to have to talk more into the microphone.

MS. CHAINEY-DAVIS: Would you prefer that I turn the mike off or --

HEARING OFFICER KRAMER: Turn it on and bring it closer.

Ms. CHAINEY-DAVIS: That better?

STAFF COUNSEL RATLIFF: Yes. And to try to be efficient about this, I'm going to -- I have just a few introductory questions and I'll address them to Ms. Milliron, and then Ms. Chainey-Davis can add to them and supplement them if she believes necessary.

DIRECT EXAMINATION

BY STAFF COUNSEL RATLIFF:

Q Ms. Milliron, we've already had some discussion of the environmental setting in the Ivanpah Valley for botany. But could you briefly describe that?

A The Ivanpah site supports a diverse flora. And as has

already been established, there are special status plant species. According to the applicant inventory of the site, there's close to 200 different plant species that were identified in their surveys, most of them native. There is a large cactus component and succulent component. They sent us thousands of barrel cacti on the project site. And it's located on and immediately surrounding by undisturbed natural land, except for the Fern Valley Golf Club, I-15, a transmission line, and a few unpaved roads.

There's been some talk about the grazing there's occurred out there. It doesn't appear that there's been vegetation maintenance or very much cross country or damage or what has occurred out there hasn't noticeably degraded the habitat for special status plant species.

The vegetation consists primarily of Mojave creosote bush scrub, which is -- others have talked about it. It's dominated by drought adapted native scrubs. There's also Mojave, Yuba, Nevada ephereral scrub, and Mojave wash scrub there as others have mentioned. There's numerous ephemeral washes that form part of the regional cota site.

And regarding the diversity of cactuses, to me, I believe there were twelve different species of cacti that were reported by the applicants, the Forestry Service.

Q Ms. Davis, do you have anything to add to that?

A Just that when we consulted -- in the preparation of the staff assessment, we consulted other regional experts about the significance of this particular site. Is it significant floristically? And there was a general consensus that it's a very special site. The applicants also -- they talk about that in the botanical report quite freely that it's a rich and diverse site and it hasn't been noticeably degraded.

Q Thank you.

Ms. Milliron, there already has been I think identification about the applicant's witnesses of the species of special status or concern. Could you briefly describe their status in terms of their California native plant society thinking?

A Sure. Well, they mentioned five of them. Would you like me to mention the status of the six that we're concerned about or --

Q Yes. As long as you don't include their Latin names.

A All of the plants are listed on the California Native Plant Society. They all, except for the Rusby's desert mallow, appear on CNPS List 2, which is considered rare, threatened or endangered in California but more common elsewhere. Of those five that are listed, two include small flowered androstephiuh, which I'll talk about a little bit later, Mojave milkweed, desert pincushion,

nine-awned pappus grass, parish club cholla, and then the final one which is on CNPS List 1B which is plants that are considered rare or endangered throughout the range in California and elsewhere is the Rusby's desert mallow and that one is California exempt.

STAFF COUNSEL RATLIFF: Ms. Davis.

MS. CHAINEY-DAVIS: Oh, did you mention the CNDD there also? They've also been assigned a rank by the Department of Fish and Game Natural Diversity Database. That rank is referred to as the global and state rank and it's based on the nature served system of ranking conservation status.

And it's an internationally accepted system for establishing a ranking conservation status. They provide -- there's two numbers there. The global rank refers to the status of its distribution globally. And the S rank refers to the status of its distribution in the state of California for two of these species -- three of them. Three of the five, they have a state rank of one, which means that they're critically imperiled. And their definition is critically imperiled in the state because of extreme rarity or some other factors, such as very steep declines, making it especially vulnerable to extirpate from the state. Some of these have distribution outside of California. This rank refers to its distribution

within California, which is obviously of concern to the California Energy Commission and other state agencies.

I guess that's all. Thank you.

STAFF COUNSEL RATLIFF: Well, I was going to ask you next if these plants are rare in the vernacular sense, but I think perhaps that was just answered. I mean, is this anything further to say about that or --

MS. CHAINEY-DAVIS: Well, the one -- when we were doing the analysis, the one that we were most concerned about was the Mojave milkweed -- that's right. No Latin names. The Mojave milkweed. And that one we were really worried about, because not only are there about 22 occurrences listed in the Natural Diversity Database, we also do -- by the way, when we do a review of a species, we don't just look at the Natural Diversity Database. We also do a review of the California Consortium of Herbaria, which somebody talked about a little bit earlier, which contains hundreds of thousands of specimens collections going back even a hundred years. So we reviewed that. But probably most importantly, we consult the recognized local experts. Local expert botanists, because there's really no substitute for that kind of local expertise. There's like over 2,000 rare species, rare plants in California -- rare plants in California. That's a lot for any botanist to know.

So I know whenever I'm working on a project somewhere, you always go and talk to the local experts. That's usually -- you'll consult. It could be consultants. It could be someone from the California Native Plant Society or whatever, but whoever the recognized experts are. And then we also look in the files of the California -- the hard copy files of the Native Plant Society and the California Natural Diversity Database.

Anyway, backing up, we were most concerned about the Mojave milkweed, because not only are there only about 22 occurrences in the Natural Diversity Database, but four of those are what they call herbarian ghosts. They're collections that have not been seen for decades and in some cases centuries. We don't know if they're accident or not. They've never been relocated so then that leaves all the project area occurrences.

And then there's really just one or two solid other occurrences outside of Ivanpah Valley that we know about from that review and that was the -- there was occurrences in -- I think it's just the Shadow Valley occurrences.

But, again, we consult the local and regional experts and we say, do you agree with these estimates of rarity? Are these plants really that rare or are there

like bunches of them out there and they just haven't been recorded? And the consensus from the experts that we consults was yes, they are indeed rare. And this one is really rare. We're really concerned about that one.

STAFF COUNSEL RATLIFF: Thank you. And how might the project affect those plants? Ms. Milliron first and then Ms. Davis after.

MS. MILLIRON: Well, the project occurrences in most of the cases represent a substantial portion of what's been documented for these species in the state. And so impacts to that substantial portion could be in some cases catastrophic to these plants, if not mitigated. We're very concerned about direct, indirect, and cumulative impacts to these plants.

STAFF COUNSEL RATLIFF: What are your conclusions then of your testimony about the direct and cumulative impact to these species?

MS. MILLIRON: We concluded that the impacts of the six species that I mentioned earlier would be significant in terms of direct, indirect, and cumulative impacts. This would be in a CEQA context, because the project would eliminate a substantial portion of the documented occurrences in the state. Or in the state of the endemic Rusby's desert mallow be a substantial portion eliminated of what's known in the world as it only occurs

in California.

Does that answer your question?

STAFF COUNSEL RATLIFF: Yes.

Ms. Davis, do you have anything to add to that?

MS. CHAINEY-DAVIS: One of the things raised by the applicant at one point was -- I mean I think somebody said earlier that they did say in the AFC that they did acknowledge that the impact was significant. But then there was I think some back and forth at some point about, well, we found so many here they must be common or so many in the project area, they must be common.

So I will again ask that question: Is that thinking, well, maybe that's a valid question to ask the local and regional experts?

And I think I also asked CNDDB their botanists, Roxanne Bitman, who's been with the Natural Diversity Database for -- I don't know -- ten or 20 years or something like that. And I said, "So how often do you start finding these plants to be -- these rare plants -- these rare species to be common once they've been added to the database." And she says, "Oh, you'll find a few. You know, once you start doing systematic surveys, but only very, very rarely do they ever -- does that ever result in delisting them."

By delisting, I mean taking them out of the

database. I'm not talking about state or federal lifting.

And then she said that we also have something in the database called the -- I think it was population static or population trend. And what that is is a measure of how many -- it's a measure of how many times or how frequently they have found occurrences of this species once it has been added to the database. And that's tracked over a period of years. So if it's added to the database and they start finding lots and lots of new occurrences, that kind of gives you an indication that you might find some more out there, a bunch more out there. If you were to do, you know, real systematic surveys. But then there's others who have been in the database for, you know, 20 years. And all those years, every time when that species was searched for on a project, they haven't found a whole bunch new occurrences. So that kind of helps give us a little indication, too.

Am I making myself clear? Did I articulate that? It's a measure of how likely we are to find many new occurrences to the point where we would be lead to believe this species might be much more widespread than previously thought.

STAFF COUNSEL RATLIFF: Thank you.

The applicant's witnesses when they testified earlier, they discussed an avoidance plan, which they've

put forward for the species. And I guess I want to say I want to acknowledge we're appreciative of these efforts. But I wanted to ask you how effective you think that avoidance plan would be for mitigating these impacts, Ms. Milliron.

MS. MILLIRON: I want to echo the appreciation that they did file a plan that appears to be responsive to what we are asking for in our condition of certification. However, what was noticeable to me is that it doesn't designate contiguous areas of true avoidance, which when we use that term I meant avoidance completely of the impact being both the direct and the indirect impacts of essentially no activities occurring in and amongst areas designated for rare plant protection.

So without that major component, I have several concerns which have been brought up by others as well in a workshop that we had. And we actually stated in the FSA DEIS that we didn't consider the preservation of special status plants by maintaining vegetation between heliostats as a feasible avoidance measure because you'd still have indirect impacts from the regular maintenance activities that would be occurring on the site.

So I feel that it is unlikely to succeed in preserving the special status plants due to the indirect impacts that would effect the long-term sustainability of

the plants. The indirect impacts I'm concerned with would be things like changes in the hydrology, concentrations of rainfall or wash water that there would be around the basis of the heliostats and that changing the local -- it's different from what the plants have evolved and are now adapted to receiving. There could be increased soil compaction and changes in the soil structure.

Someone also brought up the shading. And while the plants might be likely to persist in the short term -- I'm not a plant physiologist, but I do know from having grown plants that the photo grade is important. So they may vegetatively be all right for a few years, but I'm concerned that this might be some effects to actual flowering free production and changing the sunlight that's available to these plants.

Also, there could be increasing weeds and there will be changes in vegetation structure, although we do appreciate that the site is not going to be completely graded. I think that there will be quite a bit of changes in the structure.

And probably my biggest concern in terms of why I'm concerned about how the plan is set up is that there will be what appears to be fragmentation of the population. And this will disrupt -- it could disrupt pollination and disbursal and therefore gene flow. So

again, while the plan might be successful in the short term, I have concerns with the long-term viability of these populations.

Also there has been a mitigation effort of this kind that we can look to to see other successes. So essentially the approach is untested. So that's why I have concerns about that. We heard from Dr. Pavlik this morning who had some similar concerns. We've also received the comments of Dr. Tasha Ladoux who has some experience with probing these desert plants.

And in summary, there's much skepticism for these opinions. And also just from basic conservation biology principles which teaches that you want to have contiguous preserves, preserves that are adjacent to undisturbed habitat so you can maintain gene flow and natural processes. That's it.

Do you have anything to add?

MS. CHAINEY-DAVIS: In the FSA, page 39, staff specifically based on this kind of input from the people that were consulted and the lack of any demonstrated examples of success, we -- and based on the sort of basic principles of conservations or preserved design that she was just talking about, which is avoidance in the true sense of the word. And you're not just avoiding direct impacts, but you're avoiding indirect impacts as well.

Indirect impacts that could potentially and possibly even likely if you were to consider the comments of these specialists, likely to slowly degrade the viability, the sustainability of the population over time. In other words, the plan, it might not be sustainable.

You know, there's studies out there that suggest that these efforts, translocation efforts, et cetera, are typically not successful. In addition Ann Howald's paper, there was another one by Feedler that was commissioned by Department of Fish and Game, 1991, I think. And she conducted a review of mitigation success of 34 I think it was translocation efforts in California and less than 25 -- or was it less than 15 percent -- less than 15 percent were successful. I agree --

MR. HARRIS: I want to object to the presentation of new evidence about 25 studies that weren't identified. If they were identified, I'd like to know where they were identified.

MS. CHAINEY-DAVIS: You know, that one might have been I think in the FSA.

MS. BELENKY: It's also in our testimony.

MR. HARRIS: So what's the reference?

STAFF COUNSEL RATLIFF: The Feedler paper is referenced.

MR. HARRIS: Okay. I'm sorry. I thought it was

something new you're presenting. But it's within your testimony. Thank you for that reference.

MS. CHAINEY-DAVIS: So there's studies out there that suggest that these kinds of projects are typically unsuccessful. Not always, but typically, and are risky at best.

And then -- and, yes, I agree with Ann. Because in 23 years, my 23 years of experience, I've done a lot of revegetation. I've worked on a lot of projects. I even managed a revegetation nursery where we propagated native plants specifically for this purpose and designed and implemented and even monitored projects like that.

And we have learned a lot. We have learned a lot. But what we've learned a lot about mostly is how to translocate or how to do wetland and riparian restoration.

But even Oak Woodlands, the experts in oak restoration at U.C. extension, even they don't have any really good examples of oak habitats that have been successfully mitigated through either translocation or in this case artificial introduction.

So we have -- we know that we're getting better at it. But we're not there apparently. We're not good enough yet -- we haven't succeeded to the point where there are studies out there suggesting it is successful and worth the risk. So all we have is some bad news. We

have this bad news to lean on. We know we're getting somewhere. We're learning more. But we don't have anything out there we can bank on.

So we appreciate that they did -- they really raised the bar in terms of the quality or content format of a sensitive plant protection plan. It's got all the components of a really good plan. What we don't have is any real measure -- any guaranty of success. We have a lot of skepticism and not a guaranty.

The applicant when the panel was up here earlier, we had a good chance at it. I can't remember verbatim. I think we got a good chance.

Some of these species are -- one in particular, the Mojave milkweed, we could be pushing this particular species toward state listing. It's critically imperiled and it's even on our alert status. When I was talking about it with the Natural Diversity Database, she says, wow, this one really deserves its S1 status. And all we have are these herbarian ghosts and we've got what appears to be the epicenter of its California distribution in Ivanpah Valley.

And, you know, we just don't have -- there's certainly not a lot of room there for mistake. You know what I mean? There's just not a lot of room. So we felt like we would be remiss in our duties if we recommended a

mitigation plan, if we endorsed a mitigation plan that didn't give us a better guaranty of mitigation success. Sure, there's a chance it might be successful, but it's unproven and untested. And you know, I think if anybody had a chance of success, it would be Ann Howald. It would be under her supervision. She's very good.

But we just didn't feel that there was enough solid evidence out there to be able to say to you, you know, bank on it. Sure, this is going to mitigate these impacts to a level less than significant. You can count on it. You can bank on it. So we're just uncomfortable. It's just not -- it's not convincing enough.

Thank you. Ms. Milliron had prompted me. She reminds me she had some slides that she intended to show with her -- I think they'll be quite quick and illustrative. And I believe any maps are included in the testimony. If they aren't, we'll take them and throw them away.

HEARING OFFICER KRAMER: Well, and if possible if when you show them if you could tell us where they came from, that would be helpful.

MS. MILLIRON: These are all in the rebuttal testimony. I believe it's exhibit 305. They were also -- they're just repeats of figures that we prepared for the FSA as well.

I'll go through these quickly. But we wanted to show essentially a series of range maps that are compiled from the California Natural Diversity Database distribution of various species to give you an idea of the relative ranges of these species. And we started with the desert tortoise first, because we were talking about it all day yesterday. So just to put things into perspective with a charismatic species with the desert tortoise, we'll show you the plants. But so in California the desert tortoise range -- I'm not a desert tortoise expert, but I believe it spans about six counties. In the circle -- and you'll see the circle delineating the project area, the Ivanpah project area, occurrences that have been attributed to the project.

And I included photos that are either from the applicant's botanical survey report or from either sources. Jim Andre's photos are included here well.

This is the California portion of the Mojave milkweed. And as you can see compared to the last slide, there's a lot fewer dots. And it is all of the plant species that I'm going to go through do have highly restrictive range in California. But as we mentioned, they're all known in the state from fewer than 30 documented occurrences which include those in the project area, except for the small flowered Androstephium, which

I'll show you in a moment.

MR. HARRIS: Can I ask a question? What do the dots represent? I'm sorry if I missed that.

MS. MILLIRON: They all represent area of the occurrence. They're actually just the -- I believe it's the center point of the occurrence as mapped by the Natural Diversity Database.

MR. HARRIS: Thank you.

MS. MILLIRON: Is that correct, Carol?

MS. CHAINEY-DAVIS: It's point data associated with every occurrence in the database. And sometimes it's point specific. Sometimes it's kind of general based on a collection and it will say Shadow Valley. So we just assign the point to center of Shadow Valley and assign it a one-mile radius, meaning it could occur somewhere within that mile radius.

And these ranges do not include the occurrences we found in the California Consortium of Herbaria.

MS. MILLIRON: Correct. And this is the California distribution of the desert pincushion, and then the nine-awned pappus grass, parish club cholla. There is the Rusby's desert mallow, which is not known to occur outside the state. So this slide would actually show its global distribution.

MS. CHAINEY-DAVIS: Are you sure about that? I

thought that one had been found outside the -- it's never been said it's been found outside the state. But it is still globally rare I think.

MS. MILLIRON: Yeah.

MS. CHAINEY-DAVIS: Isn't it?

MS. MILLIRON: That's California endemic for the Rusby's mallow.

MS. CHAINEY-DAVIS: Okay.

MS. MILLIRON: This is the species that I mentioned has over 30 occurrences. This is the small flowered Androstephium. It's a bulbiferous plant. And while we initially didn't discuss impacts to this species as significant in the CEQA context based on the larger number of total occurrence, I think it's somewhere around 85. But the Sierra Club testimony pointed out that I believe it's 85 percent of the documented occurrences are in the path of proposed solar development or urban expansion. So considering those reasonably foreseeable impacts, we revised our determination on that and included it in the list of species we're concerned with.

And this figure just illustrates the concern that I just mentioned. And in terms of cumulative impacts, not only to the small flower Androstephium that Sierra Club brought up but also other plants. If you look at this figure, I believe it corresponds with a table in the

cumulative impacts -- a table of cumulative projects in a region. And the dots are various special status plant species in the area overlain with potential projects. So if you look at the Ivanpah Valley which is in this area, you can see why the concern of does come up when you start looking at the other projects are likely to go in.

I think I'll stop there.

COMMISSIONER BYRON: Ms. Milliron, if I may, one quick question.

MS. MILLIRON: Sure.

COMMISSIONER BYRON: Just looking at the figures -- and thank you, those pictures are just wonderful. But I can't help but wonder about the concentrations or the rarity of the dots. There seem to be so many of them right in the project area, and I can't help but wonder is that because that area is so well studied?

MS. MILLIRON: Certainly. If you do look at what's in the database, you'll note that a lot of the surveys are conducted in support of other CEQA analyses. So that does influence where you find and get the dots essentially. So, yeah. And if you look at how -- if you drill down and zoom in on the maps, certainly for the project area, the level of detail is much greater because of the applicant's level of survey as compared to other

projects.

COMMISSIONER BYRON: Thank you.

MS. MILLIRON: Uh-huh.

HEARING OFFICER KRAMER: Mr. Ratliff, any further questions?

STAFF COUNSEL RATLIFF: I have one last question for the witnesses. In your opinion, is there a feasible mitigation for these plants?

MS. MILLIRON: We concluded that, as I alluded to earlier, that true avoidance for direct and indirect impacts by the limited portions of proposed development and reconfiguring the project footprint in areas that support the highest density and diversity of these special status plants could substantially reduce the impacts of these special status plants.

So what we proposed was sort of a macro avoidance approach where you would avoid contiguous tracks of land that could be adjacent to undisturbed habitat. And you wouldn't conduct business if you were in those areas. There would be no touch zones.

And we assume there might be some flexibility in footprint configuration based on the expansion of the footprint that it occurred -- has occurred throughout the AFC review process. Most recently we assume that when 365 acres were added to the project to accommodate some large

detention ponds that the ponds were eliminated without adjustment downward in the footprint, that maybe that would provide some acreage that could be applied toward rare plant preservation.

I don't know -- I don't know whether that flexibility is available anymore. But so we do think that there is mitigation that could reduce a substantial part of these impacts and whether it's cast as mitigation or reduced footprint alternative, we can discuss that more. I think we will discuss it more in the alternatives section. But we think that that type of reduction in footprint in the protection of contiguous areas could reduce the impacts from most of these species, but we still think that even with designation of those preserves that the impacts to Rusby's desert mallow and the Mojave milkweed would still be significant due to their distribution throughout the area. So in other words, they're distributed across the projects such that you can't draw an avoidance area that captures enough of them to ensure that you avoid an impact.

MS. CHAINEY-DAVIS: I don't pretend to be an expert in desert revegetation or desert ecology and rely heavily on the expertise of people like Bruce Pavlik to inform our decisions. In the letter that Bruce -- in his comment letter which was docketed and is in the record, he

says first given the severe deficiencies in the --

MR. HARRIS: Can I ask what document you're referring to? Is it a comment letter that was --

MS. CHAINEY-DAVIS: No. No. It was docketed yesterday because, remember, we didn't get this special status plan avoidance plan until this past week. And so we circulated it and asked for comment --

HEARING OFFICER KRAMER: You need to speak into your microphone.

MS. CHAINEY-DAVIS: Oh.

We just got this special status plant avoidance plan this week and circulated it for comment. And one of the comment letters --

MR. HARRIS: I'm going to object to the reading of the letter into the record this late. I've never seen this letter. I don't have the ability to ask any questions. But more importantly, the author of the letter is not here to be cross-examined and certified to the truth of the matter asserted. So it's clearly hearsay and it's prejudicial hearsay. I don't think they want to read it into the record.

STAFF COUNSEL RATLIFF: We agree it's hearsay, but hearsay is acceptable in administrative hearings of this nature. There's no bar to hearsay evidence. I mean, the letter is brief. I see no reason why I should not

hear it. Mr. Pavlik of course has already phoned in today.

HEARING OFFICER KRAMER: Let me ask, who is the letter addressed to?

MS. CHAINEY-DAVIS: The California Energy Commission.

HEARING OFFICER KRAMER: So that sounds like a public comment and we're going to have to put into our file of public comments and address it at some point our other.

Let me suggest that we take a break and that rather than have you read the letter we duplicate it and distribute it among the parties. Mr. Harris can read it, and then we can talk about the letter to the extent it is more than a public comment.

MR. HARRIS: I guess my concerns are several fold (inaudible). And I actually got a hearsay objection out of Mr. Ratliff when talking with Mr. De Young about our discussion with the BMP, so I'm a little surprised to hear that standard changed. But at the end of the day --

MS. BELENKY: I --

STAFF COUNSEL RATLIFF: I never objected to hearsay testimony --

HEARING OFFICER KRAMER: We go one at a time here folks.

MR. HARRIS: I apologize, Mr. Ratliff, if it wasn't you, if I was incorrect on that.

The concern I have is this is public comment. I don't mind receiving it as public comment. But if it's read into the transcript, that becomes part of a hearing record for this proceeding and is evidence. And public comment is not evidence. That is the basis of my concern. This particular comment, by the way, is the former officer of the California Native Plant Society. He's hardly a disinterested party of the public. You can Google him and his name comes up on the service for CNPS for one of the parties. He's not currently an officer, at least to the best of my knowledge. But the suggestion this is just some disinterested member of the public, I want to dissuade you of that.

But at the end of the day, this is public comment and should not be taken as testimony. It should not be read into the record as evidence.

HEARING OFFICER KRAMER: Well, I don't think the mere fact of its appearance in the transcript that it gets special status as evidence. But after all, what he said on the telephone some minutes ago is going to appear in the transcript. And the Committee is smart enough to distinguish between public comment and testimony. And we're not -- and I'm sure you will remind us at some point

down the road.

So rather than just read it and try to have everybody hold all the words in their short-term memory and read it from their short-term memory several times, let's get it xeroxed and passed out. It is going to come in at least as public comment. And we were about to take a break anyway. So let's come back at 3:35 on the clock.

MR. HARRIS: Mr. Kramer, I had mentioned a flight problem. Not flight problem, but an airplane flight. I think the 3:20 cab is here to pick up Mr. Olson.

HEARING OFFICER KRAMER: I'm sorry we weren't able to go at the speed as predicted. But, by and large, we're making progress and that's probably the best we can do.

MR. HARRIS: Thursday I think can work for Arnie. But I'll solidify that during one of our breaks.

HEARING OFFICER KRAMER: Thank you. We're off the record.

(Thereupon a recess was taken from 3:21 p.m. to 3:46 p.m.)

HEARING OFFICER KRAMER: Back on the record.

During the break, we talked about the schedule, in light of other things, Mr. Harris's witnesses need to depart. And I'll attempt to state my understanding of what seemed like a good plan. And if I've gotten part of

it wrong, anybody can speak up and let me know. We're going to continue with biology and finish that this afternoon. In the vicinity of 6:00, we'll take a break for musical cars and our box lunches will be brought in. And then we'll continue this evening to no later than 10:00. And we'll continue on the topic of alternatives.

Mr. Harris has agreed that he doesn't need to go first. That was a hard concession for him. And we are trying to accommodate these two witnesses from the intervenors who could be completed today and wouldn't have to come back. So we can either start with the staff or the two intervenors who have witness issues and work through as many of the alternatives panels as we can. And then we will finish alternatives on Thursday, and tomorrow we'll go back to our schedule which will have us working first on air quality.

So is there anything wrong? Does anybody see any problems with that plan?

MS. SMITH: I don't see any problems, Mr. Kramer. Just a question. When you were saying we'd go through as many panels as possible, are we doing the informal hearing procedure for the alternatives so maybe that will speed things along?

HEARING OFFICER KRAMER: We certainly can.

Mr. Ratliff, are you open to combining your

witnesses with all the intervenor witnesses?

STAFF COUNSEL RATLIFF: I believe -- yes, we are.

HEARING OFFICER KRAMER: So it would be a panel of everybody, but the applicant's panel --

MS. SMITH: The applicant's not willing to throw its experts into the mix?

MR. HARRIS: I'm worried about the genetic diversity.

(Laughter)

STAFF COUNSEL RATLIFF: Well, that's what we're worried about, too.

(Laughter)

MR. HARRIS: We are actually the one that won't have witnesses tonight.

MS. SMITH: Better yet.

MR. HARRIS: So we don't want to break up the panel. They practice as a panel and they're supporting each other in cross. And so -- and by the way, the people who are available are probably a third of the direct testimony. But it would be counterproductive. We would have to go back over some ground.

So I've asked for, given Mr. Olson's availability, is put our entire panel on on Thursday and that we don't have any problem with folks phoning in if they need rebuttal. So it would just be my panel on

Thursday, we do not object to -- so it's on the record. We do not object to the other parties panels of alternatives proceedings today.

MS. SMITH: Mr. Kramer, I guess I didn't understand the hallway conversation. I thought that the applicant's expert would go to -- he had the Bill Powers issues and the Center for Biological Diversity issue. I didn't understand that. That means I'll definitely have to bring my witness back on Thursday if you're going to be talking about the other alternatives, private lands and I-15 and Sierra Club proposal, et cetera.

MR. HARRIS: All we're planning to do on Thursday is make our witnesses -- we'll do our direct testimony and our witnesses will be available for cross. There are four or five people on the panel. I have a list of them on the panel if you'd like, but --

STAFF COUNSEL RATLIFF: Well, could I ask, I mean -- I don't know who your witness is for the I-15 alternatives. But I mean, would it not be possible to have him on for that limited issue so we could at least deal with that issue tonight and only have some subset of issues to deal with later?

MS. SMITH: I've had a witness here for two days wanting to talk about the I-15 alternative, and now it looks like I have to bring him back on Thursday.

MR. HARRIS: No, we don't object to Mr. Cashen proceeding today.

MS. SMITH: Well, with all due respect, if we're going to have your panel examine, cross, et cetera, I need to be here and so does my witness. You know, that's just the way the process works.

MR. HARRIS: I want to highlight -- we can pull the transcript -- that we made this unavailability known to everybody on the 4th. So this was not -- this isn't new in that respect.

MS. SMITH: But that was -- sorry. But that was the Thursday unavailability. Today is Wednesday. Today is alternatives day.

MR. HARRIS: No. No. It was --

MS. SMITH: Has Wednesday become Thursday?

MR. HARRIS: No, today is the 12th. Today is the 12th. My witness's unavailability was on the 13th. Today my witness was here and you just saw him leave for his flight. We managed to filibuster enough that they had to go catch a plane. So that's the unavailability that we faced. All right.

MS. BELENKY: I don't want to make this more difficult, but if we're talking about our pre-hearing conference statements, we did state that Bill Powers was not available on Thursday. So we've been trying to

negotiate and do all these.

So there is this question of Arnie -- I'm sorry I've forgotten his last name -- Olson left, but the rest of your panel is here; correct?

MR. HARRIS: The person -- yes. No. Actually, everybody except Mr. Olson is still here waiting to be hopefully released. But Mr. Olson is the one whose testimony is a rebuttal to Mr. Powers.

MS. SMITH: But what does Mr. Olson have to do with the Sierra Club I-15 discussion? That's my question.

MR. HARRIS: Nothing. I want to be clear. I don't have any problem with --

MS. SMITH: Then why do you have to bring your panel back on Thursday?

MR. HARRIS: I have an affirmative case that I want to put on on alternatives. I've got five witnesses with direct testimony. And they are presenting as a team. And they were going to do that today. They can't. So all I'm asking is they be allowed to do that on Thursday. That's the only change.

STAFF COUNSEL RATLIFF: You could do that on Thursday but still participate today in an informal hearing on the I-15 alternative, just for that limited purpose, couldn't you?

MR. HARRIS: I need to check and see who my

witnesses are on the I-15 alternative. Hold on.

STAFF COUNSEL RATLIFF: Presumably Mr. Olson wasn't one. He didn't address that so --

MR. HARRIS: I understand the question now. Let me look at my witness list, okay.

HEARING OFFICER KRAMER: Actually, I don't see Mr. Olson on here.

MR. HARRIS: He was added on January 4th rebuttal testimony, as was Mr. Gray.

Okay. Our witnesses -- yeah, I hear you. I think we have folks -- our witnesses are available on I-15, it would be Mr. Carrier who is here, Mr. De Young, who's here; Mr. Spaulding -- Dr. -- Dr. -- Dr. Spaulding, who is here as well; and that is it. And I would make those folks available to be part of that panel.

MS. SMITH: So we need to add Dr. Spaulding to the alternatives witnesses list?

MR. HARRIS: Dr. Spaulding is in my rebuttal testimony identified as a witness. So, yeah, he's previously identified as a testimony -- witness. As a doctor witness on this issue.

STAFF COUNSEL RATLIFF: Thank you. That should work.

MR. HARRIS: I apologize.

HEARING OFFICER KRAMER: Thank you for working

that out.

So those witnesses are not excused, because we will be getting to them on the alternatives panel.

And it sounds like no party has an objection to presenting all those witnesses as a panel this evening; is that correct? Seeing no correction, that is correct. So that's the way we will proceed on the issue of Mr. Olson versus Mr. Powers on that topic, specific to them.

Ms. Belenky, is it acceptable to you that Mr. Powers will testify this evening and Mr. Olson will testify on Thursday?

MS. BELENKY: Yes. That's acceptable and we'll try to have Mr. Powers on the phone in case there's any rebuttal or clarifications, because Mr. Olson was brought in specifically to rebut Mr. Powers' testimony. And so if we have any redirect, we'd like to be --

HEARING OFFICER KRAMER: Okay. Well, if that's the case, then it does make some sense that Mr. Powers would go first anyway.

MS. BELENKY: Yes, that would be fine.

HEARING OFFICER KRAMER: Okay. Let's continue then with the biology panel.

Mr. Ratliff, were you concluded with your questions?

STAFF COUNSEL RATLIFF: I think we had. I think

where we left was a question of whether I think of what I understand to be about a paragraph of hearsay evidence could be read to you. And I just don't want to spend a whole lot of time on this. I don't think we should.

But if you look at our rules of evidence in Section 1212 of Title 20, it's that any relevant, not cumulative, evidence shall be admitted if it is of the sort on which responsible persons are accustomed to relying. And specifically with regard to hearsay, it says hearsay evidence may be used for the purpose of supplementing or explaining other evidence but shall not be sufficient in itself to support a finding unless it would be admissible over objection and civil action.

So I think we're offering essentially hearsay testimony here in support of the testimony you've already heard. I think that's entirely appropriate and maybe we could just move on. My panel will be done.

MR. HARRIS: With the clear delineation that Mr. Ratliff just gave that is, in fact, hearsay, all it would expose us to is the risk of having to explain that in a brief. So I would withdraw my objection for the witness reading that paragraph of the public comment.

HEARING OFFICER KRAMER: Okay. And because it's been referred to by a witness, you should give it an exhibit number so we can track it.

Mr. Kessler, I understand that you consumed a couple of the exhibit numbers that I may not be aware of. So to your knowledge, what is the next number that's available?

MR. KESSLER: 313.

HEARING OFFICER KRAMER: So this will be Exhibit 313. It's an e-mail from John Kessler to the docket optical system at the top dated January 11th, 2010, at 8:08 p.m.

But ultimately it is simply forwarding an e-mail from Ms. Milliron which then appears to be forwarding a letter of comments from Bruce Pavlik. So that is Exhibit 313.

And, Ms. Davis, you were about to explain your opinion on the question that was before you was informed or influenced by this comment.

MS. CHAINEY-DAVIS: Yes. We did -- we did -- it's a complicated issue. Rare plant mitigation is also difficult. It's always challenged because they don't -- they don't translocate easily. I don't think there's any disagreement about that. It's not easy. And we're learning more and getting better at it. But we're not home yet. And we don't know if we ever will be. And so anyway it's --

COMMISSIONER BYRON: Please move closer to your

microphone.

MS. CHAINEY-DAVIS: Yeah, it's a difficult question. It's a challenge to come up with effective rare plant mitigation. So we didn't have a lot of time to digest the sensitive plant avoidance plan and research it. So we consulted the opinions of some people that know a lot more about the issue than we do. And one of those was Bruce. And you heard from him today. He basically -- you know, he did talk about a lot of the issues that are raised in the letter. So we don't need to go over those again. You have a copy, so you talked about genetics diversity, the key to resilience in population. Self-sustaining population is the only way that species can persist, et cetera.

And at the end of the first paragraph -- because we asked him, we need your opinion on whether incentive plant avoidance plan has a likelihood of success. And so he says at the end of the first paragraph, "given these deficiencies and the approach, I find it highly unlikely that the proposed avoidance and mitigation measures will effectively conserve the rare plants in the Ivanpah project area." And then he talks about what is important.

And then in the end of the third paragraph, he says, "any alteration to the project footprint that leaves rare plants adjacent to the large undisturbed tracts of

habitat in order to accommodate disbursal is a better solution than fragmentation and inadequate or untested mitigation."

And so the reason I brought this up is because I was asked about -- I was asked if we had any thoughts about how to mitigate this impact. And so we specifically said in the FSA page 39 that we were pretty uncomfortable with the idea of preserves among the heliostats where the vegetation surrounding the rare plants occurrences -- surrounding them -- not within but surrounding them would be managed and that we don't know how these plants would respond to the shading of the mirrors. There's a lot of things we don't know. We don't even know what pollinates these and how the alteration of the structure and the composition of that habitat how that would affect the pollinators. All these just unknowns. Lots of unknowns.

A mitigation method technique that has been tried and what agencies typically love to see and push for and kind of enforced by organizations like TNC, et cetera, is the idea of preserves that try to maintain intact functioning ecosystems where you're not in this mucking around. And so what we concluded based on this kind of input is that we need to maybe re-examine a reconfigured footprint, a reconfigured alternative. And maybe we need to look at that again, because bio measure 18 as we wrote

it and as it's been addressed does not appear to have a lot of support among at least the people we've consulted.

STAFF COUNSEL RATLIFF: Does that complete your testimony, Ms. Davis?

MS. CHAINEY-DAVIS: Yeah.

STAFF COUNSEL RATLIFF: Thank you. And let's open for cross-examination.

HEARING OFFICER KRAMER: Okay. Mr. Basofin, any questions for the panel?

MR. BASOFIN: I have no questions.

HEARING OFFICER KRAMER: Okay. We'll go down the row. And ask do any of the intervenors wish to question this panel?

Mr. Suba?

CROSS-EXAMINATION

BY MR. SUBA:

Q Good afternoon. I have a question that relates to the CEC staff's rebuttal testimony, page 29, the staff response to our testimony that details the need for surveys that address the full nature of the floristic characteristics of the east Mojave. And by that I mean the surveys that were done were done well. They were done in the spring.

But the nature of the Mojave -- and we'll go through this in our testimony -- I'm saying all this to

set up a question here so everybody understands the context.

Mother Nature dumps water down twice in big amounts in the eastern Mojave. And it's I believe common practice in Arizona and maybe for when floristic surveys are done, they're done in the spring and in the late summer/early fall because that's when one captures all the flowers that flower. And that doesn't happen here in Sacramento or along the coast or areas like that or in the valley. But it does happen down there.

So the intent of surveys is to describe fully the environmental character of the area to assess the impacts. It seems like we've missed all of the information that's available there. So I'm just trying to reconcile what is being recommended, what can be done. So it says here CNPS recommended an expansion of the survey area called for to include the entire project site. So what bio 18 calls for is for late summer/early fall surveys to be done in the areas that are to be protected to identify plants in that fall flowering in there that can be protected.

My question is, what about all those other plants that may or may not occur on the site in the fall that have been missed? When is it feasible for large multi-thousand acre projects like this one to address that part of the nature in the east Mojave?

Rambling question.

What about fall surveys?

MS. CHAINEY-DAVIS: The issue of, like you said, most of California's Mediterranean climate and most of us consultants are very accustomed to doing spring surveys. And there's actually a lot of consultants. I heard from the person that gave a talk on the issue at a recent conference of southern California botanists. There's a lot of consultants out there that weren't aware of the need for fall surveys and this eastern portion of the California desert. So it's a new issue. We confess, it's a new issue to us. And it was brought to us as an issue after the surveys were done and basically during production of the FSA.

And so, you know, if we had -- it's definitely an issue that needs to be raised we think on all these projects. I think we need to get in there and tell these applicants early on that they need to do well time surveys, even though it's not -- it's not something that we're accustomed to doing. It is provided for in the survey guidelines, the agency botanical survey guidelines say that you need to do surveys at a time of year that anything that has the potential to occur in the project area is blooming or is identifiable. So in that sense, we probably all should have been doing fall surveys for a

long time. But it is new to staff. It's an issue we were not familiar with and it came to us late in the process.

And so that's a hard one. What do you do? It's your report production. Do you tell them? Do you hold the whole process up at this point?

So what we did is went through the table of -- we consulted the local experts what species do you think have potential -- which of these fall bloomers have potential to occur? And then the applicants were then asked or addressed in their rebuttal which of these species had real potential to occur in the project area based on suitable general and micro habitat. And so they went through the list and they addressed each of those species and appeared to have addressed them all adequately. In other words, that they've considered that. They weren't blowing that off that said the habitat was not present in the project area to support those fall blooming species that were brought to our attention.

MS. MILLIRON: Yeah. I think in the table they identified things as being unlikely or very unlikely to occur. And there were two species which they had listed as more of a likelihood of occurring. And I believe those were two of the watch list species. But --

MR. SUBA: Excuse me. Just to be clear, that's Bio Table 1 in exhibit 81 of the applicant's rebuttal

testimony.

MS. MILLIRON: And if I might have adjusted a little bit, we did include that two survey periods be included as you mentioned in bio for areas that were to be protected with the idea that if -- that there be enough of the suitable habitat to provide a sampling of what was there.

And also as Carolyn brought up, we just were unsure what our options were towards the do you hold everything up for this? Because we were already saying the impact was significant with respect to rare plants. So I don't know if anything was found it wouldn't change -- it's already being considered significant. So it wouldn't be a wholesale change.

MS. CHAINEY-DAVIS: I suppose if they had -- if there was suitable habitat if the applicants responded that there was indeed suitable habitat in the project area for one of these species then we could have just considered requiring mitigation for that. But that was not the result of their response so --

MR. SUBA: Thank you.

HEARING OFFICER KRAMER: Follow-up question to that.

The FSA in the discussion of the Native Plant Society's comments appears to encapsulate this as a

response to what we call comment number one. But that talks about a summer survey. Are we talking about different things?

MS. CHAINEY-DAVIS: Same thing, yeah.

MR. SUBA: Same thing.

MS. CHAINEY-DAVIS: Some are fall late season. We'll just refer to perhaps what is late season.

MR. SUBA: Late summer/early fall. After the monsoonal moister of summer.

HEARING OFFICER KRAMER: Thank you. Any other questions from the intervenors?

Let me just check the telephone. County, are you still here?

MR. BRIZZEE: Still here, Mr. Kramer. Thank you. I have no questions.

HEARING OFFICER KRAMER: Okay. Ms. Belenky, go ahead.

CROSS-EXAMINATION

BY MS. BELENKY:

Q I just have one follow-up question to what you said. You said that you became aware of the issue of the fall flowering species late in the process. Could you give us some time frame for that?

MS. MILLIRON: I believe it was -- I'd have to look up the date on the document. But I believe it was a

comment letter in response to the FSA. So I think what Carolyn said it means in terms of staff's or my ability to say this is a problem, because that -- the time that would be ideal for signaling that problem would be in data adequacy to point out that there was an inadequacy in the survey level that was conducted. But when we got the letter, it had already been deemed data adequate. So as far as I understood, I didn't know there were options available to ask for a re-survey at that point.

MS. BELENKY: Do you know the time frame -- I mean, I can look up when the pre-essay comments were due. That's fine. I just wanted to make sure I understand that it was in response to a public comment at least as far as the public process which was early in the process. It was in your -- you're stating that for you as a staff person it felt late in the process.

MS. MILLIRON: Correct.

MS. BELENKY: Thank you.

HEARING OFFICER KRAMER: Mr. Harris.

MR. HARRIS: Thank you. I have a few questions for staff.

CROSS EXAMINATION

BY MR. HARRIS:

Q First of all, start with my typical song here. There are no state or federally threatened or endangered plants

we're talking about here; is that correct?
A Correct.
Q So it's rare plants, special status. Help me understand how you understand those terms. Are rare plants and special status plants the same thing in your mind?
A We call them special status because they don't appear on any official -- they're not state or federally listed but they are listed by other organizations such as the California Native Plant Society and they are tracked by Fish and Game's Natural Diversity Database. The Energy Commission's regulations reference the CNPS list and the definition of "species of special concern." So all those are grouped into what we could use as the term special status. But also even if a species is listed state or federally we understand that it may be considered endangered or threatened if the species can be shown to meet the criteria in Section 15380 of CEQA and plants appearing on CNPS List 1B and 2 are considered to meet those criteria in that section of CEQA.
Q Okay. So let me ask the question a different way. Do you use the terms "rare" and "special status" interchangeably?
A We do. Sometimes we use the term rare plants as sort of a shorthand way of abbreviating special status species

or special status plant species. The plants that we've been discussing we do consider them rare in California.

STAFF COUNSEL RATLIFF: If I could just add to that, as a point of legal clarification, that I hope will help here is that CEQA makes those terms essentially interchangeable. Because if you look at CEQA guideline section 15380, in Subdivision D says a species not included in any listing identified in Subdivision D above that is a rare species shall nevertheless be considered to be endangered rare or threatened if the species can be shown to meet the criteria in Subdivision B. And that is -- if you read those sections, I think you'll see that CEQA is basically making this a circular kind of definition.

MR. HARRIS: Thank you. I won't have to cut that out of the transcript. That is the relevant section.

BY MR. HARRIS:

Q I'm just trying to understand what we're talking about, we're talking about rare special status. And again it sounds like it's not rare, threatened, or endangered, but it is either somehow related to the California Native Plant Society determination or determination by the California Natural Diversity Database or CNDDB.

The terminology is confusing for us non-lawyers, and I hear a lot of good occurrences. You know how many

occurrences are there. And I think, Ms. Milliron, that your maps that you showed, those are mostly occurrences on those maps -- I won't use the terms measles. I'll use the term dots. The dots on your maps were occurrences?

A Correct. The term that the National Diversity Database uses is actually element occurrence. So an element would be synonymous with a species and occurrence would be a group of full population. Sometimes it's not the same thing occurring in the same place.

MS. CHAINEY-DAVIS: Can I add to that?

I just wanted to add -- make sure that Commissioners understand the maps -- the project occurrences that were reflected in the maps that you saw earlier on the screen was the project survey data, which is very detailed, very fine scale one through -- they run it through filters so that you're not -- they don't want -- they don't want you to get a false impression that there's 895 occurrences of species in the project area. They run it through a quarter-mile grid. And it's that fine scale documentation of occurrences is simplified into a smaller number of occurrences. They're basically one population. That's because they regard these as just sub-populations of a meta population kind of a thing.

So the project GPS data and the maps that -- for example, Amy showed earlier -- Amy Hiss, the applicant's

botanist -- show there's lots and lots of dots on the map. If you look at CNDDB's filtering of the same data, it's made fewer dots on the map. Simplest way I can think of it.

HEARING OFFICER KRAMER: So in the data the staff shows on the map, dot could mean one plant or one or more.

MS. CHAINEY-DAVIS: Or a hundred, 200.

MS. MILLIRON: It's a tool to use a common metric for looking at for grouping essentially so you don't count them as saying you don't have so many separate occurrences for locations where, for example, if you're doing a survey by occurrence and every tenth of a mile you get out and you still see the plant, those wouldn't be separate occurrences. It would only be after a quarter mile that it would be counted as a separate occurrence.

HEARING OFFICER KRAMER: Mr. Harris.

BY MR. HARRIS:

Q I want to make sure I'm clear. So an occurrence is not an individual plant; is that correct?

A It could be in some cases. That would be an occurrence that's not in very good shape.

Q So an occurrence -- a plant's a plant. So occurrence is at least one plant; is that correct?

A Correct. Although the occurrences in the CNDDB -- there is a field in there for whether that occurrence is

extirpate. So if you have an occurrence and it's marked as extirpate, they're certain they've confirmed there aren't any plants there anymore, but it's their record.

MR. HARRIS: So the occurrence is at least one. And you said it could be hundreds. Could an occurrence be thousands of plants?

MS. MILLIRON: I believe it could in the case of the nine-awned pappus grass. I believe there were thousands of individuals found in that one. I'm not sure how many occurrences that was grouped into for the CNDDB, but I would imagine that would be a case where you might have thousands.

MR. HARRIS: So I almost said I won't compare apple and oranges, but it seems like the wrong metaphor here.

Occurrences in individuals plant is the limiting factor on how many plants are in the current than the quarter mile Ms. Chainey-Davis referred to? Did I get that right, Chainey-Davis?

MS. CHAINEY-DAVIS: Yes.

MR. HARRIS: So if there were -- pick a number -- 3,000 of a particular plant all within one quarter mile, that would be a single occurrence; is that correct?

MS. MILLIRON: I believe so. I haven't done any mapping using that method, but I believe that's correct.

MR. HARRIS: Sorry. Go ahead. I didn't mean to cut you off. Go ahead.

MS. MILLIRON: I cut you off

MR. HARRIS: That's all right.

MS. CHAINEY-DAVIS: We did look at -- the reason that we didn't use population occurrence, population number, the number of plants found in an individual occurrence is because it's variable in -- in other words, it's not available for every occurrence in CNDDB.

So, for example, for the Mojave milkweed, there was numbers available -- that's not a good example because they're all in the project area. There's numbers -- so for example, the nine-awned pappus grass, we looked at -- there was population sizes estimated for about 75 percent of the occurrences in CNDDB but not all. And they vary from 150 to 15 -- no -- to 2,000. And then in the project area there's 6,670 individuals in your project area.

MS. MILLIRON: One of the other things that we acknowledged is that there's different patterns of varying plants. So even though a plant is locally abundant and you're finding, for example, in this case thousands of them, it's still very restricted in distribution, which still makes it sensitive to local extirpation.

There's other factors that go into rating it as a rare plant. And so I believe that the CNDDB uses the

metric of element occurrence in terms of ranking the conditions. The G, global, and statewide as --

MS. CHAINEY-DAVIS: That's not just CNDDB. That's nature serve. Nature serve method protocol. And that's an internationally accepted system for classifying conservation or describing conservation status.

The point of the maps was not for us to count the number of dots on the maps. The point was for you to see how restrictive the range is. And yes, they'll find more here and there. They'll find a few more. But they do systematic surveys. But it still gives you an idea of how restrictive the range is in California. That was the point.

MR. HARRIS: Thank you. I apologize if I jump on either one of you verbally here.

So the next question I have is the quarter mile thing is pretty -- sounds like it's a distance so -- let me put it in a formal question. You said I could have up to, say, 3,000 plants in a single occurrence. Is it also true that if I had one plant at one location and a second plant located more than a quarter mile away that that is recorded as two occurrences of those plants?

MS. MILLIRON: I believe that's correct. And like I said, I haven't worked at the database. And there's some in the room who actually have.

MS. CHAINEY-DAVIS: I could probably answer that question a little bit better.

I did collaborate with the CNDDB when I was the CPMS botanist and got similar ranking of element occurrence. Counting of occurrences is also used in the system. So I do believe that's correct. And if that example if there were two (inaudible) what you were saying, two individual plants that were separated by a quarter mile would they be counted as two occurrences?

MR. HARRIS: Yes.

MS. MILLIRON: I believe that's true. But I can't speak for CNDD. If there's other information or report of those occurrences includes along the records they take that into account. So if there's other biological factors that indicate that there was a single occurrence, they may be mapped as a single occurrence. For example, if they've got really detailed GPS data. Like for example they wouldn't cut off an occurrence at a quarter mile if it extended past that. So I know there's multiple factors they use. It's not as simple as throwing a grid on top of a map. I don't believe it's that. But in your example I think --

MR. HARRIS: So what other factors -- if they weren't going to use the quarter mile separation to delineate two occurrence, what other factors might make

someone in the field say this is one occurrence?

MS. MILLIRON: I guess I would be speculating, but I would think maybe there's -- you know, if there's like some kind of a continuation of habitat signatures they're picking up that, indicate that. I don't know -- Carolyn, do you know?

MR. HARRIS: I'll withdraw the question. You said you weren't sure, so I'll back off.

I want to understand about political boundaries, too. Are you only looking at California when you're locking at these occurrence?

MS. MILLIRON: What do you mean when you say looking at?

MR. HARRIS: Well, you're making the determination of impact on the plants. Do you consider information about plants that are in the Ivanpah Valley but in Nevada?

MS. MILLIRON: Yes, we do. Our conclusions are in the CEQA context. Again, we're practicing that with the conclusions we're making are about the California distribution with the exception of the Rusby's desert mallow which is restricted to California.

MR. HARRIS: So when you say you're going to take away X percentage of the non-occurrences, are you talking about X percentages of the known occurrences in California

or X percentage of the known occurrences that are known?

MS. MILLIRON: In California, for most of the species range wide for the Rusby's desert mallow.

MR. HARRIS: Is the California Natural Diversity Database, CNDDB, information on plant occurrences outside the state of California?

MS. MILLIRON: Their paper files do sometimes contain information from other states. There is data sharing with other national heritage programs. For example, there's really good data sharing with the Oregon National Heritage Program. But they don't have detailed map -- in general, they don't have detailed mapping data from other states. They only map things that are in the state.

MR. HARRIS: So the data itself doesn't contain out of California -- information from outside of California? Is that correct? It's the paper filed --

MS. MILLIRON: Yeah, I believe that's true. I haven't -- yeah, I think all the maps cut off at the state line, but I'm not sure since it contains animals too. So I'm more just familiar with the plants I've looked at in that database.

MR. HARRIS: In terms of the Rusby's, I know that you based your analysis on the element, the elements occurrences, can you explain to me why the loss of 15

plants is an unmitigable impact under CEQA?

MS. MILLIRON: Well, it looked like the plants that were based on the distribution that was mapped that they couldn't be avoided if you were looking at avoidance and contiguous designated preserves that are contiguous with undisturbed habitat. So that was largely why we were concluding that.

MR. HARRIS: But it is based on 15 plants; is that correct?

MS. MILLIRON: I don't have the exact numbers in front of me. I'd have to look that up. I was actually looking at it more in context with how many occurrences would be left in the state, what portion that number of plants represents.

MR. HARRIS: I'm going to ask you about a term that you used that kind of struck me as a little strange. You talked about true avoidance. What do you mean by true avoidance?

MS. MILLIRON: I'm sorry about that, that I didn't clarify that. I was meaning it in terms of what we think about mitigating or mitigating impacts to rare plants, we sort of follow a flow chart if you want to avoid it first, avoid the impact. And then if not, if you can't avoid it, then you want to minimize the impact. And then if you can't do that, then you mitigate.

And so to me, the plan that was proposed seemed to be minimizing impacts during construction but not actually avoiding impacts during both construction and operation. It would still be impacts occurring. And so when I talked about avoidance, I meant that you would truly not have impacts occur directly or indirectly to those plants. Does that clarify a little bit?

MS. CHAINEY-DAVIS: I think we envisioned that you would not be, you know, conducting power generation within the plants preserve. You wouldn't be managing the habitat. You wouldn't be mowing it and it wouldn't be shaded by the heliostat mirrors, that it would be avoided.

MR. HARRIS: Thank you.

On page 6.245 of the staff assessment, you've recommended a mitigation approach that is to protect -- I'll just read this.

Staff recommend a mitigation approach to protect 75 percent of the individuals -- so those are the plants -- at least of the five special status plants within the project area. And that's the 75 percent level for pincushion, the pappus grass, the club cholla, the desert mallow, and the milkweed. Do you remember that as part of your testimony?

MS. CHAINEY-DAVIS: I do.

MR. HARRIS: Where does the 75 percent number

come from?

MS. CHAINEY-DAVIS: Seventy-fie percent is a mitigation goal, not a significance threshold, per se. A goal in the way that mitigation ratio would be a goal. And it did take into account -- we did consider the fact that we expect the population to extend beyond the project boundaries on the map and include and may extend into adjacent undisturbed habitat.

One of the things we looked at when we were analyzing the significance -- when we were analyzing the impacts was cumulative effects. And as you saw in the cumulative effect map that Misa brought up, there's a number of projects, other renewable projects proposed for the Ivanpah Valley. So we took pretty seriously the potential for significant cumulative effect to be Ivanpah Valley populations of these plants. So 75 percent assume that there are more in the valley. That was our -- the mitigation goal that we established.

MS. MILLIRON: And also we knew that in order to establish -- I guess establish what number could be lost before you impact the population as a whole, we realized that would be needed to determine that kind of a number biologically would be some sort of a population viability analysis or a study addressing what the minimum viable population size would be for each of these species and

acknowledging that we probably don't have time within the context of this proceeding to do that type of a study. We're trying to provide some sort of flexibility of the mitigation goal that does meet 100 percent.

MR. HARRIS: That helps me a lot. I understood it to be a threshold that if you were above or below you were either good or bad. But it is actually that. This is a target or a goal

MS. MILLIRON: Correct. We felt it would be too vague to ask for a plan without some kind of idea or I guess delineation of what we were looking for.

MR. HARRIS: I really appreciate the clarification. Coming at it as a lawyer, I thought you were saying that was a CEQA threshold of significance and I heard you say exactly that that wasn't the case. And so maybe we should talk more. Sorry.

Ms. Milliron, you said at one point that the plan won't protect the species that are on the project site. Is that from a biological perspective a question you ask and will this plan protect the plants the individual plants that are on the project site?

MS. MILLIRON: I'm sorry. What was the question? Are you asking whether I asked the question?

MR. HARRIS: I believe -- maybe I misunderstood you. I believe you said that the plan should be aimed at

protecting the special status plants that are on the site. So the individual plants on the site. Did I misunderstand you?

MS. MILLIRON: Oh, the species. The species that have been identified on the site is that -- the six that we're concerned about.

MR. HARRIS: Let me see if I can rephrase the question. Is the goal to protect individual plants on site or was the goal to protect the plant at a population level?

MS. MILLIRON: The goal of our proposed mitigation or the plan that the applicant has revised?

MR. HARRIS: What do you think the goal should be for protection of these species? Should it be protection of the individual plants on site?

MS. MILLIRON: Well, I think we should definitely -- it's hard to get away from using number of individuals as some sort of a measure. I think we should be looking at how to protect the population. Certainly, the comments that we heard --

MS. CHAINEY-DAVIS: Population in the sense of the Ivanpah Valley population. If you look at those occurrences, it's just sub-populations of one greater population within the Ivanpah Valley. We're trying to affect an avoidance protection of a chunk of substantial

portion of what's left out thereafter considering all the indirect and cumulative effects of all the proposed projects. And we're trying to do that through a method that has always been considered the first option, which is avoidance.

MR. HARRIS: I have no further questions. Thank you for your time. That was very helpful.

HEARING OFFICER KRAMER: Mr. Ratliff, any redirect?

STAFF COUNSEL RATLIFF: Yes.

REDIRECT EXAMINATION

BY STAFF COUNSEL RATLIFF:

Q Ms. Milliron, do our regulations for data adequacy require fall surveys?

A I believe -- I have to read them, but I think it says that the surveys be conducted at a time when the target species would be in flower or otherwise identifiable. I don't believe it specifies the time period.

Q Do applicants typically file spring surveys as opposed to full surveys?

A Correct. That's what Ms. Chainey-Davis was pointing out.

Q How often have we seen fall surveys filed in an application?

A I have not seen any.

Q If you had found through fall surveys an additional plant or two additional plants or any number of additional plants, would it have changed your conclusions regarding the significance of impacts to the rare species that we've discussed today?

A No. I think I mentioned that. We had already concluded the impact to special status plant species was considered (inaudible).

Q And you had a line of questions about why you were concerned about plants within the boundaries of California. Does that have to do with anything to do with the California Endangered Species Act and the terms of that act itself?

A Well, as far as -- I'm not an expert on that. But as far as I understand it that it could -- part of it is that the Department of Fish and Game can only protect what is within their control within the state. And there's also the issue of protecting the California portion of ranges as being a significant thing in and of itself.

Peripheral populations, what they call them, often contain unique genetic diversity that is of significance to a continued existence of (inaudible) ranges of species.

MS. CHAINEY-DAVIS: We talked about that in the FSA, the significance of peripheral populations.

BY STAFF COUNSEL RATLIFF:

Q Realizing that you're not a lawyer, either of you, I'm asking if you know if the Department of Fish and Game interprets the California Endangered Species Act to apply to the plants which are within the state of California exclusively?

A That's my understanding is that you're asking if it applies only to the California portion.

Q Do you know if the Department of Fish and Game interprets the Act that way?

A I believe they do. I saw some other cases recently that were circulated with respect to wildlife and plants actually.

Q When you say cases, are you talking about court cases?

A Yes.

Q Okay. So is it your understanding that the courts have also interpreted it that way?

MR. HARRIS: That's a legal question.

STAFF COUNSEL RATLIFF: She can answer it. I understand that this is a legal question

MR. HARRIS: And I'll be doing mine on re-cross.

MS. CHAINEY-DAVIS: When we consulted Fish and Game staff, we made a reference to a recent court case involving the California distribution of coho salmon in which apparently the courts ruled that -- what was

explained to me is that the court ruled that the California distribution of coho salmon, that was significant and of importance to the state of California regardless of its distribution outside the state. If that answers your question.

STAFF COUNSEL RATLIFF: I didn't understand the answer.

MS. CHAINEY-DAVIS: One of the things it says is that even if a species is not -- and I think we put this in the FSA -- even if the species is not a California federally listed species, it still may be considered endangered, rare, threatened if the species can be shown to meet the criteria in section 15380. On general plants appearing on CNPS one or two are considered to meet CEQA Section 15380 criteria and affects to these species are considered significant.

MS. MILLIRON: I found --

STAFF COUNSEL RATLIFF: My question is entirely different from that. And I'll offer it one last time. Nevermind. Nevermind.

HEARING OFFICER KRAMER: Any re-cross?

MR. HARRIS: No. Thank you.

HEARING OFFICER KRAMER: I think this panel has concluded its work, unless it needs to come back for rebuttal.

So normally the intervenors, let me ask if you are going to present your various witnesses as a panel?

UNIDENTIFIED SPEAKER: Yes.

HEARING OFFICER KRAMER: Any objections to that? Okay. So the intervenors, let's have all of your witnesses on the marine biology issues.

MR. BASOFIN: Mr. Kramer, could I just ask a quick question of you? We've now had docketed this document entitled, "Draft Desert Tortoise Mitigation Options." It was docketed this afternoon and distributed to the proof of service lists and handed out in hard copy today. It's been submitted as an exhibit and I guess it's been submitted by staff. And I'm wondering how staff intends to use it.

I just would note that if staff intends to submit it into evidence, you know, many of the witnesses who testified regarding desert tortoise mitigation are no longer here, and namely, my witness, Dr. Ron Marlow. But I think more importantly than that, I don't see Mr. Flint in this room. And I believe Mr. Flint prepared this document. And it would be nice to be able to cross-examine him on it.

HEARING OFFICER KRAMER: Well, if the staff is going to offer it, they would certainly need to make the author available.

But let me let Mr. Ratliff address this. This is the first I've seen of this. It was either dropped on my desk here and got buried or --

STAFF COUNSEL RATLIFF: The chart in question I believe is in our rebuttal testimony. I'd like to check to see if that's true. I told Mr. Flint he could leave because -- well, I wasn't sure he was still enjoying this.

(Laughter)

MR. BASOFIN: I would also like to go home. But if that's true -- I did not see it in the rebuttal testimony. If that's true, I will concede that it's slipped by me and I had an opportunity to cross-examine Mr. Flint when he was available. That would be great.

HEARING OFFICER KRAMER: Because I was thinking it was going to be based on what he said yesterday was that somewhat indeterminate list of potential locations at which the property might be purchased to satisfy --

STAFF COUNSEL RATLIFF: Well, I think that's what I thought he said, too. But when he then explained that it wasn't really that, I thought everyone understood. He said I think an immediate reaction to everyone's excitement about this was he had over-promised and this list would not be nearly as dramatic as what he indicated. And I think we find that to be true.

HEARING OFFICER KRAMER: Well, it deviates from

that even more than I expected it, too, I have to say.

STAFF COUNSEL RATLIFF: Should we call him back so you can beat him up or --

MR. HARRIS: Mr. Kramer, I've got a little more clarification from Ms. Sanders. In our rebuttal testimony, exhibit 305, she used an excerpt from this information addressing the second page of the table. That's included in our rebuttal testimony.

Some of the new information here within the two pages that Mr. Flint gave us and what it was targeting to address with land acquisition on the first page of the table that would give some examples of what Fish and Game had been suggesting to Bright Source they could consider was target areas for land acquisition. I believe that was the intent of the request yesterday was to identify those target areas.

HEARING OFFICER KRAMER: Okay. So then you're saying page 2 is not new and page 1 might be --

MR. HARRIS: Well, excerpts of page 2 is not new. We included the list of enhancement action, not necessarily in columns two and three, but at least the list in column one.

HEARING OFFICER KRAMER: Mr. Basofin, how long have you had to review this document?

MR. BASOFIN: It was docketed sometime this

afternoon. And it was passed out in hard copy I think maybe an hour or two ago.

My main point is several witnesses have testified to mitigation. Ron Marlow has testified to desert tortoise mitigation. Dr. Connor, who is still here with us, testified about desert tortoise mitigation. But, you know, we're two-thirds of the way through the hearing here, and I just think at this late hour it's prejudicial for staff to be wanting to submit that into testimony. Mr. Flint's testimony discussed in detail the mitigation plan, the fact that the mitigation wasn't complete, that it could take 12 to 18 months to implement it. And here we have a document that is very much related to that statement. And it's just difficult for me to be able to prepare to respond to this document in this limited time.

MR. HARRIS: Mr. Kramer, we would have no objection if you'd move that into evidence. You could take it as public comment.

That's the other option, treat it as agency comment. Your regulations do allow agencies to provide comments on these things as you're painfully aware. So your options it seems instead of bringing Mr. Flint back is just to accept it as public comment and the Committee can give it that weight. But this document is not what I expected either. But at the end of the day, if it's not

moved into evidence, listed as an exhibit -- but if it's not in the hearing record, then it's just public comment.

HEARING OFFICER KRAMER: Mr. Ratliff, is that an acceptable approach to you?

STAFF COUNSEL RATLIFF: Could I look at it just a minute?

Yes, that's acceptable to us.

HEARING OFFICER KRAMER: Any further comments, Mr. Basofin?

MR. BASOFIN: No.

HEARING OFFICER KRAMER: Okay. We will accept the e-mail from Mr. Flint covering a two-page chart as public comment, treat it as such.

So are these two individuals, the extent of the intervenor's biotic witnesses?

MR. SUBA: Yes, Your Honor.

HEARING OFFICER KRAMER: Please identify yourself by name. I think you've already spelled it, so just give the record your name for the transcript.

MR. ANDRE: I'm Jim Andre.

MS. ANDERSON: I'm Ileene Anderson.

HEARING OFFICER KRAMER: Okay. I gather that one or more of you will want to introduce some direct testimony from these witnesses.

MR. SUBA: Yes.

HEARING OFFICER KRAMER: Mr. Suba, you can go ahead.

DIRECT EXAMINATION

BY MR. SUBA:

Q Good afternoon. Mr. Andre, please state your name.

(Laughter)

Q Can you tell us your position, the extent of your work experience in the Mojave?

HEARING OFFICER KRAMER: He did that previously, did he not?

MR. SUBA: So we don't have to do that again?

HEARING OFFICER KRAMER: No.

MR. SUBA: Excellent.

MR. HARRIS: We'll stipulate that Mr. Andre is an expert, if that helps cut down the inquiry.

MR. SUBA: Okay. We'll focuses on expediency and effectiveness.

BY MR. SUBA:

Q So to put our testimony and our concerns about the applicant's proposed project into context, perhaps you could provide a brief overview of the key attributes of the nature of the flora in the eastern Mojave, particularly with respect to the Ivanpah Valley, otherwise at the heart of the eastern Mojave.

A I'll try to make this brief. I wasn't anticipating so

much information on this coming out beforehand. But you know I just want to -- I work and live and run a research center located in the east Mojave Desert University of California. We have about 165 research projects. And in looking at the kinds of research that's being attracted to this area, it's quite diverse. But one of the overriding interests in the eastern Mojave Desert is the still a functioning ecosystem. It's a place where scientists from all over the world can come and study land processes as they are intact on a fairly landscape level still.

This scientific value to this part of our state -- and perhaps it is one of the most intact ecosystems in the state of California, along with the Sierra Nevada. You know, this value is immense to the scientific community and it is the scientist community which has been educating and learning about the important function of this ecosystem.

In terms of plants, which is what we're focusing on here, the California deserts in general, the flora of the California deserts, which is several counties, actually it includes 37 percent of the -- 28 of the state's land mass contains about 37 percent of the state's vascular taxa, about 2350 by last count.

HEARING OFFICER KRAMER: Could you slip into a --

MR. ANDRE: A lecture. I'm going to be brief.

HEARING OFFICER KRAMER: Define some vascular (inaudible).

MR. ANDRE: I'm sorry. I'm being as -- a species can be -- it can be a species of plant or there can be sub-groups to a species which includes variety and sub-species. Those are all taxonomic units which are called taxa or a taxon.

So when we talk about, for example -- I was trying to think if one of the rare plants had a variety status. There can be a species that has three or four varieties and that variety qualifies as a taxon. Just as some of the big horn sheep have races. We do the same thing with plants, but we use sub-species and varieties.

It still qualifies under protection of a sub-species or variety as much as a species would. The species concept really breaks down rare plants, and that's a whole other topic.

COMMISSIONER BYRON: However, you said the state is comprised of 37 percent of vascular taxa.

MR. ANDRE: In the state of California, yes. And their number has been growing over the past 90 years, and over the last 50 years or so we've added about 25 taxa per decade to the California desert flora. This pace of -- well, I should clarify about what I mean about adding taxa to a flora.

MR. SUBA: Actually, can you just define vascular and maybe we'll be good? Sorry to interpret. Was that the issue was the definition of vascular?

HEARING OFFICER KRAMER: Yeah. I'm still waiting for you to define vascular.

MR. ANDRE: I'll keep it simple. Vascular plants are flowering plants and gymnosperms, dihots, monocots, it excludes mosses, lichen, all those little tiny things.

MR. SUBA: Plants that don't have arteries and veins inside of them to make an analogy. Sorry, Jim. Don't know if that's really lousy words. I'll just be quiet.

HEARING OFFICER KRAMER: I think we took one step forward and three steps back.

(Laughter)

HEARING OFFICER KRAMER: And I'm sure when I speak and use a legal term that kind of causes your comprehension to hit a comprehensive speed bump as well. The more can you use colloquial terms, the easier it will be for all of us I think to accept and digest this.

MR. ANDRE: For this discussion, let's say 2350 species, because that is the convention that has been adopted. So can we agree on that?

As I said, we're adding about 25 species to the flora per decade on average. Species are added by new

discoveries, new species to science which is appearing all the time, as botanists get out and discover new things and taxonomic studies advance.

You can also have a range extension into a flora. It can be a plant that's known from let's say the Sierra Nevada or from Arizona is found in California, such as the oenothera caverna, the cave dwelling evening primrose which was found in Ivanpah Valley by myself first in 2007. I had no knowledge of the solar energy development at the time I found that. That is a new plant known from Nevada but new to California. It enters the flora.

So we have 25 new species per decade approximately. And my estimate is we're going to be adding -- I've done some analysis on this, but I'm not going to get into that -- approximately 125 to 175 new species over the next 100 years to the California deserts.

The east Mojave Desert is a hot bed for species diversity, plant species diversity, compared to the rest of the California deserts. The parts of the Inyo County area, Death Valley also has high species diversity. But it really is accepted in the data and shown in the data that the east Mojave Desert is an area of high endemism and high species diversity.

I have been working on flora in the Mojave Natural Preserve and surroundings, which includes Ivanpah

Valley, but I actually had not done a lot of work in Ivanpah Valley prior to 2007. And in that work over the last 15 years, I have added an additional 13 to 14 percent to what was known in terms of number of species to that flora. So that's just to give you an idea for the types of discoveries and the pace at which science is continuing to document this area.

Another issue that has come up already but I want to touch on some more is the nature of these Mojave Desert and I want to contrast it. It lies at the hub of these major deserts. The great basin desert, the Mojave Desert which it is in, but it's on the eastern margin of the Mojave Desert and also the Sonoran Desert which actually gets pulled to the north along the Colorado River and influences the Mojave Desert.

California from a western Californian sort of perspective and thinking about the eastern Mojave Desert and contrasting it to a lot of sort of what we understand in the summer drought California east Mojave Desert has been discussed and we get a lot of thermally-induced summer rainfall. We're getting the Arizona monsoon/Gulf of Mexico influence/gulf of California influence. And if you compare the east Mojave to the west Mojave, about five to ten percent of the annual rainfall in the west Mojave is attributed to summer and thermally induced

precipitation. In the east Mojave area California in the Ivanpah Valley -- in the surrounding mountains, this percentage is 25 to 30 percent. You get into Arizona and summer rainfall, it makes up about 60 to 70 percent of total rainfall.

So you can see the eastern California deserts eastern Mojave Deserts, especially sort of this radiant have increasing summer rainfalls as we head east. And that has, you know, the flora which is evolving and changing over time has evolved to this type of regime. And if you do some analysis on flower infinology and reproductive infinology of the entire flora, which I have done but not presented. But I will present some general percentages in terms of this important component of the flora is activated by summer rainfall reproductive in the fall. And it's roughly 35 percent of the species are in peak flower not in the spring, but in the summer mostly in the fall and also possibly even in the winter. And we saw that in 2007 when we had some very early winter rains and very long warm spell.

And we actually had a spring bloom that occurred in November. Spring bloom meaning plants that respond to cold rains and cold soil conditions. So it's a very complex system. And you can't guaranty if you go out in April -- which most botanists were wanting to see as much

as possible in a short period of time and try to get the most bang for their buck and they go out in April and they look at what they can. As someone who wants to study the entire flora throughout its range and throughout all times of the year, I target conditions when they are at their best in terms of documenting the entire flora. And the fall component if you were to look at another peak in reproductive activity, you can't ignore the fall. And that includes summer annuals and also includes fall flowering plants that respond to summer rainfall.

Another attribute about the east Mojave, you know, compared to other ecosystems in north America, it's fairly pristine in terms of exotic species. Only seven to nine percentage of the flora is represented by non-native species. This again is an attribute of significance when you're looking at a system that is still intact and where natural processes are not altered by significant overriding problems.

The Ivanpah Valley, if we sort of hone in on the Ivanpah Valley, special status plants was well defined I think by Lisa or at least we came to an agreement. Approximately 120 special status plants -- 350 special status plants presently thrive in the deserts. In the Mojave natural preserve and surroundings areas which includes Ivanpah Valley, there's about 120 special status

plant species.

So you have a very high level or high percentage of the flora in this part of the California deserts that contains special status plants.

BY MR. SUBA:

Q There is setting for us to start discussing some things that have already been brought up by the applicant. And actually I believe Commissioer Byron -- sorry Commissioner Boyd if that was you -- and that is with the east Mojave being such a frontier floristically, one could assume that rare plants are in fact everywhere. We just haven't documented them. Maybe you could address that a little bit. Not only are we discovering more plants, which I assume would be protected unless we discover something new, but is the potential there to uncover more of what is considered now to be rare? And does --

A When you say floristic frontier, a term I use quite a bit in lectures and talks, what it is is sort of what I expressed is that a place where a lot of new discoveries can be made. You don't have to go to New Guiana to find new species. Several of us in this room are describing new species. And so it's a fairly -- and many of these are from the east Mojave.

That's a different concept than an area that is a hotbed for documenting new species and their

distributions. But I think it goes hand in hand. And that's a very important thing when we talk about is it really rare if we get out and do more surveys, are we going to find additional plants elsewhere? Well, that is true. And that is true for anywhere that I've ever worked in a natural ecosystem. I don't know of a location in California, for example, where we are not continuing to add new occurrences of special status plants with surveys. That is happening in the east Mojave and at a possible higher rate. I certainly experienced that with my work.

But at the same time, we're also adding new species to the flora. And especially when they're new taxa and limited in distribution, those also enter the listing process and so you have sort of a -- it's not a static process. It's constantly evolving and the California Plant Society -- is I believe Andy outlined the process for recommending and assigning status to California Native Plant Society listed plants. This is not a static process. Plants are evaluated on a regular basis for either listing or down listing.

Q Given the amount of plants on the special status list, the amount of surveys that are being done, can you evaluate what the trend is in plant rarity? Are things becoming less rare or rare or taxa, are we adding more taxa?

A You go by the existing data. And in looking at numbers of plants added to the eastern Mojave Desert in terms of plants that have been added to the CNPS list, plants that have been assigned status, there have been far more that have been added to the list than have been down listed or removed from the list.

And that is a -- you know, I believe that is a very science-driven process, given that the best science we have to work with and the criteria that we have assigned.

I can point out too that, you know, it is a -- the Ivanpah project is a beautiful case study of almost every thing that I have said. Ivanpah Valley is a great case study. As a sort of a person that is called by consultants like others here in this room, many consultants will call and ask questions about discoveries they're making on projects. It can actually get quite time consuming and irritating, to be honest. However, this is valuable information. And if you're a scientist who's interested in new discoveries and additional and documenting our natural world, it's exciting and you take it in. So I hear from consultants working throughout all the solar projects and geothermal projects as a scientist, not as a consultant but also sometimes as a consultant.

And the very interesting thing about Ivanpah

Valley is prior to 2007 and as we talk about this project prior to 2007, there were no documented occurrences of special status plants known to the project and to some of the areas -- most of the areas surrounding the project. And when I say known, that means a document or an observation of a documented rare plant. That was revealed in pre-survey assessment. And what was very surprising in my mind, my advice was do the surveys, make them comprehensive, and there is a likelihood of finding something, although if you were to go down the list of potential species target species, I don't think any other than possibly Rusby's mallow -- I'm going to try to use common names -- was a plant that would be more than unlikely to be expected on the site. And that's due to known occurrences that are up in the hills there just above the site. There may have been a few others that had a higher potential than unlikely.

But my point is the findings were quite significant. I mean not legally. But from a scientist standpoint. And that speaks very -- and the findings one is documenting known plants from the California flora. There have been a number of new species in the last four or five years that have turned up that are new to the California flora even in Ivanpah Valley, including oenothera caverna --

Q Those are Latin terms.

But you know, Jim, so it's an area that is -- if I can try and make sure I understand what you're saying here. This area is a botanical frontier. People are finding new things.

And just a couple more points to make on this point. Is rarity based on the number of solely on the number of plants that occur?

A No. Absolutely not. I mean, there are many factors that contribute to both rarity and the status of a rare plant in terms of its threats and endangerment. It's a long list.

Q But threats are among them?

A And some of the more obvious things are numbers of plants, aerial extent of the populations, conditions of the populations, threats, genetic diversity across the sub-populations, populations or meta populations, lovely groupings we have.

But some of the other things that are often overlooked but not by the populations mitosis for instance are reproductive biology. Each species has its own individual life history characteristics and biology. There is a rare plant that occurs in California deserts that is -- several actually -- and many of those are self-incompatible. They require -- they may have

thousands of individuals, but they require far more than that than, say, a plant that was not self-incompatible. And so numbers of plants doesn't always reflect viability in a population. And so it's quite complex. And I guess I'll just leave it with that.

Q Thank you. So the applicant performed surveys in an area where there were no plants that were previously documented prior to the surveys that they did? They found spring flowering rare plants and are proposing various measures intended to address the avoidance and minimization because of the information they obtained from doing the spring surveys.

In your experience and based on the nature of the eastern Mojave flora, has the applicant documented the full suite of rare plants that has the potential to occur on the site?

A Well, you know, I think this might be -- I'm really thinking now about the applicant's rebuttal testimony and you know, the table which I believe is Table B 1 -- no -- Table Bio 1.

You know, we proposed in our testimony a number of mostly fall flowering and summer annual species that might have been overlooked during spring surveys but would be overlooked or very difficult, too. And it was presented as an example of you know, special status plants

that are nearby with attributes and potential to occur on the site. The rebuttal, you know, I think it was discussed briefly by Lisa and Carolyn -- I have to use first names. I don't know everyone's last names.

And I feel that it's not necessary to the point that I'd like to eventually make here, but I would like to set the record straight on some of the information presented in the table. It's not -- for the most part, it's accurate with a few exceptions. And those exceptions don't necessarily change my overriding statement here. But they may -- if this is going into record, it should be accurate. So I'm wondering if I should take the time now just to update those, that information.

Q As long as we can be clear what we're doing. And that is -- what I'm trying to do by asking these questions is to identify the need to on these types of projects do fall surveys for rare plants for special status plants. And in the applicant's rebuttal testimony, there is a table that states 18 plants that we put in our testimony that was an initial potential list of plants. By no means is it exhaustive. But even that list is -- there's some details that you want to address about where they occur, where they have the potential to occur in relation to the applicant site. And so why don't you go through maybe one or two examples of what you would like to put into the

record.

A One or two --

MS. BELENKY: Can you refer to the table so we can all look at it?

MR. SUBA: Yes. The table is on page B9 to B12 of exhibit 81. Called Table Bio 1.

MR. HARRIS: I want to be clear. Is that rebuttal -- is it rebuttal and is he purporting to correct our document or critiquing it? Because there is a difference.

MR. SUBA: There's some corrections --

MS. BELENKY: He's critiquing it.

MR. SUBA: What's the difference between critiquing and correcting?

MR. HARRIS: Correcting a document in the record to change to reflect his view of the world. So I'm sorry to be a lawyer.

MR. SUBA: It's not wrong. It's incomplete. Is that a critique?

MR. HARRIS: It's called a critique? That's okay.

MR. ANDRE: If -- really, I don't find this to be germane to my final point about fall flowering plants. However, it's an issue of existing data that I wanted to add to the table as if I was part of the group that

developed it, which I wasn't. But I would like to make it as accurate as possible.

BY MR. SUBA:

Q Okay. Go ahead.

A There is a bouteloua collection in the UCR that's three miles northwest of the project at 4,000 feet. I've observed it down to 3400 feet along the transmission just north of the project. There is a collection -- I mean, I can give you the collection numbers if that -- Andre number 8665. There is a collection of bouteloua trifid, Andre number 9800, sent to UCR. I don't know whether it's been processed yet. 1.5 miles north of the project in the limestone at the base of the limestone there is a collection of cordylathus perviflorus. The nearest occurrence is in the south end of Ivanpah Valley at 4100 feet, Andre number 10965.

MR. HARRIS: Can I ask for a clarification? Is Mr. Andre adding to the CNDDB his recent observations? I'm thoroughly confused.

MR. ANDRE: These records will go into the CNDDB --

MR. HARRIS: But they're not there now?

MR. ANDRE: They should be. They are all recent, fairly recent. Some of them are not, so they may or may not be in the CNDDB.

HEARING OFFICER KRAMER: Let me ask if anybody is going to find this relevant for as far as their conclusions or -- Mr. Suber, you're bringing this up. Is this something --

MR. SUBA: Just -- yes, actually, that the reasoning that these plants -- other special status plants don't have the potential to occur on the site of all flowering plants is the same reasoning that one could have applied to the spring flowering plants before the surveys were done. And yet, the spring flowering plants were found on the site. Since fall surveys haven't been done, our concern is that we're missing part of the record before a project is -- before the environmental impacts of the project are fully considered.

HEARING OFFICER KRAMER: So the recent observations --

MR. SUBA: So in the table, the table shows that the newest occurrence is only this far. And we're basically saying they could be this far. And furthermore, in the spring, the spring flower before the surveys were -- they were just as far away.

HEARING OFFICER KRAMER: But the plants he's talking about, are those the fall flowering plants?

MR. ANDRE: Yes, these are all collections made in the fall.

MR. SUBA: So maybe we're just -- I just feel that I'm just trying to make that point.

HEARING OFFICER KRAMER: If he couldn't reduce this to a paper that could be --

MR. ANDRE: That's what I was sort of alluding to.

MR. HARRIS: Well, I'm going to have an objection that this is information that could have been filed as testimony in a timely manner. It's just now being filed. His observations that occurred in the fall --

MR. SUBA: This is in response to rebuttal testimony.

MR. HARRIS: No matter. His observations occurred in the fall and they're being offered now orally at the hearing. On that basis, I'd object.

MR. ANDRE: Well, the observations are in response to the rebuttal only. The rebuttal table, Table Bio 1, uses nearest occurrences to and other factors, most of which I agree with. To glean potential of that species occurring on the site if surveys were to be conducted during (inaudible) conditions.

What I'm doing is only providing additional data that shows there are in fact known data, known populations closer to the site which could change the conclusions from the table that 16 of the 18 species are unlikely to occur

there.

But the most important point as Greg made is that if you were to drop the same list of potential plants as was done for the surveys that were conducted in the spring, the majority of those were also given an unlikeliness to occur on site, because their nearest documentation was similar to the distances that are shown in this table.

So if the same logic were to be applied as to why we enforce the need to do spring surveys to fall surveys, then the conclusions from this table should be similar to the conclusions of any target list created for spring surveys that shows potentials only. And I guess my take on this is if you have a table full of species and the conclusions are unlikely they would occur on the site and they stayed, they assert in their final sentence that their plant surveys are sufficient to provide an assessment of the project potential impacts as required by CEQA and NEPA. And that's their conclusion following this table. I guess I need to understand why that would not be the case for in the spring surveys that would be conducted.

HEARING OFFICER KRAMER: Okay. Does any other party want to weigh in on this objection?

MR. HARRIS: Let me just settle it the way we did

the other stuff and he can provide his table as public comment here after.

MS. BELENKY: The one reason I'm a little concerned, Mr. Andre is an expert. He's an expert that is acknowledged by the applicant and by the staff. And the issue of fall surveys was raised throughout the process. And there's rebuttal testimony from the applicant on the issue of fall surveys, and now Mr. Andre appearing here in person at the evidentiary hearing is responding to the rebuttal testimony. I just don't see any problem with that. And --

MR. HARRIS: He can respond to the issue of surveys. But he's actually adding new data information occurrences of plants from what I understand. And that's --

MR. ANDRE: That's not correct.

MR. HARRIS: That's different than arguing about seasonality.

MR. SUBA: To be clear, these are herbarium records.

MR. ANDRE: Yes.

MR. SUBA: So they're publicly available?

MR. ANDRE: The majority of the ones I have listed here are publicly available or not depending on whether they've been processed.

MR. SUBA: They could be sitting in a pile somewhere.

MR. ANDRE: Maybe Andy should explain this.

Sometimes you can submit vouchers that you collected to an herbarium and it can take years for them to be processed. These vouchers, some of them, are in the CNDDB at this point -- excuse me -- the California Consortium of Herbaria Database indicating that they've been processed and submitted to that database. Some of them are more recent and would not -- some of them would not have been available to those who put together this table and that's fully understood, because they are recent. But they are vouchers housed at a recognized herbarium. They are in an herbarium that is a part of the index of herbaria which is a national list of herbaria recognized in the United States of America.

MR. SUBA: To move this along, CNPS would be happy to submit this information as a table to improve the record -- or the inaccuracy of the information that's in Bio Table 1.

But the main point that CNPS is trying to make here, would like to make, is that the conclusion that the project impacts have been fully analyzed is erroneous because we haven't looked at much potentially there in the fall for this project and the project to follow. That's a

real concern for projects in the eastern Mojave.

HEARING OFFICER KRAMER: I understand the point you're making.

I have a question for Mr. Harris. This issue was first raised by the Native Plant Society in comments that were responded to in the FSA DEIS, and that response is on page 6.2-77 of the FSA. This response does not raise the defense, if you will, that you offered in your rebuttal testimony to the effect that -- correct me if I'm wrong -- but as I heard it today, it was that the project area is unlikely habitat for the fall blooming species that might occur in the area.

My question to you, Mr. Harris, is why did you not raise that as a part of your first filed testimony after the FSA was published?

MR. HARRIS: I'm anticipating it was in our FSA comments. I guess I don't know how this became the applicant's inability to provide information when they're raising -- let me be real clear. I don't care -- let me back up. Mr. Andre's opinions are valid. What I care about is new documentary information that could have been entered earlier being entered now as unfair surprise. So if there's no new documents going into the record, he can talk all he wants about these things. I don't care. That's my sole concern.

Does that help, Mr. Kramer?

HEARING OFFICER KRAMER: So you would be comfortable in testifying that he has found species closer to the project site than the table indicates without going into the details of those findings?

MR. HARRIS: If there is an offer of proof that it was impossible for Mr. Andre to provide this information on behalf of the Native Plant Society in a timely manner, i.e., when pre-filed testimony should have been filed or when rebuttal testimony should have been filed.

MR. SUBA: We had no concern about it, because you didn't have -- there was no table to respond to. It's the information in the table in your rebuttal testimony that's incomplete. So we weren't -- it wasn't a problem until the table came out. The issue is there, but the actual information --

MR. HARRIS: Let me respond. It's only incomplete because he hasn't provided it to CNDD and they haven't put it in the database and our guys haven't been able to run it to check it.

MR. ANDRE: That's not true.

HEARING OFFICER KRAMER: Okay.

MR. ANDRE: Let me give you an example of --

HEARING OFFICER KRAMER: I think we've heard

enough. We need to deliberate for a moment. So let's go off the record.

(Thereupon the Commission went of the record from 5:40 to 5:47.)

HEARING OFFICER KRAMER: This involves balancing of the fairness issues that are involved in the rules within the system we tried to set up where all the evidence would be exchanged ahead of time. On the one hand, this is coming in rather late.

On the other hand, it's a correction to as I understand a table with details that were not available -- made available or at least as part of the written evidence the applicant was intending to provide until the rebuttal period.

Balancing all that, we are going to let the information in, but offer the applicant the opportunity to come back either tomorrow -- let's say on Thursday so it's a time certain if they wish to provide any additional response to this information. I'll give them time to attempt to verify it and determine if they need to provide any more by way of a response.

Let me ask Mr. Andre, how many of these entries are there?

MR. ANDRE: You know, these are just corrections and additions.

HEARING OFFICER KRAMER: How many lines?

MR. ANDRE: Maybe seven.

HEARING OFFICER KRAMER: Seven. If you could reduce those to writing and share those say in a handwritten form this evening, we have access to copies.

MR. ANDRE: You can just copy this. I've actually printed that out right now.

HEARING OFFICER KRAMER: I think that would be better than trying to read anything. First of all, people would have to take notes because the transcript is not going to be available for some time. That is our ruling.

Mr. Harris.

MR. HARRIS: Yeah, point of clarification. The table -- I think you should -- characterization of these as corrections; if they want to be characterized as additions, that's fine. But Table Bio 1 has several notations at the bottom and one of which is that the Jepsun Online Interchange was consulted. And this is a portion of California herbarian species records that was accessed on 29, December, 2009. So our list is based on accessing that database on the 29th of December of this year. And -- sorry. Last year. And that's the representation made about those documents. So if Mr. Andre has things that are not available to people who access that database on the 29th of December and you want

to add those as corrections or additions, that's fine. They're not corrections. They're just documents. And I want to be real clear about those.

HEARING OFFICER KRAMER: I think you're right. These are simply -- this is a list of finds I guess you could call them that Dr. Andre has testified he has made in the area or he is aware of. I may be wrong to say that he -- so by the name of the entries, I gather he was the source or the discoverer.

In any event, we do not intend that this be any sort of correction to the applicant's testimony. It is not the applicant's testimony. It is Dr. Andre's testimony. And you are free to take aim at it and offer whatever you wish to by way of rebuttal tonight if you like or on Thursday. But I presume you want some time to look it over.

STAFF COUNSEL RATLIFF: Mr. Kramer, I wonder if another approach might be -- I think the point being made is one about surveys and that's the essential point. That's the general point. And the desire is to detail that point in a very specific way. I think -- I mean, I wondered if we can't just dispose of the matter by letting that occur but make the listing of it as Mr. Harris suggested just a document that isn't considered an evidentiary -- an exhibit in evidence, but let it be going

in in the same manner as Mr. Flint's document as well and so there isn't this consternation that it has the same weight as sworn testimony.

But the point that he is testifying to is still being made, which is his feelings about the necessity of surveys in the fall. I mean, I'm offering this as a way of perhaps to get through this without having to have additional hearing time spent on trying to rebut still another round of testimony.

HEARING OFFICER KRAMER: Well, it's not clear to me that you need additional time. That's up to the applicant. And, staff, I suppose since it is in a way it's a rebuttal to your own testimony --

STAFF COUNSEL RATLIFF: Yes. I'm not offering it as -- I mean, I'm not suggesting this for any other matter than efficiency. It seems like kind of a way to deal with it so that both parties make their points.

HEARING OFFICER KRAMER: Well, Mr. Suba, as I understand it, digested that suggestion and chose to attempt to offer it into evidence. And we ruled, so let's go forward.

STAFF COUNSEL RATLIFF: All right.

HEARING OFFICER KRAMER: So, Dr. Andre, you don't need to continue your verbal efforts to go off of the friendly amendments, if you will, to the table. You could

probably move on to your next question.

MR. SUBA: You know, this is just -- I just have one last question for Mr. Andre.

BY MR. SUBA:

Q We've talked a lot today about the nature of the flora in these Mojave, the proposed avoidance and minimization and mitigation measures recommended by CEC staff and also opposed by the applicant. In your opinion as an expert in the field of flora, what would be your recommendation for the best outcome for the botanical issues that we're looking at on the Ivanpah site?

A I think the best outcome is part of the process, and that is to minimize or avoid impacts to the native vegetation rare plants and all impacts that are considered in the project.

In terms of rare plants, I think the desired outcome is avoidance. And true avoidance was sort of mentioned. And I think touching on the avoidance comment as a term that often is used and implied in different ways -- and Misa Milliron I think clarified their position on what avoidance was and how avoidance was used in CEQA and standards for mitigating projects.

I would like to add, you know, in terms of some of the measures that are being proposed in our testimony and we went through reasons. We pointed out many factors

that are basic principles of conservation biology and how there would be alteration of both plant processes, population processes, and the environment such as soils, solar insulation, et cetera, et cetera, and plants that are avoided in situ or in the project area and sequestered out into zones of higher protection. But avoidance of those, you know, is in our minds is not necessarily possible if the goal is to maintain viable populations in the long term on site, given the existing proposals.

I think there is a compelling defense for this being a tick situation. And it's not clear cut. It's not something that you can argue with, absolute guaranty that rare plant species that would be attempted to be maintained on site are going to survive or not going to survive. But the evidence and the basic theory of plant population biology and -- yeah, I'll leave it at that -- work against any long term viability.

MR. SUBA: Thank you. I have no further questions.

HEARING OFFICER KRAMER: Any other questions for -- actually, that was the open testimony. I'll correct myself. Then to have direct testimony from Ms. Anderson and then open it up to questions from all the parties.

So is somebody planning on offering their

testimony for Ms. Anderson, or are you simply going to make her available for questions?

MS. BELENKY: The latter. In fact, we were going to make her available for questions and we realized that on earlier ones she was on the panel, she hasn't given her basic background information.

HEARING OFFICER KRAMER: Well, let's do that now then.

MS. ANDERSON: I've been a biologist for over 20 years now doing work in southern California primarily on the Mojave Desert for a number of years. I have a Master's in biology. I've worked as a consultant when I did not only biological surveys, but wrote documents and compliance with both CEQA and NEPA.

I have subsequently moved into conservation where I've reviewed may so many environmental documents in my life, commented on those, been an expert witness in front of other State boards. I also served two consecutive terms on the BLMs Advisory Council for the California Conservation Area.

HEARING OFFICER KRAMER: Thank you.

Let me ask if the parties are going to examine this panel? One, Mr. Harris, Staff Counsel Ratliff, rather than break for dinner, it sounds like we might finish in 15 or 20 minutes. Let's go ahead.

Ms. Cunningham.

CROSS-EXAMINATION

MS. CUNNINGHAM: This is for the panel. Have you both been to the Ivanpah project site?

MR. ANDRE: Yes. I've been through the site many times.

MS. ANDERSON: I've also been to the site.

MS. CUNNINGHAM: Have you seen on the site soil biological crusts?

MR. ANDRE: Yes.

MS. ANDERSON: I have also.

MS. CUNNINGHAM: And how common would you estimate them to be?

MR. ANDRE: I've been lectured to by many soils scientists, and what is visible as crust usually is a crust that is high in moss content and also mosses that have been recently hybrid. So you can see them quite easily. But crusts are almost everywhere, across the world. So the answer in terms of well developed crust I would say is moderate crust in places. And when you get to the sandier soils down below, possibly less so. But the crust is present throughout the system project.

MS. ANDERSON: I need to answer this in the context of revegetation, because that's what my testimony was towards.

And I realize that there are biological crusts on the site. These are incredibly important in preventing de-desertfication, because they up take not only carbon dioxide as we heard earlier today, but also moisture, provide a safe site for seeds to germinate. And so their retentions of these soil crusts from restoration effort is essential in order to put back and sort of hold the desert floor together. It's an essential component. It's one of the things that pulls the desert together is these very small things that you wouldn't even necessarily look at if you didn't have a trained eye, but they're incredibly important.

MS. CUNNINGHAM: Do those soil crusts re-grow quickly after disturbance?

MS. ANDERSON: The literature out there shows that certainly mature crusts do not reform quickly. There has been effort through revegetation to disburse the propagule, and that's how they spread little pieces of soil crusts spread onto the surface of disturbed plants and it starts the process.

But certainly having those soil crusts develop into organisms that actually hold the soil in place from these and other disturbances takes a very long time. I think it depends a lot on the precipitation is my understanding. And it takes easily 25, 50 years to start

getting them reestablished where you may be able to detect them on the surface of the soil visually.

MR. ANDRE: I've worked in the field quite a bit with Jane Belnap who has studied mostly the structure of soil crusts and the estimates that she has given me in terms of restoring a lost crust that might recolonize an area where a crust has been lost is about a centimeter to two centimeters in horizontal movement back into the disturbed area.

So as the general rule of thumb, it can vary depending on where you are, what kinds of crusts you have a -- as Ileene pointed out, the climate regimen, et cetera, as a rule of thumb. That's sort of a layperson's, which I am when it comes to soil crust ecology, rule of thumb.

MS. CUNNINGHAM: That's all. Thank you.

HEARING OFFICER KRAMER: Anyone else?

Seeing none, Mr. Harris.

CROSS-EXAMINATION

BY MR. HARRIS:

Q Realizing everybody in general, I'll try to be quick. I want to talk about the CNPS listing process and just so I make sure we understand how these plants end up on these various CNPS lists. As I understand it, the species is proposed by someone familiar with the species and they

send a letter to the Native Plant Society, probably botanists, and say that they are concerned about the status of the plant. Is that basically correct, Mr. Andre, as a first step?

A Usually, the CNPS botanist is contacted by an individual who has a recommendation, and the CNPS botanist goes into consultation with various other people including experts in the species and decides whether it's worthy to put into the process a recommendation for listing.

Q So they get a proposal from someone familiar with the species. They make it to the botanist. The botanist reviews that. The botanist sends it to regional rare plant committees for review and discussion. Is that pretty much correct?

A No, that's not quite correct. So when it's proposed, the initial step once it is proposed for a review is that it goes into the online, which is open to the public and anyone review process, and basically they collect reviews of the proposal from all the various participating public and professional botanists.

Q So who typically participates in those forums to decide whether a plant ought to be put on the Native Plant Society list?

A Primarily professional botanists.

Q So botanists from environmental groups and, say, for

example, botanists from timber companies as well are typically people that are involved in these kinds of things?

A It could be any botanist.

Q But generally not members of the public? You say it's open to the public. But it typically is botanists who are involved in these discussions; is that correct?

A It includes botanists from all walks of life, lay people, agency botanists, consultants, scientists, professors, et cetera.

Q And most of this is done on line and message boards or that kind of forum. How do the various botanists who are talking back and forth on these proposed listings, how do they communicate? What is that process like?

A They communicate through text written in a forum. They communicate via phone call, e-mail, et cetera. But the communication that is part of the process is any forum that is an on-line forum.

Q So then a determination is made to put it on the list, List 1A, 1B, 2, 3, and 4 various native plant status codes. It's my understanding that it's List 1 and List 2 is also added to the other database the CNDDB; is that correct?

A The CNDDB includes List 1D, 2 -- well, let's say 1A, 1B, 2A, 2B, 3 and 4.

Q And List 3 is ones to review that need more information and 4 is the watch list; is that right?

A Four is the watch list.

Q So 1 and 2 are the lists the botanists are more interested in in what the botany forum comes up for listing 1 and 2. Is 1 and 2 generally your focus?

A I'm not sure I understand the question.

Q Let me withdraw the question. I'm not sure I understand it either.

Let me talk about the CNBDD. That's a database; is that correct? There's a actually a division within Fish and Game. But is that a database, is that a correct statement?

A Yes. It's a database managed by the Heritage Program of the California Fish and Game.

Q How does information make it into that database?

A The -- this is a question better asked of their database manager. I will attempt to describe that process.

Q Just your understanding is fine.

A Yeah. You know, there is an electronic forum, a paper forum, and an encouraged sort of obligation to botanists who confront a rare plant occurrence or collection to fill out this form which includes information about data observations, conditions of the environment associated

species present, number of species in the population, et cetera. And then that information is sent.

And also the Heritage Program makes an effort to conduct searches of their own for vouchers that have been collected and added for instance to herbaria, also, the online accessible Consortium of California Herbaria.

Q Is that database a paid for subscription database or is that available to the general public?

A You're talking about the CNDDB?

Q Correct.

A Yeah. There is a fee to acquire the database. Well, a portion of the database. There's various levels that they will release sort of that information that is available on line. And then there is a more detailed information that is available through --

Q But all the information that's submitted to that subscription database is voluntarily submitted by botanists; is that correct?

A Not all of the information. I just described another way, and that's to do our own internal searches.

Q Okay. The Native Plant Society ranking, List 2 plants, those are ones that described as rare, threatened, or endangered in California, but common elsewhere; is that correct?

A With the exception of that not common elsewhere but

more common elsewhere.

Q I stand corrected. I read it incorrectly. You're right. More common elsewhere. So a List 2 plant is one that has issues in California but is more common elsewhere? Did I get it correct that time?

A Yes.

Q What if there's a disagreement between these two processes about whether a plant is rare?

A Well, there's not necessarily just a disagreement about whether a plant is rare. There would be a disagreement on details about the distribution of the plant, et cetera.

Many of those disagreements -- I'm not sure disagreement is the word -- but just the lacking of information or the lack of an understanding by botanists about the information, if a lot of that comes out in the review process on line.

Q So just for the layperson that doesn't work with the CNPS list or the CNDDB, how do I look at those two lists and try to figure out where they overlap? What's the commonality there? Is it all List 1, then it's G4? I mean, help me understand how the two systems are integrated, if at all.

A The CNDDB is a collection of occurrence. The CNPS list is a list of species. So they have different -- the

databases represent rare plants, but they represent occurrences versus the listing, which is just a species.

Q Couple things I'd like to ask you about, too. You described the Ivanpah project as a take situation. Did you mean that as take in terms of California Endangered Species Act take, or is that just more colloquial in terms of the word "take"?

A More colloquial. What I'm referring is a loss of all the species, a loss of all the individuals.

MR. HARRIS: I don't have any other questions. Thank you.

HEARING OFFICER KRAMER: Any redirect? I don't know if the intervenors on the phone want to ask any questions?

MR. BRIZZEE: No questions.

HEARING OFFICER KRAMER: Thank you. We can dismiss this panel. And this would be a good time for a dinner break. And with we'll move our cars. We'll go off the record.

(Thereupon the Commission recessed at 6:15 p.m.)

EVENING SESSION

7:00 p.m.

HEARING OFFICER KRAMER: We're back on the record and we are on the topic of alternatives. And let's -- we agreed to have a panel of portion of Mr. Harris witnesses and -- (inaudible.) I thought we agreed to that already.

MR. HARRIS: Okay. Yeah.

HEARING OFFICER KRAMER: So if those witnesses on alternatives would come forward.

MS. BELENKY: I'm sorry. Mr. Ratliff had asked us if we would entertain having Bill Powers give his testimony, which is on the distributed photovoltaic, first and the rest of the panel on the more like on the ground siting alternatives.

HEARING OFFICER KRAMER: Does that make sense, Mr. Harris?

MR. HARRIS: I have one more complicating factor is that (inaudible) could that be moved over tomorrow? Because I have folks who are waiting for that answer. It's noticed for today, but I'm happy to let them go and have them come back tomorrow if that's what we want to do. But our pre-hearing conference statement had it on for today, so that's why we're still here.

HEARING OFFICER KRAMER: I think given that tomorrow we just have air quality and minor issues and

soil and water was relatively minor in my understanding. Would that cause complications for my other parties to move soil and water until tomorrow?

MR. HARRIS: Can I ask whether people have cross-examinations? Do I need to bring my witnesses at all? I'm seeing them shake their heads. Only takes one, so good.

HEARING OFFICER KRAMER: So we'll move soil and water until tomorrow.

MR. HARRIS: Can I ask Lisa which areas in soil and water are you interested in? I want to make sure we have the right people available to you.

MS. BELENKY: It's not just me. And I did talk to one of your staff people during the dinner break. I believe there's also some questions about scouring and surface water and I had some questions on whether resource issues, groundwater.

MR. HARRIS: Okay. That's helpful.

MR. BASOFIN: Yeah, that would be me that had questions about scouring.

MR. HARRIS: Good. That just helps me make sure I have the right people here. So I appreciate the preview.

STAFF COUNSEL RATLIFF: Jeff, if you would consent, we were thinking maybe we would put on both the

water witnesses and the air quality witnesses for both staff and the applicant as either do in a panel to try to make things go faster on those areas.

MR. HARRIS: So mix water and air --

STAFF COUNSEL RATLIFF: No. No. I don't mean at the same time. Separately for the issues, but --

MR. HARRIS: All of our air people and all of your water people?

STAFF COUNSEL RATLIFF: Yeah. Either doing a frontal hearing or do a combined panel just to try to get over it more quickly.

MR. HARRIS: Yeah. I think that would work. I think we probably do want to quickly summarize our issues with Mr. Rubenstein or Mr. Hill two or three minutes. But I'm finally willing to entertain a panel mix. You wore me down.

HEARING OFFICER KRAMER: Okay. So let's constitute to the alternatives panel which would be all of the parties' witnesses and a portion of the applicant's witnesses.

MS. BELENKY: Mr. Powers.

HEARING OFFICER KRAMER: We have Bill Powers first. So, Mr. Powers, if you would come forward. And were you here -- Mr. Spaulding, I'm sorry I confused you, but we're just going to have Mr. Powers for this part.

Were you here yesterday to be sworn?

So do we have anyone else in the room who was not yet sworn who will be testifying today? Mr. Anderson, if you could also stand with Mr. Powers.

MR. BILL POWERS AND MR. DICK ANDERSON, called as witnesses, being sworn to tell the truth, were examined and testified as follows:

MR. POWERS: My name is Bill Powers. B-i-l-l, P-o-w-e-r-s.

MR. ANDERSON: Dick Anderson, A-n-d-e-r-s-o-n.

DIRECT EXAMINATION

BY MS. BELENKY:

Q Good morning, Mr. Powers. I'm going to ask you a few questions about your testimony.

Before you start, did you prepare the written testimony entitled, "Testimony of Bill Powers and Rebuttal Testimony" that were submitted in this proceeding?

A Yes.

Q And do you adopt this testimony and the rebuttal?

A Yes.

Q And do you have any additions or corrections at this time to that written testimony?

A No.

Q Thank you. Could you please summarize briefly your background?

A Registered professional mechanical engineer in California. I have worked as an engineer with air pollution control systems, energy systems for the last 25 years and have been involved in energy planning processes over the last decade related to strategic energy plans primarily in southern California.

HEARING OFFICER KRAMER: Is your mike on?

MR. POWERS: It is now.

MS. BELENKY: Did that get in? Okay. Good.

BY MS. BELENKY:

Q And could you briefly go over a short summary of your testimony regarding the feasibility of a distributed photovoltaic alternative that would amount to the 400 megawatts that would be similar to the proposed plant?

A Yes. I think I would like to begin by two statements. One is that the testimony that I have prepared is presenting distributed photovoltaic as a superior alternative to proposed project. And my professional opinion is that the rejection of the distributed photovoltaic as infeasible is based on both flaw of logic and obsolete information. And I'd like to take a few minutes just to hit the highlights of the testimony.

And I open with a presentation on distributed photovoltaics first in the loading order definitely first among new energy options in California siting to the

Energy Action Plan 1 and Energy Action Plan 2. And also to the CEC's own 2009 integrated energy policy report. And I'll just read a sentence from that or summarize. That it underscores the integration of building PV is a critical component of net zero structure. And it is filters of the CEC and the PUC that California move to net zero residential and commercial buildings as soon as possible with the dates currently are 2020 and 2030. And photovoltaics are described as an integral part of that energy efficiency envelope to reach the target of net zero.

And the CEC has also been a champion of distributed generation, both CHP and distributed photovoltaic. And as frustrated as I am at the lack of progress on distributing generation, it's critical it hasn't happened and the energy action plan definitely supports a position that we've talked photovoltaics/distributed photovoltaics is first in the renewable order.

The FSA provides an excellent description of why the distributed photovoltaic option is the best option in this case that it's already located on the structures that need the energy. You're not transmitting great distances the power that is needed. Minimum maintenance, washing required, the fact is well that all of the related

infrastructure, transmission substation upgrades, et cetera, would not be required. And even this project will have a whole separate proceeding over at the PUC for the associated transmission.

The FSA then eliminates photovoltaics. It's eliminated because one statement is there isn't additional policy support at this time for major development or at least on this scale of PV. That it would require more PV manufacturing capacity, that the nation and the world capacity simply couldn't handle a 400 megawatt PV project in or out of the urban core.

And finally that the price of PV is still so high that it's cost prohibitive. We wouldn't do this for economic reasons. All of the justifications are incorrect and unsupported.

First talking about policy support, we have and the FSA is correct on this that both of the utilities involved in contracting for this power already have huge photovoltaic/distributed photovoltaics projects in works. SCE has got 500 megawatt project approved in June 2009. It's underway. That is almost exclusively a rooftop solar project.

PG&E, I think their approval is imminent, but it's another 500 megawatt distributed photovoltaic project.

Both of those companies already have power purchase agreements with suppliers of PV power in the same distributed PV cookie cutters that we talked about already. In the PG&E program, SCP has a 21 megawatt PPA with NRG for the flight array per solar ray. The PG&E has a 10 megawatt PPA set for generation with their Bolder City Power. All of the structures that are necessary to do this increases by a factor of ten or 100 are already in place, the contracts, how we do it. There's no -- FSA referred to incentives, that we would need more incentives to do this. Neither of those projects was done with CSI type incentives. Just with available tax incentives for solar projects.

The lack of information was sited on -- excuse me. The issue of the ability of the utilities to absorb a large amount of the distributed PV was brought up as a potential policy hurdle. Yet, the PG&E application -- if you read the SCE application, it states 500 megawatts is not a problem. We can do several times that amounts of urban PV simply with the commercial real estate owners we're dealing with now.

Issues of high power in-flows from PV DG, not a problem. We control the grid. We handle the manned response programs. We will install necessary telemetry in the PV a raise themselves so if we have PV in-flows that

exceed for whatever reason some issue of re liability or any other issue, we will back off the power of individual arrays.

All of this is common sense. I think that SCE did a wonderful job of laying out exactly how a utility would handle thousands of megawatts in the urban core at least in southern California. There are no policy steps that need to be taken before we did implement at this scale.

The other issue is one of capacity. How much PV potential do we have in the urban core of California and California as a whole including the substations. We've had repeated studies that show we have in the range of 25 to 30,000 megawatts of AC of rooftop potential.

We have a study that is underway that I think the expert Mr. Olson is one of the leads on where the estimate is that in a high distributed generation scenario for 33 percent by 2020 we do 15,000 megawatts of DG PV, of which we only do 6,000 in urban core. The reason we'd only do 6,000 in the urban core is not because we've only got 6,000. Because the authors of the study made an arbitrary decision we're going to assume that only a third of it's available. We're not going to substantiate that. Just that we're going to cut nearly 20,000 megawatts of hard scale rooftop PV in the urban core to 6,000 and now we're

moving on. And you don't make that arbitrary decision and the numbers that the CPUC is working with were comparable.

We also have -- and this is not the only study that's been done on PV potential. In San Diego, San Diego Gas and Electric working with a couple of the energy public interest groups there did a roof by roof survey of San Diego. They surveyed with GIS, SEIC with contractor over 15,000 rooftops. We know exactly what our area coverage is in terms of what's a reasonable percentage of coverage on commercial rooftops. In San Diego, 65 percent is deserted. We know what our capacity is.

And if you were to extrapolate that to all of California and we are not a heavily industrialized area. We don't have necessarily as few rooftops as other bigger industrial areas. We get to 25 or 30,000 megawatts of commercial rooftop PV. So I don't really think that is in dispute, despite the testimony that has come back and forth.

And let me just double-check that I've covered most everything.

The other point that I wanted to make in this introduction is the issue of cost. Frankly, the only reason I'm here advocating that we do this as a priority is because there's been a revolution in the cost of PV systems. And what has happened in the FSA and in the

rebuttal system is what I experience all the time. Reach back in time to some point in time before the revolution happened, pick out a high cost of PV and write testimony on it. But the PPAs that have been signed by PG&E and SCE both for these units they have with Sempra and with NRG and the big projects they've got.

And the fact that Sempra generation is now going to sell 48 more megawatts of PV to PG&E and talking about doing hundreds more is because PV with thin film technology is the lowest cost solar energy you can get today. Lower cost in this not even considering the transmission. And this is really a break point for California is that the -- we can do this for years. We can pull out costs from 2007 and 2008 that have nothing to do with reality and approve projects like this one. But when we use a rigorous analytical procedure, rigorous engineering that we would come to the conclusion that the cheapest way for us to do this and by far the fastest, especially if we do it in the urban core, is this way. There just hasn't been much forward progress on the big remote utilities projects. We're not moving. And this can move extraordinarily fast if it gets support and authorization. And I think that -- I think that that is up.

One other point on pricing. The CEC has

advocated in the IEPR -- and I agree with this -- that in order to encourage feed-in tariffs -- what is a fair tariff for distributed photovoltaics and a fair tariff is the MPR and time of (inaudible), because it produces more energy during the on-peak period.

If that is all that is done that the MPR and the time of use and that is a sufficient prior point at about 17 cents a kilowatt hour, that's enough. That is enough of a price for a feed-in tariff or a bilateral contract with the contract signed between both of the utilities involved here to get saturation deployment of PV in the urban core. It's not going to cost the California consumer anything in terms of additional cost.

And I know on the rebuttal there's quite a bit on the transmission and distribution benefits. There are transmission and distribution benefits in certain areas, especially in the more congested urban core areas. In some places there are not, transmission distribution benefits. To me, the transmission and distribution benefit would be great to have. It's not critical to have to make this work. But it would be great to have. But it is definitely necessary in order to get the PV where it should be.

If you've got a congested point where the E3 calculator is showing us that the T and V benefit of

distributed generation at this point would be $0.05 a kilowatt hour, that's exactly where we want to put the PV, because that's where the congestion is. You at least want to know -- even in a just system you would put that in the price. But even if you didn't, it tells us exactly where we're supposed to put the PV. Maximum benefit to California.

And so all I'm saying is the CEC is getting it right. MPR, type of user, you've got a market to take off with distributed PV. If you add in the transmission and distribution benefit on top of that where it's appropriate, it's going to take off faster.

So to summarize, I feel that the -- though the FSA and the rebuttal testimony are just repeating stale information that will always give us the answer that PV is not the way to go.

And, finally, I'm not asking this to be black and white. I'm not saying that your decision today -- if you were to make a decision that distributed PV is a superior alternative to the Ivanpah proposal, that doesn't mean you're committed to making that same determination in a case that comes before you in the future. This has major environmental impacts associated with it. If this were the west lands water districts on disturbed abandoned farmland, those issues wouldn't be there or a similar

facility in the desert with disturbed abandoned something. And this also requires transmission, which again if the project were on disturbed abandoned something under a transmission line, it would be dedicated to this purpose and this is displacing fossil power. And the two major issues that have me here today wouldn't be there. And that approving a large utility scale project under those conditions would be a different scenario.

Q I just wanted to ask a few clarifying questions. In the rebuttal testimony, you make a distinction that I'm not sure I understand between utility photovoltaics and distributed photovoltaic. And I also want you to maybe just talk a little bit about what would fit within -- in your, mind when you use the term distributed photovoltaics, what fits within that rubric?

A Yes. The issue of distinguishing between distributed photovoltaic and utility photovoltaics in this case is simply semantics. The RETI process, which I have been involved in, even in the RETI reports, the 20 megawatt arrays around substations, as long as they don't require transmission distributed are DG, distributed generation.

The same with the rooftop photovoltaics distributed generation. That's what's stated in the REDI final report as well as that the arrays are on the substation 20 megawatts. Could be on rooftop 20

megawatts.

The real issue is: Does it require transmission? And in this case in the rebuttal testimony, yes. The Sempra ray of ten megawatts is stepping up to transmission to be transmitted in. But otherwise that facility is identical to what we would call a distributed photovoltaic system in the context that I'm using it.

And one final point is that I brought up the arrays in my testimony that Sempra Generation array in Bolder City, Energy Array in Blythe to make the point that these two utilities, SCE and PG&E, already had a PPA bilateral contract mechanism to do this put in 10 or 20 megawatt arrays at a certain point, not to try to distinguish between utility PV and distributed PV. The first time I've seen this distinction was in rebuttal testimony.

But one other comment on that. The final comment is that I see the SCE project at 500 megawatts as a distributed generation project. These are rooftops in an urban area. But in rebuttal, that was called a utility generation project. That's where I see this as semantics. I want 500 megawatt projects in the urban core. You can call them utility or distributed. If they're not stepping up on a transmission line, they're distributed, whether you do it on the scale of ten megawatts or 10,000

megawatts.

Q Thank you. That helped to clarify.

I just wanted to also make sure I understand you're saying the benefits of the distributed has also to do not just that it is in the urban core, but that it doesn't need additional new transmission lines. One of the questions I have about the long distance between the source of the energy and where the energy is used is whether there is a loss across that and how you calculate the loss of energy -- usable energy across that line.

A Good question. In my testimony I do find out that the average loss -- and this is used in the AB 32 process as well, transmission loss 7.5 percent. Peak loss about 14 percent. And the RPS program does not account for transmission loss, so the Ivanpah project would get full credit for 400 megawatts, even though only about 360 is going to get delivered and the other 40 is going to have to be made up somewhere.

And in reality, to me, that's a flaw in the RPS program. And that is really advancing remote projects, but not accounting for the losses that we have to account for in the AB 32 process. And at the rate of import for the current net that I consider 45,000 gigawatt hours a year, 36 hours megawatts of that, close to 40 is imports, that approximately 4,000 megawatts or gigawatt hours ares

going to have to be made up somewhere. That is going to be the equivalent of a couple of Ivanpah project. Their sole purpose will be to make up the transmission losses of primarily or exclusively remote utility scale programs.

And one more clarifying point. The average loss for California is about seven and a half percent. But the solar projects have a higher level of output during on-peak times where transmission lines tend to be hottest and most occupied.

And I think that the appropriate way to assign transmission loss to these projects is not the average of 7.5 percent. But SCE uses a time of use multiplier which really reflects the additional time that you're operating. On peak is probably about a strawman for the multiplier you should put on our average transmission loss to properly characterize the transmission loss of a solar project in the desert, which would be in the range of ten percent.

But that links into, okay, we go to Blythe or Daggett, best solar resource in the state, and there is a comparative chart rebuttal testimony that shows in San Diego your solar resources is eleven percentage less than it is in Daggett. And Bakersfield, it might be 12 -- and I don't have the numbers. They're a little bit more than ten percent. Well, if your loss on the transmission is

ten and your production in San Diego is ten percent or twelve percent loss, it's basically a draw. That's my point. The RPS program doesn't account for transmission losses. That doesn't mean it won't happen. You still have to make them up. It just means the RPS projects are advantaged because they're not accounting for a loss.

One final point. I don't know if the point of rebuttal testimony was to make it appear that the PV projects in the urban core would have a lot lower capacity factor. But I do know that the case of the NRG project -- that's the NRG in SCE PV project -- that's fixed thin film first solar ought put at least 45,000 megawatt hours a year rating 21 megawatts AC.

The capacity factor of that project is 24.5 percent in this rebuttal testimony that is put together. Based on looking at the PV calculator, PV calculator example that's used for four kilowatt residential array comes up with a capacity factor for Daggett of just under 20 percent. I would not compare the capacity factor of a four kilowatt residential array to the capacity factor of a 21 megawatt array in a single location for a number of reasons, including the DC to AC conversion.

But I just want to point out that I think that the -- I know that the capacity factors that are shown in this rebuttal testimony offer a completely different

situation and they are low.

Q Thank you. I don't want to only focus on the rebuttal. But I think your testimony very much speaks for itself. So I just do have a couple of other questions. One of the issues -- sorry. I lost my train of thought there for a second.

In the rebuttal, they talk about the need of distributed photovoltaic for a certain kind of loan guaranty program in order to be feasible and going forward in the future. And I believe it's something like, if that changed, then it would be hard to put photovoltaics in places. I think this goes to the feasibility question. I mean, I don't doubt that there are different loan guaranties or whatever. But could you say a little bit about what those are on the photovoltaic, the distributed?

A The photovoltaic option is completely commercial. The issue that has come up repeatedly in the back and forth different projects I've been involved in is the capacity that it would be great to do a lot of photovoltaic, but there just isn't sufficient capacity out there for California to bump up its photovoltaic deployments in a big way.

And no offense to California, but we are way back in the past when it comes to deploying photovoltaics. The Germans put in somewhere between 2,500 and 3,000 megawatts

of PV primarily rooftop PV last year. They have been steadily ramping up over the last four or five years.

Currently, because of the economic -- two things happened: The economic slowdown and kind of the boom cycle of the technology that's taking off. Worldwide, there's approximately 20,000 megawatts a year of PV manufacturing capability between thin film and polycrystalline silicone. The estimate over supply for the year 2010 is 8,000 megawatts that we talked about 15,000 megawatts in the high DG scenario the PUC looked at. With the world over-supply, we could sell that in two years.

The world is calling for a place to put panels. And as a result of that, the cost of polycrystalline silicone panels have dropped to the point where they're putting a lot of pressure on the thin film for solar that there isn't that much of a delta anymore. I know that as well because I'm now assisting clients put in PV systems. And these prices are real. Even polycrystalline silicone is down around four dollars a watt.

And, again, this is a dynamic environment, but we're in a different world than the world when these were costing seven and eight dollars a watt. And so there is absolutely no issue about there being as much capacity as California can possibly put in per year at this point in

time.

Q Thank you. I just had one more question and we'll let the other people ask you a few questions.

In your testimony, you're talking about distributed photovoltaic. And you did say something about how it compares to these large utility scale solar projects that are out in the desert. My question really is are you against all large utility scale solar projects or is it -- I mean, that's not what your testimony is about. Your testimony is about there is an alternative that would work. I just want to make sure we clarify that we're talking about this particular project. This is an alternative to the Ivanpah project that you're discussing; is that correct?

A Correct. And I do think that at this point -- and I do have a quote in here from the CEO of Sempra Generation who indicates that before they jumped into the fixed thin film, they evaluated solar panel. They looked at power towers and: One, determined that the first solar thin film was the least cost approach to solar; and two, they didn't feel the power tower had been commercially demonstrated at this point and had an additional element of risk.

But I think in a world that doesn't have AARA incentive money and loan guaranties, you would get in the

desert photovoltaics. You would get them at the same scale as these -- in fact, there are over 3,000 megawatts of photovoltaics in the reference case, the 32 percent reference case in the PUC setting, and that in a more open market forum it would all be photovoltaics. And that if it's going to be first solar photovoltaics in a 500 megawatt array in the desert, then at least on a capital cost it's about the same. The capital cost of putting it out there and putting it on rooftops, which are very easy to put PV on, it's going to be about the same. Your solar insulation will be better in the desert but you're going to use it on line loss. So ultimately it's good a draw.

So if the site in the desert is a degraded one, we don't have the environmental issues we have here, it's going to use existing transmission. It's going to be about a draw about that either one of them would work. And I say that from the standpoint I have no fundamental opposition to building these systems big. I would love to see them built very big primarily in the urban core. But there are ways that you would also work outside of the urban core on the large scale.

MS. BELENKY: Thank you.

HEARING OFFICER KRAMER: Any questions for the intervenors? Staff?

STAFF COUNSEL RATLIFF: Yes.

CROSS-EXAMINATION

BY STAFF COUNSEL RATLIFF:

Q Good evening, Mr. Powers. It is Mr. Powers, yes? I wanted to thank you for coming tonight and thank CVD for having you come.

I'm very interested in your testimony. And I guess I should explain that on a visceral level I find it very appealing and therefore I want to be -- I guess I want you to convince me fully. But I do have questions that are not meant to be those that are argumentative but really ones for you to teach me. First of all, I wanted to ask you what is the current amount of megawatts that solar PV contributed to California's electrical system distributing PDN?

A Could you repeat the first part of the question?

Q How many megawatts of distributed photovoltaic is there in California right now?

A I think around 500 megawatts. Though I'm not certain what the amount is. I know we put in about 300 megawatts over 2007/2008 time period. So I think we're in that range.

Q And I think you know at this agency one of the things this agency puts a lot of energy into is the development of forecasts for future demand and supply. And in those forecasts, we have assumptions for future supply

scenarios. And I'm asking because I don't know. What is the assumption for San Diego and southern California or the amount of distributed solar voltaic that is likely to occur in those forecasts?

A That is an excellent question and there is no simple answer to it. We have a CSI program is the California solar initiative which is the residential and commercial of 2000 megawatt. Is a program that is supposed to generate or have online 3,000 megawatts by 2017. And we appear to be on track for that, especially the prices of PV falling so quickly, but we're running into some procedural hurdles like the net metering cap which we don't solve that issue could slow things down.

The utilities are now jumping into the photovoltaic game. I've mentioned the SCE project 500 megawatts, SDG 50 megawatts, somewhere in there. It's a moving target, because the utilities can propose whatever they would like to propose, and these projects may be the tip of the iceberg.

We may see over the next few years numerous projects, I hope we do, on this scale of 500 megawatts. And we have a number of other -- I haven't talked at all about the residential market, but there are a couple of feed-in tariffs the CEC has been working hard to get for years. If we had feed-in tariff, I think we could readily

pass the germs with how much photovoltaic we put into California and not to assume that feed-in tariff is only for California and not the nation.

So it's a dynamic environment, but currently we have a traditional adversarial relationship. Distributed generation of any kind takes away load from the utility and the utilities have been just as opposed to fossil fired distributed generation combined heat and power plant of any kind as they have to photovoltaic. So you credit the utilities for being equal opportunity proponent to any kind of distributed generation. But do we resolve that the feed-in tariff works? The sky is the limit?

Q What is the status of the feed-in tariff proposal?

A There's one in process over at the PUC for approximately a thousand megawatts of cap. The CEC has recommended there be no cap. If the CEC's desire to see no cap were to happen, that feed-in tariff process alone could be the game changer. If that cap stays, then that feed-in tariff is a boutique program, just doesn't matter that much and it would be a legislative fix. And there are there is a feed-in tariff AB 1106, two-year bill with feed-in tariff, but it hasn't gone the distance yet. And if it does, pending the tariffs that are designed for that are sufficient, that would be a game changer.

Q The questions I have about how the alternative would

be feasible has to do with the current -- we have a current forecast for how many megawatts each utility area you have and that forecast of course goes to the Public Utilities Commission which does a procurement plan based in large part on that forecast. And then projects such as Ivanpah respond to the utility power poles and RPS needs, which are assuming that there would be a significant portion of demand met by PV.

And what I'm trying to figure out is how much greater a portion of PV would you assume is going to occur than the utilities and the public utilities have assumed if there were to be enough additional PV capacity to take the place of Ivanpah?

A I think a very good start is the high -- they're looking at high distributed generation scenario now, the PUC and alternative road to getting to 33 percent by 2020. And part of it I think is just the reality of the fact these projects are now moving forward. That even if the commission were to approve this project, they still have to get financed. And the stumbling block has been financing. If you had a contract with PG&E SCP that were enough to cover reasonably what they thought the costs were, they wouldn't have to get an AARA loan guaranty and they wouldn't have to bundle everything together in the hopes of getting (inaudible.)

This is all being precipitated because the contract isn't adequate. That's one of the achilles heel of the RPS program since day one. So the utilities can have as many forecasts as they'd like. But if the contracts are not sufficiently liberative so the contractor can get financed, the projects don't get out of the box. And that is consistently what has been happening with the RPS program.

And the high DG scenario is really I think a perception reality. If these projects were the same programs we're dealing with in this hearing today, can't move forward if we're serious about getting to 32 percent. There's got to be Plan B. And the beauty of the distributed generation option is, one, it's least cost and, two, there are no environmental impacts. In fact, three, I think all of the people in the hearing who are here for some reason are concerned about impacts can probably -- if we had a show of hands, who's against distributed? I mean, there's nobody who is against it. It's always been the cost is prohibitive. But what it does represent is a fundamental change in electricity provision. Because instead of having three utilities you've got ultimately they become wireless companies, transmission distribution. But the power provision will become more and more supplied by many peer parties. So

the operation's made simple, but what it implies is a fundamental shift.

HEARING OFFICER KRAMER: Let me break for a minute.

I'd like to ask on the telephone, you must have moving your telephone headset around our something. We're getting a breathing noise and some noises moving of cords or something. So if you could do us the favor of muting your sounds with star six, we would appreciate it. And when you want to speak again, just hit another star six and we will be restored to speaking ability.

Mr. Ratliff, go ahead.

MR. POWERS: Just one final comment, and that is it's not that revolutionary that California utilities would be wireless companies because that's what they were eight years ago. So now we just shifted back into a fuzzy role for utilities. But being wires only would not be a novelty.

BY STAFF COUNSEL RATLIFF:

Q I think if I could explain from the point of view of the lead agency that does an alternatives analysis, when you're looking at the feasibility of an alternative, it's natural for the first thing for you to do is to look at what is the forecast. And if you look at the forecast, then you see what the assumptions is for PV in the future.

And when you see that, then the next question is, well, is there anything in the forecast or anything that you can foresee that's going to change that assumed amount of PV/distributed PV? And if you don't have anything concrete then to base your analysis on, you can't assume a larger number. I mean, you can't really defend rejecting a project based on the assumption that there will be more PV than anyone has ever assumed, unless you have some kind of reason to think that that PV would actually be implemented.

And so I guess the question I would have for you is who would implement the additional 400 megawatts of distributed PV that we're talking about that would be an alternative to the Ivanpah project.

A The implementation I think would be straightforward. The utilities, as you pointed out, go out to RFOs all the time for contracts. And they could either propose to do it as a utility-owned project or they could propose to go out to bid for the project. But the needed capacity is known through the 32 percent. We know how much renewable energy we want to get.

So this is really more of a substitution issue than it is a separate set aside for PV. Right now we got I think 7300 megawatts of resumed solar thermal capacity, and what we're talking about is instead of that being

solar thermal power PV capacity in a remote location, that it be PV capacity in close. So it's more of a substitution issue.

One comment about the CEC though. And the CEC has been putting out an excellent document for a couple of years of comparative cost of electric generation technologies and one in 2007 did a draft of August of 2009. But there was a hole in that analysis, which is what is revolutionizing PV is thin film. And I did comment on that report. And says it's a good report, great report. But all you have in here is single access tracking conventional polycrystalline silicone which has been around in these analyses forever. And you don't have a thin film PV and you need another category, because that's really what's changing the entire environment here in California. But I haven't seen the final report yet.

I called Al Alvarez, who's the head of that section, to follow up a letter and the court was out as to whether the CEC was even going to include that case for solar. And I think that if the CEC doesn't put that in the document, the CEC should follow up with a separate document that looks at it. Because right now all we're talking about at the PUC is the thin film sensitivity analysis, what does that do to price and your rate.

All we're talking about is thin film PV and how

that's changed, how it's flipped. If that price is corrected, which it is, it flips the economic priority order for solar if you would do all PV and almost none of the solar thermal. But you've got to have the information in your report. Even if it's one sentence that says thin film PV is here and it's late in the day and we can't put it on our graphs. But the CEC does need to take care of that, because right now we got a great report that's missing a critical element.

Q So you've got the audience here who presumably --

A I know I'm talking to the right people.

Q My own question -- and I can't give you the numbers on this. But my understanding from hearing the supply people talk is that the 33 RPS goal is going to be very difficult to meet if we license renewable projects and assume robust PV installations as well. In other words, the impression I get is that you can't just pick one source for your renewable energy. If you want to meet the goal, you have to pick them all. What is your response to that?

A My response is that even if we were to do 100 percent PV, from this day forward, PV would still only be a little over half of the renewable energy that we rely on to meet 33 percent. Because we're talking assuming again at the low end short 45,000 megawatt hours a year is net exclusively by PV, that's still part of a 75 or 80,000

gigawatt hour per year renewable energy supply. And PV would be less than 20 percent of California's total energy supply, which is about 250,000 gigawatt hours a year.

And so to me, there's no merit to diversity of technology if you have one technology that's excellent, cheap, low cost, and ready to go and you feel compelled to add on higher cost, higher impact technology solely for the sake of diversity. And you're willing to pay all that extra money for diversity, I think within the photovoltaic what we're talking about is widely distributed at the point of use or power you couldn't get more reliable than that, that in the PV field there is a world of different technologies.

For example, one of the issues that came up repeatedly in rebuttal is it weighs a lot and a lot of buildings, roofs, structurally might not be able to handle it. Okay. That's true of the thin film PV. It's two glass panels, weighs about seven pounds a square foot. However, the other form of thin film is a roll-out flexible sheet that weighs one-tenth that much. We've got 15 schools in San Diego that are covered with that type of PV. And your roof can be razor thin and it can handle that form of PV.

So within the world of photovoltaics, there are just -- like within the world of automobiles, there are

many different types of PV. Bottom line is even if we did it all PV, that gap would still only be a relatively small part of the whole energy picture in California.

Q So you're acknowledging that there would have to be contributions from other technologies besides distributed PV and presumably even utility PV to reach a 2020 goal of for the RPS?

A Well, I'm acknowledging it only in the sense it's reality. We already have nearly 30,000 gigawatt hours a year from renewable energy sources, of which almost none of it is PV. And mostly wind.

Q And going forward, won't there be the need for additional megawatts from other forms of generation beside distributed PV?

A Well, I'm accepting that the Tehachapi project seems to be well advanced. That's a few thousand megawatts of wind, which will contribute several thousand megawatt hours. And I should be clear at this point California's track -- what you're asking is should we be putting so many eggs in that basket. Right now, we are putting every egg in the remote central basket. And so I really see PV as the diversification of our approach, not as PV being a momo culture in a situation where we need more diversity.

Q I'm just asking how big the basket is actually. I mean, is the basket big enough for everything? Can you do

it all with PV, in other words?

A We can definitely do the gap between from 20 to 33 percent renewable energy with PV. There's no question about it.

Q I'm sorry. Why do you say 20 to 33 percent?

A What I'm saying is we were supposed to have reached 20 percent renewable energy by this year.

Q But we're all at what? Twelve, 13 percent actually?

A Right. But they're already -- that a momentum alone I think we're going to get to 20 percent with adding PV with some of it advanced. And we'll be contributing to that --

Q So you're assuming that there will be non PV projects that get us to 20 percent and?

A There will be non PV projects that --

(Telephone disruption)

Q So you mean projects in the pipeline then -- there are enough projects in the pipeline to get us from, say, 13 percent to 20 percent? And then you think that PV could fill the gap between 20 percent and 33 percent?

A Yes. If we chose that route, we could do it with PV alone. And that would be the most cost effective way to do it. If you include all the costs associated with the remote generation, which is transmission losses and --

Q What do you mean by if you include all the costs? If who includes it where?

A Generally, transmission is diversed from generation in terms of looking at cost. And as I pointed out here earlier that the RPS program doesn't count losses. So there is no penalty for -- even if the plant were located in Texas, we had a thousand mile transmission line losing 20 percent of that energy, none of that would show up in the comparison of merit.

Q I'd like to ask you a final question, too. When I read the testimony of Mr. Olson, I felt that one of the interesting objections that he made to your testimony was that there seems to be a larger conundrum in positing 400 megawatts of distributed PV generation as an alternative to the Ivanpah project if you could posit the same 400 megawatts against every other renewable project that's currently being considered by the Energy Commission or the California Public Utilities Commission for that matter or any local government if it were doing renewable wind for instance or something like that. I mean, it seems to be a logical conundrum to say we could get additional 400 megawatts somewhere if we had a feed-in tariff. And, therefore, if we had that 400 megawatts, we wouldn't need Ivanpah, for instance. Do you understand the nature of my -- well, that's his criticism?

A I thought Mr. Olson was correct in the line of questioning he brought up, which is if I could only point

to 400 megawatts PV of California, then his argument would carry today. But a good part of my testimony is dedicated to showing that just using, for example, the RETI numbers where RETI looked at putting PV around substations up to 1375 substations around the state and that 27,500 megawatts total output close to 60,000 gigawatt hours a year, that what RETI was pointing out if we did this, we could actually meet -- especially with the new net short we could meet it.

But RETI is not dealing with the single megawatt capacity I'm dealing with when I look at the urban core. And that the reduction process now that Black and Beach (phonetic) and E3 are going through where I made a comment earlier about them arbitrarily reducing the amount of commercial recaps by two-thirds just as a base assumption in support. That's approximately 20,000 megawatts of commercial rooftops; 20,000 megawatts of commercial rooftops, 27,500 megawatts of non-urban arrays of substations we can go far beyond the meeting 33 percent by 2020 with that resource. And that doesn't even include commercial parking lots where at least in San Diego we're doing a lot of commercial parking lots with solar. And based on available information, those commercial parking lots should have at least the capacity as the commercial rooftops themselves.

And so it's a good point Mr. Olson raised, and that was a reason for spending to much time demonstrating that there is -- even if this occurred in every proceeding that there would be 400 megawatts of PV available to substitute that question in each case.

Q Do you know why RETI doesn't include distributed PV in its estimates?

A It's a procedural issue in that they are strictly focused on what they consider to be utility options that would all be between the cutoff -- I think the RPS program is 20 megawatts. So the smallest piece of pie you can look at is 20 megawatts. And the decision to avoid any urban or suburban areas -- is I think the explanation is in the first RETI report I don't recall what the direction off of that was. But at this point in time, it makes it very convenient because it essentially is everything -- every rooftop of capacity unrelated to the RETI. So they become two separate sources of potential for distributed photovoltaic.

STAFF COUNSEL RATLIFF: Thank you.

HEARING OFFICER KRAMER: Mr. Harris.

MR. HARRIS: Give me just a minute, please. I think I might be able to cut this down considerably.

We have no questions for the witness.

HEARING OFFICER KRAMER: Any questions from the

Committee?

Seeing none, any redirect?

REDIRECT EXAMINATION

BY MS. BELENKY:

Q I just had one small point I didn't understand when you were speaking with Mr. Ratliff. We don't now have the feed-in tariff that we're hoping to get; is that correct?

A We have a couple of small feed-in tariffs in California, but they are at a low price point. So they haven't generated projects.

Q But even with the current situation with the feed-in tariff, that's what your testimony was based on; right? Is that correct?

A My perspective on the feed-in tariff? Right, that we need an effective feed-in tariff.

Q But even if we don't get a change in the feed-in tariff, there is still this capacity to put in this distributed photovoltaic even without that change. The change would make it better. But even without the change --

A My point is that the contracts that were signed between PG&E and Sempra and SCE and NRG that those are -- the contract language explained this is NPR with a bump up that essentially reflects to a degree the time of use benefits and that's enough. That simply replicating those

contracts would be sufficient to greatly expand just the bilateral contracts the distributed PV.

HEARING OFFICER KRAMER: Could you remind me what MPR is an acronym for?

MR. POWERS: Market refer rent.

COMMISSIONER BYRON: I also don't know if you said what RETI is either.

MR. POWERS: That's the renewable energy transmission initiative process.

HEARING OFFICER KRAMER: I gather then we have no more questions for this witness, so thank you, Mr. Powers.

MR. POWERS: Thank you.

VICE CHAIRPERSON BOYD: Thank you, Bill, for reading the IERP. It warms my heart, too.

MR. POWERS: I must say the IEPR is a great document. But the 2007/2009 IEPR, if we can live up to it, we'll be in the right direction.

HEARING OFFICER KRAMER: Okay. Now let's constitute that now I keep trying to put together the remaining alternatives witnesses from staff, the intervenors, and the applicant with the exception of a couple of the applicant's witnesses. The staff's witnesses are all lined up at the staff table. That's fine.

COMMISSIONER BYRON: Mr. Kramer, is it true the

witnesses are expressing a preference to have their backs to Mr. Harris?

(Laughter)

MR. HARRIS: Only the witnesses that had to prep with me for five days and they're tired of me.

STAFF COUNSEL RATLIFF: Mr. Kramer, is it okay if our witnesses stay here?

HEARING OFFICER KRAMER: That's fine.

STAFF COUNSEL RATLIFF: And just in terms of how you want to conduct this, does it make any sense to allow each witness to have four or five minutes to summarize their testimony?

HEARING OFFICER KRAMER: That's one of the alternatives. Is that acceptable to Mr. Harris?

MR. HARRIS: As long as they have the option to say, "I don't want to summarize anything." There may be some folks that don't want to.

HEARING OFFICER KRAMER: That's fine as well.

And the intervenors, are you fine with your witnesses summarizing their testimony on their own, or would you want to question them specifically?

MS. SMITH: I'm going to have a few questions for my witness, Mr. Kramer.

HEARING OFFICER KRAMER: Okay. Why don't you go first?

COMMISSIONER BYRON: Mr. Kramer, can you review again since we have a mixed panel here -- are there intervenor witnesses on this panel also?

HEARING OFFICER KRAMER: I believe there is at least one.

COMMISSIONER BYRON: If you would just make that clear.

HEARING OFFICER KRAMER: We have staff, some applicant witnesses, and one intervenor witness. And I suppose this is as close as we're going to get to the panel, the true panel that we debated.

STAFF COUNSEL RATLIFF: You mean an informal hearing?

HEARING OFFICER KRAMER: Informal hearing.

STAFF COUNSEL RATLIFF: Yes.

MR. HARRIS: I will have some questions for Mr. Cashen.

HEARING OFFICER KRAMER: Certainly what I'm envisioning is those witnesses where we can press the play button and they will summarize their testimony we will do that with them.

Ms. Smith would like to ask questions of her witness in order to elicit his opening testimony, and that's fine.

And then once everybody has had their chance to

summarize we'll have a round or two of questions from the parties in order. And the panelists when the question is directed to the panel after the initial round, although it may be directed to one person, if you have something to say, please feel free to offer your comments at that point in time.

Ms. Smith, did you want to get it started?

MS. SMITH: Thank you.

DIRECT EXAMINATION

BY MS. SMITH:

Q Mr. Cashen, would you please state and spell your name for the record.

A Scott, S-c-o-t-t, Cashen, C-a-s-h-e-n.

Q And what subject matter are you testifying on tonight?

A Alternatives.

Q Were there any changes to your sworn testimony?

A No.

HEARING OFFICER KRAMER: And were you previously sworn?

MR. CASHEN: Yes.

BY MS. SMITH:

Q Are the opinions in your testimony your own?

A Yes.

MS. SMITH: I'd like to move Mr. Cashen's testimony into the record as exhibit number 611.

HEARING OFFICER KRAMER: And that was filed as -- sorry. That was filed as rebuttal testimony I gather.

MS. SMITH: No. We only filed direct testimony with no rebuttal.

HEARING OFFICER KRAMER: When was that filed?

MS. SMITH: This is what I did -- I didn't give the actual testimony of Mr. Cashen a number. So I still need to move Sierra Club's exhibit 600 through 610 into the record and then assign a specific number which would be 611 to Mr. Cashen's actual testimony.

HEARING OFFICER KRAMER: But. But that was distributed to the parties as your opening testimony?

MS. SMITH: Yes.

HEARING OFFICER KRAMER: Okay. Thank you.

MS. SMITH: Without any rebuttal.

BY MS. SMITH:

Q Mr. Cashen, can you please summarize your qualification, your education, and your relevant professional experience?

A I have a Bachelor's of Science degree in natural resource management with an emphasis in wildlife management from the University of California Berkeley. And I have a Master's of Science degree in wildlife and fisheries science from Pen State University. I have 17 years of professional experience in the field of natural

resources management.

I currently operate my own consulting firm. I've been doing that for approximately the past two years. And one of the things I've focused on during that time is your view of potential biological resource impacts of large scale solar projects. I've to date reviewed eight large scale solar projects, of which five are being proposed for the Mojave Desert. And also entering into the second year of a project that I'm conducting for California State Parks to survey for the peninsular big horn sheep. And I serve on the scientific review team that is charged with reviewing the US for of the service's implementation of the Herger Feinstein Quincy Library Group Act.

Prior to starting my own consulting firm, I spent seven years working as a senior biologist for two private environmental consulting firms. During that time, I conducted work for both public and private development clients. And prior to that, I held positions with Point Reyes Bird Observatory, the National Park Service, Pen State University, University of California, and a private forestry consulting firm.

Q Please describe for us what the Sierra Club asked you to do on this project.

A The Sierra Club asked me to conduct an independent and objective evaluation of the biological resource impacts of

the proposed project site and as well as potential impacts of the proposed alternative site known as the I-15 alternative.

Q I'm going to ask you some questions about the methodology of your work. First, what was it you did prior to your actual investigation?

A I reviewed the AFC and the FSA as well as all the environmental documents that have been docketed on the CEC project web page. I also reviewed maps. And I have already done quite an extensive amount of literature review, but I spent some time reviewing some of the articles that I thought would be most pertinent to this project.

Q And I'm going to ask you some questions about how you went about your investigation. First of all, what were your specific goals for this investigation?

A I had two goals. The primary goal was to compare the relative abundance of desert tortoises at the proposed project site in comparison with the alternative site. And a secondary goal was to examine both those sites so I could gain a better understanding of the biological resources present.

Q Who did you work with on this project?

A I worked with Jim Cornett, and I worked with a crew from American Conservation Experience.

Q Who's Jim Cornett?
A Jim Cornett is a colleague of mine that has extensive amount of experience in desert ecology, and he's a well-recognized expert with the desert tortoise as well as just general plant and animal species of the desert.
Q And did you pick a particular methodology in order to go about this investigation?
A Yes, I did.
Q Would you please describe that?
A I used the lime transect sampling technique.
Q Why did you pick this particular methodology?
A It is a method that was used by the applicant in its surveys. It is also the method that is recommended in the U.S. Fish and Wildlife Service desert tortoise protocol. And it is the method that I thought was most appropriate to use.
Q Thank you. Can you please summarize your principle finding from your field work?
A Yes. My principle findings were that there was a significant difference between the relative abundance of tortoise sign at the project site versus the alternative site. And that specifically there was significantly more tortoise sign at the proposed project site. I tested the statistical relationship between those two data sets and it was statistically significant.

Q Thank you.

In your opinion, are your field findings consistent with other scientific principles and information? And if so, can you please explain what those are?

A Yes. My findings are consistent with what is in published literature on a couple of different levels.

First, at the ecosystem level, my research results were consistent with general ecological principles. And we've heard a lot about these over the last couple days. And they include things such as fragmentation, connectivity, species disturbance. These are all things that I would be willing to bet that all the parties in the room agree upon.

We've heard testimony from the applicant about the effects of fragmentation and connectivity of desert tortoises around Las Vegas. We've heard testimony from the Department of Fish and Game about connectivity issues. We've also heard testimony from the staff about connectivity and fragmentation, and we've heard testimony from the intervenors about these issues as well.

At the organism level, there has been research on effects of roads on desert tortoises, and that research unanimously indicates that roads have an adverse effect on desert tortoise populations. There is known to be a

depression zone adjacent to roads in which the population suffers adverse effects. And this is from things such as direct collisions with vehicles, well-meaning passers-by who think that they need to help the tortoise across the road. And in picking it up and moving it, they end up doing more harm than good. There's quite a considerable problem with collection. People taking tortoises home as pets for their kids.

There's also been research that shows that ravens use roads as a travel corridor, and ravens are known to cause significant mortality to tortoises.

And then there are things such as wild fire, which is frequently human caused. And those events are more frequent adjacent to roads. Toxics that are dumped either legally or illegally, trash, and a few other things. All of that research that has been conducted on desert tortoises and the effects of roads has shown that it has an adverse effect on desert tortoise populations.

Q So based on the established ecological principles you went through and then it sounds like the desert tortoise research that you reviewed, do you have any specific conclusions that you derived from that research?

A Yes.

Q Would you like to remind us?

A Maybe. No.

Yeah, I think it's pretty clear that relocating the project on the lands adjacent to the freeway would have less of an impact on the desert tortoise population than the currently proposed location. I think that that conclusion is supported at the three levels of analysis: At the ecosystem level with the ecological principles I mentioned; at the organism level and the desert tortoise research that has been conducted; and finally re-site specific level with the study that I conducted. All three of those things independently point to the conclusion that moving the project to the lands adjacent to the freeway would have less of an impact. And considering all three of those cumulatively, my conclusion is even stronger.

Q Thank you. Have you reviewed the proposal that the Sierra Club submitted to the Energy Commission and the BLM in June of 2009?

A Yes.

Q Would you briefly summarize your understanding of that proposal?

A Sure. My understanding of the proposal was the Sierra Club asked the Commission and the various resource agencies that are involved in this project to consider an alternative of moving the project closer to the freeway and that doing so would reduce the biological resource impacts of the project.

Q Based upon the final conclusions that you've articulated here and your understanding of the Sierra Club proposal, would that proposal reduce many of the project's direct impacts on biological resources in your estimation?

A Yes.

Q Could you elaborate on that?

A Our site-specific study indicated that there was a difference -- and not only was there a difference in the abundance of desert tortoise, but that was a statistically significant difference, which to us scientists means something, but maybe to everyone else doesn't mean anything.

At the organism level, it's very clear. There's no disputing the fact that roads have an impact. And it just makes common sense that if there's going to be disturbance you would want to lump that disturbance so that you could maintain these ecological principles and as intact ecological system as possible by maintaining connectivity and minimizing fragmentation, et cetera.

Q Thank you. Those are the only questions I have for him on his direct testimony. I do have a couple of questions of his reaction to staff's rebuttal testimony on his open testimony. Should I wait, or would you like me to ask those questions of him now?

HEARING OFFICER KRAMER: Why don't you go ahead

since you're on a roll.

MS. SMITH: It's just a couple of questions and it won't take long at all.

HEARING OFFICER KRAMER: And the rebuttal testimony -- for purposes of our direct, cross-examine rebuttal is really direct testimony.

BY MS. SMITH:

Q Mr. Cashen, have you reviewed staff's rebuttal testimony?

A Yes, I have.

Q And did you specifically review staff's rebuttal testimony questioning the validity of your own field work?

A Yes.

Q Please summarize any points you'd like to make regarding those aspects of staff's rebuttal testimony.

A Okay. I have just a few points I'd like to make on staff's rebuttal. The first point that staff made was that my sampling was not representative with respect to desert tortoise habitat at the alternative site. And there's a couple things that I think are important to consider in that respect.

STAFF COUNSEL RATLIFF: Pardon me, Mr. Cashen. Just for clarification here, are we talking about staff's rebuttal testimony or the applicant's?

MR. CASHEN: Staff's.

STAFF COUNSEL RATLIFF: Oh, really?

MR. CASHEN: Do you want a page number?

STAFF COUNSEL RATLIFF: Yes.

MR. CASHEN: One moment. Twenty-four.

STAFF COUNSEL RATLIFF: Thank you.

MR. CASHEN: So what I would consider staff's first significant comment was that I did not conduct sampling on the alternative site that was representative with respect to desert tortoise habitat. I reviewed the figure that -- I reviewed the figure that was provided by staff in its rebuttal testimony. And I do not see any significant bias with respect to sampling of desert tortoise habitat. Or I won't say at all. But very minimal amount. The second part of that is that, in my written testimony, I clearly stated that the area around Nipton Road should be avoided by the project. So there was no utility in sampling that area.

The third is that I'm a little bit confused, because staff had said that my sampling was not representative because it's in the lowest quality desert tortoise habitat available at the alternative site. And yet, staff has reached the conclusion that the entire alternative site provides high quality habitat. And so if it all provides high quality habitat, I don't understand how I would have sampled in the low quality habitat.

And finally with respect to that point, staff references desert tortoise habitat and modeling data in its rebuttal testimony. And I want to be clear to everyone that that is a model and the model is predicting the potential habitat quality, not occupancy, and that there is a very big difference there.

I measured in my study I actually measured an index of occupancy. The model measures habitat quality and the literature that is associated with that model by the people behind the model very clearly discuss the limitations of the model, particularly that it is not always accurate and that most importantly it does not incorporate semin-related effects on desert tortoise habitat quality.

The second significant point that staff made was that they believed my samples were conducted outside of the boundary of the I-15 alternative site. My understanding of the alternative as it was presented by the Sierra Club was that this is a concept, the concept of moving the site closer to the freeway. The Sierra Club in my understanding never provided a map of where that project would go. There have not been any hard lines established at the boundaries of where this alternative would occur. And that the necessary site inspection team are people, the engineers, whoever would be involved, to

determine where those boundaries would be have not even explored that opportunity yet. So the map that was presented in the FSA is misleading. It was not presented by the Sierra Club and those boundaries should not be considered hard boundaries.

STAFF COUNSEL RATLIFF: Excuse me, Mr. Cashen.

Part of the problem staff had is that there was no delineation of the area that you were considering or proposing is the alternative area. So staff wasn't able to actually get a fix on what it was that was being proposed as an alternative. We had to sort of guess what it was you had in mind and go from there. And so the map that we gave you was a map of the area that we thought was the potential area of which we were proposing to have an alternative. That was all we could do really. If you were just saying it's over there, we had to say, okay, what is over there? And the map depicts the potential range of over there. That's the problem when you just say we have alternative by the highway. And so I think it's only fair to say that is really is all you can do. That's the instruction you're going on.

And second point I had to make is one to the Committee --

HEARING OFFICER KRAMER: Well, let me just stop you --

STAFF COUNSEL RATLIFF: Let me, please. So far, this is not informal hearing procedure at all. It's only a name. This is exactly what we were trying to get away from. We need to actually have the lawyers butt out of this for a minute and let the witnesses actually take over and have a conference here. Otherwise, we're going to be here at night long doing cross-examination and direct examination.

HEARING OFFICER KRAMER: Well, this is still in the line of his summary of his testimony.

STAFF COUNSEL RATLIFF: Well, it is, except it's all direct examination. And we can all go through 30 minutes of direct examination. You can look at the clock and tell me what time we are going to be done.

MS. SMITH: Dick, I've been going for ten minutes. Jeepers. This is one of the fastest, you know, in the last 48 hours. And I'm almost done.

STAFF COUNSEL RATLIFF: I guess time only feels like it's standing still.

MR. CASHEN: Am I that engaging?

HEARING OFFICER KRAMER: So, Mr. Ratliff, you're setting a precedent that you may regret in a few minutes when somebody perhaps -- and I'll volunteer Mr. Harris to direct one of your witnesses --

STAFF COUNSEL RATLIFF: But that's the whole

purpose of the informal procedure is to allow the give-and-take of that and to get out of the structure that we're in right now. We're stuck. And I'd like to get out of if that we can. If we can't, if we aren't going to let that happen, let's not call it informal procedure. And let's commit to being here until 2:00 in the morning.

HEARING OFFICER KRAMER: Okay. The second motion is overruled.

(Laughter)

HEARING OFFICER KRAMER: This is going a little long for summary testimony and he's about to conclude, we're told. And your witnesses will have the same opportunity. And I recall when we started this that in your terms of long time ago but other's memory not so long ago you offered a suggestion there would be an initial summary of testimony and --

STAFF COUNSEL RATLIFF: But a summary of the testimony; not a direct examination that goes on for 30 minutes per witness. And that's my objection.

HEARING OFFICER KRAMER: Ms. Smith, can you close it up?

COMMISSIONER BYRON: One additional comment.

Ms. Smith, you've been very patient for a day and I half and I found this testimony to be very helpful. So you please go ahead and proceed. You may not be making

everyone happy in this room, but right now it's been very helpful.

MS. SMITH: Thank you very much.

BY MS. SMITH:

Q Did you have any more points, Scott, that you would endeavor to make in response to staff's rebuttal testimony?

STAFF COUNSEL RATLIFF: Pardon me, Gloria, I didn't mean to interrupt you. I'm sorry. You're going to talk --

MR. CASHEN: I would be happy to answer that question, and I don't know if I should do it now or another time and keep moving on.

HEARING OFFICER KRAMER: No. You're going to start to give and take I guess to your answer to Mr. Ratliff's question.

MR. CASHEN: Okay. To answer Mr. Ratliff's question, if there were -- there are hard boundaries associated with this alternative, I was misinformed. I was understanding it was a concept of moving the site closer to the freeway.

And with respect to my sampling, the literature shows that roads and anthropogenic disturbance, such as golf courses, have an adverse effect on tortoises. By going out there and making that assumption that that was

indeed the case without actually sampling may not have been the most appropriate science. And so I sampled in those locations so that I would have site-specific information on desert tortoise occupancy in those locations.

A couple additional points with respect to staff's rebuttal, and I will be quick. Staff comments that my sampling was skewed with respect to my conclusion on rare plants. I want to be clear. And my testimony is clear that my field work was not designed to reach conclusions on rare plants. My field work was designed to gain an understanding that could be used to reach conclusion, but the conclusions on rare plants that were presented in my testimony was based on the literature.

The staff also made a comment that interstate 15 the highway was not an influencing factor in vegetation for most of the I-15 alternative. While I do not necessarily disagree with that statement, a citation is sorely needed and my understanding that relationship has not yet been tested. And despite some differences in opinion about how the sampling was conducted, I think it's interesting to note that staff and I ultimately reached the same conclusion. Page 25 of staff's rebuttal, they conclude that relocating the site to the lands adjacent to the freeway would have far fewer impacts to special status

plants and other sensitive plant communities and that it might substantially reduce impacts to Desert tortoise.

MS. SMITH: Thank you, Mr. Cashen.

HEARING OFFICER KRAMER: Okay. Now let's then turn to staff's witnesses.

Mr. Ratliff, do each of them want to make a summary of their testimony, or do you have one at this point?

STAFF COUNSEL RATLIFF: I know that our principle witness, Ms. Susan Lee, does, because she did all of the elaborate analysis that we did for this in the FSA. I have to ask -- we can give the opportunity for two additional witnesses who contributed to additional work that we did. We can ask them when their time comes if they want to briefly summarize their contribution to the testimony.

HEARING OFFICER KRAMER: Okay. So Ms. Lee, please identify yourself and spell your name for the transcript.

MS. LEE: My name is Susan Lee. Susan, S-u-s-a-n. Lee, L-e-e.

HEARING OFFICER KRAMER: And would you briefly describe your credentials and then summarize your testimony?

MS. LEE: Okay. I have about 26 years of

experience in the environmental impact assessment field, including project management of several of the major transmission lines that have been evaluated in California, the Sunrise power linked, Devers, Palo Verde 2, Path 15. I have been working as a consultant to the Energy Commission and serving as staff for about ten years, including about 15 gas-fired power plants for which I've done alternatives analyses. And that includes several of the really challenging ones, Morro Bay, Potrero unit seven, San Francisco ERP. Working on several of the silver projects right now and generally focus on energy work in the environmental consulting world.

HEARING OFFICER KRAMER: And your summary of your testimony?

MS. LEE: Okay. Just as background and reminder I guess, this is the first project that we've done here at the Commission that's a joint document between the BLM and the Energy Commission. But it didn't start like that. The PSA was published as a CEQA document only. So it was published under a different structure than the FSA and that affects the way the FSA -- the contents of the FSA essentially.

The FSA considered 21 alternatives. We have two of those, the site alternatives at Broadwell and Siberia east were evaluated in detail and essentially retained for

analysis. We included in the PSA also a reconfiguration alternative which essentially described the changes to the proposed project that were made during the data request and data response process.

We looked at four alternative sites that were not carried forward for analysis. And then had 13 other alternatives that were not considered, things like other solar technology and other generating technology and the no project alternative.

And comments on the FSA -- comments on the PSA let us to make a lot of changes to the FSA which then also was a joint NEPA document for BLM's use as a draft EIS. We expanded a discussion of distributed solar PV which Mr. Powers was talking about a little earlier. We added a detailed evaluation of the interstate 15 alternative, which is the one that was suggested by the Sierra Club. We added a detailed evaluation of the private land alternative, which was a 4,000 acre land on private -- 4,000 acre alternative on private land. We considered a reduced acreage alternative as well.

The focus of each of those alternatives was to look at the three tests that are required. And this is again the CEQA side, whether it meets project, meets most project objectives, whether it's feasible, and whether it would reduce or avoid the significant effects of the

proposed project.

The conclusion of the FSA was that the alternatives that we looked at did not need any of those criteria. There's one thing I wanted to explain which is that we didn't in the FSA have any alternatives that were in that category called retained for analysis versus the category called eliminated from detailed analysis.

And the history there again goes back to the issue with BLM and the Energy Commission and trying for the first time to work out a process by which we could prepare a joint document which represented both agency's needs. BLM preferred not to detail any site alternatives for analysis. And while as the Energy Commission we would have retained the analysis of four site alternatives, the two I mentioned Broadwell, Siberia, the I-15, and the private land alternative and each of those was analyzed at the level of detail that we normally do in the CEQA analysis -- we didn't put them in that category in the FSA because it was problematic for BLM.

So the reason that was okay with us ultimately was that we had done the analysis of all of those alternatives before we made that decision. We knew that the analysis led us to the point where none of those alternatives was environmentally preferred to the proposed project. So putting them in the category of eliminated

still provides the decision makers with all the information explaining how we got there, but it didn't effect the decision-making process. So it's a little bit of an unusual situation because of the joint agency thing, but we feel like the information that's provided for decision makers is adequate.

So that's it for my summary.

STAFF COUNSEL RATLIFF: Do you need to summarize as well or --

MS. SANDERS: This is Susan Sanders. And I want to address just a few points that Mr. Cashen made that was on my testimony.

First of all, I would like to thank the Sierra Club, because they did go out and collect original field data on the biological resources at the site and we appreciate that.

The comment that I had that was on page 24 and 25 was that while the line sampling method was a good one, I think that was appropriate for the data they then collected. The important foundation for that is how you choose your sample site. So if you want your sampling two or 300 acres in a 4,000 acre area, you want to make sure it represents the bulk of the project area. And it was our assessment that it did not. And the math that was the USGS model indicated that a quarter of that model which

incorporates a number of environmental variables important to desert tortoise that was poor desert tortoise habitat that one of the sampling units was placed in. And the other point was that it was outside of our proposed I-15 alternative. We moved it about a thousand feet -- Susan, is that right? A thousand feet?

MS. LEE: From the freeway.

MS. SANDERS: And it looks to me like the sampling the northern most one was placed right next to the freeway. If you look at Boarman versus Sazaki, which is a reference the Sierra Club site, the extent of the influence of roads was I believe 400 feet or 400 meters. I think it was 400 meters. And beyond that, you began to stop seeing the effect of declining of desert tortoise numbers from the edge of pavement. So this sampling site, this northern most sampling site for the Sierra Club fell within that area. And for that reason I think also it was not representative.

But I agree with Mr. Cashen, our conclusion was that portions of the I-15 alternative, the northern most portions, the lower elevation portions that were close to the golf course were poor desert quality habitat -- desert tortoise habitat and also poor -- not as good quality plant habitat. So the field surveys by Dick Anderson and Carol Chainey-Davis substantiate that. Thank you.

HEARING OFFICER KRAMER: Any other summaries from the applicants?

Seeing none, do any of the applicant's witnesses wish to make a summary of their testimony?

MR. HARRIS: I'll put it in the form of a question, but I don't think any of our witnesses want to summarize their testimony, do they?

MR. DE YOUNG: No. We prefer to go over our pre-filed and rebuttal testimony.

MR. HARRIS: If I could speak, I'd say Dick Anderson --

HEARING OFFICER KRAMER: Then just identify the applicant's witnesses on the panel for the record. We have Mr. De Young, Mr. Carrier, and is that Mr. --

DR. SPAULDING: Spaulding.

HEARING OFFICER KRAMER: So Mr. Priestly will be in the next panel? Okay.

So now, Mr. Ratliff, we are just going back to --

MR. HARRIS: Actually, I'm sorry. I do have questions, but I thought staff had not concluded. I thought Mr. Anderson -- I do have questions.

HEARING OFFICER KRAMER: Okay. I did not see him. So go ahead, Mr. Anderson.

MR. ANDERSON: My name is Dick Anderson, and I've worked as a wildlife biologist for over 30 years. Almost

all of it involves around energy development of some kind, a number of projects throughout the state, a number of them in the desert. In fact, I worked on the first solar project that we ever licensed called Solar 100 back in the early '80s. I bet nobody remembers that. We never built it. But we got a license for it. And we also got some compensation land that you probably have to deal with.

Anyhow, we went out and did our survey on the 15th of August on the I-15 corridor in the proposed project site and the 16th, the following day, at the private land site. We did a rather informal reconnaissance survey, and we essentially looked at habitat quality or habitat assessment, a time of the year when tortoises aren't out and about so we didn't expect to see any.

We traveled throughout the site. We stopped numerous times, probably -- I don't know, 30, 40 times. Walked around, looked for animal sign, looked for tortoise sign. Looked for any sign. I was impressed with the project site and I was impressed with the I-15 site. They both are good quality habitat, high quality habitat.

There was evidence of late grazing. Saw a few cattle.

There was an area down along as one thing I want to point out which already has been emphasized is that we

didn't go closer than about 100 -- a thousand feet to the freeway, because the way we looked at the site, there was some other things that were possibly going to be built there. There was a right-of-way or something. So the project couldn't be built that close. We looked at and documented a lot of things and built a little chart to compare the sites.

We looked at things like micro relief of topography, things that are important to tortoises and small mammals. Soil texture, dominant shrub cover, ground cover, the types of things that are cover that tortoises look for for their food and just quality surrounding habitat.

The results of the study were that habitat was high quality throughout. There were areas of disturbance. And one of those areas was -- down along the freeway area, there's a coral. And there's probably five or ten acres of land that's pretty beaten there. That was about as close as we came to the freeway. I think it was on the edge of what we consider the I-15 site.

As we moved up in elevation, we got greater diversity in our plants and the habitat was just seemed to be higher quality and better. And that's both on the existing site and as we move towards Nipton Road elevation went up on the I-15 site. So that's really fine examples

of habitat on both the I-15 site and the proposed project site.

We were aware of the effect highways have on tortoises and that the effect diminishes as you move inland.

We also found there was a lower diversity of plants as we move to lower elevations towards the golf course, for example.

And as Ms. Sander said, I don't know if she used a number but after you get below about 2800 feet in that location becomes more or less undercover. And there's areas there within both project sites that we consider of lesser -- not necessarily lesser quality, but lesser potential for tortoises.

Again, we didn't see any tortoises. We didn't expect to. Tortoises were not out that time of the year. And then I wanted to say one or two things about -- so what I found was that there really was no substantial difference between either of the sites, the proposed project site or the I-15 site. And although I didn't write the rebuttal testimony that Mr. Cashen was referring to, I did read his study. And I have concerns similar to Dr. Sanders and that is that I think that the habitat that was surveyed could have been more represented and should have been randomly selected for one thing. That would

eliminate the bias and allow him to do a statistical analysis that he talked about.

Also I also believe that I think there were two transects done in the I-15 and two transects done in the proposed site. One area that was surveyed in the I-15 site was right along the freeway where we would all expect to find fewer tortoises. So that alone discredited the study a little bit. However, I agree that although I found that neither site was that much better than the other, there could be merit to developing closer to the road or some portions of both of the projects that are in the lower elevation habitat.

And that's all I'll say right now.

MS. CHAINEY-DAVIS: Would you like me to talk about the plants?

My name is Carolyn Chainey-Davis. I'm a botanist. I have 23 years of experience conducting botanical inventories and impact analyses habitat assessments --

HEARING OFFICER KRAMER: I think you've already summarized your qualifications for us.

MS. CHAINEY-DAVIS: Oh, I didn't, but that's --

HEARING OFFICER KRAMER: Oh, you didn't through your earlier testimony?

MS. CHAINEY-DAVIS: Nope.

HEARING OFFICER KRAMER: Then go ahead.

MS. CHAINEY-DAVIS: Would you like me to just cut to the chase?

HEARING OFFICER KRAMER: I just didn't want you to repeat yourself.

MS. CHAINEY-DAVIS: Oh, no. I've been working a long time. I've -- to summarize it quickly, I've probably done 4 or 500 projects in that 23 years. I've got a lot of work under my belt and was the lead botanist on most of those projects and lead writer on most of those. Many of those were projects that were subject to a lot of agency review and review by conservation groups, et cetera, and worked on a lot of Furky (phonetic) licensing projects up and down the Sierra, a lot of re-licensing projects all over the state, transmission and for -- but, you know, I also have a decade in working on revegetation projects, designing -- I've written a lot of mitigation plans. I've done a lot of sampling, blah, blah, blah. Anyway, let me just cut to the chase. It's late.

There was a problem with Scott's sampling along the highway. I don't need to repeat that. We couldn't push obviously if they could build a solar field along a narrow strip along the highway, that would significantly reduce the impacts to rare plants and desert tortoise, but we can't do that. It's not feasible. So what we were

looking at was like a 4,000 acre alternative and that I think Susan had up on the screen. It could not get any closer than give or take a thousand feet because of the port of entry right-of-way and then Caltrans, et cetera, and all those other right of ways.

So anyway, that alternative, it runs -- it follows a transect from top-notch habitat near Nipton exit at about -- I can't remember now -- 3,800 feet elevation and follows the highway. The highway is not the topgraphic low position in the landscape. That's where a lot of the confusion comes from. There's assumptions made here and there that the highway's the low point, but it's not. It follows the hill. It starts at the top of the hill at Nipton and follows the slope down into the playa and across the valley floor and out playa and you don't hit the low elevation until you get up to the golf course. That's the topographic low position.

And hey -- hey, you two. Figure six, the contour map. You know, the contour one.

Anyway, so what we found is as you follow a transit from the high elevation down to the low elevation is that there is a change. There is a transition in the habitat at about somewhere between 2700 and 2800 feet where the habitat no longer resembles the habitat that support rare plants.

This was the best of all possible worlds for doing a habitat assessment for rare plants, because it had not just a couple of remote reference populations to go visit. There was literally hundreds of rare plant occurrences immediately adjacent to the alternative that we could navigate to and get a direct take search image and take on what kind of general and micro-habitat conditions supported rare plants in that valley.

So what I was looking at -- I mean, that's what you do when you do a rare plants habitat assessment. You don't run a transect. The transect, that kind of detail, you use that to characterize vegetation types or to establish baselines for future comparison.

But when you're looking for rare plant habitat and you go to a reference population, you gain a search image and then you go back to your target site and you figure on well, does it have these conditions. The kind of conditions that you look for, it's not just the habitat type. And it's definitely not plant density. It's things you're looking for for a lot of rare plants is soil types, soil textures, washes and other topographic features like that, rocky interfuses, sandy washes, sandy substrates. And then, you know, indicators in the plant community like high diversity. Most of these rare plants occurrence were associated with really high cactus and succulent

diversity. It was really nice habitat.

And so that's the kind of things we're looking for. And those are the kind of thing I was looking for in the I-15 alternative, and there is a good 3,000 acres of top-notch habitat in the I-15 alternative for rare plants. It's a bummer. But it is what it is. There is really good habitat there and the southern two-thirds of the I-15 alternative. Below there as you start to climb down the valley the ephemeral washes, they start to abate in the landscape. You lose all that nice micro-topography. It's not rocky anymore. The soils are fine texture. It's definitely saltier and maybe not as well drained. It flattens out and it gets sparse and low diversity. And the cactus just disappear. And so then it no longer resembles the habitat that supports hundreds of rare plants on the project site next door.

So there is a portion in the northern third of the I-15 alternative below about, you know, give or take 2800 feet, there's about 1500 acres there of habitat that is less than likely that is no longer resembles the good stuff that supports the rare plants. You can't rule out the possibility that some new plant would occur there that they had not found in their surveys and for which we had no reference population. Those things happen. But this was a habitat assessment. It was August, the alternative

idea concept came to us late in the season. We had a report to put out. And so we went out, did a habitat assessment, and that's what we found. End of story.

MS. LEE: One thing I wanted to adjust to kind of wrap up is that you can tell from the summary from our two biologists, there was a fair amount of study, not a lot of field time, but a lot of analysis of what was in the field. This is all the siting dates that I've worked on in the ten years I've been here. The first time we had a field assessment of an alternative site, we took this alternative very seriously. And we did a lot of study on it to make sure we really understood what was there and feel very comfortable in our assessment.

As both Carolyn and Dick said, that northern segment has lower habitat value as does portions of the proposed project.

The proposed project isn't uniformly great habitat, but one whole segment, Ivanpah 2 in the middle, has almost two rare plants. So like that project, this one has areas better suitable for a power plant.

But overall it was very comparable. It has a lot of good quality and a smaller area of poor quality habitat. And we took a lot of time to make sure we had that assessment.

MS. CHAINEY-DAVIS: We also did an assessment of

private lands alternative as well. And that one had -- that one was great for minimizing impacts to biological resources. It had other issues. But just speaking for plants and I think we had the same conclusions on tortoise, there was no comparison.

The I-15 site was good habitat and the private lands alternative was junky disturbed habitat with low potential to support rare species.

HEARING OFFICER KRAMER: Mr. Harris, did you want to make some inquiries of your --

MR. HARRIS: Yeah. I actually have some inquiries for the witness. Could we have the lights back up? And maybe I need to put a poster board over there in a second. If it takes that off the screen that would be helpful. I asked Ms. Lee to help me out, and then I have a question for her to start with.

CROSS-EXAMINATION

BY MR. HARRIS:

Q Susan, can you turn to the FSA at the bottom of page 2 -- 4-2 and the top of 4-3. Do you see that paragraph? This is the FSA, it's the paragraph that starts with 23 alternatives to the project have been developed and evaluated. Do you see that paragraph?

A Yes.

Q There's some language in -- I'm going to go back to my

notes probably about six lines down that says BLM has reviewed this analysis of alternatives and determined that none of the alternative locations or technologies analyzed would meet the purpose of need and the proposed action and therefore these alternatives have been eliminated from further consideration by BLM.

That language, eliminated further consideration, jumped out the first time I read this. And then I looked at your document and I see, you know, 38 pages on Siberia, 30 pages on Broadwell, 24 pages on private land. These are all ones that were eliminated from further consideration. And so rhetorically, I wonder -- my question to you is do you wish to phrase that differently?

A That's the problem I was trying to explain in the introduction. It's probably not very clear. But it was the challenge of this being the first document that's a joint document between the Energy Commission and BLM. Both agencies going into it with a history of very different separate documents and trying to come up with something that met their criteria.

And again had this been a CEQA document only, we would have retained in a different category but not with a different level of analysis the four site alternatives that I mentioned before and BLM would not have. That is just their approach. So there was layered into this

section which is mainly a similar document to what we normally would do for an FSA some sections that explain BLM's perspective which is that those alternatives are not carried forward in their analysis for consideration as alternative sites. But the analysis here is every bit as detailed as we normally would do. And in fact, much more detail as we've been discussing here on I-15 than we normally would do for CEQA only alternatives analysis.

Does that answer your question?

Q Yeah. I think the 38 pages on Siberia and 40 on Broadwell, in my mind, that's a very, very detailed alternative analysis, don't you agree?

A That's, in fact, what BLM said as well.

Q And that would be my example from cross. People wondering about that concept.

I have a few questions for Mr. Cashen. And I know we're getting late and I'm losing people's interest and I don't want people mad, so let me get these those if I can.

Mr. Cashen, I want to understand the vernacular here. There is a lot of confusion about the Sierra Club alternative and the I-15 alternative. I understood your testimony to be a criticism of the staff's I-15 alternative. Is your testimony actually about just the I-15 alternative?

A The testimony that I presented was just about the I-15 alternative.

Q So is there a Sierra Club alternative that's separate and distinct from the I-5 alternative?

A My understanding is that the terms I-15 alternative and the Sierra Club alternative have been interchanged. But my understanding is that the Sierra Club never provided a map with actual boundaries of the proposed relocation site of the project.

Q I think maybe that's the basis for my confusion. It's not clear to me whether you're promoting an alternative or rebutting an alternative. What's the purpose of your written testimony?

A The purpose of my written testimony was to provide the facts that are available on the impacts of roads and other sources of human disturbances, such as golf courses or other developed areas, on desert tortoise populations as well as the methods and results of my field study and the literature that is available on the special status species of concern and my conclusions based on the literature of the impacts of the proposed project site and the alternative site on those target species.

Q It's still a little hazy for me, but maybe it will develop as we talk here.

Let me change subjects a little bit. On page 9,

you talk about your field survey methods and you say, "Our field survey methods replicate those performed by the applicants consultant at the project site and those recommended in the U.S. Fish and Wildlife pro golf surveys." Those surveys though were not conducted in season; isn't that correct?

A I was up in December is when we conducted our study.

Q To your understanding, is that the season for U.S. Fish and Wildlife protocol surveys?

A No, that is not. But I was not surveying for live tortoises. I was surveying for tortoise borrows.

Q Okay. And the reason my experts got excited is you said you replicated their methodology and they were out there when it was hot. So they were a little excited about that, that characterization, so I wanted to clarify the record on that.

Mr. Cashen, I put over here what is an exhibit. I'm actually going to want you to draw on that exhibit for us. So maybe it's best if you go to the stand over here where there is a microphone.

And, Mr. Petty, I don't know if I'm going to screw you up.

But I would like you to be able to put some marks on this map. The map is exhibit 69 as previously identified. And if we can turn off the overhead

projector, that will help.

MS. SMITH: Who's 69?

MR. HARRIS: It's our witness 69. It's a visual resource impact map. I just wanted a map that shows the area. And I didn't want a new exhibit to create confusion about whether it had been pre-filed and what have you. This exhibit has been already moved into evidence as a visual resource map.

MS. SMITH: Can I ask you what it is you're going to be asking him to do?

MR. HARRIS: Stay tuned.

MS. SMITH: But we've already submitted a map that depicts his actual sites.

MR. HARRIS: I have a few questions. And if he can't answer them, he can say I can't answer them.

Can you provide him with marking pens, please?

Again, this is exhibit 69 that was previously identified and that's a visual resources map. And I'd like the Committee to be able to see it, so if we can turn it a little more towards the Committee and away from the intervenors, that will be fine.

MS. SMITH: Mr. Cashen, have you ever seen this map before?

MR. HARRIS: I believe I've still got direct going here, but he can answer.

MR. CASHEN: No.

MR. HARRIS: Well, are you going to make your objections and he can say if he doesn't answer.

BY MR. HARRIS:

Q So you state in your testimony that you walked 87 miles of transect within the I-15 alternative and 54 miles in the proposed site.

Can you mark with a black pen where the I-5 alternative is on this map? I-15. What did I say? I-5? Just approximately what's the location of the I-15 alternative?

MS. SMITH: I'm going to raise an objection here. We've already got maps that depict all these things. It's 9:30 at night and he's asking you to recreate a new map. And we've already got maps that depicts all this stuff. He's not an artist, nor is he a geographer.

MR. HARRIS: If he -- my handwriting is horrible. I'm not going to grade his handwriting. If he can't do it, he can say he can't do it. But that's fine.

Can you mark the approximate boundaries --

MS. SMITH: Can I get a ruling on my objection?

HEARING OFFICER KRAMER: It's overruled. We're trying to have an informal discussion.

Mr. Harris, it might help if you explained where you're going.

MS. SMITH: Yeah. You're putting my guy up on display here.

MR. HARRIS: I just want to ask him to mark a few features on the map and it will take two seconds. I'd have been done by now without the interruptions. I'd just like him to mark the I-15 alternative on the map if you can.

MR. CASHEN: I'm going to charge you if I get this pen on my suit.

MR. HARRIS: If you do a good job on the map, I'll buy you a suit.

STAFF COUNSEL RATLIFF: I can't take the suspense.

MR. HARRIS: Okay.

MR. CASHEN: Not to scale.

MR. HARRIS: Not too shabby either. Thank you very much.

BY MR. HARRIS:

Q On your testimony on page 20 you said, "The southern portion of the alternative site (i.e. near Nipton Road) possesses an extremely high diversity and abundance of plants and wildlife resources and should be avoided by the project."

Would you now use the red pen, if you would. And will you -- sorry. We have to provide you with the red

pen. Would you now mark what are you talking about as the southern portion of the alternative that possesses extremely high diversity and abundance of plant life and wildlife resources and should be avoided by the project? And if you just want to draw a line wherever you think that is --

A I can have a real easy answer to this. I'm not comfortable marking on the map. My field investigation was not designed to determine where the boundary should be.

As I mentioned in my testimony, there is a tremendous amount of resource near Nipton Road. There is a gradient coming down. And at least my observations and Jim Cornett's observations was that there is a gradient. And as you get further away from the mountains, that plant diversity, both structural and species diversity, begins to take route. So without conducting a detailed field investigation of what resources are in that area, I would not feel comfortable marking a line on this map.

Q So I guess in the workshop setting I thought there would have been a geographical feature in the Clark Mountains that had been identified by Ms. Smith as sort of where the line was, where that was, the no-fly zone if you will down there in the southern portion. I want to know if you can give me a general idea of what area down there

we should avoid? Is it the very bottom of that apex down there?

A There aren't any contour lines on this map.

Q Okay. So how should the Committee implement your direction portion of the alternative which possesses extremely high abundant plant life should be avoided? How do they implement that recommendation?

A Are you asking for my recommendation?

Q Your testimony contains a recommendation on page 20. Would you like to take a look at your testimony again to refresh your memory about that recommendation?

A No, I'm familiar with my testimony.

Q So my question to you -- I thought it would be easy just to draw a line on the map. But my question to you, if you can't draw a line on the map, is what direction can you provide the Committee as to how far south you need to avoid to avoid this wonderful habitat you described -- I'm sorry for the pejorative -- for the habitat you described on page 20?

A I would recommend a little bit more of a field investigation to determine to quantify the resources that are present in that area.

I think it's also somewhat a management decision based on the species of concern. And as we had quite a bit of talk today about plants and the many oral of the

plants of concern in the area require focus surveys and I was not out there at the time when those plants are available -- or are identifiable. Excuse me. So if the plants are of concern then surveys to try to identify plant resources in that area that would be necessary.

And, similarly, there were concerns about desert tortoise and there was the potential to put the project in that area. I assume that desert tortoise surveys would be necessary.

Q Okay. So you're going to decline to draw a line on the map. I accept that. Thank you.

Can you mark the transect approximately where your volunteers walked? Using the red pen, please.

MS. SMITH: We already have an exhibit that depicts that much more accurately than Scott would be able to drawn on that map I would venture to argue. And that's Figure 4.

MR. HARRIS: Figure 604. He can use it for reference if he'd like to use it to draw on the map. But it says boundaries are indicated in red may be inexact due to manual entry. So you drew it apparently on 604. I'm just asking you to draw it.

MS. SMITH: I object to him drawing on the map. Everyone can turn to that page and we can all sing along from the same sheet.

MR. HARRIS: I would just like him to --

MR. BASOFIN: Mr. Kramer, I think in addition that would be considered cumulative evidence if he's --

MR. HARRIS: Clearly, they don't like this line of questioning, but I'm going to try to get through it. I have two more questions.

MS. SMITH: It's not that I dislike it or like it. Why are we drawing maps when we already have ones that he painstakingly put together? I feel like you're -- this is a very insulting aspect to it.

HEARING OFFICER KRAMER: Well, I certainly don't see the insult.

MS. SMITH: All right. Then I withdraw that.

MR. HARRIS: I'll tell you exactly where I'm going. I'd like him to draw where his transects are. I'd like him to draw the point of entry. And I'd like him to mark the areas within the Ivanpah site that he surveyed.

HEARING OFFICER KRAMER: Objection is overruled.

MR. HARRIS: So the transects that were walked by the volunteers --

STAFF COUNSEL RATLIFF: You can lead a witness to the board, but you can't make them draw.

MR. CASHEN: All right. Just to be clear, you mentioned a certain number of miles and I think it was 67 and 85 miles. And I had eight people talking. And each

person walked a transect line. And if we do the math, that's a lot of lines. So are you asking me to draw the boundaries of the areas surveyed with the transects?

MR. HARRIS: Correct.

MR. CASHEN: Or do you want me to draw each individual transect line?

MR. HARRIS: The area is fine, because the map is not fine enough scale I'm sure for you.

MR. CASHEN: Okay.

MR. HARRIS: Thank you.

STAFF COUNSEL RATLIFF: Point of order, Mr. Kramer. I'd like to suggest you order all the lawyers to leave the room. We all go outside and play Russian Roulette and you can conduct an informal hearing in our absence.

MS. SMITH: I second that motion.

COMMISSIONER BYRON: However, we only have one bullet.

MR. CASHEN: Maybe somebody from whoever made this map could show me where the coral is. That would be helpful.

(Thereupon Dr. Spaulding joined Mr. Cashen at the map.)

MS. BELENKY: I'd like the record to show Mr. Spaulding is helping him draw the map. So maybe your

group could have drawn the map to begin with.

DR. SPAULDING: I limited my actions to just placing the coral.

MS. BELENKY: I think this is ridiculous. And I also object because it's 9:30 at night. This is not informal hearing. If you wanted a map with composite things on it, he has plenty of GIS people at his disposal to have made this map. I find this whole line of questioning objectionable.

MR. HARRIS: Maybe we can cut this off. I've asked for the GPS coordinates and unit a week ago, and I still don't have that information. So I don't have anything I can present at this hearing in this regard.

If we with have an agreement to provide that information -- that's the information we requested of the field notes a week ago. That's why I'm doing this. If you can provide me the field notes, I will stop.

MS. SMITH: Okay. Can we just review the bidding here real quickly?

You can ask for his field notes as soon as he submitted his testimony. He was out in the field. We can do a declaration. The man has been in the field for the last week, and you asked for his notes while he was in the field. I contacted him while he's in the field. Said I'd get his notes when he gets back. He's here right now.

The man hasn't even been home in a week.

MR. HARRIS: I know.

MS. SMITH: As soon as he gets home, he'll get you his notes.

MR. HARRIS: Mr. Cashen, go ahead and stop. Obviously, I've upset your attorney.

I want to be clear that the reason I asked for this is because we weren't able to lay on top of your 604 his GPS coordinates. And if you will give me an opportunity to get the GPS coordinates and lay it upon his 604 and have it entered -- I want to go home, too.

MS. SMITH: As I promised you today off the record, he would do that when he got home. He promised you that. We could have avoided all of this. He promised you that. He hasn't been home.

HEARING OFFICER KRAMER: So, Mr. Harris, you're producing an exhibit that combines the base map with his notes?

MR. HARRIS: Correct. And I apologize to the witness if somebody agrees this was humiliating. I really want something I can put in the record. And if the answer is shut up, Jeff, we'll get you the coordinates and you can put your map on the record, I'm pleased to go home.

HEARING OFFICER KRAMER: Is that a fair phrase of your --

MS. SMITH: As I stated earlier and as Scott stated earlier, absolutely. We resolved this earlier today.

MR. HARRIS: We did not resolve one thing. Are you going to object when I want that document moved into evidence? Are you going to insist that we have cross-examination on that? Because I need a document in the record.

MS. SMITH: His field notes. You can have his field notes.

MR. HARRIS: And can I have a document that we're going to produce based upon his GPS coordinates into the record without objection?

MS. SMITH: This is ridiculous.

STAFF COUNSEL RATLIFF: I think there is a supposition here that the Committee was going to look with great eagerness towards the things we're talking about. But I don't think they're ever going to look at --

MR. HARRIS: The applicant is. The applicant wants to know where he walked.

STAFF COUNSEL RATLIFF: We have 30 minutes left probably before we're done and --

MR. HARRIS: That's all he want to know. We just want to confirm where he walked.

HEARING OFFICER KRAMER: We need to end this and

move on.

MR. HARRIS: Please.

HEARING OFFICER KRAMER: Do we have any objection to the principle subject to the ability to point new mistakes that you find in Mr. Harris compilation? Do we have any objection to receiving that compilation into evidence and it will be at some point after Thursday I assume.

MR. HARRIS: My GPS -- my GIS guys hate me right now so --

HEARING OFFICER KRAMER: You probably won't get the data from Mr. Cashen until then anyway.

Is there any objection to that document coming into evidence?

MR. HARRIS: And I'll be clear. We're going to provide the document and we'll also provide a description of the methodology used that develop that document.

MR. BASOFIN: I'm not objecting to that. I just want to point out that we haven't even seen that document. Don't know what it looks like.

MS. SMITH: I don't even know that -- you know, Mr. Cashen hasn't had a chance to assemble his notes. We haven't had this conversation. We're not trying to hide anything. The first thing I did was cc him on this e-mail. We are open to full disclosure here. I'm

certainly not trying to hide anything for Pete's sake.

HEARING OFFICER KRAMER: Okay. Go off the minute and the Committee is going to converse here.

(Thereupon the Committee went off record at 9:30 p.m. and resumed at 9:30 p.m.)

HEARING OFFICER KRAMER: So we're planning on closing down for the evening right now. It will help everyone to decompress.

But, Ms. Smith, do you need the overnight time to consult Mr. Cashen about whether -- or are you going to agree that Mr. Harris can -- once he gets the data, compile the document, circulate it to everyone, and that it will be admitted into evidence with the ability for the other parties if they feel the need to provide comments about any inaccuracies they find in Mr. Harris comments?

MS. SMITH: And, Mr. Cashen, how long do you think it will take to you compile that information?

MR. CASHEN: What I thought we had agreed to was that I would provide the start and end points of the transect line; is that correct?

MR. CARRIER: That's fine.

HEARING OFFICER KRAMER: Did you say it was --

MR. HARRIS: Mr. Carrier says that's fine, so that's fine.

MS. SMITH: That's fine.

HEARING OFFICER KRAMER: Okay.

STAFF COUNSEL RATLIFF: Is it possible to finish this panel tonight or do we have to bring them --

MR. HARRIS: I'm done. I'm absolutely done. I'm fully satisfied and I'm apologetic for again to Mr. Cashen if that was demeaning. It was not intended to be. I wanted documentary evidence, and I apologize to everybody.

HEARING OFFICER KRAMER: Well, Mr. Ratliff, if you estimated another 30 minutes a minute ago, do you --

STAFF COUNSEL RATLIFF: Yeah, I think so. I mean, I don't know. These things -- one thing leads to another.

HEARING OFFICER KRAMER: Well, maybe the Committee would like to recess.

STAFF COUNSEL RATLIFF: And we have talked about a lot of things in the alternatives testimony that we haven't touched, and some of those things are important. I mean, we've talked about -- in that testimony is a reduced acreage alternative and a number of other concepts which any number of the witnesses may want to talk about and we didn't really introduce. If we neglect to talk about it at all, I think maybe the Committee misses a picture that is important. If we talk about it now, perhaps there's not enough time. I don't know.

HEARING OFFICER KRAMER: We're not proposing to

enter discussion. We're proposing to end further discussions this evening, if you know what I mean. So we will continue the discussions.

Let me ask the parties. The rest of Mr. Harris' panel will be with us on Thursday. Would it be more appropriate to carry over until then? That may be a hardship for Mr. Cashen. And it may be the case that we have finished the panel. Does anybody wish to ask him any more questions about alternatives? And he could, of course, reappear by telephone as well.

MS. SMITH: Well, just as a matter of clarification because I had some questions for staff in relationship to the I-15 alternative. I don't know if we need Mr. Cashen. It may generate more discussion. But I do have a few questions for staff.

HEARING OFFICER KRAMER: Well, again, we're not cutting off -- we're not closing the topic. We're just shutting down for the evening.

MS. SMITH: Just to try to figure out when we convene on this topic again, I think we're fine with Thursday.

HEARING OFFICER KRAMER: Okay.

MR. BASOFIN: Mr. Kramer, I have a series of questions for staff as well. I guess my preference would be to do it tomorrow morning because I think we break up

if we break it up too much by doing it Thursday, tomorrow afternoon. I think we lose something in the interim, the momentum of the panel.

HEARING OFFICER KRAMER: Well, actually, downhill is what strikes me.

(Laughter)

HEARING OFFICER KRAMER: So I sense a nod in my peripheral vision. So let's pick this up on Thursday.

MR. CONNOR: Mr. Kramer, could I ask you a question?

HEARING OFFICER KRAMER: Mr. Connor.

MR. CONNOR: I have to leave tomorrow morning. So I could certainly be available on telephone on Thursday, but I do have some questions I'd like to ask the staff.

HEARING OFFICER KRAMER: Well, you can do that on Thursday via telephone.

MR. CONNOR: I just want to make sure I can do that.

HEARING OFFICER KRAMER: So unless there's some other issue we need to address, we can --

VICE CHAIRPERSON BOYD: Summarize together.

HEARING OFFICER KRAMER: Tomorrow will be air quality. And then we'll try to get through the remaining topics beside the alternatives. So among other things,

the combined discussion of soil and water and reliability, these were identified as conjoined topics. And then there are a couple of other topics where there might have been a few questions from one party or another.

MS. BELENKY: We just have the outstanding issue of the project description. They were going to try to find someone from --

HEARING OFFICER KRAMER: Mr. De Young.

MR. DE YOUNG: Yoel Golin is available up to 3:00 tomorrow and on Thursday. That's pushing it for him.

HEARING OFFICER KRAMER: Maybe we set an alarm clock tomorrow and call him.

You also know somewhere in the range of 2:00 in the afternoon the Commissioners have the reception for Commissioner Rosenfield retiring. And we'll be adjourning for roughly 15 or 20 minutes to go up and pay our respects and celebrate his career at the Commission. You're welcome to come along, but there will be a bit of a break then.

So with that, we're adjourned for the evening.

(Whereupon, at 9:36 p.m., the hearing was adjourned.)

CERTIFICATE OF REPORTER

I, TIFFANY C. KRAFT, a Certified Shorthand Reporter of the State of California, and Registered Professional Reporter, do hereby certify:

That I am a disinterested person herein; that the foregoing hearing was reported in shorthand by me, Tiffany C. Kraft, a Certified Shorthand Reporter of the State of California, and thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of February, 2010.

TIFFANY C. KRAFT, CSR, RPR
Certified Shorthand Reporter
License No. 12277