BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

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| IN THE MATTER OF THE APPLICATION OF HASHKNIFE ENERGY CENTER LLC, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES 40-360, ET SEQ., FOR CERTIFICATES OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING THE HASHKNIFE ENERGY CENTER GEN-TIE PROJECT, WHICH INCLUDES THE CONSTRUCTION OF A NEW 500 KV TRANSMISSION LINE AND ASSOCIATED FACILITIES INTERCONNECTING WITH THE EXISTING APS 500 KV CHOLLA SUBSTATION IN NAVAJO COUNTY, ARIZONA. | DOCKET NO. L-21126A-20-0300-00187<br><br>CASE NO. 187 |

At: Flagstaff, Arizona

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BE IT REMEMBERED that the above-entitled and numbered matter came on regularly to be heard before the Arizona Power Plant and Transmission Line Siting Committee at the High Country Conference Center, 201 West Butler Avenue, Flagstaff, Arizona, commencing at 9:11 a.m. on the 17th of November, 2020.

BEFORE: THOMAS K. CHENAL, Chairman

LEONARD DRAGO, Department of Environmental Quality
JOHN RIGGINS, Arizona Department of Water Resources
PATRICIA NOLAND, Public Member (Videoconference)
JACK HAENICHEN, Public Member
MARY HAMWAY, Cities and Towns (Videoconference)
ZACHARY BRANUM, Arizona Corporation Commission (Videoconference)
JAMES PALMER, Agriculture
KARL GENTLES, Public Member (Videoconference)

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and

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CHMN. CHENAL: Good morning, everyone. This is the time set for the resumption of the Hashknife CEC hearing.

I see we have our live Committee Members, and could we -- could the Committee Members appearing by video announce themselves, please?

(No response.)

CHMN. CHENAL: Member Hamway, I believe, is on. She's muted.

I want to make sure who the Committee Members are that are appearing via Zoom.

Member Gentles.

MEMBER GENTLES: Here.

CHMN. CHENAL: Okay. Member Hamway.

MEMBER HAMWAY: Yes.

CHMN. CHENAL: Okay. And Member Branum.

MEMBER BRANUM: Present.

CHMN. CHENAL: Okay, good. Thank you very much.

Let's give just one moment for Member Noland to get her system set up. Because of the limitation of the number of people allowed in the room, she's in a separate room today.

MEMBER NOLAND: I'm good.

CHMN. CHENAL: Okay, she's good. Very good.

Okay. So are there any housekeeping items we need to address before we resume with your next witness, Mr. Acken?

MR. ACKEN: Mr. Chairman, no. Thank you. We're ready to proceed.

CHMN. CHENAL: Okay. Ms. Benally, any housekeeping items?

MS. BENALLY: Good morning, Chair. Linda Benally with APS.

The only remark I'd like to make is Mr. Derstine, Matt Derstine, co-counsel, has a conflict today and will not be participating in the hearing for a good portion of the day. Thank you.

CHMN. CHENAL: Okay, noted. Thank you.

All right. Mr. Acken, shall we proceed with your next witness?

MR. ACKEN: Thank you, Mr. Chair. The applicant calls Derek Holscher.

MR. HOLSCHER: Good morning.

CHMN. CHENAL: Good morning, Mr. Holscher. When you're set up, let me know, and we'll swear you in.

MR. HOLSCHER: Good to go. Thank you.

CHMN. CHENAL: Do you prefer an oath or an affirmation?

MR. HOLSCHER: Oath is good.

CHMN. CHENAL: All right. Would you raise your right hand.

(Derek Holscher was duly sworn by the Chairman.)

CHMN. CHENAL: Thank you very much.

DEREK HOLSCHER,

called as a witness on behalf of the Applicant, having been previously sworn by the Chairman to speak the truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ACKEN:

Q. Please state your name and business address for the record.

A. My name is Derek Holscher. Business address is 9785 Maroon Circle, Suite 300, Centennial, Colorado 80112.

Q. By whom are you employed and in what capacity?

A. I'm employed by Burns & McDonnell, an engineering consulting firm. I'm employed as an environmental project manager in our environmental

services group.

Q. And what was your role in the development of the CEC application?

A. I assisted with the preparation of the CEC application, including the executive summary, as well as Exhibits A, F, G, H, and J. I also assisted with the public outreach efforts, in particular the public open house meeting that took place last year.

Q. Next, provide an overview of your educational and professional background.

A. I have a bachelor's of science degree from the Metropolitan State University in Denver in land use. I've also got nearly 20 years' experience in the utility industry, primarily focused on the permitting and siting for utility facilities, including substations and transmission lines, as well as acquiring the appropriate land rights for those facilities. I've also previously provided expert witness testimony in Colorado for a new 345 kV substation and transmission line.

Q. Let's start off with land use. Where can your analysis be found in the application?

A. The bulk of the analysis is included in Exhibit A; however, there are brief discussions in Exhibit F that relate to recreation opportunities and

then also Exhibit H regarding existing plans.

Q. Describe the analysis you conducted to evaluate the potential effects of the project on existing and planned land uses.

A. Yes. We conducted a land use inventory that was completed to identify the existing and planned land uses within the project area. The methods that we used for this inventory included field verification and review, as well as interpreting various types of aerial imagery, mapping, as well as comprehensive plans and general plans. In addition, we did do some coordination and communication with Navajo County in order to determine what existing and planned developments might be within the proposed project area.

Q. What existing land uses are present in the project area?

A. The existing land uses within the areas of the preferred and alternative transmission route -- excuse me -- line routes are mapped here on Figure A-2, which is in the CEC application under Exhibit A. The main types of existing land uses that we identified were industrial, utilities, rangeland, transportation, and vacant land. Overall, the project vicinity consists primarily of land use for ranching, with a lot of existing utility infrastructure as well. Industrial

and utility development is clustered around the APS Cholla power plant, which is the terminus point for both the alternative and the preferred transmission line routes.

We can talk a little bit about some of these existing land uses in a little bit more detail; in particular, the industrial. As you can see --

The battery is running out on the laser here. There we go. It's coming through now.

The APS Cholla power plant there is just located southeast of Joseph City. We have the proposed transmission line route shown in blue, the alternative route shown in orange.

And then we also have various existing transmission line corridors that bisect the project area of varying voltages. We have the 500 kV shown in red, the 345 shown in green, and then we also have a 230 kV line coming in from the north.

Next on the list, we had rangeland. As we mentioned earlier, ranching is the principal use for most of the land within the project area, which is predominantly owned by the Aztec Land & Cattle Company and leased for grazing activities.

Next, we have transportation. You can see I40 travels east/west across the northern part of the

project area. In addition, we have the Burlington Northern Santa Fe railroad that follows I40 essentially along the south side, including a stop at the APS Cholla power plant.

And then lastly, we have vacant land. It's a little apparent here on the map that there are numerous undeveloped tracts of vacant land throughout the project area that are either State owned, publicly, or privately owned.

Q. And before we shift to future land uses, if you would -- Member Riggins had a question yesterday about water infrastructure in the area, and I think this is probably a good slide to highlight the existing water infrastructure and perhaps address his questions.

A. Great. Yeah, thank you for reminding me on that piece and thank you for the question yesterday.

We kind of have them shown here. The blue dots represent existing water wells or water tanks, and then the blue lines that connect those are the water pipelines. So the majority of the wells and the pipelines are outside of the solar facility boundary, so they shouldn't have much of an impact with the transmission line, as the structure placements for the line can avoid those wells and adhere to any clearance requirements that are needed for those wells.

There are two wells that are located on the solar -- within the solar boundaries, I should say. I've been told that once the engineering and the design of the solar facility gets under way, those can be taken into account and worked around, essentially. They can still remain in place throughout the operation of the facilities there.

CHMN. CHENAL: Yes, Member Riggins.

MEMBER RIGGINS: Thank you.

And thank you for addressing those questions. Just quickly, when I was looking at A-2, the water pipeline, is that buried or is that aboveground or is it both?

MR. HOLSCHER: From what we've been able to surmise, all of it is underground.

MEMBER RIGGINS: And those feed the -- the wells and the water tanks, does that feed stock tanks that are in the area?

MR. HOLSCHER: I believe it's a combination of some of the -- for the uses of the -- I'm sorry -- the rangeland out there. So they're assumed to be owned by the landowner out there for the operations that they conduct on their property.

MEMBER RIGGINS: Okay. Thank you, and thank you for addressing those questions.

MR. HOLSCHER: You're welcome.

BY MR. ACKEN:

Q. Next, let's talk about planned uses in the area of the project.

CHMN. CHENAL: Mr. Acken, before we leave that, can we go back to that slide. I just had a couple follow-up questions for Mr. Holscher.

Can you confirm what lines are coming out of or going into the Cholla power plant now? You mentioned the red -- the red lines indicate 500 kV lines coming from Cholla, correct?

MR. HOLSCHER: Correct.

CHMN. CHENAL: Then you mentioned a -- and those are 500 kV. And what other lines are serviced by Cholla?

MR. HOLSCHER: Serviced by Cholla?

CHMN. CHENAL: Or power is coming from Cholla and being transmitted through transmission lines.

MR. HOLSCHER: Okay, sure. Yeah, we have the two different 500 kV lines here that kind of merge here and then head into the power plant. There's also dual 345 kV lines here; there's actually two that run into the plant. And then we also have a 230 kV line that comes north out of the plant. And I believe also there is another 345 here, yeah.

CHMN. CHENAL: Well, that's the one I was kind of curious about. Is that -- is that transmitting power from Cholla to the northeast, or is that just a separate line that's coming from somewhere else and it's just bypassing Cholla or interconnected with Cholla?

MR. HOLSCHER: I believe that interconnects with Cholla as well from a different location.

CHMN. CHENAL: Do you know where that line -- maybe that's for APS. I'm just curious.

MR. SIMPSON: Four Corners.

MR. HOLSCHER: I'm not sure the destination or the terminus for that line. Maybe APS could shed light on that question.

MR. SIMPSON: That connects back to the Four Corners power plant up in New Mexico.

CHMN. CHENAL: All right. Thank you.

MR. HOLSCHER: Thank you.

Okay. Yeah. So moving on to planned land uses within the project area, those are illustrated here on Figure A-3, again, as part of Exhibit A in the CEC application. And the data that was derived for reviewing these uses kind of fell under three different major plans, that being the Navajo County comprehensive plan that was adopted in 2011, we also reviewed the

County's character area maps that was adopted in 2003, and then a pretty hardy document is the Aztec area plan that was adopted by Navajo County in 2011 as well.

Currently, there are no existing developed recreational activities -- or, sorry -- resources within the project area. In addition, there are no known plans for any future recreational opportunities in the area. Therefore, we are determining, at this time, that the project wouldn't have any effects or impact on any future or existing recreational opportunities.

As mentioned yesterday in the testimony, a special use permit application for the proposed solar facility was submitted to Navajo County back in August of 2019. After review, it was determined by the planning and zoning commission, as well as the board of supervisors, that the requirements within the County's comprehensive plan were met with the project and ultimately received approval.

As Ms. Innis mentioned yesterday in her testimony, the application was amended earlier this year and also went back to the planning and zoning commission and the board of supervisors and received approval for the amendment.

The map here kind of shows three major

existing land use types, and this was pulled from the County's character areas map. You can see here the majority of it is rangeland that kind of runs -- this light tan color on the south side of I40. Next, you have the community village, which is this darker brown kind of centered around Joseph City there. And then we have a small section of rural ranch up in the northeast part of the project area.

BY MR. ACKEN:

Q. Provide your conclusions with respect to the project's potential effects on planned and current land uses.

A. Yeah. We kind of think of land use impacts as being divined primarily as restrictions on a land use that would result from construction and operation of the facilities or just straight-up incompatibility with any existing land use plans. Typically, restrictions would consist of right-of-way or easement acquisition across a piece of property.

The preferred transmission line route was -- or, I'm sorry -- the preferred transmission line route was sited to minimize the required distance between the proposed substation and the APS Cholla plant, thus kind of reducing the amount of transmission line that would be required to interconnect the two.

As you can see on the map here, the project area is located on parcels that are within the existing rangeland, and as discussed before, has a lot of industrial and utility development in the area as well. Again, from the map here, the County designates that area as rangeland as well.

The project is consistent also with the comprehensive plan, Section 2.2 in particular, that enables access to solar energy for all character areas within the county, and will co-exist with minimal intrusion on any of the adjacent properties. We believe this goal was further strengthened by the approval of the SUP by Navajo County.

Q. Let's turn to cultural resources, and I'd like you to describe the process that you used to evaluate that.

A. Sure. The cultural resources was kind of broken up into three different phases here. We conducted a Class I records search of all available databases in the state. We also conducted a Class III survey, which is a pedestrian survey on the ground, on two different occasions. And then thirdly, we had tribal consultation.

And I think to address one of the Committee Members' questions yesterday, we did send out a total

of eight different letters to eight different tribes, which included the two tribes that are most closely located to the project area, that being the Navajo Nation and the Hopi tribe. Of those eight letters, we did receive three responses. All three did indicate that the project had no impacts or effects on any of the tribes' known cultural resources. Included in those responses was one from Navajo Nation, and then the other two, I believe, were the San Carlos and the White Mountain Apache tribes.

Q. So what cultural resources are present around the project?

A. After conducting the Class I records search, it indicated that there was, I believe, five -- yes, five known sites within a half a mile of the transmission line corridors.

During the survey, it was noted that the project area has been used and is currently being used as ranching and for grazing; and because of that, the surface visibility was very excellent to conduct the Class III survey.

During the pedestrian survey, a single historic site was identified and recorded. This was what they call an acequia and a wooden bridge. These were constructed around 1943, and actually looked like

they had been used relatively recently; however, it was recommended that this site not be listed on the National Register for historical properties due to the condition. It was in pretty poor condition in that it didn't really add anything to the history of the area.

None of the sites, I believe of the five sites that were noted in the project area, are really unique to the area and are thought to occur quite frequently throughout the local region.

This survey area is noted for having several flooding episodes in the past, I think we touched on that a little bit yesterday, and this is due to the close proximity to the Little Colorado River. The precontact sites that survived these flooding events, that was due to the fact that they were located a little bit higher in elevation and located on some bedrock outcrops, so they were able to survive those flooding events. That, or they were located far enough away from the river that they weren't impacted by these flooding events.

If any of the unknown precontact sites are located within those lower river sands, they are believed to be buried quite deeply. So nothing showed up on the pedestrian survey.

CHMN. CHENAL: Just a quick question just so

the record is clear. One of the pictures on your slide there says, welcome to Obed. Please stay off the stone walls, et cetera. Would you just explain what that is? I know we've had testimony about Obed Road. Just if you could just flesh that out a little.

MR. HOLSCHER: Sure. Yeah, thank you for the question. Those were one of the five sites that were identified in the Class I survey that we did and is located far enough outside of the project area that it wouldn't pose any kind of impact or effect to those during construction of either preferred or the alternative.

CHMN. CHENAL: And what was it, the stone walls?

MR. HOLSCHER: You can kind of see it in the second picture here. This is kind of a gate to a portion of the ranch. And then, yeah, that's just a stone wall that was used for dividing or kind of quartering off either some supplies or some livestock possibly.

CHMN. CHENAL: And dating from what time period?

MR. HOLSCHER: If you give me just a second, I can find the data on that.

CHMN. CHENAL: Sure.

MR. HOLSCHER: I believe the date was 1905.

CHMN. CHENAL: And just because I -- I hate to hear it, but I have to ask the question. How old does something have to be to be eligible for the National Historic Register?

MR. HOLSCHER: To be honest, that's a question -- I'm not exactly sure of the date, but I can find out and report back to you.

CHMN. CHENAL: That's okay. I thought I had heard 50 years, and it just --

MR. SIMPSON: Yeah, I believe it is 50 years.

CHMN. CHENAL: -- it just hurts to hear.

MR. SIMPSON: And then there's an official determination process that ensues.

MR. HOLSCHER: Thank you.

BY MR. ACKEN:

Q. Mr. Holscher, please summarize your conclusions with respect to cultural resources.

A. Yeah. I think, you know, based on both the Class I and the Class III surveys that were conducted, as well as the testimony that was previously stated yesterday, we believe that the siting of the project is -- has been done efficiently in a manner to have no impact to any existing or known cultural resources.

Q. Next, I'd like you to compare the preferred

and alternate routes with respect to environmental resources.

A. Sure. Thank you. Yeah, we believe the preferred route is -- has several advantages. For one, it is a shorter route and has fewer line losses, which makes it more efficient and more economical. A shorter route, by nature, has fewer overall impacts and minimizes any potential conflict with working around existing transmission line structures or facilities in the area. It also reduces the number of turning structures or angle structures that would be required to cross the river, the railroad tracks, and then into the APS Cholla power plant. It also parallels some existing roads throughout the ranch to help minimize on some of the disturbance during construction. And it also provides the best access to the preferred substation location for the solar facility.

Q. I'd like you to provide a -- kind of tie it all together for us and provide an overview of the project's environmental effects.

A. Sure. Thank you.

Next slide. Yeah, perfect.

In summary, we think the project conforms with all applicable management and comprehensive plans. The project is also located within the close proximity

to a great existing utility industrial hub, that being the Cholla power plant. It also has various existing transmission line corridors within the vicinity. And overall, we believe the project has minimum to no effects on existing and planned land uses, cultural resources, or visual resources.

Q. And what is your professional conclusion regarding the environmental compatibility of both the proposed and alternate routes?

A. We believe that, you know, based on all the information provided during yesterday's testimony and in the overall CEC application, that the project alternatives are both environmentally compatible.

Q. Thank you. Do you have any final comments for the Committee?

A. No. No, thank you, at this time.

MR. ACKEN: Mr. Holscher is available for questions.

CHMN. CHENAL: All right, thanks.

Mr. Holscher, just a couple questions. I think in the previous slide there was a reference to a preferred substation location. And maybe Ms. Innis discussed -- I know that there was testimony that both substation sites within the solar plant were doable and acceptable. I don't remember what was said about why

one was preferable to the other, why the substation site was preferable in one location versus the other. So could you, maybe if you know the answer to that, comment on that? If not, we'll ask Ms. Innis when she's back on the stand.

MR. HOLSCHER: Sure. You bet. Thank you for the question. I think I can touch on a little bit of that, if we can go back to one of the slides that has a map of the area. Yeah, that one would be good. Thank you.

MR. ACKEN: And this is Slide 37, for the record.

MR. HOLSCHER: Thank you.

So the preferred transmission line route comes from the power plant to the solar facility. Right now we're anticipating that the substation for this location would be kind of in this northeast quarter of the section here; versus down here, where the alternative comes in, the substation location would be in one of the -- a quarter section right here.

Between the two, the preferred one up here does have a little bit better terrain, I guess, and better soil conditions to -- better access, I guess, to that substation location, whereas down here the terrain is a little bit more challenging, I guess, would be for

construction. So of the two, I think they are both doable, but the preferred would be the one to the north here with the better terrain and soil types.

CHMN. CHENAL: Okay, thank you. Thank you for that. That answers my question.

The second question I had was: Mr. Brophy last night had indicated that this project, the Invenergy project, is one of a number that are planned for the region that would be able to utilize the facilities. Are you aware of any other, you know, projects in the general area that are being planned or discussed?

MR. HOLSCHER: Nothing specific at this time. We do know that there has been some expressed interest for possibly locating future transmission lines along the area where the alternative is being proposed. That is another reason why I think Invenergy is leaning towards the preferred route, to avoid the congestion that would be taking place along the alternative route.

CHMN. CHENAL: And what would those transmission lines be for?

MR. HOLSCHER: Other types of utility projects. Nothing specific known at this time, whether it would be a solar project or another substation type of project.

CHMN. CHENAL: All right, thank you.

Any questions from any of the Committee Members?

(No response.)

CHMN. CHENAL: Any from those appearing by Zoom?

(No response.)

CHMN. CHENAL: All right. Ms. Benally, do you have any questions of the witness?

MS. BENALLY: APS does not have any questions. Thank you.

CHMN. CHENAL: All right. Mr. Holscher, thank you for your testimony.

MR. HOLSCHER: Yes, thank you.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Yes, Ms. Benally. Oh, I'm sorry.

MEMBER NOLAND: It's Member Noland.

CHMN. CHENAL: Okay, yes.

MEMBER NOLAND: The question I have, and I don't know if this witness would have the answer, is: When we did the flyover, there was talk about one residence of, I think, a leasehold rancher. Can we get this pointed out, where that's located along the project site?

MR. HOLSCHER: Sure. Actually, let me give you the slide number to reference here. I should be able to pull that up fairly quick here. It kind of goes back to part of the visual testimony that was given yesterday. If we could go back to Slide Number 30, located in the bottom left-hand corner. Perfect. Thank you.

Yes. As mentioned yesterday, there is a residence within the project study area, and that's the residence for the grazing lessee out there. And that's kind of indicated right here in this little bubble. That was part of the visual and scenic analysis that was done. I believe there's a small home there and a couple out buildings. So it's about, roughly, maybe a quarter mile, half mile south of that alternative transmission line route.

MEMBER NOLAND: Great. It's way away from the preferred route and all of that, so that's fine. Thank you.

MR. HOLSCHER: You're welcome.

CHMN. CHENAL: Any further questions from the Committee?

(No response.)

CHMN. CHENAL: Okay. Thank you, Mr. Holscher.

MR. HOLSCHER: Thank you.

CHMN. CHENAL: Mr. Acken, any -- I know we discussed off record that maybe at this point we'd turn it over to Ms. Benally, but do you have any further witnesses or...

MR. ACKEN: Thank you, Mr. Chairman. As we discussed in a procedural sidebar before we went on the record, we propose to close our direct case at this time, allow APS to put their witness panel on, and we'll bring back Ms. Innis and additional Invenergy witnesses as needed and appropriate to address any cleanup questions, including Member Haenichen's questions.

I would like to move for the admission of exhibits we've discussed so far so that I don't forget, and that would be: INV-1, the application; INV-2, the testimony slides; INV-3, the public notice documentation. We have not discussed INV-6 yet, but we will. So then I'd like to move INV-7, which was the additional Slide 28.1. And I believe that's it for now.

CHMN. CHENAL: So you're moving INV-1, 2, 3. Could you repeat the others, Mr. Acken?

MR. ACKEN: 1, 2, 3, and 7.

CHMN. CHENAL: Okay. Any objection?

(No response.)

CHMN. CHENAL: Hearing none, INV-1, INV-2, INV-3, and INV-7 are admitted.

(Exhibits INV-1, INV-2, INV-3, and INV-7 were admitted into evidence.)

MR. ACKEN: Thank you. I have nothing further at this time.

CHMN. CHENAL: Okay. Ms. Benally.

MS. BENALLY: Good morning, Mr. Chairman and Committee Members. What I'd like to propose is that we call Mr. Brad Larsen and Mr. Jason Spitzkoff as a panel so we are able to efficiently address questions from the Committee.

CHMN. CHENAL: That's fine. I see Mr. Larsen is in the room, and I understand Mr. Spitzkoff will appear by Zoom, so let's take a couple minutes and get that set up. This will be interesting. This is a first for the Committee to have a panel composed of a live witness and a witness by Zoom, but the crack AV group we've got here are up to the task.

MS. BENALLY: Could we confirm that Mr. Jason Spitzkoff is signed on, please?

CHMN. CHENAL: He is.

MR. SPITZKOFF: I am here. Hopefully you can hear me.

MS. BENALLY: Mr. Spitzkoff, good morning. I can hear you.

MR. SPITZKOFF: Good morning.

CHMN. CHENAL: So I'll swear the witnesses in. Mr. Larsen, let's start with you. Do you prefer an oath or an affirmation?

MR. LARSEN: An oath, please.

CHMN. CHENAL: Would you raise your right hand, please.

(D. Brad Larsen was duly sworn by the Chairman.)

CHMN. CHENAL: Mr. Spitzkoff, would you prefer an oath or an affirmation, sir?

MR. SPITZKOFF: An oath, please.

CHMN. CHENAL: Would you raise your right hand.

(Jason Spitzkoff was duly sworn by the Chairman.)

CHMN. CHENAL: Thank you.

MS. BENALLY: Chairman Chenal, I'd like to propose that I proceed with a planned direct of Mr. Brad Larsen and then follow up with Mr. Spitzkoff to address questions that were raised yesterday by Member Haenichen and yourself, Mr. Chairman, that were raised yesterday.

CHMN. CHENAL: That's fine.

MS. BENALLY: What I would also plan to do is to introduce the panel, Mr. Larsen and Mr. Spitzkoff. And once I complete that, then I will move into my direct with Mr. Larsen.

D. BRAD LARSEN AND JASON SPITZKOFF (VIDEOCONFERENCE), called as witnesses on behalf of APS, having been previously sworn by the Chairman to speak the truth and nothing but the truth, were examined and testified as follows:

DIRECT EXAMINATION

BY MS. BENALLY:

Q. So let me start with Mr. Larsen. Mr. Larsen, are you ready?

A. (BY MR. LARSEN) Yes. Can you hear me okay?

Q. Yes, I can hear you fine. Thank you. And if at any point I am not coming across clearly, Mr. Larsen, please let me know.

Would you please state your name?

A. (BY MR. LARSEN) Yes. My name is D. Brad Larsen, spelled L-A-R-S-E-N.

Q. And what is your job title?

A. (BY MR. LARSEN) My job title with APS is a

senior siting consultant.

Q. And what do you do in that role?

A. (BY MR. LARSEN) In that role, we have a lot of responsibilities, but we basically would take a transmission line case from start to finish, if you will. So part of my role is to be a single point of contact for both our internal and external teams. I would also manage the APS administration of the siting process. I would hire and manage an environmental consulting firm that would help us with all the environmental studies required for a CEC application, and also to assist us with public outreach efforts. I would manage and oversee and strategize on those outreach efforts.

I also would kind of lead and strategize compiling the CEC application with all of our internal parties and reviewing that application. I would help with logistics as far as setting up hearings, preparing for the hearings. And of course, I would provide the witness testimony for APS during the evidentiary hearings. And even after the fact that we are granted a CEC, I pretty much would still own that CEC and follow it throughout construction to make sure that we're in compliance with all the conditions and terms and that we do our annual compliance filings as

required.

Q. Thank you for that very complete response, Mr. Larsen. Would you please give a summary of what your education and professional background is?

A. (BY MR. LARSEN) Yes. I have a bachelor of science in electrical engineering from ASU. I'm a registered professional electrical engineer in Arizona. I've worked for APS for over 30 years in various roles from transmission planning, engineering and construction jobs, some management positions, and about half of that time, 15 to 16 years, I've been in the siting department.

Q. Thank you. So to wrap up your introduction to the Committee, would you share your experience in prior line siting cases in which you have testified?

A. (BY MR. LARSEN) Yes. The most current case was just held about a year ago, which was our Wildcat and Cyclone 230 kV project in Goodyear, Arizona. That was Case 183. I also testified in Case No. 160, which was the Mazatzal 365 kV interconnection project up in the Payson area. And then I've also testified before an administrative law judge with the ACC on an amendment to an older CEC, Case No. 120.

Q. Okay, thank you. Now, I'd like to move to the introduction of Mr. Jason Spitzkoff.

A. (BY MR. SPITZKOFF) Good morning.

CHMN. CHENAL: Mr. Spitzkoff and I have a continuing disagreement, and it shows up in every previous hearing we've had, formal and informal. And he continues to try to goad me with the Rutgers sign behind him, because we all know Rutgers does not belong in the Big 10. And I just want to make note of that for the record, because if they're just reading the transcript they won't see that. So go ahead, Mr. Spitzkoff.

BY MS. BENALLY:

Q. Mr. Spitzkoff, would you please state your name for the record?

A. (BY MR. SPITZKOFF) My name is Jason Spitzkoff, that's S-P-I-T-Z-K-O-F-F.

Q. And what is your job title?

A. (BY MR. SPITZKOFF) My title is manager for transmission and distribution engineering, and I have three departments that report to me. Those would be the transmission planning and engineering team, the transmission contracts and services team, and the facilities siting team.

Q. And what are your responsibilities in that role?

A. (BY MR. SPITZKOFF) Certainly. So I refer to

those teams collectively as transmission expansion. So we deal with -- in the transmission contracts team, they deal with all generator interconnection projects, the intake of the applications, the processing of the applications, and the eventual negotiation of the interconnection agreement. They also deal with other transmission contracts that APS has as a company.

For the facilities siting team, Mr. Larsen, I believe, gave a good explanation. That is the team that he is a part of, so I won't belabor that team's role.

And then for the transmission planning and engineering team, that group does all of the reliability studies for the future growth of the APS transmission system, everything from the 69,000 or 69 kV lines up to our 500 kV lines. And part of that includes the performance or oversight of the performance of generator interconnection studies.

Q. Thank you. Would you summarize your educational background? And you've already touched on your work experience a little bit in describing your role; but if you have anything to add in that regard, do so as well, please.

A. (BY MR. SPITZKOFF) Certainly. So my educational background, I have a bachelor of science

from Rutgers University in electrical engineering. I also have a bachelor of arts from Rutgers University in economics. And I've been with APS over 19 years at this point, all of that either in the transmission planning and engineering team or as the supervisor or the manager of the groups that I have just mentioned.

Q. And have you testified in line siting cases before?

A. (BY MR. SPITZKOFF) I have. I believe I've testified in two cases, the first one being the Sundance to Pinal Central project. I apologize, I don't have the case number handy for that one. And the second one was the project Mr. Larsen just testified, the Wildcat project. I have also provided public comment on one or two other cases that the Siting Committee was hearing from other utilities, really just responding to questions that they had. I was in the audience, able to respond.

Q. Okay. Thank you very much, Mr. Larsen. So I'd like to now transition to the direct of Brad Larsen. I would like to cue the fantastic AV team that we have with us here today that there may be a point in time where my witness, Mr. Larsen, may be referring to Mr. Spitzkoff, so that may be sort of a hand-off that may occur during the course of the testimony this

morning for the APS witnesses.

So Mr. Larsen, since we're starting with your direct, would you just please state your name again for the record?

A. (BY MR. LARSEN) Yes. D. Brad Larsen.

Q. Thank you. And then APS's interest in this case relates to the portion of the project that is covered by CEC-2, is that correct?

A. (BY MR. LARSEN) that is correct.

Q. And you have a map that shows the portion of the line that's covered by CEC-2 that is identified as Exhibit APS-1, is that correct?

A. (BY MR. LARSEN) That is correct.

Q. So -- and that will help you or aid you in your testimony today as you are walking through the various elements of CEC-2, correct?

A. (BY MR. LARSEN) Yes.

Q. So let's start by having you give the Committee an overview of what is shown on APS-1, which is projected on the screen, and I believe that you also have in front of you if you need to refer to that version as well.

A. (BY MR. LARSEN) Yes. Well, just to start out with some general features of the map, north is up at the top of the page. So it's a standard north is

up, south is down, east is to the right, and west is to the left. And what this is is an aerial photo taken from Google Earth Pro, but it's kind of just zoomed in on a small portion of the Cholla power plant property. And I'll go through some of the features, and then we'll get into more details a little later.

I did just want to start out that right at the top of the page, kind of about three quarters of the way over, there's kind of a drainage area that runs down to the south and then to the west, kind of a dark area, if you can see that. That's referred to as Tanner Wash. That wash has actually not got any access across it. It's kind of a protected wash, if you will, from our perspective at least.

And then I wanted to just note that just to the east and the south of that wash there's a little white line, road, that comes down and then kind of gets into -- you'll see some electrical substation equipment. That is the road -- what we call our controlled access road. And to get into any of this part of the plant, you do have to access through the gate of the Cholla power plant. So unless you're an APS employee or an authorized contractor for APS, no one has access into this area.

To further talk about this, the generalities

of it, up in the top kind of center portion you'll see kind of a rectangular structure with a bunch of round circles on top. That is one of the cooling towers for one of the Cholla production generation units.

And then to the right side of the page you'll see various buildings and just facilities there. That is actually a portion of the generating facilities; one or two of the units are visible there. And then mainly, just to the south of that, you will see the bigger substation or switchyard area. Particularly, there's a little yellow marker that says "Cholla 500 kV substation." So this is the general area that we will be interconnecting into, or the applicant will be.

And basically, the green line that is shown kind of going in a north -- or, if you start at the top, toward the southeast. But right at the end it says "0.3," that last green X to the right. If you go just south of there, that is an empty bay that the applicant will be connecting into, so that is actually the point of interconnection for the project.

I also just want to point out, there's a yellow line starting right at the top of the page in the center that comes to the south, meets up with the green line, and then follows it down and actually then continues off the map over to a 230 kV substation

that's just off the map here.

The green line that we're talking about there, that is something that will be identified under CEC-2. We'll talk in more detail about that in a minute.

CHMN. CHENAL: Mr. Larsen, just for a moment, what is that yellow line that comes --

MR. LARSEN: Oh, I'm sorry. This yellow line is an existing 230 kV line that actually comes from Flagstaff, Coconino substation, which is right close to where we're meeting today here off NAU campus. But that's an existing line, and our plan will actually be to co-locate that line with the new line in this section right through there. And I apologize for not mentioning that that is an existing 230 kV line.

And then lastly, there's the little blue line that angles kind of from the middle of the left page up to the -- where it connects with the green. That blue line is kind of the final portion of what is CEC-1. And right at the peak or the point there where it changes from green to blue, that will be the point of physical demarcation or the point of future ownership change. So that will be the last structure of CEC-1 and the first structure -- the first piece of CEC-2 where we will connect to CEC-1.

CHMN. CHENAL: If I may ask just one more question. There's an orange line that encompasses a large part of the substation area. Could you describe what that is?

MR. LARSEN: Yes. The farthest one to the north, actually just south of the green intertie line, that is our 500 kV line that kind of goes out to the west and then turns south. That is the line that goes to our Saguaro power plant down just kind of northwest of Tucson.

The other line that is just to the south there on the bottom of the page, that is a 500 kV line that goes to the -- it's actually an SRP line. It goes to the Sugarloaf substation and then continues on to the Coronado power plant that SRP owns.

CHMN. CHENAL: Thank you.

BY MS. BENALLY:

Q. Thank you for that overview, Mr. Larsen. Would you please describe the nature of the coordination and direction that APS has provided to Hashknife relative to CEC-2?

A. (BY MR. LARSEN) Yes. We've had various communications with the applicant on this. And really, we focused it on CEC-2; that is the portion that APS will own and operate at some point in the future.

We really talked about just how best to access the area. And considering we have this existing 230 line that we felt it made sense to construct, from the point where they kind of come together that we would build it as double-circuit, for a couple of structures at least, to the point of interconnection. So we talked about how to do that. We just kind of told them why.

And again, I'll just touch base a little bit. I did talk about the controlled access area. In general, when we talk about interconnection projects, the controlled access is actually just the substation or a switchyard, and the applicant would build their line up until the last structure outside of the fence. In this case, because the switchyard is kind of -- quite a distance inside the plant property, there are multiple structures going to be needed between the point of their last structure and the interconnection point.

So those are the type of items that we talked about and explained why the last point of their line or the point of physical demarcation needed to be on the west side of the wash. Everything, including the wash, into the east is in the controlled access. So it's very unique to this interconnection project in that the

last structure outside the controlled access, we need a series of structures to get between that one and actually the point of interconnection, unlike other interconnection projects.

Q. Thank you for that. So during the course of the coordination, and as the applicant got closer to the filing of the application for the Certificates, did APS assist with the preparation of the application, as well as the proposed form of CECs?

A. (BY MR. LARSEN) Yes, we did, to some degree. We did not participate with the general -- the first issue, I guess, of the CEC as they prepared it. We got involved a little bit late in the process. But we did review their application and we had various calls and meetings where we could talk about it and we provided input into how we felt the CEC-1 should be noted and described, as well as how CEC-2 would be described. So we did have a chance to review the form of orders of the CECs and provide input and suggestions on how we felt that we could do that to meet the needs of APS for the CEC-2 portion.

Q. And the proposed changes that APS provided to the proposed form of CEC, can you speak to the disposition or how those were received?

A. (BY MR. LARSEN) I'm sorry. Can you repeat

that?

Q. Sure. So as you provided this feedback on the proposed form of CEC, were they incorporated as APS suggested?

A. (BY MR. LARSEN) Yes, I believe they were. And actually, the applicant has been very, very good to work with us and to listen and try and understand our needs. And yeah, I do believe that they've incorporated those things.

Q. Thank you. So now I'd like to kind of bring your testimony to what you've been describing as the point of physical demarcation. You did describe where CEC-2 starts. Can you explain a little bit more where CEC-2 starts?

A. (BY MR. LARSEN) Yes. Again, I'll just describe that the blue line coming here, that is the end. And this structure that is right where the green and blue meet, that will be the final structure of CEC-1 owned by the applicant. CEC-2 starts with the conductor that we connect to that structure. So the structure itself is not part of CEC-2, but the conductor that we attach to that structure is really the beginning of CEC-2. So the apparatus that we connect our conductor to is the start of CEC-2, and then we will span over the wash and into the Cholla

plant property and then go forward all the way to the point of interconnection.

Q. Would you please continue with your description of the line covered by CEC-2 and then identify the structures that would be used in building that line?

A. (BY MR. LARSEN) Yes. And to start out, I just want to point out, at the point where this 230 -- yellow 230 kV line meets up with the new 500 kV proposed line, there's an existing 230 kV structure right in that location. So we would be looking to build a new double-circuit structure in the vicinity, very close to that structure, probably just a little bit away from it, so that we can construct the new structure without taking the old structure or the line out of service. So we would build the first double-circuit structure right in that rough area right there.

Then, if you continue down to the end, to close to the point of interconnection, where it's 0.3, which that represents about .3 miles, there's another 230 kV existing structure there. That would be another place where we would put in a new double-circuit structure somewhere in the close vicinity to that existing structure. That would be double-circuit, the

230 would be on the northern-most side, the 500 would be on the southern-most side, and then the 500 line would connect right into the point of interconnection, that bus right there.

Now, I also want to point out that because we don't know -- we haven't done engineering design, we don't know for sure that we can span that full distance with a double-circuit line, plus if there's any different engineering reasons as to dropping into the point of interconnection. We want to just plan that we could potentially have a third structure somewhere between those two structures. So we know there will be at least two double-circuit structures, but potentially there could be three double-circuit structures within that portion.

I also just want to talk about this more western portion. Again, we're spanning quite a distance from the point of physical demarcation over to the first double-circuit structure. Again, if engineering decides that we can't make that span or we can't keep the ground clearance or the safety standards that we need, it may be -- it may be needed that we would build a single-circuit structure somewhere on the east side of the wash close to this access road. Again, we don't know that; but out of an abundance of

caution, we just want to say that potentially we would need one single-circuit structure when we do the final engineering.

Q. Thank you. So APS, based on your testimony, is looking at placing three to four structures, a combination of single-circuit and double-circuit structures?

A. (BY MR. LARSEN) That is correct. I would say there will be a minimum of two double-circuit structures, the possibility of a third double-circuit structure, and the possibility of one single-circuit structure.

Q. Thank you. And in your testimony you also spoke that you were going to be rebuilding an existing 230 kV line which will carry the new 500 kV line, is that correct?

A. (BY MR. LARSEN) That's correct. We will, again, build the new 230 double-circuit structures hopefully just far away from the existing ones so that we can keep the 230 line in service, and then that line would be transferred over to the new double-circuit structures and the 500 kV would then also be on -- located on those structures.

Q. Okay. Thank you. The structures that you describe, the single-circuit and double-circuit

structures, are those shown in the CEC application?

A. (BY MR. LARSEN) Yes, they are.

Q. Would you please, just for the record, refer to the application, if you have it before you, and indicate what structure -- what the figure numbers are for those structures?

A. (BY MR. LARSEN) Yes. And those are shown in their Exhibit G in the application, Exhibit G. And I don't know if we could pull that up. I did just want to point out that -- I showed you on this map where the point of interconnection is. But Figure G-1, which is actually Page Number G-2 is their drawing of the switchyard. It was actually -- would be in the CEC application. I apologize for that, but I just think it helps clarify the point of interconnection and it does match what Hashknife has in their application. I should have warned you about that. Okay, right there.

I just wanted to point out again, you'll notice here -- and this -- up here you'll see it says CEC-1. This is really kind of this -- it says fence line. It's actually not the fence line, but it's the area outside of the controlled access. That would be where CEC-2 starts, a point of physical demarcation or a point of future ownership change, if you will.

And I apologize, Mr. Haenichen, that is in

red, but hopefully you can kind of see the green very shaky pointer there that comes down to the point of interconnection. And again, you'll see it's in the vacant bay on the very north part of that 500 kV switchyard.

As Chairman asked about the other lines, this is the Saguaro line, which, if you remember on the map, was just south of that interconnection, and then the Sugarloaf line was just down a little further south. So this is correct and it matches with what I was just showing you on the APS-1 map.

Also, now, while we're close to the Exhibit G structures, the single-circuit structures would be similar to what is in their Exhibit G. It could either be a lattice structure -- more than likely we would do something similar to Exhibit G.

Q. I'm sorry, Mr. Larsen.

A. (BY MR. LARSEN) Oh, I'm sorry.

Q. I am so sorry to interrupt you, but would you go back to the prior slide?

A. (BY MR. LARSEN) Yes.

Q. Just for the record, I'd like to indicate that this particular slide that you're referring to is in INV-2, which is the applicant's filing, and it is on Page 6, just as a matter of record.

A. (BY MR. LARSEN) And the actual drawing, again, is in the Exhibit G as in G-2, Page G-2.

Q. Yes, and it does appear in the application.

A. (BY MR. LARSEN) yes.

Q. Thank you, Mr. Larsen.

A. (BY MR. LARSEN) Thank you for that.

CHMN. CHENAL: Mr. Larsen, I have a question or two here. Let's stay with that slide. No, back to where the -- there we go. Okay. So CEC-2 is from the point of ownership change to interconnection at the 500 kV bus. These will ultimately become APS-owned facilities.

I don't know if you're the witness for this; you probably are. But it's unique that we have two CECs in the same application and both are being sought by Hashknife as the applicant, but it's also pretty clear that CEC-2 is within the APS, you know, facilities. So I guess a question could be asked, well, how come APS didn't seek a CEC-2 and Hashknife the CEC-1? Why is Hashknife seeking the CEC for the CEC-2, which is going to be the facilities that are within the APS Cholla plant?

MR. LARSEN: Yeah, I think I can answer that. In reality, I guess we were a little late to the party, if you will. The applicant was about ready to file the

CEC, and initially they were going to get one CEC for the full line all the way into the point of interconnection. And when we started meeting with them, we explained why we felt there had to be two CECs. It was a little late for us to become joint applicants, which might have been the best way to go. But since we weren't really part of all of the earlier processes of putting that CEC application together, we felt that this would be the next best way, to break up the CEC into the two sections rather than have to do that later on.

The other option would have been that they may have obtained a CEC all the way into the point of interconnection, and then APS would have had to more than likely file again, come put together an application, file a new case, come back for another hearing to try and sort it out and get that defined as an APS CEC.

So we felt that by intervening, and in this case friendly intervening, they've been very good partners with us, that this would be a way that we could do it. They could -- as the applicant, they could own both the CECs initially. And at the point they decide to move forward with their project as part of the FERC large generator interconnection agreement,

that then that would be transferred to APS. And as they decided to move forward, then they would fund, per the agreement, and then we would design and construct the project. We felt that even though this complicates this case somewhat and is a little more work for the Committee in getting two CECs rather than one, in the long run it would probably save time and money rather than us coming back at a later date with another hearing and going through kind of the same -- the same things that we're doing today. So I hope that answers the question a little bit.

CHMN. CHENAL: It does. And I'm asking that question more to -- for the record, okay, to create the record. We've had meetings and we've discussed a lot of these alternatives and, you know, I want to make sure the record is clear on it.

So who -- and let me ask a few follow-up questions at this point. And Ms. Benally, I'm sorry if this may be something you're going to get into, but let me just touch on it now.

So who's going to construct, ultimately, the portion of the line covered by CEC-2, APS?

MR. LARSEN: That will be APS, yes. We will -- we will own, construct, operate, and maintain that whole portion of the project that is identified as

CEC-2. That will all be APS or an APS contractor.

CHMN. CHENAL: And then let me ask the same question with respect to CEC-1. Who will own -- who will construct, own, operate, and maintain CEC-1?

MR. LARSEN: That would be Hashknife Energy, at least I would say. I would ask the applicant and they could confirm that.

MR. ACKEN: We can confirm.

CHMN. CHENAL: Okay. And then just so I'm clear, the reason -- just if you could just succinctly say, since we're on this topic, the reason why APS believed that it should have a CEC-2, as opposed to Hashknife having one CEC to cover the entire length of the line?

MR. LARSEN: Yes. The reason is we need to own that -- or, we will own it because, again, within that large area of the Cholla power plant, we would not allow other people to come in there and work on the lines or take it out for maintenance or -- we need to have full control over that as the transmission provider. It's actually a -- Jason can confirm the term, but I think it's a transmission facility -- provider facility, I believe is the way it's referred to in the interconnection agreement.

CHMN. CHENAL: Okay. Thank you, Mr. Larsen.

And Ms. Benally, I'll turn it back to you. At some point, I think it would be good, to flesh out the record, to have a little testimony on maybe a little more description of what this interconnection agreement will look like, or looks like if it's already been entered into, how long it's going to last and just generally any nonconfidential information that you can put out for the record so we have a better understanding of how that's going to work.

MS. BENALLY: Thank you, Mr. Chair.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Yes, Member Haenichen. Excuse me.

MS. BENALLY: Oh, pardon me.

MEMBER HAENICHEN: Thank you.

Mr. Larsen, I want to start by complimenting you on your presentation skills. Everything you did was very clear and precise and easy to understand for the Committee.

Now, I've got kind of a little bit of a silly question now that I've been pondering. When you were using the pointer to show things, were you using the green pointer?

MR. LARSEN: Yes.

MEMBER HAENICHEN: But there's a white arrow

that followed what you did much more steadily and closely. We all shake on those pointers. Who or what entity operates that arrow, that white arrow?

MR. LARSEN: And that's a great question, and that is our fabulous AV guys sitting just behind us here. Because those viewing this remotely by Zoom, they can't see the pointer, and again, it is very shaky, and they are doing an excellent job of following it with the curser, if you will, to kind of point that out. So I do commend them.

MEMBER HAENICHEN: Yeah. It's like he's reading your mind, actually. I mean, it's unbelievably clear.

MR. LARSEN: It is. It's kind of scary. They're sitting back behind me; I don't know what else they're getting out of my mind. Probably garbage.

And I just want to say thank you for the compliment there.

MEMBER HAENICHEN: Well deserved.

MS. BENALLY: Chairman Chenal, I think now is a good time to respond to your question regarding the interconnection agreement since we have already sworn in Mr. Spitzkoff. So I'd like to have him appear, and then he can respond to your question and any follow-up questions that may result from that.

CHMN. CHENAL: Sure. Thank you.

MR. SPITZKOFF: Good morning, Chairman. In response to your question, I believe it was really what does an interconnection agreement look like, what does it entail, how long is it, things like that.

So this project is subject to the large generator interconnection agreement, and that's a pro forma agreement governed through FERC, the Federal Energy Regulatory Commission. And it's contained within APS's OATT, O-A-T-T, open access transmission tariff, and that's publicly available, and the agreement itself. So this project does have one signed interconnection agreement, and our -- being a FERC jurisdictional utility, agreements such as a generator interconnection agreement are filed with FERC. So they are publicly available. They're in FERC's version of the docket.

And those agreements do not have a sunset date on them. They will exist as long as the facility exists. Or if the interconnector -- the interconnection customer for some reason wishes to terminate it prior to the facility retirement, you know, I guess that is a possibility they may want to do that. But it doesn't have like a 20- or a 30-year time period on it.

What else? It covers everything from specifying what facilities are going to be built, where the control handoffs are. It gets into some of the requirements from like a protection and communication needs, gets into insurance, liability, standard contract, things like that.

So I'll stop there and leave it if you have any additional follow-up questions.

CHMN. CHENAL: So under the agreement, we already heard APS will be responsible for construction, ownership, operation, and maintenance of the CEC-2 line. Does the interconnection agreement address CEC-1? I think the applicant has confirmed that Hashknife will construct, own, operate, and maintain CEC-1, the transmission line. Is that covered by the interconnection agreement?

MR. SPITZKOFF: Sure. So the generator tie line as a whole is covered by the agreement in just a broad picture. The parts that APS will construct and own are more -- are covered in the agreement in more detail. The parts that the applicant will construct and build doesn't have any details on what kind of structures they need or what kind of wire. It really just says they have to build it to good utility practice and, you know, maintain and operate it so that

it stays in good standing.

And then, again, there are some general things related. Like for a connection this size into a 500 kV substation, we require communication paths. So the line will have, you know, a fiberoptic line at the top in a static position. So in that sense, that part of it is covered, but really the agreement focuses more on the work that APS is going to do and the cost responsibility.

So for the -- for the part covered under CEC-2, APS is going to own it, maintain it, construct it; however, the applicant is financially responsible for all of that even going out over time. So we will charge them year over year for whatever maintenance activities that we do, because it's -- Mr. Larsen said it earlier -- it's categorized in the FERC interconnection process as transmission provider interconnection facility. As opposed to the parts that are outside that are covered under CEC-1, that is interconnection -- customer-provided interconnection facilities.

So the whole line is the generator interconnections, but it's divided into those two categories specifically for the reason of when lines are within the controlled access areas of a

transmission provider, it provides the opportunity -- the ability for the transmission provider to actually own that and hence do all the work on it and not have unknown contractors coming in and out of really access controlled areas.

So it is -- this concept is part of really all generator interconnections, certainly large generator interconnections. The only nuance with this one is normally controlled access is really just within the substation fence. So that demarcation, that point of demarcation, is fairly close to the fence there. This one just expands a little bit more just because of the geographic nature of what's in that area that Mr. Larsen described earlier.

CHMN. CHENAL: All right. Thank you for that. Thank you.

BY MS. BENALLY:

Q. Thank you, Mr. Spitzkoff.

So I'd like to transition back to Mr. Larsen and wrap up your testimony relative to the map that you had up. The exhibits -- pardon me -- the transmission structures that you described are included in the typical structures Exhibit G section of the applicant's application, is that correct?

A. (BY MR. LARSEN) That is correct.

Q. Okay, great. The last area that I want to sort of close the loop on is why it's important for APS to have a separate CEC. And as I understood your testimony, in addition to Mr. Spitzkoff's comments, APS will own a portion of the Gen-Tie line which is within the controlled access area of the Cholla power plant, is that correct?

A. (BY MR. LARSEN) That is correct.

Q. And APS is going to build, operate, and maintain that portion of the line, is that correct?

A. (BY MR. LARSEN) That is correct.

Q. And because of those reasons, and the fact that APS will eventually own that segment of the line, are the reasons why a separate CEC is necessary for this segment of the line, is that correct?

A. (BY MR. LARSEN) That is. That's correct.

Q. Okay, thank you. So we've been talking about the transfer of CEC-2. Would you explain when that will happen?

A. (BY MR. LARSEN) Yes. That will happen -- again, at the point that the applicant decides to move forward with this project, a number of things will kick in per the agreement, but that is when the CEC-2 would be transferred to APS. The applicant would also fund the project so that APS could start design and

construction in order to meet the timing to get their project done in the same time frame that they would be building and constructing CEC-1.

CHMN. CHENAL: Let me ask a question, Mr. Larsen, on that. And I have to ask, because I don't want to forget it. The applicant is funding the facilities covered by CEC-2?

MR. LARSEN: That is correct. As part of their interconnection agreement, they fund the whole interconnection line to the point of interconnection, but APS will actually own and maintain that. And it's my understanding that we will maintain that line, but they still cover the necessary expenses for that maintenance.

CHMN. CHENAL: All right. Thank you.

MR. LARSEN: And that is all spelled out in the LGIA, or the large generator interconnection agreement.

BY MS. BENALLY:

Q. Thank you, Mr. Larsen. So I have just a couple more questions for you, and then we'll conclude your testimony.

Does APS have a position on the applicant's preferred or alternative route that was presented yesterday?

A. (BY MR. LARSEN) No, we do not have a position on the routes. We believe that they have a good project. We believe that both the preferred and alternative routes are good routes. Both of them kind of come together and end at the same -- the end point is the same for either the preferred or alternative, and as far as the end point of CEC-1. So it doesn't really matter which one they build; CEC-2 would remain the same as we described it here.

Q. Okay, thank you. Does that conclude your testimony?

A. (BY MR. LARSEN) Yes, it does.

MS. BENALLY: So at this point, I'd like to have Mr. Spitzkoff appear again on the screen.

CHMN. CHENAL: Let's do this, Ms. Benally. How much time do you think it's going to take for Mr. Spitzkoff's testimony? I anticipate there will be some questions.

MS. BENALLY: Mr. Spitzkoff is going to be responding to the questions that came from the Chair and Member Haenichen, so I would imagine probably not more than 30 minutes.

CHMN. CHENAL: Let's do this. Let's take our morning break, then. This seems like a good time to do that. We'll take a 20-minute break, and we'll resume

and start with Mr. Spitzkoff.

(Off the record from 10:37 a.m. to 11:13 a.m.)

CHMN. CHENAL: Let's resume the hearing. And Ms. Benally, I think your next witness is going to be Mr. Spitzkoff.

MS. BENALLY: Yes, Chairman Chenal. We will be calling Jason Spitzkoff. I also still have Mr. Brad Larsen seated at the witness table in the event that there are questions that he may be responding to.

CHMN. CHENAL: Sure, thank you.

MS. BENALLY: Is Mr. Spitzkoff available?

MR. SPITZKOFF: I am here.

BY MS. BENALLY:

Q. Thank you. Mr. Spitzkoff, you were involved in the Hashknife project. You described earlier what your sort of roles and responsibilities were for APS. Can you speak specifically to what your role was relative to the Hashknife project?

A. (BY MR. SPITZKOFF) Certainly. So in regards to this project, my role was mainly in a managerial sense. Again, my transmission contracts and services team processes all of our generator interconnection requests through the FERC process, so that team intook the original request. They're the single point of

contact for interconnection customers as they go through the process. They also work with my transmission planning and engineering team. They're the team that coordinates the study work for our generator interconnection projects. And then finally, my siting team coordinated with the applicant on the CEC applications.

Q. Okay, thank you. So I'd like to start with questions about the Cholla power plant. There were some questions regarding that from the Committee yesterday. Were you listening to some of the questions that came in from the Committee Members?

A. (BY MR. SPITZKOFF) I was listening on and off to the hearings yesterday, but I do believe I heard most of the questions.

Q. So let's start with, what is the plan for the Cholla power plant?

A. (BY MR. SPITZKOFF) Certainly. So originally, the Cholla power plant had four generating units. A number of years ago, unit number two was retired. That leaves three generating units currently in operations. Two of them, unit three and unit four, are connected into the Cholla 500 kV yard, and unit number one is connected into the 230 kV yard.

The unit number four is actually owned by

PacifiCorp, and it is -- just the everyday operation, maintenance is run by APS. PacifiCorp has announced plans to retire unit number four. I believe it is by the end of this year or shortly after this year; although, that has changed in the past. So I think that is still their current timeline right now. As far as the remaining two APS units, they are planned to retire by 2025.

Q. Okay, thank you. I'd like to now transition to the extra-high-voltage transmission system. There were some questions about the electricity flow, power flow that arose yesterday. You have a map that shows the transmission system, which APS has identified as APS-2, is that correct?

A. (BY MR. SPITZKOFF) That is correct.

Q. It's also visible here on the screen in the hearing room.

A. (BY MR. SPITZKOFF) Yes.

Q. Now, would you please start by giving the Committee an overview of what is shown on this map?

A. (BY MR. SPITZKOFF) Certainly. So this map, you can see the outline of the state of Arizona. So again, it's oriented with the north to the top of the page, south direction to the bottom of the page, east to the right, west to the left. You can see at the top

is the border between Arizona and Utah. And to the left, or west side, is the border between Arizona and -- it originally starts at southern Nevada and then turns into the border with California.

If you go over to the east side, or the right side, of the page, you'll find the Four Corners power plant. I'm looking at it now, and it's crept down from -- it's closer to actually up in the Four Corners area there. This is not geographically necessarily accurate, but it's up in the Four Corners area on the New Mexico side of the border.

The lines coming out of there -- directly to the west is a 500 kV line that goes to Moenkopi. And the lines that come -- start off to the south and then angle to the west a little bit and those go down to Cholla, those are two 345 kV lines. Four Corners also has a number of other transmission lines that are connected there from other utilities. It's a fairly good size transmission hub in that location.

Then if we transition back down to Cholla, you'll see some of the lines that Mr. Larsen described earlier. You have the line that goes to the east; that's the SRP line. It goes to the Sugarloaf substation and ultimately Coronado. That's a generating station owned by SRP. And then Coronado has

345 lines that connect to other areas.

Q. Mr. Spitzkoff?

A. (BY MR. SPITZKOFF) Yes, sir -- ma'am.

Q. I apologize for interrupting you, but could I ask our AV folks just to project the map so that is much more visible for the individuals in the hearing room.

And Mr. Spitzkoff, I appreciate you describing the map particulars with some -- being very definite about it. We don't have you here in the hearing room to indicate the various locations that you are referring to, so please continue to be very descriptive on what you're describing so the Committee is able to follow your discussion or your testimony. Thank you. And again, I apologize for interrupting you.

CHMN. CHENAL: Mr. Spitzkoff, question: What's the kV for the line from Cholla to Coronado or Coronado to Cholla?

MR. SPITZKOFF: That is 500 kV.

CHMN. CHENAL: Thank you.

MR. SPITZKOFF: And before I continue describing the map, what I will say is this map is mainly depicting APS-owned and APS-participated transmission lines. There are other transmission lines

in the state owned by other utilities that are not necessarily depicted on here. For instance, at Coronado, like I was saying, there's other lines that are connected in there that are owned by SRP and Tucson and other utilities.

If we go back over to Cholla, the other line that heads straight down that's a thicker black line and it heads straight down south, that goes to the Saguaro substation, as Mr. Larsen described. That also is 500 kV. And Saguaro is -- it's not quite -- it's a little further than halfway between Phoenix and Tucson, a little closer to Tucson than it is Phoenix, but it's in that area of the state.

Then starting back up at Cholla, you see the two black lines that again head southwesterly. Those are 345 kV lines. One of them connects to Preacher Canyon substation; the other has Mazatzal substation in there. Those are 345/69 substations that provide local power to local 69 kV networks for load serving in northern Phoenix there, and they eventually end up at -- not northern Phoenix -- northern Arizona, and then the lines eventually end up at Pinnacle Peak, which is in the north Phoenix area there. So that is an import into the Phoenix metro load pocket there.

If you stay at Pinnacle Peak and then head --

follow the double lines that go north from there, those are 345 kV lines owned by WAPA, or Western Area Power Administration. They go to Flagstaff, and that's actually the name of their substation and it's just outside of Flagstaff. And it goes -- it continues all the way north to the Glen Canyon substation. Glen Canyon -- and if you keep scrolling the page north, Glen Canyon is basically next to where you see Navajo there. So those lines would continue up just to the left of the Navajo substation there. Navajo is another -- was another large generating station; that was recently retired just last year or the end of 2019, I should say.

And then all of the lines -- the line going to the west, or the left of the screen, and the two lines heading south, those are all 500 kV lines. The one going to the west goes into southern Nevada. It goes into the Eldorado Valley, where there are a number of other 500 kV lines that connect into there. So that's another fairly large transmission hub. And then the ones that head south will also end up in the Phoenix load pocket. It will go all the way down to the West Wing substation there. And West Wing is in sort of -- I think north Peoria is the official jurisdiction.

And then the other dominant feature on the map, West Wing will connect -- you see there is the Palo Verde generating station. If you just go to the west, to the left there, that's the Palo Verde generating station, also the Hassayampa switchyard, and there's a number of natural gas generators and 500 kV transmission lines that all connect into that major hub there.

So that's an overview of the general transmission system in the state of Arizona. If we want to go back towards Cholla -- I'll just recap that a little bit, because that's a little bit more of the focus of the hearing here and where some of the questions were. So we have the 345 lines that come down from Four Corners, and then they continue all the way down to Pinnacle Peak or the Phoenix area. Those lines are used to bring the power from the Four Corners generator and the Cholla plants down into Phoenix. It also is there -- like I said, the Four Corners switchyard is a decent sized transmission hub, so it will -- it does provide an opportunity to bring resources in from, say, New Mexico or southern Colorado, those areas.

So resources come down from there, they go through Cholla, and on into Phoenix. Some of that

power does also route around from Cholla down the 500 line to Saguaro and then back up. Once it hits Saguaro, we have a 230 system that connects to the north back into the Phoenix area. So the power will serve our loads in Pinal County, and then whatever is left will continue back up into the Phoenix load pocket there.

Generally, that's the direction of flow is from the north to the south. There are times where -- you know, this is an ever-changing environment in the utility world with base load generation coming offline and energy markets. There are times when those lines will be lightly loaded, but they'll still generally be down from the north to the south direction.

A line that was mentioned earlier is the 230 line that comes out of Cholla. So starting again at the Cholla yard, if you go to the west on that black line, that connects over to Coconino. Coconino is a substation -- a 230/69 substation that serves Flagstaff and the outer areas of Flagstaff. That line continues to the west over to Verde, another 230/69 substation that serves northern Phoenix areas. And then again, that will continue on to Yavapai, where it connects back to the 500 lines that come out of Navajo.

So really we've -- that 230 line connects the

500 lines that come out of Navajo, all the way across to the east of the state, back over to the Cholla area. And the 230 substations in between are the sources for the 69 networks that serve all of the areas in northern Arizona in that area there.

BY MS. BENALLY:

Q. Thank you, Mr. Spitzkoff. So I'm going to take you back to the Cholla power plant. And the question I'd like you to respond to that arose yesterday is if anything will change regarding the transmission system and the transmission lines that you just described after the planned closure of the Cholla power plant?

A. (BY MR. SPITZKOFF) Certainly. So of course, the power flow itself will change. You know, you're removing a couple of hundred megawatts of generation in a location. But, you know, if that generation is replaced with projects such as the project by the applicant, you know, that would -- that would restore the original flows as they may be seen today or in the recent past. But that's from a reliability perspective.

The interconnection studies account -- the studies that were performed for this project, this interconnection, did account for the Cholla generation

being in service and after it was retired. So there's a future look to these studies that we perform to account for multiple different scenarios, and the reliability of the system is examined and maintained for all of those scenarios.

And I can report that the studies for the project here did not identify any reliability concerns with adding that generation into the Cholla switchyard. If it had, then there would be network upgrades that would be associated with the project. And then what that means is: Whenever the problem that comes with interconnecting new generation, we would determine what the solution is to mitigate that problem, whether it's a new line or upgrading existing facilities, whatever that may be, we would identify that, and the applicant -- the interconnection customer would be responsible for initially funding those upgrades to maintain the system reliability there. The overall theme with generator interconnections is new interconnections should have no negative effect on the reliability of your transmission system. So that's the reliability perspective.

There's also another perspective, which is the scheduling perspective, and that's who has the rights on the line and who schedules that. And that's

more of a paperwork exercise than how the electrons actually flow. And even after the Cholla power plant is retired, APS will retain the scheduling rights on all of the lines that are shown. And our future resource needs are using those transmission lines to bring in resources at Four Corners or beyond Four Corners, in New Mexico or wherever, bringing them in, across, and down those lines to meet our future load needs. So the lines -- all of the lines that are there will still be utilized by APS to meet our load obligations in the future.

Q. Thank you, Mr. Spitzkoff. Chairman Chenal inquired yesterday about where the output from the Invenergy project will flow on the APS system. Can you address that question?

A. (BY MR. SPITZKOFF) I can address it in general terms. So when you connect a new generator in, the physics of the system will dictate where it flows and the conditions at any given time, what other resources are on, what lines are open, what lines are closed. I can't address specifically like saying 200 megawatts will go here and a hundred megawatts will go there. It connects into the system, we've ensured -- you know, the studies that we perform, we ensure what we call N minus one secure, so we can lose any facility

without any problems, that there will be no reliability concerns.

From a scheduling perspective -- again, there's two different worlds that come into play here. From a scheduling perspective, the interconnection customer, that is dependent upon who is offtaking their energy, where they go. If they are selling to APS, they can deliver it to us right at Cholla, and we'll utilize the capacity that we have in those lines there and bring it home. SRP does have a 500 kV line there, so theoretically they could sell to SRP right onto SRP's system if SRP has the capacity.

Or if they wish to go to the west and sell to the California ISO, they would have to obtain transmission service through APS, through any available capacity that we have, and we would bring it to a point where we connect with the ISO. That could be either down the 345 through Pinnacle Peak through the system and over to Palo Verde, or it could be north to Four Corners and across the 500 kV line over to Moenkopi and then Eldorado. There's a number of different paths.

So I can't definitively answer the Chairman's question. There's two different aspects. There's a reliability aspect and then there's the marketing aspect.

CHMN. CHENAL: Let me ask a follow-up question, then. Thanks, Mr. Spitzkoff. My question wasn't precise enough. Let me see if I can clarify it a little more. Is APS going to buy all of the power that's generated by this Hashknife project and will then distribute it to its customers?

MR. SPITZKOFF: Certainly. Mr. Chairman, the decision on resource procurement is made by other teams than mine. And usually there are RFPs, or requests for proposals, which is an open solicitation for generators or projects to bid in. As far as I am aware of today, APS does not have any contract with the applicant for their project to purchase any of the output of their project.

CHMN. CHENAL: And those are done through, is it power purchase agreements or power purchase contracts?

MR. SPITZKOFF: That's one of the ways you can do it, through a power purchase contract. And the developer, in that instance, still owns the generator. You can also do a turnkey project where you have -- a developer builds a project and, say, a utility is interested in actually just buying it out. But for something like this, I would say a power purchase agreement is more likely, I believe.

CHMN. CHENAL: And the other way -- forgive me. I mean, we've heard testimony in other cases. But Hashknife could make the power available on the open market, and that's -- I'm going to -- is that the OATT, the open tariff, where people can kind of bid on it and buy the power from Hashknife, who basically offers it on the open market? Is that another way that power can be, you know, sold to customers?

MR. SPITZKOFF: Yeah, that is one way. I believe you'd have to be in an energy market to take advantage of that. And APS is part of the -- what's called the EIM, energy imbalance market, that's run through the California ISO. I cannot speak intelligently on whether just connecting at Cholla would allow them to participate, or if they -- I think they have to determine or prove deliverability into the EIM market. And that's probably as far as I can describe the market capabilities for you.

CHMN. CHENAL: Okay, thank you.

BY MS. BENALLY:

Q. Okay. Thank you, Mr. Spitzkoff. I'm going to now transition to a different topic. Yesterday Member Haenichen had asked about how APS is dealing with intermittency on its system. Can you address that question?

A. (BY MR. SPITZKOFF) Certainly. So intermittency is something that not only APS, but most utilities in the country, and probably the world, are dealing with, you know, today and certainly on a moving-forward basis. And just to make sure we're -- I'll describe the intermittency. With an increasing portfolio of renewable generation, being either solar plants or wind plants, the solar plants output when the sun is there. And when you get a cloud, it will dissipate a little bit or completely, depending on the cover. Wind plants will generate power when the wind is blowing and will stop when the wind is not blowing. So the variability of your common renewable resources is really the intermittency problem.

And then there's another aspect of intermittency, which is kind of still related, when you're dealing with solar plants, but it's a lot more predictable. You know when the sun is going down at night, you're going to be losing your solar energy. So you have to be able to accommodate a ramp-down of the solar with enough resources that can ramp up at a high enough rate. And those resources are generally the same that you would use to deal with the intermittency problem with non- -- what's called non-dispatchable generation, you know, like if there's a cloud cover or

the wind stops blowing that was not predicted ahead of time.

So just to level-set again, really the way a power system works is the generation has to equal the load at any given time. So you have a balanced system; but if you suddenly lose a lot of generation for whatever reason, you're going to have more load than you have generation on, and you've got to make that up in a short period of time. So that's why -- one of the reasons why intermittency is a concern, is to maintain that balance.

And there's a number of ways that we deal with that today and, you know, moving out into the future. So one of the ways is participating in the EIM market, again, that's that energy imbalance market. That really aggregates a wide area of utilities and resources that respond on a 5-minute basis. And kind of just the high-level theory is you've got resources in one area that might not be needed in the area they're in, so you can sell it to an area that might need it, and the resources in that area might be cheaper than what you can get.

So it's really just an aggregation of resources so that you can optimally use your generation, but that aggregation provides a level of

help to the intermittency problem. Again, if you're in a big enough area, maybe the resources, like the solar resources in Arizona, might be low due to clouds or storm activities, but in another area in northern California or Nevada they're still high. So you can take advantage of some geographic diversity there.

Another way is using quick-start gas plants, natural gas plants. Generally, those are better suited to respond to the ramping of renewable generation more so than base load units. Those are slower to move, and you really -- for base load units, like such as coal units, you have limited ability to start and stop those multiple times a day. It takes a long time to get them up to the right heat and spinning and then producing. Natural gas plants are a lot more flexible, and you can start and stop them a lot more frequently and get them up to full speed a lot quicker. So we also are using those.

And then another thing that we're doing is increasing the energy storage portfolio. So energy storage is going to play a key role moving forward. What that can do is soak up a lot of the excess renewables during the day. The renewables are high, especially solar renewables are high during the day, but the load is low during the day. So if you can

store that energy and then dispatch it when the solar is coming down, or in intermediate times if the wind stops blowing or cloud covers come over, if you've got your batteries, your storage system charged, you can dispatch that on a fairly quick basis. So those storage resources can help with that too.

And then in Arizona and the southwest we have a very important resource; that's Palo Verde. That base load that's there in the system helps -- really helps everyone, all of the systems in the area, with its base load resource that's there.

So those are some of the things that we're doing today. This is going to continue out into the future as the resources that make up the system grow in size and percentage value that's on the system. You know, really no one knows where we're going to be in 20 or 30 years to fully solve this problem. You know, that is things that are being developed, the industry is moving, storage projects are evolving, other technologies are going to come online.

For instance, like natural gas plants, there's been some talk of those transforming to run on hydrogen, for instance, instead of natural gas, and that transforms them into a clean energy resource. So we don't -- we don't know if that's going to evolve or

when that's going to evolve, but really it's definitely something that's a factor in all of APS's integrated resource plan is the intermittency, you know, how much renewable generation you have, what you have to back that up, and it's part of the -- it's the long-term plan on keeping our eyes forward, looking for what that future holds.

Q. Thank you, Mr. Spitzkoff. Based on our timing here, it looks like I estimated poorly the length of your testimony, but I just do have one more topic I'd like for you to address.

Member Haenichen asked a series of questions yesterday concerning the harmonics from the Invenergy project. Did you hear those questions yesterday?

A. (BY MR. SPITZKOFF) I believe I did. Again, I'm not sure I heard all of them, but I heard them once or twice.

Q. So from APS's perspective, does APS have requirements regarding harmonics from an interconnection project?

A. (BY MR. SPITZKOFF) So APS has requirements in terms of projects need to meet the IEEE standards for harmonics. And I'll say, when it comes to harmonics, generally we don't have a significant concern about harmonic injections when projects are

connected to the EHV system. However, any new inverter-based interconnectors will have to perform a study closer to or just after they go online to ensure that they are meeting those IEEE standards. And if they're not, or if we do see some effects of harmonics on the system after a project is operational, the interconnection generator will be required to correct any of those issues to our satisfaction.

CHMN. CHENAL: I need to break in here a second. Harmonics, inverters, IEEE standards, let's go over that again and break it down so it's more understandable to nonelectrical engineers, if you don't mind.

MR. SPITZKOFF: Certainly. And I forgot to lead with the most important thing, which is: I am not an expert on this topic.

CHMN. CHENAL: Oh, man. Okay. Then I'd hate to hear how an expert would have stated it.

Let's start with some of the basics. I mean --

MR. SPITZKOFF: Sure.

CHMN. CHENAL: -- what is harmonics? Just break it down. I know Member Haenichen asked the question, but I think we need to have you kind of break it down for us so we can understand the question and

the answer.

MR. SPITZKOFF: Certainly. I'll try my best. And I was really hoping I wouldn't have to explain what harmonics is, because that's -- to do it justice, you really have to have a full understanding of the topic. But I'll give it a shot, and whoever is reading the record can laugh at me later.

Basically, everything has a frequency. So the transmission system or the United States grid as a whole operates at 60 hertz, so that's 60 cycles within every second. And the -- when you're dealing with inverter-based resources, so that's when you have an AC to DC -- so the inverter changes from DC output of a solar array to AC to connect to the grid. That's what the inverter does. And so when you're dealing with power electronics, those can create harmonic resonance, I guess, and --

CHMN. CHENAL: So is that something different than 60 cycles a second? Is it different frequencies? Is that the problem, you're merging different frequencies?

MR. SPITZKOFF: Yes, so -- you've got a little bit more than -- more than -- I'm glad you have a little bit more understanding than I was worried about.

But it's really when you have those frequencies that start interacting with each other and will distort the frequencies, and they can actually interact in positive or negative ways. And it's -- of course, it's the negative interactions that you're more concerned with. And what will happen is they will -- they could potentially affect some of the other systems that are on the grid, like the relays that protect the lines and the transformers, things like that.

I would say -- this might be a mischaracterization, but I would say harmonics may be more of a concern for the plant itself. Like I was saying, connecting -- being connected to the EHV system, it's pretty strong, so you're going to need probably a lot of inverter resources operating with negative harmonic effects to really affect an EHV system.

BY MS. BENALLY:

Q. Mr. Spitzkoff.

A. (BY MR. SPITZKOFF) I would say if you're on a smaller system, you would have more of an effect.

Yes.

Q. I apologize for interrupting you mid-sentence, but EHV, would you please define that?

A. Extra-high-voltage. So that's 345 kV or

500 kV or -- anything higher than 345 kV would be EHV. Again, extra-high-voltage.

So the other thing with harmonics that we are more concerned about is what we call subsynchronous control interaction, or SSCI, subsynchronous control interaction, and really that's when you are connected to a system that has series capacitors and power electronic controllers in close proximity to each other. And that's where you can get an effect that would be of more concern than just regular harmonic interference, it's when those power electronic controllers might interfere with the -- or, might create like a resonance when you have series capacitors on lines in the area, and that can affect the protection systems that are on a transmission grid.

So the SSCI study is something that is performed by interconnectors that -- inverter-based resources that are interconnecting, but that study is generally done when the plant has its detailed control design, because really it's the detailed control system of the plant that you have to utilize in the SSCI study in order to determine whether you'll have negative effects from that.

And that's something that APS will work with all of the applicants to -- it's the applicant's

responsibility to have a consulting firm perform that study. We would review it, make sure we buy off on the results of that study, and we work with them to get that done.

Q. Mr. Spitzkoff, your testimony that every inverter-based generator has to do a harmonic study as part of the interconnection process, and it has to happen at a point in time just before, I believe you said, it triggers the interconnection -- in this instance with Invenergy, they have not performed the harmonic study yet because the project hasn't progressed to that point, is that what you're testifying or stating?

A. (BY MR. SPITZKOFF) So I have to clean that up a little bit. The SSCI is a study that they will have to perform as they progress further into their design, they get closer to their final design.

The harmonics study, that's a study that not every interconnector will have to do. We would -- we would indicate to an interconnector if we want them to perform that study ahead of time and ask that they perform that study. Or, you know, if there aren't indicators that the system has anything that we have concern about, and we don't -- they don't perform that study, and then after they are interconnected and we

see -- we see some problems arising out of the -- you know, in the system out of the interconnection, then they would be required to do that after the fact and mitigate any of those problems. And there are things like harmonic filters that can be installed on facilities like this.

That, I would characterize as a simpler fix or mitigation than anything that would come out of the SSCI analysis, because that could entail a lot -- a lot more redesign that may have to occur either in the generation plant control system or in the network trying to mitigate those issues.

Q. Okay, thank you.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: I'd like to chime in here a little bit, Mr. Spitzkoff. Let's envision that this project gets approved, and in the future other ones like it. This is a very large generator. I believe it's 400 megawatts; is that approximately right?

MR. SPITZKOFF: It is 400 megawatts. I would say it's a medium size.

MEMBER HAENICHEN: Yeah. But in the context of this discussion, it's something to be reckoned with, in my opinion.

So putting aside the harmonics problem momentarily, here we're going to have -- we're going to not have Cholla anymore, which is basically a coal-fired rotating machinery plant that generates pure 60-cycle AC. Would you agree with that?

MR. SPITZKOFF: Yes.

MEMBER HAENICHEN: So that's going to be replaced by a 400-megawatt facility that has other characteristics, including this intermittency thing. First of all, I don't know if you can answer this question, but the applicant probably can, are they going to have a large storage facility associated with this generating station to fill in the holes, batteries in particular?

MR. SPITZKOFF: I think that would be a question for the applicant and not for me.

MEMBER HAENICHEN: Okay. Well, then we'll have to make some assumptions. If you're going to use -- if you're going to store some of the output of this DC generator, and we got testimony yesterday about inverters, that they're going to have a whole slew of smaller inverters located throughout the 400-megawatt array that convert the DC to AC, now, I presume, if you're going to have an affiliated storage facility of large megawatt hour capacity, that -- well, first of

all, it has to be -- if it's batteries, you've got to use DC.

And these questions might be better asked of the applicant, but we can just chat about it now.

So let's say they siphon off some of the energy being generated by solar at peak time as DC, don't invert it, and then put it into a battery pack. And that battery pack is a temporary thing. It's not intended to store energy long-term. It's intended to fill in the gap in the solar generation. So now -- and then the remainder of the energy is taken as AC, produced by these little inverters that are scattered out throughout the array.

Now comes time to use the stored energy. Now you've got a giant battery pack that is storing DC electricity, not benefiting from the little inverters earlier. Are you going to have -- are they going to have a giant inverter that works at an extremely high power level to convert this into usable energy really quickly? So that's one question.

I'm just afraid that utilities are going to face this problem more and more as more projects like this come online. And I think that they have to come online and this is the future of generation. If you want to take a really long view, there isn't going to

be any more fossil fuel available at reasonable prices, so we have to solve this problem. And I commend you for engaging with the applicant on this project and I think you should continue, but I hope you'll agree that this is an urgent problem that has to have a lot of R&D on it.

MR. SPITZKOFF: Certainly. Member Haenichen, I have a couple of general statements I can make, and then maybe the applicant will have specific. I can talk generally to what I've seen for projects as a whole that have requested interconnection into APS for -- when they have battery storage as part of their project.

And really, it looks very similar to the PV inverters. The inverters are generally the same. So I would not expect one or two larger inverters. You're generally going to be about the same number of inverters when you're dealing with a battery storage system similar to the PV array. It may be a couple, few; it's not exactly one to one.

But really the inverters themselves are the key -- the key piece of equipment for these types of facilities when it comes to my perspective as the utility. That's the fast-acting, that provides the voltage support and the frequency response. So when we

do our studies, we focus a lot on the type of inverter and the inverter specifications that the applicant provides in their application to us.

One other perspective I'll provide in terms of the intermittency. There's things called a balancing authority area, and the balancing authority is responsible for the resource and load balance. So APS has a balancing authority with our -- we're responsible for a certain amount of load, and we have to make sure we have the right amount of resources for that at any given time. So if we -- say this project is connected at Cholla, but they're not selling to APS, they don't have to be within the APS balancing authority. They can be dynamically tied to any other balancing authority. And the intermittency problem is one that the balancing authority -- each individual balancing authority will deal with on their own also.

So while we look at it from a purely reliability standpoint of we have a solar project that could go up and down throughout the day, we make sure that the voltage changes as it goes up and down, meets the standards, et cetera. But from a resource standpoint, if they're not selling to us, not in our balancing authority, then it's -- the concern of that shifts over to the balancing authority that they're in.

And that's one thing that whoever is operating that balancing authority is looking at, how much of this do I have. And that's what plays into how much spinning reserves they might carry or other dispatchable resources that are ready to respond in an instant to that.

MS. BENALLY: Mr. Spitzkoff, let me look to the Committee to see there are any other questions.

MEMBER HAENICHEN: Well, I want to continue on this question, if I may.

The small inverters that are sprinkled throughout this system are not going to be of any value if you're storing a large portion of the output of the array as DC. Now, if you can come up with some way to store AC, I'd like to hear what it is, but I don't think there is.

So when you want to go use this stored energy, you're going to have to have a fast way to convert it into 60-cycle AC, and that is going to be a huge inverter, basically. The little inverters are out of the picture at this point. They've done their job for using the output of the array in realtime. This can be absorbed by the system if the amount of this stuff going on is small compared to the overall output of the entire grid. But when we get to where it starts

approaching 50 percent, then you're going to have to deal with this problem.

So this is a good project you're doing because you're going to learn from it, but I don't think it necessarily projects to a large amount of such energy on the grid with storage, that's what I'm worried about.

MS. BENALLY: Chairman Chenal, Member Haenichen, I didn't hear a question in your comments. Is there a question that we can respond to? Mr. Spitzkoff indicated that he is not necessarily an expert in this area. We want to be responsive to your questions.

MEMBER HAENICHEN: No, I understand. Well, I projected out into the future in my last remarks, and it has nothing really to do with this project. And I'm not going to vote against it because of these long-term considerations, but I urge people doing these interconnections of these type of systems to find a solution to this problem, the storage. Because without it, it's doomed to having a small role.

MS. BENALLY: Thank you, Member Haenichen.

MEMBER HAENICHEN: So I don't need any answer.

MS. BENALLY: Thank you.

BY MS. BENALLY:

Q. Mr. Spitzkoff, I'd like to take you back -- you discussed a number of different things, and I do appreciate you working through the various explanations on technical engineering and so forth in nature. I do also appreciate your statement that you indicated that you are not necessarily the expert in this area and your responses will be taken in that regard.

I would like to take you back to the Hashknife project in particular. And as the interconnecting utility, you did perform studies. Can you just quickly, for the record, to wrap up your testimony, indicate if that revealed any issues or concerns on APS's part?

A. (BY MR. SPITZKOFF) Certainly. So as part of an interconnection request, there are two specific studies that are performed. The first one is a system impact study, and that's the heart of the reliability analysis. We model the new project, the project that's requesting interconnection, we model that in the model of the whole system that we have, we put it in there, we do simulations, and we see the results. And we're looking for any reliability concerns that the new project may cause. And if there are any, we will identify them and determine what is required to

mitigate those, and those results are presented to the interconnection customer.

From those results, they can elect to move on to the next phase, which is the facility study, and that is more of what was identified as needing to be done to interconnect the project. The facility study is more the nuts and bolts on taking a deeper dive into, okay, we have to add one breaker and four switches and seven poles or a new half-mile line or whatever that is or replace a transformer. It gets into the details of time to do that and the cost to do that. And then -- so those are the two main phases before a project will go into the negotiations for a large generator interconnection application.

I think I answered your question. I kind of maybe got myself lost there.

Q. You did answer the question. Essentially, the interconnection process did not identify any particular issues for the utility -- for APS, is that correct?

A. (BY MR. SPITZKOFF) Yeah, generally that's correct. So this interconnection customer, there's a number of requests they have to APS that makes up the 400-megawatt total. And the first project, which was for 200 megawatts, did not identify any issues.

The second project, which was another 200, was in a cluster of projects with some other projects at the same time. We study projects that come into a six-month window at the same time, so that second half of the project was studied with a couple of other projects.

That second cluster did identify really one concern, and it was while all of those -- if all of those projects were built and were outputting at the same time that all of the Cholla generation was still online and outputting, then there was one overload of a transformer for a loss of two elements. That's a pretty low-probability event that could be mitigated any number of ways.

The first way is basically just time. Like we said earlier, the unit four that's owned by PacifiCorp is most likely going to be retired very shortly, so that will mitigate the event. Then, if the full megawatt output of all of those other projects are not constructed and online by 2025, when the rest of Cholla is expected to be retired, that also mitigates the problem.

And then finally -- well, not finally. But another way to mitigate the problem is to set up a protection system where if the event occurs where we

lose those two elements, we could what's called trip off some amount of the generation of this new cluster of generation that would come in under a certain level to mitigate the overload of the transformer.

And then finally, the final option is to replace the transformer with just a larger, higher-rated unit.

So in general, those were laid out in the interconnection results for the projects that were in that second cluster, and which direction we go is going to depend on the timing as those projects develop. Like I said, the issue of concern is likely to mitigate itself just with the sequence of events over time.

Q. Okay. Thank you very much.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Just to follow this thought, so the agreement -- I'm sure you don't have a signed agreement yet with Hashknife on the details. But the one that you're considering is that, yes, you can connect into this with no flattening of the solar intermittency by storage, is that correct, you're just going to take it as is?

MR. SPITZKOFF: Well, APS is not necessarily going to take this output. But if you're referring to

just, you know, take it in terms of allowing it to connect to the grid, yes, that's correct.

MEMBER HAENICHEN: Okay.

MEMBER HAMWAY: Mr. Chairman, this is Mary Hamway. I have a couple of questions.

CHMN. CHENAL: Sure, Member Hamway. I was going to get to you. I just wanted to see if Ms. Benally had any more questions. But sure, why don't you go ahead with your questions then.

MEMBER HAMWAY: Okay, thank you.

So you mentioned the balancing authority. So does APS belong to multiple balancing authorities? We learned that the EIM is currently managed by Cal ISO, is that correct, the primary one? And I know APS joined that in 2016. So if -- so until a power purchase agreement is done and APS agrees to take this power, Hashknife can't really be a part of a balancing authority, correct, or can they make those arrangements on their own? So my major question: Is this plant and the lines associated with it, are they going to be managed assets from ISO?

MR. SPITZKOFF: So I don't know the answer to that last part of the question, whether they're going to be managed assets of the ISO. That really depends on who they end up selling to.

The plant, when they connect, they can request to become a part of APS's balancing authority, or they can -- they can actually create their own balancing authority if they wanted to, or they can join any other balancing authority that may have them.

And I think part of the lead-up to that question, APS may never purchase the output of this plant. If we went through a scenario, they could connect to our substation at Cholla. And if they wanted to sell to, say, a Southern California Edison company, they would connect to APS at Cholla, they would purchase transmission capacity from us where we would use our system at a cost, what's called transmission wheeling rate, and deliver it to our point with the California Edison company. That would then -- then Southern California Edison would be their offtaker. They could be dynamically scheduled into California Edison's balancing authority, which is administered by the ISO.

So without knowing where -- what the future of this particular project is, there's parts of your question that I can't really answer.

MEMBER HAMWAY: Okay, thanks a lot. I appreciate that.

CHMN. CHENAL: Any further questions,

Member Hamway?

(No response.)

CHMN. CHENAL: I guess not.

Any further questions from the Committee of Mr. Spitzkoff?

MEMBER BRANUM: Chairman, this is Member Branum.

CHMN. CHENAL: Yes.

MEMBER BRANUM: I have a few questions for Mr. Spitzkoff. Thank you for the testimony and the additional information. I don't know if this is out of order, but I have reviewed the INV-6, which is the Utilities Division of the Corporation Commission's letter in response to the Chairman's letter. And there is a paragraph in that letter which I think you've just spoken to, but I wanted to point it out for you, Mr. Spitzkoff, and see if I'm understanding the reliability impacts of the project correctly.

And so where this is located, if you have that handy, that is on Page 2. And what it says, in the last paragraph right above the conclusions and recommendations, it says, "Staff" -- being the ACC Utilities Division -- "reviewed the documents provided by the Applicant detailing the results of studies performed by APS in support of the interconnection

request as well as responses to Data Requests issued to the applicant. In those responses, the Applicant stated that they would be installing all equipment and protection schemes outlined as necessary by APS to mitigate possible voltage and reactive power problems associated with interconnection of the Solar Plant to the APS transmission system."

So the question is: Are these possible voltage and reactive power problems associated with that second 200-megawatt cluster that was studied?

MS. BENALLY: Mr. Spitzkoff, before you answer, I just want to ensure that you have the document in front of you that the Committee Member is referencing.

MR. SPITZKOFF: I don't have it in front of me, but I did review it. I remember that paragraph. I believe I could respond to the question.

MS. BENALLY: Chairman Chenal, do you want to have that letter projected, or are you comfortable in having Mr. Spitzkoff respond with having what has been read into the record?

CHMN. CHENAL: Well, perhaps -- no, we can't. We don't have it.

Okay. Tell you what. Let's do this. Let's have Mr. Spitzkoff answer the question as best he can.

I don't know if Member Branum has additional questions in addition to this one. Because we're getting close to the point where we should be taking our lunch break, and that would be a great opportunity for Mr. Spitzkoff to be able to review the letter and answer it.

So Member Branum, will you have more questions in addition to this? It's perfectly fine if you do. Maybe we could allow Mr. Spitzkoff to look at the letter and resume at this point after lunch.

MEMBER BRANUM: Yes. Thank you, Chairman. I do have one additional question. I could ask that now so Mr. Spitzkoff can contemplate during the lunch break, if appropriate.

CHMN. CHENAL: Sure, let's do that. And then we'll take our lunch break and then Mr. Spitzkoff can review the letter and consider the second question from Member Branum, which you could state now if you'd like.

MEMBER BRANUM: Okay. Thank you, Chairman.

The second question is: Could APS briefly, at a high level, describe how the proposed project may improve the delivery of power across APS's own transmission assets and balancing authority? And really what I'm trying to understand is, with the eventual retirement of Cholla, does APS look favorably upon projects like this which displace that capacity in

this region? Thank you.

CHMN. CHENAL: Great question.

So you have a little homework, Mr. Spitzkoff. It's a little -- it's almost 12:25. Let's resume the hearing at 1:30, it's just an hour and a couple minutes, and we'll resume with Mr. Spitzkoff. So let's adjourn until 1:30.

(Off the record from 12:23 p.m. to 1:41 p.m.)

CHMN. CHENAL: Good afternoon, everyone. This is the time set to resume the hearing.

Ms. Benally, I believe your witness, Mr. Spitzkoff, is still on the stand. And I believe there are a couple questions that Member Branum had posed before our break, one of which involved the letter that was written from the Corporation Commission to me in response to my letter. I understand you don't have any further questions of Mr. Spitzkoff, so it's basically answering the questions from the Committee at this point and any from the applicant.

So with that understanding, can we -- I want to confirm that Mr. Spitzkoff is present. He is, I can see now.

I want to make sure Member Branum is on the line with us now. He is.

MEMBER BRANUM: Chairman, I'm here. Present.

Thank you.

CHMN. CHENAL: All right, very well. So Member Branum, there were a couple questions you had, one of which involved the letter which we had up on the screen, we can put back up, and I know Mr. Spitzkoff has had an opportunity to review it. So shall we go back to that question and then follow it up with your second question?

MEMBER BRANUM: Chairman, thank you. Would you like me to repeat my first question?

CHMN. CHENAL: Why don't we do that, and then Mr. Spitzkoff can respond. Thank you.

MEMBER BRANUM: Okay. Thank you, Chairman.

Thank you, Mr. Spitzkoff. The question was basically, can you confirm that the second cluster of the 200-megawatt capacity that is in question here in the Utilities Division Staff engineer's write-up discussing possible voltage and reactive power problems associated with the interconnection of the project?

MR. SPITZKOFF: So I can confirm that. I also went back and reviewed the -- the project had a number of restudies that they requested as they altered the makeup of their projects. So the latest study that I see shows, in two of the three parts of the project, the power factor capability, which is the voltage

support that they can provide, falls short of the minimum requirements. And APS listed out what the applicant would be required to do to bring them up to those minimum requirements.

MEMBER BRANUM: Okay, thank you. That answers my question, my first question. I appreciate that. Thank you.

CHMN. CHENAL: Member Branum, do you want to repose your second question?

MEMBER BRANUM: Yes, sir. Thank you, Chairman.

The second question would be, at a very high level, I'm just interested to get APS's perspective on this project and, I guess, potential future projects that are similar and basically get a sense of how APS is really approaching the displacement of that Cholla capacity in the region.

It's my understanding that APS is making, I think, investments in the community around the Cholla power plant. I think it would just be helpful to get some insight in how APS sees this area developing in the future and if you look favorably upon projects of this nature and hope to see more. Thank you.

MR. SPITZKOFF: Thank you, Member Branum, Chairman.

That's a fairly broad question. What I can say is, you know, APS reviewed this project and the reliability impacts of this project and found no negative effects to reliability.

The rest of the answer to that question would really be from a number of different departments at APS that would really be able to answer that and would require a lot of speculation and a lot of discussion.

MEMBER BRANUM: Thank you. I can appreciate that and I appreciate the response.

I guess zooming in on a little more detail, when you have studied this project, has there been any consideration for projects on the horizon that may be similar, you know, renewable development in the area, that APS anticipates? You know, we had public comment yesterday, and I believe the gentleman who spoke talked about a grand central terminal opportunity, and this is kind of where the question stems from for me. I'm just curious if APS shares that vision that this is potentially an area where there will be a lot of activity moving forward. But if you can't answer that, I completely understand. I appreciate it. Thank you.

MR. SPITZKOFF: Member Branum, Chairman, I did not hear the comment specifically by the member of the public yesterday. What I can say is APS has an

open access transmission tariff that really means that developers can apply for interconnection anywhere in our system. The queue that we have for generator interconnection request is publicly posted. We have over a hundred active requests at the moment across our whole system, and this area in particular does have a number of requests. It has had a number of requests in the past, it currently has a number of requests, and I would say would probably continue to have requests in the future.

MEMBER BRANUM: Thank you, Mr. Spitzkoff. That addresses my question. I really appreciate the additional information.

Thank you, Chairman.

CHMN. CHENAL: Very well. Are there any further questions at this time from the Committee of Mr. Spitzkoff or Mr. Larsen?

(No response.)

CHMN. CHENAL: I'm not hearing any.

Does the applicant have any follow-up questions or questions of Mr. Spitzkoff or Mr. Larsen?

MR. ACKEN: No. Thank you, Mr. Chairman.

CHMN. CHENAL: All right. Mr. Larsen, Mr. Spitzkoff, thank you very much for your testimony. I think we all found it very helpful and appreciate you

appearing and providing us that testimony. So thank you for that.

I think that we had discussed previously that at this point --

Ms. Benally, do you have any further witnesses or exhibits or anything at this point?

MS. BENALLY: Oh, yes. Thank you, Mr. Chair. I do have two exhibits that I would like to move for admission. I'd like to move APS Exhibit 1 --

CHMN. CHENAL: And APS-2?

MS. BENALLY: -- and APS Exhibit 2. I apologize. I was trying to find a description for APS-1. So yes.

CHMN. CHENAL: Well, we have both of them. So APS-1 and 2?

MS. BENALLY: That's correct.

CHMN. CHENAL: All right. Any objections?

(No response.)

CHMN. CHENAL: Hearing none, APS-1 and APS-2 are admitted.

(Exhibits APS-1 and APS-2 were admitted into evidence.)

MS. BENALLY: Thank you. That's all I have. Thank you, Mr. Chair.

CHMN. CHENAL: And then I think we discussed

earlier, Mr. Acken, that at this point we'd go back to, I guess, rebuttal. And you'll have a couple witnesses for rebuttal, is that correct?

MR. ACKEN: Yes. Thank you, Mr. Chairman. The applicant recalls Susan Innis, and we are also going to call Aaron White. He will be appearing remotely. APS had such great success with the audio visual guys here, so we're going to see if we can tier off of that as well.

And while we get organized and Aaron gets logged on, the purpose of his testimony is twofold. One, he's available to answer any further follow-up questions that Mr. Haenichen and others may have regarding the inverters. And then also, he is here to testify on the APLIC standard, if you will, the avian protection standard. And I say "standard"; he's going to correct me and tell all of us that's incorrect. So that's why he's here.

CHMN. CHENAL: All right, very good. And what is this witness's name again? I'm sorry.

MR. ACKEN: Aaron White.

CHMN. CHENAL: Mr. White. Okay.

MR. ACKEN: Would you like to swear him in?

CHMN. CHENAL: Sure.

Mr. White, would you prefer an oath or an

affirmation?

MR. WHITE: Oath, please.

CHMN. CHENAL: Would you please raise your right hand.

(Aaron Michael White was duly sworn by the Chairman.)

CHMN. CHENAL: Mr. Acken.

AARON MICHAEL WHITE (VIDEOCONFERENCE), called as a witness on behalf of the Applicant, having been previously sworn by the Chairman to speak the truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ACKEN:

Q. Mr. White, please state your name and business address for the record.

A. Aaron Michael White, 1 South Whacker Drive, Suite 1800, Chicago, Illinois 60606.

Q. And by whom are you employed and in what capacity?

A. Invenergy. I am transmission engineering manager.

Q. If you would, briefly describe your

educational and professional background.

A. Yes. I'm a licensed civil engineer. I have worked in engineering over 10 years, specifically in power delivery and transmission design for the last eight years. I've worked as a consultant, and currently on the owner's side for Invenergy.

Q. And did you hear the testimony and questions concerning what is Condition 6 to the proposed Certificate of Environmental Compatibility that addresses Avian Power Line Interaction Committee requirements and guidelines?

A. Yes.

Q. Could you -- is it fair to say that the proposed revisions to Condition 6 were at your suggestion?

A. Yes.

Q. And if you would, explain to the Committee why you proposed changes to the condition.

A. Yes. The changes I recommended were to remove the word "standard" because the names of the documents that were questioned, a 2006 APLIC document and 2012 APLIC document, are not professional standards; rather, recommendations.

Q. And so do you know where the reference to standards in the 2006 -- well, in the condition

referencing 2006 standards, do you know where that comes from?

A. I do not. I have seen it in a previous CEC that I reviewed in preparation for this hearing.

Q. But it's your position the 2006 APLIC -- I keep wanting to call them standards -- the 2006, those are guidelines or suggested practices, is that the way we should describe them?

A. Yes. The 2006 APLIC document titled Suggested Practices for Avian Protection on Power Lines, the abstract of that document will state -- does state it is to assist stakeholders concerned with complying with federal laws protecting and enhancing avian populations and maintaining the reliability of electric power networks, that utilities may choose to adopt these recommendations or modify their design standards based on species and conditions at issue.

Q. And will the project be designed to adhere to the recommendations from APLIC 2012 guidelines?

A. The project will be designed to adhere to both recommendations from 2006 APLIC, Suggested Practices for Avian Protection on Power Lines, and the APLIC 2012 document entitled Reducing Avian Collisions with Power Lines, which its abstract states that its scope is to provide electric utilities, wildlife

agencies, and other stakeholders with guidance for reducing bird collision with power lines.

CHMN. CHENAL: Mr. Acken, let me -- I was trying to find in the documents, because I have them downloaded on my iPad -- one of the documents, the 2006 versus 2012, dealt with electrocutions and the other dealt with collisions. And you just said that. So to save me the time of looking through that, can you state again which one dealt with which?

MR. WHITE: Yes. The 2006 APLIC document, Suggested Practices for Avian Protection on Power Lines, addresses wildlife electrocution, avian electrocutions specifically.

CHMN. CHENAL: And then the 2012 document deals with avian collisions?

MR. WHITE: Yes. The 2012 document titled Reducing Avian Collisions with Power Lines addresses avian collisions and guidelines, recommendations to do such.

CHMN. CHENAL: Okay, thank you. Thank you.

Mr. Acken, go ahead. I just wanted to make sure I heard that correctly as I was looking through the documents.

MR. ACKEN: Thank you, Mr. Chairman.

BY MR. ACKEN:

Q. Mr. White, do you have any further comments?

MR. ACKEN: Thank you.

Next, we're going to turn back to Ms. Innis to address a couple follow-up questions.

SUSAN INNIS (RECALLED),

recalled as a witness on behalf of the Applicant, having been previously sworn by the Chairman to speak the truth and nothing but the truth, was examined and testified as follows:

REDIRECT EXAMINATION

BY MR. ACKEN:

Q. Ms. Innis, did you hear Member Noland's questions -- or, I guess it was a request to show the substation on the form of order maps and also identify corridor width?

A. Yes, I did, and we were able to make those updates.

Q. And do you have in front of you what's been marked as INV-8?

A. Yes, I do.

Q. And would you describe that for the Committee?

A. Sure. INV-8 is our preferred route form of

order map for CEC-1. We have labeled the corridor, per the suggestion from the Committee Member, as a 1,000-foot corridor. So you can see we've added that label here on the right side of the corridor below the point of interconnection at the Cholla power plant.

The other suggestion was that we provide a more specific location for the solar project substation, so we've added that to the map. It's the northeast quarter section shown here. The CEC-1 corridor would connect with the project substation in this portion of the solar project area.

Q. And if you would, show the same for the alternative route.

A. And here you can see this is our form of order map for the alternative route. And again, we've made the requested changes. We've added a label that this is for a 1,000-foot corridor. And then we've shown here, for the alternative route, the project substation would be in the southeast quarter section shown at the western edge of that transmission line corridor.

Q. And next, show the proposed map for CEC-2.

A. And then our third and final map here, this is our CEC-2 form of order map. We've labeled the 500-foot corridor here, and I believe that's the only

change we've made to the maps we showed earlier.

Q. Thank you. Yesterday, do you recall Member Haenichen asked whether you were seeking approval for both the preferred and alternative route?

A. I do recall that.

Q. And do you recall what your answer was?

A. We would like to seek approval for both the alternative and the preferred route to allow for flexibility in siting the transmission line for this facility.

Q. And to clarify, that was not what I said yesterday. But of course, she's the witness and the applicant, and so the applicant is requesting approval of both.

Did you hear anything yesterday in the public comment from the landowner that, in your mind, provides further support for requesting approval of both routes?

A. I did. Last night Steve Brophy with Aztec Land & Cattle, the landowner that we hold the lease agreement with for the solar project and transmission lines, referred to this area as grand central station and suggested there is a lot of competition in the area for other renewable energy development projects.

We also just heard testimony from Mr. Spitzkoff at APS that this area has had generator

interconnection requests. I did have a chance to look quickly at their publicly available transmission queue online. APS lists all of the generator interconnection requests that are pending. And at the Cholla substation and on the surrounding lines, I identified approximately a dozen different renewable energy projects seeking to access the transmission system here.

For those reasons, I think Invenergy and Hashknife Energy Center would like to request approval for both the preferred route and the alternative route to make sure we have the ability to interconnect our solar facility with the transmission grid at the Cholla substation.

Q. And do you have any final comments for the Committee?

A. I do not. We appreciate the consideration of our application.

MR. ACKEN: Thank you, Mr. Chairman. That completes our testimony. The witnesses are available for questions.

CHMN. CHENAL: We may have some questions. The last comment, Ms. Innis, I'd like you to just restate it maybe. The applicant is asking for us to approve in the CEC both the preferred and the alternate

route?

MS. INNIS: We are, if that would be possible. I believe the Committee has entertained that in previous applications. This would give us flexibility to choose between those routes when we get closer to designing and constructing the generation tie line.

CHMN. CHENAL: And tell me again why that's needed.

MS. INNIS: Because of competition in the area, and to provide flexibility. So that if there are other generation tie lines in the area, we'll be able to navigate around those and connect our solar generating plant to the grid.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: I'm sorry. Who is speaking?

MEMBER NOLAND: It's Member Noland.

CHMN. CHENAL: Oh, Member Noland. Yes.

MEMBER NOLAND: Well, I think this is a last-minute change. The CECs were developed using an "or," the preferred or the alternate. And I haven't been part of a CEC, that I remember, that we've approved both the alternate and the preferred, and I've been on this Committee for 10 years.

MR. ACKEN: Mr. Chairman, could I address

that?

CHMN. CHENAL: Sure.

MR. ACKEN: I don't know the case number, but it was an APS case, Palo Verde to North Gila. It was a relatively long transmission line, but the interconnection into Palo Verde had three alternatives requested and approved. So while the vast majority of the route was one route, the three alternatives for the interconnection were approved, because at that point the applicant was requesting approval to perhaps interconnect at Palo Verde, Red Hawk, I believe, and then a third facility. And so that approval was granted. And we can go back and pull that CEC for identification so the Committee can see that, compare it, see what conditions were imposed as far as notice, things of that nature.

You know, I hear Member Noland. I'll take the arrows on this one as far as not making that clear about the request for two. We would ask for two. It's all on land owned by the same landowner, who supports the project, and I believe in his public comment said he was agnostic to the route. So that's why we're asking for both.

CHMN. CHENAL: Maybe we should --

MEMBER HAMWAY: Mr. Chairman.

CHMN. CHENAL: Yes, Member Noland.

MEMBER HAMWAY: No. It's Mary Hamway.

CHMN. CHENAL: Member Hamway. Sorry.

MEMBER HAMWAY: Yes. I just had a question. So by approving both of these routes, are we basically allowing APS and Hashknife to kind of tie up a lot of this for the length of this so that it eliminates the ability for competition or it makes it harder for competition? Because I really wouldn't want to be choosing winners and losers here. I think that you ought to choose one and we'll go with that. That's my opinion.

CHMN. CHENAL: Thanks, Member Hamway.

I'm just trying to focus -- I'm trying to develop a series of questions to get back into this issue of why it's important to the applicant to have the option of one route or the other so that we'd be asked to approve both. I heard the words, but I don't understand what that means. I don't understand how picking the preferred or the alternate would somehow be impacted by other potential projects in the area, since it's all going to be -- both of these lines are going to be on Aztec's property. I guess I don't understand that. If I could ask, Ms. Innis, if you could develop that a little further.

MS. INNIS: Sure. We can talk in terms of hypotheticals to answer that question.

CHMN. CHENAL: And maybe a map would be good, to have a map of the project area.

MS. INNIS: Sure. We'll get that pulled up. That will work. Is that all right, Chairman? We'll use this one to speak from.

CHMN. CHENAL: Yeah. I like the color one better, if we could get that. That was the one that was --

MR. ACKEN: Let's use Figure 2, which I believe is Slide 2 from INV-2.

MEMBER NOLAND: Mr. Chairman, that's not showing up in here.

MS. INNIS: We'll share the image on Zoom here in just a moment.

MEMBER NOLAND: Got it.

MS. INNIS: They're seeing it now?

MEMBER NOLAND: Yep.

MS. INNIS: It just takes us a minute to synch on the phone with what we've got here in the room, so bear with us for just a minute so we can get everything up for everyone who needs to see it.

And those of you on the phone, you can see the map area now?

(No response.)

MS. INNIS: Very good. So hypothetically speaking, we have these two proposed routes on this image. The solar project area, again, is shown within that yellow box, the hatched area. The preferred route is shown in blue on the north side of the project area. And then in orange, along the east side of the project area, we've got our alternative route.

And based on what Mr. Brophy has indicated, hypothetically, we could have other developers of renewable energy projects on the land to the north, south, east, or west of our project area who also have generator interconnections pending with APS at the Cholla substation or on one of the lines that enters the Cholla substation that could potentially seek to use this same area to interconnect for their Gen-Tie lines.

CHMN. CHENAL: So I guess that's what I'm not understanding. If, for example, the alternate route was established, it runs parallel to existing transmission lines. Would that just not be another, you know, Gen-Tie line that would feed into Cholla from any of these other projects? I guess I'm not understanding how the fact that there's another project that could be built, say, southeast of your project,

what would -- why would it be hampered -- its Gen-Tie line be hampered if your project uses the alternate route? I mean, I hear the words. I'm sorry, I just do not understand why your Gen-Tie line would interfere with another Gen-Tie line.

MS. INNIS: Sure. We're looking for flexibility to choose between the preferred route and the alternate route when it comes time to engineer the design and pursue construction of the generation tie line. So in your example if we had a project on the southern side of the existing 345 and 500 kV transmission lines and we were locked into that alternative route, we would have to come back before the Power Line Siting Committee for approval to move that corridor, for example.

CHMN. CHENAL: Well -- believe me, I'm not trying to be argumentative. I'm just not understanding why would you -- if there were another project with another Gen-Tie line, why would that obligate you to move your line on your project?

MS. INNIS: Let's continue with the hypotheticals here. And I appreciate the line of questioning here and kind of digging into what we're looking for here with our request to approve the preferred and the alternative.

So continuing on with that hypothetical example, if we received approval this week from the Line Siting Committee for that alternate route, and another developer came in and constructed their facility before we constructed our facility, they could potentially secure easements or rights that would potentially infringe on our ability to actually construct in that alternative route corridor shown there.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Yeah. This isn't making any sense to me. You have a preferred route. It's preferred for a reason. One would think that you've been out there to go over the area. You have a thousand-foot corridor. And I don't know how this was presented to the public and other people, but as I've understood it from the beginning, you're asking for the preferred; and if not, there's an alternate. Also, I haven't seen any document on the cost of either route to see what the cost differential is.

MS. INNIS: We did provide cost information in our application.

MEMBER NOLAND: Okay.

MS. INNIS: I can grab that. Hold on just

one second. Let me grab that and look that number up for you.

MR. ACKEN: Ms. Innis, I'd direct you to Page iii of the application, Section 4biv.

MS. INNIS: So now that I have that in front of me, I'm looking at 4biv related to the estimated cost for the proposed and alternate routes. We suggest here the estimated cost of the alternative route is an additional $1 million. The estimated cost for the proposed transmission line along the preferred route and the project substation is estimated to cost up to $23 million.

MEMBER NOLAND: Well, do you know, what's the breakdown for just the transmission line? Are you saying that the alternative route with substation would be 1 million more than the preferred route with substation?

MS. INNIS: That's correct. The alternative route has an incremental cost of $1 million more than the preferred route.

MEMBER NOLAND: And the preferred route is 20 -- how much?

MS. INNIS: 23 million.

MEMBER NOLAND: 23, okay.

Mr. Chairman, I think this is kind of

changing horses in midstream right now, that's my feeling. So I'm not really sure that I'm for this.

CHMN. CHENAL: We have a couple questions. Thank you, Member Noland.

Member Riggins has a question and then Member Haenichen.

MEMBER RIGGINS: So I had a question to Member Hamway's point about essentially locking in two routes. To the point of the easements, so if both routes were approved, hypothetically, would the applicant purchase easements for both? I think as far as competition or trying to avoid another project developing faster and using the easement that you prefer, if you don't purchase easements for both routes, then that competition exists either way. Does that make any sense?

MS. INNIS: Sure.

MEMBER RIGGINS: So if we approve the CEC, and the applicant purchases easements or preferred and alternate just to lock those in place -- I mean, is that the intent, or is the intent to have the CEC show both routes to avoid -- I guess I just don't understand what you're trying to achieve by having two preferred -- or, two routes, essentially, in the CEC.

MS. INNIS: Yeah. At the moment -- I can

start with the first part of your question regarding the easements. We do have easements in place for both the preferred and alternative route with Aztec Land & Cattle. We have not pursued the T-line easements for either route from Burlington Northern Santa Fe or from APS, the other two landowners in the project area who would be affected by these transmission lines.

MEMBER RIGGINS: But any other projects that want to develop would have to possibly go through a siting process. I don't see how it would be a hindrance to your project. You already have the land for the solar facility. I just -- I don't see where it would be beneficial for you to have both. I guess I'm just not seeing...

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen, maybe Ms. Innis can respond to Member Riggins' question or comment, and then we'll go to you, sir.

MS. INNIS: Sure. And I would just make the same point I made earlier. What we're looking for here in asking for approval for both the preferred and alternative is flexibility to potentially engineer and build either of those without coming back before the Committee for an additional approval if we needed to change routes.

MR. ACKEN: And if I could just supplement that from a legal standpoint, and we'll go back and look at that other prior CEC. But I heard the concerns that this is potentially anticompetitive. It's actually intended to be the exact opposite. It's to provide flexibility to this applicant and others.

And the way that I recall 135 worked was the applicant had to identify which route it was going to choose, provide notice, and at that time, you know, the other -- it no longer had all three alternatives. It had the one that it selected. And so there was a time certain for when that selection had to be done.

And so from the legal standpoint, I just want to be clear that this isn't -- it's supposed to be helpful to competition, knowing that there's other projects and saying, they're at different stages. Some of them may be grabbing right-of-way before they go to the CEC. And we just don't want to be in a situation where we've got to come back here. We want to have options so they have options and everybody can build what they need to build.

And again, I apologize for the late hour of it from my standpoint of it seeming new. That was on me.

CHMN. CHENAL: All right. I'll have some

questions on that, but Member Haenichen.

MEMBER HAENICHEN: Mr. Chairman, thank you.

Following the reasoning of Member Hamway, I think that we should definitely just have one to approve. And once we approve that, unless this existing project proposal is going to drag on for 10 or 20 years, we're going to be cognizant of the fact that we've approved a route, and it's kind of sacred that we have to leave it in such condition that it will work for you. So I would say that either the applicant should pick one of the two or we should.

MEMBER PALMER: Mr. Chairman.

CHMN. CHENAL: Yes, Member Palmer.

MEMBER PALMER: The question I have, and he's not here to answer the question, but last night, in his comments during the public comment period, Mr. Brophy indicated that he was agnostic over which route was chosen, but I don't think he said he was agnostic about choosing them both. And it creates questions in my mind. I assume during the public process they were told that one of these routes would be chosen. It's a little concerning to me at this point to be changing our direction.

I wish Mr. Brophy was here. You know, we're dealing with a private landowner and his private

property, and I certainly respect his right to designate all of that if he wants to for corridors. But absent him being here, I have some concerns about tying up multiple corridors that he may want to use down the road for something else.

MEMBER GENTLES: Mr. Chairman.

CHMN. CHENAL: Yes. If the Members, just to help us, if you could give us your name and then your question, that would help, because we can't see who's speaking. We're just hearing your voice. I think it's Member Gentles, but I'm not sure.

MEMBER GENTLES: It is. This is Member Gentles.

Just following up on the public process of this, were both these lines, preferred and the alternate, presented as it's going to be one or the other or both in the public communications and open houses, particularly the open house that was held back in May of last year?

MS. INNIS: Sure. At the open house in May 2019, we talked generally about transmission corridors. I don't believe we showed these precise 1,000-foot-wide corridors that we have in this application.

We have had the full application up on our

website for quite some time now, I'd say at least a month, and have not received any questions or comments about preferred versus alternative.

MEMBER GENTLES: And in that -- on the website, does it say "and" or "or"?

MS. INNIS: The website contains exactly our application materials. It's just a PDF document of our full application.

MEMBER GENTLES: Okay, thank you.

CHMN. CHENAL: A couple points. I've never been a party to a CEC application where we've authorized two separate routes. And in reading the application and the proposed CECs, it was always my understanding that it would be one or the other that would be chosen.

And I note that INV-4, which is the CEC-1 draft that's been proposed, on Page 3 it talks about if the preferred route is chosen, and then it goes through a long description. And then right after it it says, "If alternate route chosen," and it gives a separate description.

And honestly, until, Ms. Innis, your testimony a few minutes ago, I was -- as in every other case I've been involved with, I thought it was one or the other. And, I mean, I don't know how much of this

is -- if this was intended to be both from the very beginning, if, you know, after a break you could show in the application where that's made clear, I think that would be helpful. I just -- I'm caught a little off guard here. I mean, we want to be mindful and provide flexibility to the applicant; I think that's why we're generally fairly generous with corridors and things like that.

But, you know, having two separate corridors -- back to Member Hamway and Member Riggins' points. If I were one of these other projects that wanted to come in and do a project, and there's already two corridors that are kind of carved out, if you will, for Hashknife, I don't know what effect that would have on my ability, if I was a project manager for that other project, to be able to use either of those corridors for my project.

So it's the unknowns here that concern me more than anything. I'm not going to say that that would preclude me, as a separate project, from having access to something in the corridor, but that's kind of an unknown here and we've never addressed this before.

Certainly, I want to give the applicant time to kind of address this. And if you want to provide us the other CEC and we take a break and kind of go over

this, we're happy to do it.

Mr. Acken, when you had mentioned the other project, I think I heard you say that the reason for the three separate alternatives was because there were going to be three potentially different interconnection points. But here there's only one, it's Cholla. So, I mean, the need for the -- if my understanding is correct, the need for the flexibility in that other case would not necessarily be the same here.

So I think what you're hearing from the Committee is just kind of a little confusion. I think this is something that -- if this was the intent at the beginning, if you could point to the application and the record and kind of help us understand where that was clear, I think that would be helpful, and maybe this other case. Because I certainly want to be fair, we want to be fair, but I've got concerns.

I would absolutely ask the applicant at the end of this hearing, tell me which one you prefer, the preferred or, based on the questions and the testimony, the alternate, and I would have gone with one or the other and frankly left it up to you. But both of them, that's a bit of an issue for me, and I'm just being up front, and I think I've heard it from a couple other Committee Members.

So I don't know what other testimony we have. I'm sure there's going to be some more questions. Certainly, we'll give you some more time to kind of regroup and present this, if you'd like, and we can have some further discussion on it.

Mr. Acken.

MR. ACKEN: Thank you, Mr. Chairman. We don't have any further testimony. Understanding -- I'm always ready to move forward with deliberations. Assuming that's not happening today, then what I would ask, with the Committee's approval, is let us take your comments under advisement, get our ducks in a row, come back tomorrow morning with what our ask is and why, and then you can decide what you want to do with it at that time and then move into deliberations. It shouldn't be a very long discussion, I don't think, tomorrow, so I would propose that we do that. I guess the alternative would be to break for a little while and do it this afternoon, but I'm not sure it matters in the grand scheme of things.

CHMN. CHENAL: I'd rather give you the time.

MR. ACKEN: Thank you.

CHMN. CHENAL: And I still have a few questions for your other witness on the avian stuff, but let me just ask if the Committee has any questions

on this at this point, understanding that they're going to regroup and come back on this, asking for both or maybe just one or the other? But are there any questions, for example, Member Haenichen, on synchronicity, on the harmonics, on any unanswered questions you have on the project itself?

MEMBER HAENICHEN: Not me.

CHMN. CHENAL: Okay.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: This is Member Noland. I don't have a copy of the filing, the application, so I would like to see -- just like you said, I would like to see exactly what was in that. And so I'd like to have those as exhibits that we can review and make a decision on. And if that's tomorrow, that's tomorrow. That's fine with me. But I need to see a -- I felt that the other -- one of the other witnesses was definitely saying they preferred the preferred route because of the number of turning structures and so on on the alternative route. And now it's kind of like, well, you should have understood we were talking about both. And I didn't understand that.

CHMN. CHENAL: Yes. And we can make a -- if the applicant doesn't have an extra copy of the

application here, I've got my copy here and you'll have a copy of it to review.

MR. ACKEN: We're delivering one to her right now.

CHMN. CHENAL: All right. One is being delivered.

MEMBER HAMWAY: Mr. Chairman, I have one quick question.

CHMN. CHENAL: Is that Member Hamway?

MEMBER HAMWAY: Yes, it is. I'm sorry.

CHMN. CHENAL: Thanks.

MEMBER HAMWAY: So who does Hashknife think is going to buy this energy? I mean, APS has said for sure today that there's no guarantee they're going to buy it. So has any of the 400 megawatts been sold or partitioned out, or is all of that available and is the need for flexibility -- does it have to do with the fact that you don't have any current -- I don't know if you have any current buyers or not, so that's kind of my question. Does that make sense?

MS. INNIS: It does. Thank you for the question. Hashknife Energy Center is actively being marketed to utilities in the region, including APS. PacifiCorp is also an owner of transmission service rights from the Cholla power plant, so they're another

natural customer. Invenergy also frequently sells power through contracts to commercial and industrial customers. So we have a variety of potential entities who would be willing to either enter into a power purchase agreement for energy from this facility or potentially enter into other types of arrangements, like a develop transfer agreement or a build transfer agreement, where Invenergy would carry the project through to a certain point and then transfer ownership, so another entity would come in to construct and operate the facility.

CHMN. CHENAL: Member Hamway, I'm sorry, you're on mute.

MEMBER HAMWAY: So there's no worries that you're not going to be able to make this happen and sell all this energy?

MS. INNIS: We would not construct the facility without a power purchase agreement or some other sort of agreement for somebody to participate in the project.

MEMBER HAMWAY: Okay. So you don't have that yet. So I guess my biggest question is: Is the lack of that, is that motivating the need for the two routes?

MS. INNIS: No, it's not.

MEMBER HAMWAY: Okay.

CHMN. CHENAL: Thank you.

Member Palmer.

MEMBER PALMER: I just wanted to follow up on Member Hamway's question, and I think you could clarify it for me. My assumption is that, with an increasing demand for a bigger percentage of the portfolio to be renewable, that selling the power is probably not a great concern. There seems to be increasingly a need to buy renewable power and percentages of portfolios increasing all the time. Would I be wrong in assuming that you're not really that worried about a demand for this power?

MS. INNIS: That's correct.

MEMBER PALMER: Thank you.

MEMBER RIGGINS: Mr. Chair.

CHMN. CHENAL: Yes, Member Riggins.

MEMBER RIGGINS: So I guess the answer that would help clear up some things for me would be: So if the preferred route was approved and the Commission approved that route, it was environmentally compatible, what could another developer or another project do that would be detrimental to that route that would cause any sort of negative effects to your project? Like what physically would hinder that route then and make it

either useless or harm your project as approved by the CEC -- or, in the CEC?

MS. INNIS: Thanks for the question. And again, speaking in terms of hypotheticals here, if we had a project on the north side of our area or the west side that was following the preferred route shown here in blue, if they were -- if their right-of-way was just to the north of ours, I could see some technical engineering challenges trying to get both of these transmission lines into the Cholla substation. So if they constructed their line first, we could potentially run into challenges during our construction period in terms of taking outages to allow safe construction with adjacent transmission lines very close by. That's an example of the kind of concern we'd have if we didn't have the option to switch to the alternative route.

MEMBER RIGGINS: And I think those are the specifics that we would be looking for as far as reasons, specific reasons why that flexibility would need to be built in. So thank you.

CHMN. CHENAL: And Member Riggins, I thought your question was if the alternate route was accepted.

MEMBER RIGGINS: I think I said the preferred. Did I say the --

CHMN. CHENAL: The preferred, okay.

MEMBER RIGGINS: I meant the preferred route.

CHMN. CHENAL: Well, still, it's a question that I -- specifics, I think, would be helpful.

Member Haenichen.

MEMBER HAENICHEN: Ms. Innis, regarding your last set of comments, this is kind of that's life, isn't it? You're already way ahead of any potential competitor come flying in. So you're in the driver's seat now, and I don't quite see where you need to have both routes on the agenda -- on the approval.

MS. INNIS: I appreciate the comment. One of the reasons we chose to proceed with this CEC application for our Gen-Tie route is exactly that. This is a very competitive business. And by getting approvals from Navajo County for the solar project and coming before you for the Certificates of Environmental Compatibility, that shows our seriousness and investment and due diligence on this project. That makes this project more attractive to potential buyers in the marketplace.

MEMBER NOLAND: Mr. Chairman, this is Member Noland.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: In the application they describe both the preferred route and the alternative

route. And after those descriptions it says, "Summary of reasons for such order of preference. The proposed preferred route was selected to optimize the interconnection to the Cholla substation including: Minimizing potential conflict with existing transmission lines including overhead crossings; reducing the number of turning structures required to cross the river and railroad tracks; parallelling existing road to minimize construction disturbance; provides access to solar field substation location where terrain and subsurface geology are favorable; and located predominantly on land owned by Aztec Land & Cattle Company, who supports the project."

CHMN. CHENAL: Ms. Innis, did you want to comment or save your comments for tomorrow? I mean, I think you see where this is headed. We all thought this was you want one or the other. I think the documents suggest that. I think to me certainly the form of the CEC-1 suggests one alternative or the other. And so this is catching us all off guard, and none of us have been involved with this before in any of the many cases we've had going back, at least some members, over 10 years.

MS. INNIS: I appreciate that. And we did intend to ask for approval for both the preferred and

the alternative, and I apologize if that was not clear from the outset. We were not intending for this to be a last-minute surprise. So, yeah, we will take these comments back and questions back and come back with you in the morning with more information.

CHMN. CHENAL: It's good we flesh this out now and no surprises tomorrow.

Member Haenichen.

MEMBER HAENICHEN: Thank you, Mr. Chairman. And this is exactly why I asked the question yesterday, are you asking for approval of either or both routes, and Mr. Acken said one. Am I quoting you correctly, it will be one of the two?

MR. ACKEN: Mr. Chairman, Member Haenichen, that is what I said. I was not under oath and I was wrong, so my apologies for misleading you.

CHMN. CHENAL: That's all right. You know, let's have this discussion. We'll finish it up tomorrow and we'll decide. I think you can see, if you had to read the tea leaves, where this is probably going to go, but I'm not going to speak for my other Members, and we want to give you an opportunity to explain it in a way that makes sense.

One of the things that would bother me and I'd like addressed is how -- with two corridors

approved, how would that impact one of your competitors? That goes back to Member Riggins' question. I mean, would having both approved routes impact a competitor who wants to come in and build a project?

Go ahead, Mr. Acken.

MR. ACKEN: We'll be prepared to address that tomorrow. Again, the intent is not to be anticompetitive, but provide flexibility for others.

CHMN. CHENAL: I had a couple follow-up questions with your first witness on the avian matter now that I have a better understanding that one of these avian standards deals with collisions and the other with electrocutions.

And I'm looking at the 2012 publication of the Avian Power Line Interaction Committee. And it says, "With this edition of the Collision Manual (now titled Reducing Avian Collisions with Power Lines) along with the" -- and that's 2012 -- "along with the 2006 Electrocution Manual, the 2005 Avian Protection Plan Guidelines, and the Edison Electric Institute's 2001 Introduction to Public Participation, utilities have a toolbox of the latest technology, science, expertise, and field experience."

So actually, looks like there's four manuals.

There's the 2012 Collision Manual, there's the 2006 Electrocution Manual, the 2005 Avian Protection Plan Guidelines, and the 2001 EEI Introduction to Public Participation.

The standard condition that we have used from time immemorial on these cases refers to the 2006 standards and the 2012 standards. The language preceding it discusses measures to minimize impacts. I think in now reading the document -- I haven't studied the two documents, the Electrocution Manual and the Collision Manual, but in now reading the introductions to those documents and the language, I'm probably going to come back and recommend that we revise the language slightly to refer to measures to minimize impacts and electrocution to avian species and refer to both the 2006 Electrocution Manual and the 2012 Collision Manual.

And I just wanted to confirm with the witness, does that make sense to you that we refer -- and I understand they're not standards, they're recommendations or guidelines -- but to refer to both the electrocution guidelines and the collision guidelines and refer to those in a condition, does that make sense to you?

MR. WHITE: Yes.

CHMN. CHENAL: Okay. That's all I wanted to get, and I appreciate that and your clarification was very helpful. And I think that's what we'll do. I'll make those changes or recommendations tomorrow, but that's very helpful and it gives us some better understanding of what that condition relates to.

Are there any other questions of the witnesses, Ms. Innis, any other questions we need to cover?

(No response.)

CHMN. CHENAL: If not, I'm going to recommend that at this point we adjourn, we come back tomorrow at 9:00, we have the opportunity to hear further from the applicant, and I will obviously allow APS to provide any additional testimony or comment. I understand that at this point you probably don't expect you'll have any; but as you deliberate this evening, maybe something will come up, and we want to give you the opportunity to create the full record.

We will have time to finish tomorrow. There will be two CECs. I will tell you now, the applicant has, I think, done a good job of taking our previous CECs. And I have a few comments, the avian being one, but a few minor comments. And I don't think it's like in previous cases where we have a lot of -- I've had a

lot of substantive changes to recommend.

So I'm going to ask my able assistant, Marie, to get those out to the applicant, APS, and to the Committee Members this evening. Understand that the avian condition I will have to work on a little, have to add the word "electrocution" and just refer to those two manuals as guidelines. So I'll work on that language a little tonight, but I think tomorrow we can do it pretty quickly.

I'm already informed that the crack AV crew will be able to put up the two versions of the CEC. And just for their understanding, the one on the left will be the document that we start with tomorrow, which will have the applicant's -- we'll start tomorrow with the version with some changes that I'll recommend. And then the document on the right side of the screen, which will be the same at the start, we'll make changes to it, we'll vote on it, and that will become the final CEC, as we've done in other cases.

MEMBER PALMER: And we'll go through that process twice?

CHMN. CHENAL: We'll go through that process twice. And I don't think it's going to take that long on the second one.

Let's talk for a second about the maps, what

the maps or the attachments will look like. I know Member Noland addressed it, I think, in one of her questions or comments.

MEMBER NOLAND: Yeah. Mr. Chairman, this is Member Noland. I think the maps that were distributed today show the thousand-foot corridor. They don't say 200-foot right-of-way on them, which I would have preferred, but that's getting to what I wanted to see.

CHMN. CHENAL: We can certainly make sure that in the narrative of the CEC that it refers to a 200-foot right-of-way.

Is there anything else, Member Noland, that jumps out at you with either the forms -- the CEC-1 or CEC-2 that we should alert the applicant and APS to this evening?

MEMBER NOLAND: No, I don't think so. And I think the CEC does, in both cases, both CECs, explain that it's a thousand-foot corridor and 200-foot right-of-way.

MEMBER PALMER: If I might add, Mr. Chairman.

CHMN. CHENAL: Member Palmer.

MEMBER PALMER: And I think it's somewhat simplified in this one in that we're dealing with a

single landowner who supports the project. And so we're not dealing with taking anyone's property or dealing with public lands. We're dealing with Aztec, who wants the see this happen, and they'll work through the -- some of the minutia of the corridor and the right-of-way.

MEMBER NOLAND: Yep.

CHMN. CHENAL: And it might be good tomorrow, if I could ask, if someone could review again the land use -- the ownership of the land as the corridor goes through it, just to refresh my recollection. I don't remember if it -- you know, most of it goes through Aztec, and a small portion of it's with State land, if I remember. No?

MR. ACKEN: Mr. Chairman, I think Ms. Innis can testify to this, but the record shows for both the preferred and alternate route that it's on Aztec land, then there is a small crossing of the railroad and then enters APS land for both routes, but no State land associated with the transmission lines. The very furthest-most west section of the solar facility is State land.

CHMN. CHENAL: That's right. Okay, thank you. That's exactly right.

So are there any other matters we should

discuss? Does the applicant --

Yes, Mr. Acken.

MR. ACKEN: Mr. Chairman, because I have a tendency to forget to do this, I would like to move INV-6 and 8. INV-6 is the Utility Division correspondence that Member Branum discussed with Mr. Spitzkoff. INV-8 are the maps that are shown on the screen and Ms. Innis presented testimony to this afternoon that we would intend to use as the maps with the form of order.

CHMN. CHENAL: Okay. INV-6 and INV-8 have been admitted. Any objection?

(No response.)

CHMN. CHENAL: Hearing none, INV-6 and INV-8 are admitted.

(Exhibits INV-6 and INV-8 were admitted into evidence.)

CHMN. CHENAL: So tomorrow we'll have some additional testimony, we'll have a statement of counsel, closing argument. They can be short, but if you want to, you'll have the opportunity. We'll then break and then go into deliberations and we'll get this concluded tomorrow.

I'm always -- you know, I don't want to forget anything tonight before we break, so I'm bending

over backwards to make sure we haven't forgotten anything before we break and go to tomorrow and resume at 9:00. But I can't think of anything, so let's adjourn now. I think it's good. I think it was a good discussion and I think it helped clarify some of the issues that we'll have to resolve tomorrow. And with that, we'll see everyone tomorrow at 9:00 a.m. Thank you.

(The hearing adjourned at 2:50 p.m.)

STATE OF ARIZONA )

COUNTY OF MARICOPA )

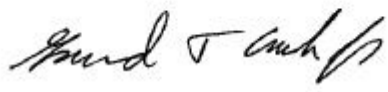
BE IT KNOWN that the foregoing proceedings were taken before me; that the foregoing pages are a full, true, and accurate record of the proceedings all done to the best of my skill and ability; that the proceedings were taken down by me in shorthand and thereafter reduced to print under my direction.

I CERTIFY that I am in no way related to any of the parties hereto nor am I in any way interested in the outcome hereof.

I CERTIFY that I have complied with the ethical obligations set forth in ACJA 7-206(F)(3) and ACJA 7-206 J(1)(g)(1) and (2). Dated at Phoenix, Arizona, this 21st day of November, 2020.

KATHRYN A. BLACKWELDER
Certified Reporter
Certificate No. 50666

I CERTIFY that Coash & Coash, Inc., has complied with the ethical obligations set forth in ACJA 7-206(J)(1)(g)(1) through (6).



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