BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES SECTION 40-360, ET SEQ., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING THE NORTH VALLEY 230KV FACILITY PROJECT, CASE NO. 120 INCLUDING THE CONSTRUCTION OF APPROXIMATELY 31 MILES OF 230KV TRANSMISSION LINES, TWO 230KV SUBSTATIONS, AND THREE SUBSTATION INTERCONNECTIONS IN MARICOPA COUNTY, ARIZONA, ORIGINATING AT THE WESTWING SUBSTATION IN SECTION 12, TOWNSHIP 4 NORTH, RANGE 1 WEST, G&SRB&M AND INTERCONNECTING AT THE RACEWAY SUBSTATION IN SECTIONS 4 AND 5, TOWNSHIP 5 NORTH, RANGE 1 EAST, G&SRB&M, CONTINUING TO THE PROPOSED AVERY SUBSTATION IN SECTION 15, TOWNSHIP 5 NORTH, RANGE 2 EAST, G&SRB&M AND THE PROPOSED MISTY WILLOW SUBSTATION IN SECTION 8, TOWNSHIP 4 NORTH, RANGE 3 EAST, G&SRB&M, AND TERMINATING AT THE PINNACLE PEAK SUBSTATION IN SECTION 10, TOWNSHIP 4 NORTH, RANGE 4 EAST, G&SRB&M. _____ AND RELATED CAPTION.	) DOCKET NO. L-00000D-02-0120) DOCKET NO. L-00000D-06-0635-00131) APPLICATION TO AMEND DECISION NO. 65997 AND DECISION NO. 63943) VOLUME II Pages 132-336

At: Sun City West, Arizona

Date: July 27, 2021

Filed: August 2, 2021

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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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 Briarwood Country Club, 20800 North 135th Avenue, Sun City West, Arizona, commencing at 9:31 a.m. on the 27th of July, 2021.

BEFORE: THOMAS K. CHENAL, Chairman

ZACHARY BRANUM, Arizona Corporation Commission, via videoconference
LEONARD C. DRAGO, Department of Environmental Quality, via videoconference
JOHN R. RIGGINS, Arizona Department of Water Resources
RICK GRINNELL, Counties, via videoconference
MARY HAMWAY, Incorporated Cities and Towns
JIM PALMER, Agricultural Interests
PATRICIA NOLAND, General Public
JACK HAENICHEN, General Public
KARL GENTLES, General Public

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CHMN. CHENAL: Good morning, everyone. This is the time to start our hearing. I am getting here a little late start, but I am sure we will make up for the -- make it up as we go along today.

Are there any procedural matters we need to discuss, Ms. Benally or Mr. Derstine?

MS. BENALLY: Good morning, Chairman Chenal, Committee members. I do have one follow-up item from yesterday that I would like to present at this time. This is regarding Decision No. 73824.

At the latter part of the hearing yesterday we shared that decision number, which was an amendment to Case 120. We didn't enter it or mark it as an exhibit, so I would like to do that this morning. I would like to mark it as APS Exhibit 29.

CHMN. CHENAL: All right. Very good.

MS. BENALLY: Thank you.

CHMN. CHENAL: And again at the end of -- the conclusion of the testimony we will just go through all of the exhibits and we will admit them. And if there is any issues with admitting any, we will still have the witness testify to the additional foundation.

All right. I think when we left we were going to finish up with Mr. Spitzkoff.

MS. BENALLY: That is correct.

Good morning, Mr. Spitzkoff.

AV TECH: I am sorry. Can we hold on? We just had the internet drop out, so we are not currently live streamed.

(Brief pause.)

CHMN. CHENAL: All right. We are back on. So Mr. Spitzkoff is ready to testify.

MS. BENALLY: Yes. Thank you, Chairman Chenal.

JASON SPITZKOFF, KEVIN DUNCAN, and MARK TURNER, called as witnesses, having been previously duly sworn by the Chairman to speak the truth and nothing but the truth, were further examined and testified as follows:

DIRECT EXAMINATION CONTINUED

BY MS. BENALLY:

Q. Okay. Good morning, Mr. Spitzkoff. Yesterday there was a question that arose from Committee Member Haenichen. So I would like for you to at slide -- actually, the slide deck that is up, pardon me, the map that's up now, the question that was asked was the length of the underground 230kV line between Avery and the TSMC fabrication unit. Would you respond to that question.

A. (BY MR. SPITZKOFF) Yes. So the distance

between Avery, the distance of the underground 230 lines between Avery and the fabrication units will be six/tenths of a mile and nine-tenths of a mile for the other unit. And that would be for each circuit, so two circuits at six-tenths and two circuits at nine-tenths.

CHMN. CHENAL: Can you repeat that again, Mr. Spitzkoff.

MR. SPITZKOFF: Certainly. And I will point between Avery substation, and the one fab is six-tenths of a mile, and then from Avery substation to the other fab is nine-tenths of a mile.

CHMN. CHENAL: Thank you.

BY MS. BENALLY:

Q. So let's continue on. Where we left off yesterday was a description regarding the TS-22 substation. So if we could advance to that slide, and describe to the Committee the planned buildout for TS-22.

A. (BY MR. SPITZKOFF) Yes. And as we discussed yesterday, TS-22 is planned for the future phases of the TSMC project. It would also be able to respond to future development of large projects in the greater Biscuit Flats area also.

And what I am going to do with the slide on the right is, in a similar manner we did with the initial

phase, phases, walk through what the service out of TS-22 would look like.

So we are using the same background here. I will just rereference, the two green boxes are Fabs 1 and 2, and then the green box on the west side is an Air Products Plant No. 1. And I removed the underground lines that are going to each of those purely to make the visualization of what you will see from TS-22 easier to visualize. You know, they will remain in service. That's purely just to make the visual easier to see.

And what I will do is I will bring in the two new green boxes that are up on the north here. And that would represent Fab 3 and Fab 4. And to serve those, we would bring underground 230kV from TS-22 over to both of those fabs, so two fabs, two lines, total of four underground 230 lines coming from TS-22 to the two future fabs.

And with every two fabs you need an air products plant. So that would be Air Products Plant No. 2. And to serve that one, we will have two underground 230 lines from TS-22 to the new air products plant.

And if we continue on with the development, and I brought in two more boxes to represent future Fabs 5 and 6, and you will see a similar service. I have now brought in the underground 230 lines from Avery to the

two new fabs, so another four underground 230 lines. And then again two new fabs, I brought in the third air products plant and the two 230 lines that would serve that.

So at this sort of what we would represent at full future buildout of the project, you will see out of TS-22 you will serve four fabrication units and two air products plants, for a total of 12 underground 230 lines coming out of TS-22.

And I will advance one more slide to show you a simplified one line of TS-22. So those fabs and air products plants represent approximately 820 megawatts of load. What you are seeing on the right slide on the left -- I am sorry. I will start on the right of the right slide. Whoops, wrong button.

This is the simplified one line of the 230kV bus. That would be at TS-22. And the labels of the lines on the left of here show all of the feeds to the fabrication units and the air products plants. And then the lines on the right, the labels represent future connections that are capable.

And then there is a couple, unfortunately it is a little small, but there are a couple that represent future transformers. So the one being highlighted, for instance, I believe that says the 230/69kV. So in the

future when we need to build the 69 yard at TS-22, the source of power for that 69 yard would be from this 230 bus.

And then I believe this one right up here, the fourth one down is an example of a 500/230 transformer. So this would be the connection where the 500kV yard at TS-22 is providing the source for the 230 bus.

And the 500kV bus is shown on the left side of this picture. So this is, again, a simplified one line of the 500kV bus. And here is this top connection with the 500kV connection of that 500/230 transformer.

So, okay, here -- sorry. This one is, this is the line coming in from the Morgan side. And, oh, there it is, Pinnacle Peak. This is the line coming in from Pinnacle Peak. So the original 500kV line that's there today goes straight through from Morgan straight to Pinnacle Peak. That line will be cut into this 500kV bus represented by these two connections here. So power would be coming into the substation and then going to the 230 bus through these transformers that are over here. And that, that is what the source is for the, for the power for the 230 bus over here, all of that, again, serving 820 megawatts of the TSMC project. Plus, also there are provisions for serving additional load as development in the Biscuit Flats area continues to

develop.

So the ultimate design of TS-22 will -- it is being designed for 500kV bus, 230kV, 69kV, and 12kV buses. 230 and 500kV will be the initial build. Once we get a signal from TSMC that they are going to move forward with Fabs 3 and 4, or, again, as I mentioned, if we have any other large load developments in the Biscuit Flats area, it would also be ready to be constructed to serve those. 69kV, 12kV, we would be ready to construct those for what we would consider more typical development, you know, smaller manufacturing, residential development, commercial development such as that.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Yes, Member Grinnell.

MEMBER GRINNELL: Yesterday I asked a couple of questions regarding the potential for future commercial or residential development in the region surrounding your current client. And my question now really does go back to that, and would any development in the area affect your current client, number one.

And number two, in the event something comes up and the trust land is sold to commercial or residential development opportunities, will you be coming back to this Committee for a new CEC?

MR. SPITZKOFF: So I will take question two first. I don't expect we would be, because -- but, however, that answer is dependent on the nature of the client and how far away they are from the substation. So if it is another significant load user and it is, say, one or two miles away from the substation, and they require from this substation a transmission line to their specific site, for instance, you know, in order to traverse from TS-22 over to where they may be, that could be a need to come for a CEC. That would be for a new line and a new project at that point.

But if there is development that does not require service from lines over 100kV, if we can serve them via 69kV lines or lower, then there wouldn't, would not be a need for another CEC, or another amendment for a CEC, because the substation would be ready to be constructed and we could serve out of that substation.

MEMBER GRINNELL: Okay. But under your current request, are you including the potential for future use and future opportunities to come out of those substations?

MR. SPITZKOFF: Yes. And I will point to --

MEMBER GRINNELL: I didn't see it. Forgive me.

MR. SPITZKOFF: I will try to find it. It is hard.

Let me -- do you have the slides? I am trying to get a closer view. Because I do believe some of those on the 230 should say future on there.

But certainly I can pick out on the 500 side this top bay up here is a future open bay. Yes, okay.

So I see the future now are the ones in the bottom, the bottom left of the 230 where I am pointing now. It says future termination 1, 2, 3, and 4. So those are bays that are not specifically allocated for what we are seeing today either to serve down to the 69 or up to the 500 and would be available for future use.

MEMBER GRINNELL: All right. I just want to make sure that we are not having to duplicate efforts down the road.

MR. SPITZKOFF: Yes. I appreciate that. And we try to accomplish that also.

Thank you, Mr. Chairman.

MR. DERSTINE: Mr. Chairman, Mr. Turner, I don't want to keep putting off Member Grinnell's question. He raised the question yesterday about the possibility of future residential development on the west side of I-17 that may impact the corridor or be in the area of the TSMC plant and that surrounding land. You are going to cover existing land use and future land use, but would you talk a bit about the possibility of whether there is

the possibility of future residential land use within the project area or within the -- that might impact the corridor that we are seeking from the Committee.

MR. TURNER: Sure. The City of Phoenix views this area west of I-17 for commercial development, commerce and business park. West of the Deadman Wash the City of Phoenix does project some residential area. That is beyond the western boundary of this project by a few miles.

MR. DERSTINE: Can we pull up a map? I apologize, if we can take Mr. Spitzkoff out of his slides.

MR. TURNER: I am not using my land use maps; we will show those later. But in general, the City of Phoenix has what they call North Phoenix 3500 PUD, planned unit development. And this entire area is slated for commercial development. The existing residential development is all east of I-17. And the future residential area would be over by New River, which is beyond our study limits right over here, that project no future residential. That's the only piece of residential that the City of Phoenix sees west of I-17 in this area.

MR. DERSTINE: Okay. And then, Mr. Spitzkoff, in terms of the open bays on the substation layout that

you identified, is APS anticipating then future commercial/industrial users and are you prepared to serve those customers from the substation configuration?

MR. SPITZKOFF: Yes, we are.

CHMN. CHENAL: Member Riggins.

MEMBER RIGGINS: Mr. Turner -- and this might be something you are going to cover later in your testimony -- is there any -- well, I guess starting with who is going to be supplying water, is this City of Phoenix supplying water to this project and project area, or who is going to be the provider?

MR. TURNER: Yes, the City of Phoenix seems to be the water provider here. When you read the North City of Phoenix 3500 PUD, which is the zoning area here, the City of Phoenix is slated for all the infrastructure.

MEMBER RIGGINS: Okay. And is there any projection on what use? I know just from the size of this project it seems like it would be pretty significant.

MR. TURNER: I don't have information on the water usage.

MEMBER RIGGINS: Okay.

CHMN. CHENAL: A couple questions kind of first for Mr. Spitzkoff.

Does APS have any idea of when Phases 3 and 4 might be, you know, started such that TS-22 will need to be constructed?

MR. SPITZKOFF: As of right now we do not know. You heard from Mr. Harrison's testimony yesterday there is commitment for 1 and 2. We have not received any commitment for 3 and 4 at this time. We have shared with them what the timelines are for the construction of a substation of this magnitude and of the equipment lead times. So TSMC is aware of the lead times that we would need to know for that. But right now there is no timeline that they provided us.

CHMN. CHENAL: And what are those lead times?

MR. SPITZKOFF: Generally it is going to be 24 months. In the supply chain environment we are in today, the large transformers, 500/230kV transformers are running close to a 24-month lead time.

CHMN. CHENAL: I am interested in hearing a little about the cost differential between undergrounding a 240kV line -- 230kV line, excuse me -- versus aboveground and why it is so much more expensive.

MR. SPITZKOFF: I am probably not the right person to walk you through that discussion.

CHMN. CHENAL: Siri wants to seem to jump in and give us the answer to that question, Mr. Spitzkoff. But

is there someone that could, during the course of the testimony, address that, the difference in cost between undergrounding and aboveground and why it is so much more expensive?

MR. SPITZKOFF: Yeah. We will do our best to try to make someone available, or if I can have a conversation with someone so I am not just going, you know, wild off the top of my head.

CHMN. CHENAL: Okay, fine.

MS. BENALLY: Chairman Chenal, we will get someone to provide that information before the close of the hearing.

CHMN. CHENAL: Super.

Member Gentles has a question.

MEMBER GENTLES: It is a bit ancillary to what we are talking about, but I am interested in Member Riggins' question about the water usage. And if we can get some sort of information on that, it would be great. I know it is not directly germane, but...

MR. SPITZKOFF: And we would have to inquire of TSMC for that information.

MEMBER GENTLES: Great.

MR. SPITZKOFF: And we will make that request.

MEMBER GENTLES: Thanks.

BY MS. BENALLY:

Q. Mr. Spitzkoff, to close off your discussion on TS-22, based on our transmission planning and the development that you discussed, what is the anticipated in-service date for TS-22?

A. (BY MR. SPITZKOFF) Right now that date is unknown. If we got the signal from a developer that's moving forward, if we got that signal today, that in-service date would be in the end of 2023 or early 2024, again, based on the construction timelines and lead times of that equipment.

Q. Okay. Thank you.

So let's now move to your --

CHMN. CHENAL: Excuse me. Member Haenichen has a question. Excuse me, Ms. Benally.

MEMBER HAENICHEN: Yeah, I am just curious. These 500 to lower voltage transformers, where are they made? Are they made in the United States?

MR. SPITZKOFF: Member Haenichen, I do not believe they are. I don't, speculating a little bit here, I am not -- which I probably shouldn't do, but I don't believe there are any companies that make transformers of that size in the United States.

MEMBER HAENICHEN: That's what I had heard and I wanted to confirm it. Thank you. That might account for the long delays.

MR. SPITZKOFF: It is part of it, but it is also the demand for them and the time it takes to construct. They are each individually built per the specs that are required at the time they are ordered. So a manufacturing company doesn't just pump them out and put them on a shelf somewhere that you can pull off. They are all individually built.

MEMBER HAENICHEN: Because these are millions of dollars apiece, I am sure.

MR. SPITZKOFF: Yes.

MEMBER HAMWAY: Mr. Chairman, could I ask where they are made.

MR. SPITZKOFF: There is a variety of locations. I know some are -- there is a company in Taiwan that makes them. I believe there is one in Germany, I believe. There is a factory in Mexico. I don't know if they make the bulk transformers of this size. And I think there might be one in Brazil. I am not saying that is the total, but those are the ones that I remember.

MEMBER HAMWAY: Thank you. I appreciate it.

BY MS. BENALLY:

Q. So Mr. Spitzkoff, let's move to your final slide for this part of your presentation. I would like for you to speak a little bit about the project benefits for

TSMC. You have alluded to this and actually have testified to it in several instances up to this point, but if you would make those closing remarks in your testimony.

A. (BY MR. SPITZKOFF) Certainly. And as you mentioned, between my previous testimony and certainly Mr. Harrison's testimony yesterday, some of these points will be a little redundant.

But just to recap, the TSMC project is going to be constructed on approximately 1100 acres of state trust land that TSMC purchased near I-17 and the 303. And on the map on the right it is shown in the bounded dotted area that's here.

A project -- I am sorry. This project will create between 1600 and 1900 new high tech jobs that will be phased in over a period of time. I believe Mr. Harrison also mentioned, and I forgot the exact number, I think it was like 7,000 construction jobs, if I remember correctly. And then there will also be additional jobs created through the supply chain partners that TSMC will have that will be located in Arizona and, you know, specifically the Phoenix valley.

It has been calculated the project will add $38 billion of economic output over the next 20 years to the economy. And the City of Phoenix is contributing

$205 million of infrastructure improvements. Some of that is the streets that we talked about. So they will be building out Dove Valley and 51st Avenue, to name a few.

And also the water infrastructure, they are going to be putting up pumping and lift stations into this area to build out the water infrastructure for the area.

It is not easy to say water without my New York accent.

MEMBER RIGGINS: Mr. Chairman.

CHMN. CHENAL: Yes.

MEMBER RIGGINS: So whereabouts are they going to be putting in the lift station?

MR. SPITZKOFF: I don't remember exactly where those are. I have maybe seen them once on a glancing view of a picture of a slide.

MEMBER RIGGINS: Okay. So that's going to be a pump and lift off the canal, or a canal?

MR. SPITZKOFF: I could not tell you. We, APS has not been involved in the water aspects of this project.

MEMBER RIGGINS: Okay. Thank you.

BY MS. BENALLY:

Q. Mr. Spitzkoff, I am going to take you back to a

question I asked you earlier, just for the record. And it may have been how I posed the question. So let me pose it differently.

This is regarding the in-service date for TS-22. In APS's supplement to the application to amend, which is APS Exhibit No. 2, in that filing, APS notes that the in-service date for the project, which is the TSMC, the Avery substation, and the relocation, is anticipated for 2022. And then the application, it also notes that TS-22 has an anticipated in-service date of 2024, is that correct?

A. (BY MR. SPITZKOFF) That's correct. That's what our 10-year plan showed when we filed that supplemental.

Q. Okay. Thank you.

So your statement or your testimony earlier when you indicated that the in-service date for TS-22 was unknown, I think you were speaking generally about TSMC's development plans and that being unknown, is that correct?

A. Well, it is a little of both. Initially in our discussions with TSMC they provided just a projection of dates for the fabs, you know, typical they would space them out by this amount of time. But, you know, since those discussions it has become clear that, you know, they have stated, you know, they are not making

commitments for any of those future phases. So, you know, until those commitments are made, the in-service date of TS-22 won't be locked in, you know, until we know that there is going to be, you know, load development there for that substation to serve.

MS. BENALLY: Okay. Thank you.

That concludes this portion of Mr. Spitzkoff's testimony. And I believe now Mr. Derstine is going to step in and perhaps do a virtual project tour.

MR. DERSTINE: Well, I am going to do very little of the virtual project tour.

Mr. Turner, you are going to do the work, right?

MR. TURNER: Yes, if I could get the AV team to switch to my laptop.

DIRECT EXAMINATION

BY MR. DERSTINE:

Q. And while they are switching over, give us some context and the foundation for the preparation of the flyover.

A. (BY MR. TURNER) Sure. So we have basically a seven-minute video. It is split into two pieces. The first half of it will show the existing facility. And so we will be starting in the east working our way along the existing facility to the west end.

Q. When you say the existing facility, that also means transmission line?

A. (BY MR. TURNER) Yes, sir, yes.

Q. Okay.

A. (BY MR. TURNER) From there, we will then do the simulation of what the new transmission line -- or the new reroute of the transmission line and the substation. So you will see those simulations in there. And we have linked in the actual simulations that are in your binder as well to this flyover.

Q. And the simulations you are referring to are the visual simulations about what the relocated line as well as what the new substations would look like at the time that they are constructed, right?

A. (BY MR. TURNER) Correct. Those are static photographs that we have manipulated to show what the existing would look like.

Q. And just again to remind the Committee, when you are going to fly along the existing line, the Morgan to Pinnacle Peak 500/230kV line, we are not going to see the Avery substation. That has yet to be constructed; although, there has been testimony that there has been some ground preparation work done there, but very limited work at this point in time. And then when you are flying over the -- when you are creating the

simulation of the relocated line, we will see a simulation of what Avery would look like when it is interconnected to the line, right?

A. (BY MR. TURNER) That's correct.

Q. And then you will also see a simulation of what TS-22 would look like, and you are going to orient the Committee in terms of the viewpoint, what we refer to as a KOP, key observation point, and where someone would be standing in order to have that view, right?

A. (BY MR. TURNER) Yes, I will try to remember to do that.

Q. Okay, let's go ahead and proceed.

A. (BY MR. TURNER) So first off, can everybody see my cursors on the screen? I don't think I will need the AV help with the laser pointer. I made the mouse fairly large.

CHMN. CHENAL: Can the people appearing by video see the cursor moving?

MEMBER GRINNELL: Yes, perfect.

MR. TURNER: Okay. I will start the simulation and pause it at a couple places just to let everybody get their bearings.

So we are going to be -- you can see how the image is panning north here. This is Interstate 17 on the right side of the image. This is the Dixileta

interchange. The yellow line you see underneath these poles is representative of the existing facility, the existing transmission line. These poles are out there today on the west side of I-17.

Let me pause it for just a second. Actually, I will pause it in a moment. Excuse me.

We are coming up on the Loop 303. And again, the yellow line represents where the existing transmission line pans. It goes along the south side of Loop 303 for four poles before cutting across Loop 303. And I am going to pause it here in just a second to point out a few features.

All right. So I am looking at the top right of the image, and there is a subset map. And I want to point out this yellow and black icon. This is trying to help us see where we are, the view. So if you picture the black part as a head and some arms, the yellow part is the field of view, what you are seeing on your screen.

So in this particular case, even though the image was panning to the north, we are now looking to the west. And I just want to point out a few features. You can still see the yellow line. This is the existing transmission line that's a half mile west of I-17. So basically we are close to the I-17 with this image.

The road you see on the left is the Loop 303, and off in the background you can see another set of poles that are going from south to north. That's the 69kV line that also needs to be moved for TSMC's facility.

And TSMC's facility is just west of the existing transmission line. And this area is what is being developed. It will need to be developed on both sides of the 69kV line.

So I am going --

CHMN. CHENAL: Mr. Turner, that 69kV line, again, will be dismantled?

MR. TURNER: Yes, that's my understanding. It has to be, because it is cutting right through the TSMC property. It is on the 51st Avenue alignment.

CHMN. CHENAL: Thank you.

MR. TURNER: So the hills you see in the background are called Deem Hills, D-E-E-M. They are on the south side of Loop 303. I will pause it right here for just a second.

On the placemat that you have in front of you, the Figure 1A, the certificated Avery substation siting area is that orange color. And I just want to point out that that area from the Dove Valley Road alignment, pretty much in the area where I am zigzagging my cursor,

that entire siting area extends even a little bit further south than this.

I do want to point out you can see the yellow line is extending north here. And now you will get a better view, but you see it extending off into the infinity as we head west. That's the existing alignment. You will still see the yellow underneath it as we pan.

So, again, TSMC's property is all of this being developed. Everything you see in this image is state land. It is undeveloped land.

BY MR. DERSTINE:

Q. Mr. Turner, can you pause there for a minute?

A. Yes.

Q. Using the map on the left, which is the same Figure 1A that's on the placemat that you referred the Committee to, show us again -- the existing line is shown in red, but it is represented in yellow on your flyover simulation, correct?

A. (BY MR. TURNER) That's correct. We were told that someone maybe had a hard time seeing red, so we changed it in the image here for the video.

Q. All right. But orienting the image on your flyover simulation to the map, can you show us generally where we are on the left, on the map on the left screen?

A. (BY MR. TURNER) Sure. So again, see the black dotted area. That's the study limits. It is a one-mile buffer. You also see that in the subset map. That's the same buffer.

So in this particular case, you can see where the yellow is, and that puts us just east of the 51st Avenue alignment, pretty much where my cursor is now looking to the southwest.

And I apologize. I am getting some reverb on my mike.

MR. DERSTINE: Thank you.

CHMN. CHENAL: I am a little confused by that statement. I thought what we are looking at in the image on your flyover is the red and that we are really more in that area.

MR. TURNER: The red line -- excuse me. Yes, the red line is the facility we are looking at. So I think you are correct. I moved my dot a little higher. Pretty much we would be at the edge of that corridor, is where the camera view is from.

Hopefully I clarified that a little bit.

MEMBER GENTLES: So, Mr. Chairman, this, this, so the yellow line on the right is the red line on the left?

MR. TURNER: Yes, sir.

MEMBER GENTLES: It appears the line, that's going to have to move further north, correct?

MR. TURNER: Yes, a half mile.

MEMBER GENTLES: And what about the 51st alignment?

MR. TURNER: Mr. Spitzkoff mentioned that that line would be relocated. And I believe it was to the west of the TSMC property.

MEMBER GENTLES: Okay.

MR. TURNER: All right. Moving forward, continuing on, we are looking southwest and we are moving to the west. Again, we are just north of the existing facility in yellow and we are coming up on the 51st Avenue alignment, which is where the 69kV line is. The darker green you see there would be areas that have more lush vegetation. Again, there are no structures out here. It is all undeveloped land. The roadway you see in the background is the Loop 303 as it winds around the hills.

And we are going to pan our view now back towards the east so that we are looking through, back through the entire property. The hills you see are the Deem Hills south of the Loop 303. That large one there is called Pyramid Peak. You will begin to see Deadman Wash come into the image here on the bottom of the

screen. It is braided ephemeral channel.

And I will pause it here in just a second when this inset map goes away and we will point out some features here. So we are at the western end of the property looking east. And I am going to wait just one second. And then I will pause it and have a quick discussion.

All right. So we are all the way at the west end of the property. I will point on the map over here. We are right at the edge of the study limits and the line. I do want to point out that we mentioned that the existing power line is along Dove Valley Road. In the west it does bend to the northwest and extends, continues on west.

If we look off in the distance you can see some dark spots along the horizon line. Those are buildings along Interstate 17. So that's where we started our view, was down in this corner, in the top right corner of this image, moved our way down to the Dove Valley Road alignment, and then we proceeded west on its alignment.

I do also want to point out some dark structure here in the top left of the image. That would be part of the Ben Avery shooting range along State Route 74, as well as the commercial district there at that

intersection with I-17. So this is the -- that was the existing.

MR. DERSTINE: I apologize to interrupt you.

MR. TURNER: No.

BY MR. DERSTINE:

Q. When you use the term along Dove Valley Road or the Dove Valley Road alignment, I don't see a road on your simulation there. Is there a road, or what are we referring to when we say the Dove Valley alignment?

A. (BY MR. TURNER) The Dove Valley alignment is just that. West of I-17 it has not been constructed. It is on the section line. And the dirt road you see there is a maintenance road for the transmission facility.

Q. Okay. So Dove Valley Road, there is an actual road that ends at I-17. If we were to extend the Dove Valley Road -- and I assume there are plans to do that -- this would the existing transmission line shown in yellow on your simulation shown in red on our map, Figure 1A, that would -- we would extend that out and that would be the Dove Valley alignment?

A. (BY MR. TURNER) Yes. The City of Phoenix has some leeway into moving that somewhat north or south. But from a planning standpoint, they have built out the half intersection at I-17, so they expect it to come off

of I-17 at that location.

But if you look at some of the city zoning plans, you will see that Dove Valley will possibly have an arc in there and not stay on the existing alignment that you would see with the dirt road in this image.

Q. Okay. And so I interrupted you. You were setting the stage to take us back to the beginning of our journey. And we have flown the existing line, the Morgan-Pinnacle Peak 500/230 line as it sits today shown in red on Figure 1A, the map on the left here in the hearing room, and we are going to go back to the beginning and you are going to show us what it will look like in terms of the simulated view of the relocation of the line. And that flyover of the simulation of the relocation of the line will include some simulations of the expanded Avery substation and the new TS-22 substation. Do I have that right?

A. (BY MR. TURNER) Yes.

Q. Okay.

A. (BY MR. TURNER) All right. I will start it. And this one will just finish here in just a second. So we are going to start this simulation right at the Loop 303 as we are coming into the Biscuit Flats area. So the road you see on the bottom of your image is Loop 303. The I-17 would be off of our screen to the

right and traveling north to south.

So we have crossed over Loop 303. These poles are existing poles that remain. The substation you see here is the proposed 64 acre Avery substation. It is shown in the substation siting area, the previously certificated siting area.

The green -- let me pause it here a second. The green represents the transmission line. These two are the new poles heading into the Avery substation. So the green line you see in the inset map will be the green line you see on the ground that we are going to follow.

Again, we are looking from just south of the Dove Valley Road alignment right here. We will be at the Dove Valley Road alignment in just a second and do a quick simulation of what the Avery substation would look like.

Q. And Mr. Turner, make sure I understand. In looking at Figure 1A, your green line -- the red line is the existing line. The existing line is not being relocated or moved in order to interconnect with the Avery substation. You have just shown a couple of the structures that will be used to drop into Avery. Is that right?

A. (BY MR. TURNER) That's correct. Oh, I can move my mouse. Excuse me.

The two turning structures here would be new. The poles south of there would be existing and be removed.

This pole, we colored it wrong. It will be an existing pole that will be reused as well. We will start -- I will show it here. The Dove Valley Road alignment from that point north is really where new poles would be installed.

Q. Okay. So not everything green is new on the simulation you are showing the Committee right now, right?

A. (BY MR. TURNER) I apologize. There is one pole, maybe two, I can point them out, that would be existing that will remain.

Q. Okay. But in terms of referencing the line, the green line we are looking at now is the existing line, that's not going to change, at least at this point?

A. (BY MR. TURNER) Yes, sir, that's correct.

Q. Okay.

A. (BY MR. TURNER) So this is a simulation taken from the Dove Valley Road alignment at I-17. The facility -- so again, on the map we are at the -- I didn't quite see the Dove Valley Road alignment. I think it is right there.

So we are looking into the Avery substation.

The gray that you see in the image is a wall, and you can see some of the A-frame structures going in. Again, this is a half mile away, and the image you are seeing on your screen is enhanced to pull those features closer to you, sort of like a small pair of binoculars, just to enhance so you can see the features.

So we will continue moving north. So that was the Avery substation. Again, this pole that my cursor is on is an existing pole that remains. We accidentally put the line on here, the green line. This is the Dove Valley Road alignment. Let me pause it.

The dirt road you see here is the Dove Valley Road alignment we were talking about before. We have removed the existing poles from this simulation so you can just see the proposed pole. So this pole was where Dove Valley, the alignment, currently extends west, starts to go west.

We need to move the line a half mile north to the half section line. And the green line now is representative of new poles. We will take a simulation from this area. Let me just point out two features before it goes. This is a turning structure. Everything here is going north to south.

Q. Can you use your cursor and show us on Figure 1A on the left screen where we are.

A. (BY MR. TURNER) Sure. This simulation is actually taken, well, the view is from the I-17, State Route 74 area looking into the facility. The black corner here, where you see that it goes north to south and then east to west, we are looking right at that corner of the black line. I just wanted to point out those poles as well as Pyramid Peak. You will see those in the simulation we will go to here in just a second.

So this is from Key Observation Point 1, which was at the Dove Valley, excuse me, the Interstate 17 and State Route 74 area. Oh, I am sorry. I didn't pause my image there. Let me go back so you can see that again.

Q. And State Route 74 is the Carefree Highway as well?

A. (BY MR. TURNER) Yes, sir. It is dual named.

So what I wanted to point out, this is the simulation. The cursor is on the turning structure right where the black line would turn east to west. So everything you see on the left side, those poles are going north to south.

Sorry for that message popping up. I don't know how to get rid of that quickly.

Q. I am not able to read it. Was that your wife that indicated you need to buy sugar on the way home?

A. (BY MR. TURNER) That was my GIS person saying

she is on standby for anything that is needed for this meeting.

The poles, the line that you see where my cursor is now, those are the line heading as it goes east to west.

Again, now we are traveling west. You can see, up in the inset map, you can see that we are looking to the south. That yellow area is pointing south, although we are traveling to the west. We are looking into the TSMC facility down there. Obviously this is the realignment. It is a half mile further north than the existing facility.

And as I mentioned, we removed the existing transmission line for this simulation. The tan area that we are coming into is the TS-22 siting area. We have a tan in this image. It is the purple area on Figure 1A, or pink area, I think we are calling it. We will have a couple simulations from this area. So we are looking towards the southeast. TSMC would be in this area.

The dirt road you see here is the maintenance road, the 51st Avenue. It was the maintenance road for the 69kV, but it is the main construction area into the TSMC property now. So it has been enhanced for their construction.

The proposed facility is what is simulated here. Those are the lines you see heading east to west. They are a half mile south of State Route 74. We have enhanced this image so that you could see it in a little more detail. I would like to point out that everything in the foreground here is slated for commercial development by the City of Phoenix. So it would be very -- in the near future the lines may not be visible.

Q. Mr. Turner, when you say enhanced image, so when I think about a visual simulation, I am typically thinking that what I am seeing on the simulated image is what I would see if I were standing there of the new proposed facilities. And I gather what you are telling me is that even with my glasses on I am not necessarily going to see what is in your enhanced image. You are making it appear larger, maybe more distinct on the horizon than it otherwise would be to the naked aye, is that correct?

A. (BY MR. TURNER) That's correct. If we wanted to be more specific, I could point out the exhibits that are in the binders.

Q. So you are referring to a series of simulations that you prepared as part of the work that went into the supplement to the application to amend. The supplement is APS Exhibit 2. And within the supplement AECOM

prepared a number of simulations. And those photographic simulations are contained in the supplement, right?

A. (BY MR. TURNER) That's correct. They are in Exhibit E, and this image from Key Observation Point 3 would be Figure E-7.

Q. Okay, thank you.

A. (BY MR. TURNER) And if you do turn to that page, the very bottom image is a panoramic shot. That is more typical of what your eye could see from that location. I will get into more detail when I am doing my land use presentation.

Q. All right. Thank you so much.

MEMBER HAMWAY: Mr. Chairman, just for clarity, I am looking at E-7. And so the top image is what is displayed on the screen as the enhanced version, and the bottom images are what we would see with your naked eye, is that correct?

MR. TURNER: Yes, ma'am.

MEMBER HAMWAY: Okay, thank you.

MR. TURNER: So we are at -- I do want to point out where this KOP is. This is taken from the 51st Avenue alignment and Carefree Highway, which is State Route 74. And we are going to use that same location in just a second here for Key Observation Point 4. And

that's what this one is. This is the proposed TS-22 substation. You can see the tan area on the ground is the substation siting area. That is the pink area that is on Figure 1A.

BY MR. DERSTINE:

Q. And let's talk a little bit about the shape of that substation. So you are saying it is in the pink area on 1A. And in particular, what is represented in your flyover simulation on the right screen before the Committee is the kind of outlined blue triangular area within the pink box on Figure 1A. Can you show that with your laser pointer, please.

A. (BY MR. TURNER) Yes. So I can't quite see the blue in there, but there is a blue line that is not necessarily a straight line. That represents the boundary of the substation parcel.

Q. And do you have any insight in terms of why that's shaped the way it is?

A. (BY MR. TURNER) This area is part of the Deadman Wash. And there are two floodplains, one on the west side and one on the east side, that may be altering the shape of that property.

Q. Okay. And I think Mr. Duncan is going to get into this a bit more in his testimony, but this area outlined in blue within the pink triangular area on

Figure 1A which represents our larger TS-22 siting area is the area where ASLD would like us to build TS-22. Is that your understanding?

A. (BY MR. TURNER) Yes. When I have looked at the North Phoenix 3500 PUD, which is the zoning and the plans for this, there are lots of different parcels that they are hoping to sell. You know, some would be higher value than others. And I think that this probably represents one of those areas that's not as quite high value or would be hard to develop for commercial or something along those lines.

Q. Okay. Thank you.

A. (BY MR. TURNER) So we are looking at the TS-22 substation. We will do a simulation of that. I will pause it there. Again, this is taken from the Carefree Highway, State Route 74, and the 51st Avenue alignment.

The substation, we saw that odd shape to it. The northernmost piece of that is about 500 feet from the Carefree Highway alignment. And so obviously at this point, you can see a lot of the substation. The area in the foreground is slated for commercial development in the future.

And I will start it here, but we will continue on. We are panning now to the south. And we are slowly going to be looking back towards the east again through

the Biscuit Flats area.

Again, this was the TS-22 layout. The green line is the proposed facility. It comes just south of the TS-22 substation before turning to the southwest and then tapering back off to where it ties in to the existing transmission line. And I will pause it here in just a second.

So again, we are at the western end of the project study limits. We are looking to the east. And that's a good image to stop.

So what I would like to point out, you can see the dirt road that was along the Dove Valley Road alignment where the existing facility, the transmission line, is located. What we are asking for is moving the transmission line a half mile north to the half section line. And this is a tapering back into the existing transmission line.

CHMN. CHENAL: So Mr. Turner, if I am understanding, where the green line stops -- which the green line --

MR. TURNER: Yes.

CHMN. CHENAL: -- reflects the new build?

MR. TURNER: Build.

CHMN. CHENAL: And is, on the 1A, is right there, right where the yellow hash marks stop?

MR. TURNER: Sure. Where the red line and black line come together would be where that tie-in would take place.

CHMN. CHENAL: Right there. Okay, thank you.

MR. TURNER: So again, we are looking back through the Biscuit Flats area. TSMC's facility would be located in this general area. As we mentioned, their parcel creeps further north than the Dove Valley Road alignment, which is this stretch here. Loop 303 is just barely on the image on the right edge and you can see it goes off. Because there is no development in this area, it is -- we still have the Avery substation shown in this simulation. It is off in the distance in the back. But given TSMC is out there already constructing, it is highly unlikely that we would be able to see that from this location.

And I think I have gone over the notes that I wanted to cover.

BY MR. DERSTINE:

Q. Can you take us back to the TS-22 substation for a minute.

A. (BY MR. TURNER) Okay. I will try.

Q. And once we kind of are over the top of that, I don't know if you need to go back a little further, I wanted to -- seemed to me there was an image where we

could kind of see it, the layout, a little more.

A. (BY MR. TURNER) I think it is coming up.

Q. Okay.

A. (BY MR. TURNER) I think it is this. I may not get all of it in there.

Q. I think that's -- well, let it run a little bit, see if it moves away and we are able to see it.

Okay. Maybe it was an earlier.

A. (BY MR. TURNER) I can go back.

Q. Yeah, go back. Because what I would like to do is have Mr. Spitzkoff, I know he likes to talk about his one line drawings, but frankly I can't make heads or tails out of those things, and what I would like to do is have Mr. Spitzkoff talk a little bit about -- I understand this is a representation of TS-22, it is certainly not an engineering or final engineering design, but if Mr. Spitzkoff can talk a little bit about what is represented there and what the layout of the TS-22 substation would look like as shown on the visual simulation.

A. (BY MR. SPITZKOFF) Certainly, I can do that. Mr. Derstine would have failed my class as many times as we have gone over this.

So this area in the foreground, this would be the 12kV portion. And then next to it here --

Oh. Can you use the mouse?

A. (BY MR. TURNER) Oh, yeah, I can use the mouse. Excuse me.

A. (BY MR. SPITZKOFF) So this would be the 12kV. This would be the 69kV. These facilities are smaller and shorter, you know, being lower voltage. Then you get into the 230kV, would be all of this. And that was, on the simplified one line that I showed earlier, that would have been what was on the right side of that picture. And then the area in the back here would be the 500kV bus. And that would have been on the left side of the structure -- left side of the picture.

Q. Yesterday the Chairman raised the question, and I think it is important that we cover it. So our corridor really just nudges up to a portion of the triangular area outlined in blue within the pink on Figure 1A, which, again, is kind of the irregular shaped area where ASLD would like APS to build TS-22.

Do you have any concerns that the corridor doesn't go north enough to allow us to get into TS-22, if that is ultimately the site that's selected for the substation?

A. (BY MR. SPITZKOFF) So I believe this, the corridor and this site overlap, that will allow for that connection. And I will visualize with the 230 and 500kV

lines generally running in this and then it takes a turn in this direction. The 230 bus structures are down close to where the line is. And that's where the connections will be made down there.

And similar with the 500kV, it is the bus structures will be into -- and I will move to the picture. The 500kV will be on the bottom part of that blue, which is inside the corridor. So the bottom of the 500kV and the bottom of the 230kV would be inside that corridor.

Q. So the 500kV and the 230kV element of the substation, the transformers, the bays, that are in that southern piece, and that's the corridor that we are proposing for the amendment to CEC 131, will still allow us to relocate the line within the requested corridor and still have connectivity to the TS-22 substation if it is finally sited within the triangular area shown on Figure 1A?

A. (BY MR. SPITZKOFF) If that was a question, yes.

Q. Yes.

CHMN. CHENAL: Let me stop. I am not sure I understand the question. I think what I am hearing is the portions of the substation devoted to the 230kV and the 500kV are within the corridor that's depicted in yellow on 1A, is that correct?

MR. SPITZKOFF: Correct.
CHMN. CHENAL: Okay.
MR. SPITZKOFF: Well, I apologize. Not the entirety of the 230 is within there.
CHMN. CHENAL: Okay. So the 12, the 69, and a portion of the 230 substation will be outside of the corridor?
MR. SPITZKOFF: Correct. The 12 and the 69 are more in the top, the top part of that triangle. The 230 being, you know, rather long, part of it will be -- you know, it comes down starting at the top and comes down that east side. And then the 500kV is all on the west, southwest corner there.
CHMN. CHENAL: Yeah. I raise the issue, and I am -- not to interrupt you, Mr. Derstine, I know you probably have some more testimony, but I think the -- I guess the question is, and I really haven't thought about it that much, but the portion of the substation for which the -- we are -- you are asking the Committee for and the Commission has directed the Committee to make a recommended order regarding the substation, TS-22, and, you know, I did pose the question yesterday, a portion of the substation is outside of the corridor, the proposed corridor, and I just -- I ask the question out loud, and I really haven't thought about it, what

effect that has, given the application and the legal effect of that.

MR. DERSTINE: The corridor that we have requested and the way it was described in 131 was the area for siting the transmission line. 131 -- and, you know, Ms. Benally will correct me if I am wrong, but there was not a specific description of the substation location within 131. There was a similar with 120, it described a larger site, a larger acreage, but it didn't specify the exact location of the substation.

So my way of thinking about the amendments to 131 are that the corridor gives us the area in which to relocate the Morgan to Pinnacle Peak line. And 131 was express that it authorized us to build two substations, but not three. The two are already either planned or have been constructed.

So the authorization that we are seeking in the amendment that we are seeking that you will see in the ROO is to change the number two to three. And, you know, we certainly can talk about how to describe that or whether it needs to specifically be described in terms of, you know, a legal or some sort of a description on the map about where it is going to be placed.

But it gets back to, again, our view that ASLD

is the landowner. They are going to drive and determine where we get to build TS-22. Ultimately ASLD will determine where we get right-of-way for the relocated line. So long as it meets the distance separation from TSMC, then really ASLD is going to determine where that line gets placed.

So we are asking for a corridor to give us the ability to work that out with ASLD not only for the location of the line. Where we place the substation, again, will be determined by ASLD. Those negotiations are ongoing. But we don't have -- 131 didn't specify or call out, to my recollection, a specific location for the substation.

CHMN. CHENAL: Here is a couple thoughts, and I think we can work through this, but a couple thoughts. Number one, I don't know why 120 and 131 didn't call out the corridors. I mean in our CECs we have issued, I mean for a number of years now, I mean we lay out where the corridors are for the lines and the substations.

Part of the concern I would normally have, not so much in this case, is the application that was filed and where the substation was depicted in the application. But here the only landowner is the Arizona State Land Department. So I am not as concerned about the notice, I mean because they did get notice and it is

not going to affect, you know, other landowners. So --

MR. DERSTINE: Yeah, there is -- Ms. Benally is directing me to the map that was attached to 131. And so the description of the substation, the two substations that were authorized in that case are with a section and a township and a range general description, and it is also identified as a shaded area within the block.

But as you will see, we can pull this up at some point when we are looking at the recommended opinion and order or when looking at the red line of 131, you can see how they addressed it in 131 and then how this Committee wants to address the location of those facilities through this amendment process.

But there is a -- the substation location say for TS-9, we are generally within the corridor; although, it did extend beyond the corridor to some extent, not unlike what we are proposing here.

CHMN. CHENAL: And can you remind the Committee, the application that was filed in this case, how did it describe or depict the location of TS-22?

MR. DERSTINE: The original application to amend, I would have to go back and see if it specified it, but certainly the supplement, as Member Noland pointed out, originally had a rectangular box for the

TS-22 siting area. It is squared off. The pink box is shown on Figure 1A. The evolution was that it became more of this pointy triangular figure, which is the preferred location within the pink area that -- it changed the siting area to some degree, but still keeps it generally within that same area.

CHMN. CHENAL: Was the original, and in the original application, the siting area for TS-22, did it extend outside of the corridor?

MR. DERSTINE: Yes.

CHMN. CHENAL: It did, okay. All right. Well, again, my concern is not so great, and I am thinking of notice to the public of where this TS-22 substation is going to be. It was noticed, this hearing was noticed on the premise that it would be within a certain siting area. And now it is being extended. Your supplement did call out, right, the larger siting area, and we are only dealing with one landowner, the Arizona State Land Department. So I think we are okay. But I would say that, consistent with our CECs generally and the ROOs that we have issued, you know, we want to call out the location of TS-22, the corridor for where it might be built.

Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

I was wondering, rather than dance around where the 230kV and the 500 are, could we extend the corridor to the north to encompass the triangle portion completely, and move it up from the south? Because you are not -- you don't need it that far south. Just some thoughts, just so it is included, the entire site is included within a corridor.

MR. DERSTINE: Member Noland, I think we can do that.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: That's --

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Yes, Member Grinnell.

MEMBER GRINNELL: Will you be in the development of this project short term, potentially long term, taking some of these 69kV lines and adding them and reducing the number of poles in the area, or are we going to -- is all the 230/500 going underground and all the 69s staying aboveground?

Did you all hear me?

CHMN. CHENAL: Yes. Counsel is conferring right now, Mr. Grinnell --

MEMBER GRINNELL: Oh, I am sorry.

CHMN. CHENAL: -- for the applicants.

MR. DERSTINE: I apologize, Member Grinnell.

Can you restate your question for me.

MEMBER GRINNELL: Right. Presently I am seeing from the two substations everything going into your client here are going in underground, is that correct?

MR. DERSTINE: Mr. Spitzkoff can address that. But I think from each substation, the feeders that will be directly connected to the TSMC fabs, and again the first phase only involves the connection at Avery, will be undergrounded.

Do I have that right, Mr. Spitzkoff?

MR. SPITZKOFF: Yes.

MEMBER GRINNELL: All right. If that's the case, any future developments outside of this particular client, are we going to continue seeing a bunch of poles in the area, or are you going to be somehow piggybacking the smaller kV lines with the larger 230 or 500kV lines, poles?

MR. SPITZKOFF: So the 500/230kV poles being double circuit as they are, the span distance cannot accommodate underbuild of 69kV. So if there happens to be 69kV line needs that would be going east to west similar to the 500/230 line, those would be constructed on their own, their own poles.

The existing 69 lines that are out there that we will be rerouting to the west of the TSMC property, they

are already double circuit 69kV. So there are already two 69kV circuits on those. And they are also traveling perpendicular to the 500/230, yeah.

MEMBER GRINNELL: Okay. Thank you, Mr. Chairman. I am finished.

CHMN. CHENAL: Sure.

MR. DERSTINE: Would the Committee like -- I know sometimes you would like to see another faster review of the flyover simulation. Would that be of benefit, or do you want to do that later?

CHMN. CHENAL: Let's do it later. I think it is time for a break. I mean we have been going at it for an hour and a half. Let's take a 15-minute break and we can ask the Committee if they would like to see the simulation just once straight through.

Member Haenichen.

MEMBER HAENICHEN: Yeah. I just wanted to make a suggestion. It has nothing to do with this case, but for future simulations -- this is for you, Mr. Turner -- it would be helpful if you had a little box up in one of the corners with an arrow that changes direction so it is always pointing in, let's say, north. That way we could have a better feel for what we are looking at.

MR. TURNER: Thank you. Something always pointing north?

MEMBER HAENICHEN: Well, pointing in any fixed direction so that we have a reference point.

MR. TURNER: Thank you.

MEMBER HAENICHEN: And it would have to rotate as you scan.

MR. TURNER: I scan.

MEMBER HAENICHEN: Is that possible to do?

MR. TURNER: Yes.

MEMBER HAENICHEN: I think that would be very helpful.

CHMN. CHENAL: All right. Let's take our 15-minute break. And we will resume when we come back. Thank you.

(A recess ensued from 10:57 a.m. to 11:32 a.m.)

CHMN. CHENAL: All right. This is the time for resumption of our hearing, the morning portion.

Mr. Derstine, if you want to proceed.

MR. DERSTINE: Thank you, Mr. Chairman.

BY MR. DERSTINE:

Q. So Mr. Duncan, let's -- I think the next chapters in our case are going to fall to you. We have got a bit of time before the scheduled noon recess. We will see how far we get and where we are at a good stopping point.

You are sworn. You are under oath. You have

been introduced to the Committee. As a reminder, you were the project manager for the Biscuit Flats relocation project, right?

A. (BY MR. DUNCAN) Yes, that's correct.

Q. And as the project manager, I think you ticked off some of your responsibilities, but you are essentially responsible for overseeing or coordinating all the things that have to happen in order to get us to today, to get us to this hearing, right?

A. (BY MR. DUNCAN) Yes.

Q. You have a lot of experience. You detailed your background and experience on day one; you have been involved with a number of projects. But this project has been a bit different in terms of it has had something of an accelerated timeline, hasn't it?

A. (BY MR. DUNCAN) Yes. But APS has worked hard to meet our customer's needs.

Q. And that accelerated timeline is one of the things that, you know, I mentioned in my opening and we will get into it in your testimony, that there are still some details that have yet to be worked out in terms of specific location, say, for example, the TS-22 substation and the final right-of-way or the location of the relocated line segment. But that's all due to kind of the timeline that we are on, and those things are

happening as we are moving forward and seeking approval of these amendments, right?

A. (BY MR. DUNCAN) Yeah, that's correct. But, you know, as you mentioned before, those decisions will all need to be in coordination with the Arizona State Land Department.

Q. Okay. Well, with that background, I think your first chapter or your section has to do with the project description and planning. Let's start with an overview of the project. The Committee should be familiar with those elements, but let's cover them again.

A. (BY MR. DUNCAN) I just need the slides set up so I can advance them.

Q. Is your clicker working, Mr. Duncan?

A. (BY MR. DUNCAN) No, it is not. Okay, yes, it is now.

Q. Great. So project description, start us off.

A. (BY MR. DUNCAN) You bet. So I know we have already talked a great deal about Figure 1A, but I will be making reference to this so I would like to take just a few minutes to orient the Committee to the features again shown here.

So I-17 here shown on the right side of the map runs north and south. That is on the eastern side of our study area.

CHMN. CHENAL: Mr. Duncan, you can give a pretty quick summary because I think we could do this by heart at this point. We are pretty familiar with it. So maybe just summarize this portion of it.

MR. DUNCAN: You bet.

So the specific features, I would just like to remind that the red line indicates the existing transmission line, the black line is our proposed relocated segment. The TS-22 substation siting area is shown in the pink. The Avery substation is shown here in green. And again, the stipple area here, or the dotted pattern, indicates the TSMC facility.

BY MR. DERSTINE:

Q. Okay.

A. (BY MR. DUNCAN) So our project -- again, this has been stated previously as well -- is to relocate an approximate 3.5 mile section of the existing Morgan to Pinnacle Peak 500/230kV transmission line approximately a half mile to the north of the existing location, also to add the TS-22 substation within our proposed TS-22 substation siting area shown in pink, and to expand the plant and permitted Avery substation, again shown here in green.

Q. Okay. So that's the project description. That essentially is the purpose and need for this project.

Let's turn to kind of the planning process that you used to come up with what is shown on Figure 1A, the map.

A. (BY MR. DUNCAN) Yeah. Thank you.

So even though the project does involve the amendment of two existing CECs, we chose to follow a typical line siting process. And our first step involved the identification of a study area which we felt would include all reasonable and feasible alternatives. The study area, as has been mentioned previously, is shown in the solid dotted or black dotted, dashed line surrounding our project.

And in following this step we identified a range of compatible routes for the line relocation as well as the suitable substation siting areas. And it has been mentioned previously many times that this has been a developing process, and this was all done in conjunction with various stakeholders, in particular the Arizona State Land Department.

Through the initial stakeholder outreach, engineering/constructibility review, and preliminary environmental review, we identified several specific alternative routes that were very similar, but different, that were identified for continued detailed study. And through this detailed study, along with the results of the engineering/constructibility review, and

incorporating stakeholder outreach, again primarily with the Arizona State Land Department, we identified the proposed route, which again is shown here in black.

Q. Okay. Let's turn to that route that you came up with through the planning process. And again, kind of give the details of that route and why it is generally -- why we are proposing it be located within the corridor and where it is generally.

A. (BY MR. DUNCAN) Yeah. So again, it is located approximately half a mile north of the existing line. And the bulk of the east-west portion is placed along the section line -- half section line, excuse me, between the Dove Valley Road alignment and State Route 74, State Route 74 here at the northern edge of our study area, and the Dove Valley Road alignment right through the middle east to west on our study area.

And primarily -- or I should not say primarily. Exclusively this route crosses 100 percent Arizona state trust land.

Q. All right. So on your Slide 97 here on the left screen here in the hearing room, the route is three and a half miles in length, as you indicated, about a half mile north of the existing line, and, again, as we have said a number of times, 100 percent on state trust land?

A. (BY MR. DUNCAN) That's correct.

Q. You mentioned, I don't know that anyone has touched on it before, but the proposed relocation line segment, the location shown in black on Figure 1A on the right screen, that's on the half section line, is that right?

A. (BY MR. DUNCAN) That is correct. As I point to the map here, between the turn at the eastern side all the way to where it makes its jog to the south is all placed on that half section line between the Dove Valley Road alignment and State Route 74.

Q. Okay. And that half section line location, is that something that you came up with, or is that coming from the direction from ASLD?

A. (BY MR. DUNCAN) In coordination with our stakeholder, the Arizona State Land Department, this was identified as a preferred alignment by the Arizona State Land Department.

Q. Okay. That has yet to be finalized and ultimately you will have to, you know, work out the exact location and obtain the right-of-way from State Land, but that is their preference, that is, in terms of the black line, what is shown on Figure 1A is State Land's preference for the location of the line within our 3,000-foot corridor?

A. (BY MR. DUNCAN) Yes, that's correct.

Q. And I think as Member Noland and the Chairman and the other members of the Committee have indicated, although our corridor extends further south and even overlaps to some degree the TSMC project area, we are not -- we need to put the line at a minimum a thousand feet off the boundary line from the TSMC land, right?

A. (BY MR. DUNCAN) Yes, that's correct.

Q. Okay. So you are transitioning to this next section corridor and right-of-way, so give the Committee the details on the corridor.

A. (BY MR. DUNCAN) Thank you.

So yes, we are proposing a -- and this has been talked about previously as well, but this is a 3,000 foot wide corridor that I am showing here that is a yellow hatched area. That 3,000-foot corridor is based on the Dove Valley Road alignment, which I am showing here east to west, along the portions of the existing route and from that point at the southern end of our 3,000-foot corridor to a point 3,000 feet at the northern end. And this corridor is bounded on the west by the point where we would reconnect with the existing line, and on the east at a point about a thousand feet east of our route.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you.

Mr. Duncan, is the corridor designated going north-south for the substation, Avery substation, is that the existing corridor from the previous case?

MR. DUNCAN: Yes. On this particular map -- this is, again, Figure 3B -- the area that's shown with this gray shading that I am now outlining all the way here to the west and then to the north and south, that gray indicates the previously certificated corridor.

MEMBER NOLAND: So then the hash marked is a new corridor, is that correct?

MR. DUNCAN: Yes, that's our proposed corridor.

Oh, I am sorry. Jason is indicating this hatched area which is shown in orange and is sloping to the left is indicative of the previously certificated Avery substation siting area. That is not part of the previous corridor for the route.

MEMBER NOLAND: Okay. Now you have totally confused me.

MR. DUNCAN: Okay.

MEMBER NOLAND: The hash mark area is a new corridor, or is it part new, part old?

MR. DUNCAN: The yellow hashed area that I am now doing an outline at --

MEMBER NOLAND: Yeah, but I am not talking about that one.

MR. DUNCAN: Okay.

MEMBER NOLAND: I am talking the north-south covering the Avery substation.

MR. DUNCAN: Yes. This area shown in orange with the hatching sloping to the left is from CEC 120. That is indicative of the area that was previously certificated as the Avery substation siting area. That is not part of our proposed corridor.

MEMBER NOLAND: Mr. Chairman, I am still confused.

What is the gray area then? Is that the previous?

CHMN. CHENAL: Let me see if I can explain it, because I had to think about this myself.

There was a corridor for the substation, or certificated area for the substation. And then there was a corridor for the transmission line. And if I am understanding, the gray area that you see was the old corridor for the transmission line, and the hatched area that's around the Avery substation was the old siting area for the Avery substation. They are not one and the same. Just as in this case, the corridor for the transmission line is different than the certificated area for the TS-22 substation.

Does that help?

MEMBER NOLAND: I am good.

MEMBER HAENICHEN: You caved.

MR. DERSTINE: To confirm the Chairman's description, we are making copies of CEC 131 and 120 so you will have the benefit of seeing how they were described in that particular case. And I think that will be helpful.

But in general, there was a description of a corridor for the placement of the transmission line and then a description, a larger general description of a substation site based on township and range call-outs, and section. And then the placement of, in this case, Avery substation was located within the larger substation site, which is the hashed area you were referring to, Member Noland.

MEMBER NOLAND: Thank you.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: I just need one more clarification. The gray elbow, I will call it, or figure, what was the purpose of the vertical portion of that, which encompasses part of the substation, the proposed substation, what was the purpose for that in the original case?

MR. DUNCAN: Okay. To answer your question,

Mr. Haenichen, the gray is a portion that extends beyond the confines of this map of the Morgan to Pinnacle Peak project certificated in CEC 131. And the north-south is a portion of the part of the alignment that goes between where Avery is indicated here in green and the Pinnacle Peak substation, which is beyond the confines of this map. So the gray is a small portion of that entire certificated area.

MEMBER HAENICHEN: Okay. Use your pointer to show us where. I know it is off the map, but where is the Pinnacle?

MR. DUNCAN: Yes. So in this inset map, we have this black box, which is indicative of the area that is shown in the larger portion of the map here. And as you can see, the CEC 131 line continues to the south and then to the east to the Pinnacle Peak substation, which is approximately in this area on this --

MEMBER HAENICHEN: Okay.

MR. DUNCAN: -- subset map, and also to the west up to the Morgan substation, which is to the west of this map area.

MEMBER HAENICHEN: Okay. And that transmission line that's in that area you just talked about exists now?

MR. DUNCAN: Yes.

BY MR. DERSTINE:

Q. So looking at your slide, Slide 101, what is described in that hashed rectangle is the 3,000-foot corridor that covers the entirety of the realigned segment of the existing line, right?

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

Q. And your second bullet there says the corridor's southern boundary is Dove Valley Road alignment. Show the Committee that, please.

A. (BY MR. DUNCAN) This, where I am pointing right now, is the Dove Valley Road alignment. This was described in earlier testimony. Dove Valley Road is an existing road up to the I-17. But west of the I-17 through this area, there is no road, but it is what we refer to as the Dove Valley Road alignment. And our corridor is 3,000 feet north of that point.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Okay. Just one last question. Although the TSMC land is not depicted on this particular picture, am I correct in saying that the northern east-west portion of the line of that TSMC property is north of the Dove Valley Road --

MR. DUNCAN: You are correct.

MEMBER HAENICHEN: -- alignment?

MR. DUNCAN: Yes.

MEMBER HAENICHEN: Okay.

BY MR. DERSTINE:

Q. All right. And the last bullet on your Slide 101 you will be requesting right-of-way from ASLD of 150 feet?

A. (BY MR. DUNCAN) Yes, that's correct.

Q. There was a question yesterday about once -- assuming this Committee decides to approve an amendment which permits the relocation of the three and a half mile segment of the Morgan-Pinnacle Peak line, what happens with not only the existing structures but with the right-of-way for the relocation?

A. (BY MR. DUNCAN) Yes. And I really can't add to the answers that have been given previously, but I will restate them. And that is that my understanding is that the structures will be demolished and removed, and that it is likely that the Arizona State -- the existing right-of-way will be relinquished to the Arizona State Land Department.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

On your Exhibit A13 -- is that correct? I don't know. Anyway, you have a right-of-way cost of $50,000. Is that lease cost or purchase cost?

MR. DUNCAN: That is lease cost.

MEMBER NOLAND: So are you paying the same amount for the current route?

MR. DUNCAN: I don't know.

MEMBER NOLAND: Well, it would be a wash then, wouldn't it? It wouldn't really be an additional cost; it would be a wash if you are paying a lease on the Arizona State land now?

MR. DUNCAN: I would assume that if the costs are similar, then yes, I would agree that that would be a wash.

MEMBER NOLAND: Thank you.

I guess the question in calculating the right-of-way cost, Mr. Duncan, did you subtract what we are paying currently for the right-of-way for the existing line that presumably we will no longer have to pay for once we obtain a new right-of-way and have relocated this three and a half mile segment?

MR. DUNCAN: These figures were provided by a member of our land team, and I am not exactly sure how they were calculated. But I don't believe that they subtracted out the existing.

BY MR. DERSTINE:

Q. Okay. So to Member Noland's point, the right-of-way cost may be less than, and may be significantly less than, down to zero of the $50,000 if

it is, if it is dollar for dollar what we will be paying to give up the old right-of-way in exchange for the new right-of-way?

A. (BY MR. DUNCAN) I think that's a reasonable statement.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Is that a one-time cost, or is it repeated? Do we have to -- is that for all time on this lease? How do they do it?

MEMBER PALMER: Mr. Chairman.

MR. DUNCAN: I believe that that is not a one-time cost, but I am not sure how often the renewal period is.

CHMN. CHENAL: Member Palmer has a question.

MEMBER PALMER: Maybe I could share a little light. And I don't know that utility easements are the same as road easements. But in my 20 years in county government, I dealt with this several times. And generally when we would get what we normally would call a right-of-way from State Land Department, we never took ownership of it. They don't sell you a right-of-way, they lease you an easement, and my recollection is it was a 30-year term. At the end of 30 years you were going to pay it again. You never actually own it. I don't know if that's the same with utilities, but I can

tell you that's how it worked in local government.

MEMBER HAENICHEN: Thank you.

MR. DERSTINE: Mr. Spitzkoff.

MR. SPITZKOFF: Yes, so I can confirm a similar situation with APS right-of-ways. Our line right-of-ways I believe are a little bit different than the substation right-of-ways. I want to say for our substations, our lease terms I think may be like a 90-year lease, something along that time frame. But periodically they, State Land, will do a reevaluation of that cost every, I don't know, five years or 10 years. And the specific payment may change over time.

And then with line right-of-ways, it is similar. I don't know if it is necessarily a 90-year, but it could be like a 30-year with a, you know, a periodic adjustment.

BY MR. DERSTINE:

Q. All right. Mr. Duncan, anything else -- so the transmission line costs, that's the cost to wreck out the old, the existing line over that three and a half miles and reconstruct the line in its new location, is that correct?

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

MEMBER HAMWAY: Mr. Chairman, I have a couple questions.

CHMN. CHENAL: Sure. Member Hamway.

MEMBER HAMWAY: So the 8.7 million, that includes the demolishing of the current line, moving a half mile north, and three and a half miles of moving line, right? Does that 8.7 million include the undergrounding?

MR. DERSTINE: No.

MEMBER HAMWAY: Okay. So that 8.7 million should never come back around to the rate case, correct? Because this should all be paid for by TSMC.

MR. DERSTINE: I will let Mr. Spitzkoff expand on it, but in general you are correct, Member Hamway, in terms of the TSMC is paying the cost to relocate the line that includes wrecking out the existing segment, replacing the line in its new location approximately a half mile north. Those transmission line construction costs, as it indicates, those are line construction costs, those are not substation costs.

MEMBER HAMWAY: Correct.

MR. DERSTINE: But as to those costs, TSMC is picking up the tab for that 8.7 million.

MEMBER HAMWAY: Perfect.

MR. DERSTINE: And Mr. Spitzkoff, do you want to expand on that?

MR. SPITZKOFF: You did a great job. I will

just confirm you are correct.

MEMBER HAMWAY: One quick question. Do we have numbers for the undergrounding?

MR. SPITZKOFF: We don't have them here today. But the undergrounding is basically, in a sense, just feeders for the customer. It is, you know, treated as a separate project than the reroute of the existing line.

MEMBER HAMWAY: Thank you.

CHMN. CHENAL: Again, I would ask to get those numbers just more for curiosity, the cost of a mile of undergrounding and how much more just to underground than aboveground and why is it so much more expensive.

MR. SPITZKOFF: We are efforting those answers at the moment.

CHMN. CHENAL: Thanks.

BY MR. DERSTINE:

Q. While we are on the subject of costs, again, I think there has been testimony that we don't have any sort of final designs or engineering, certainly for TS-22, and we still have some final design work to be done on the Avery substation. But do you have any general or ballpark cost estimates for the substations, Mr. Duncan?

A. (BY MR. DUNCAN) Yes, I do. So costs for the Avery substation have been estimated to be between 50

and $70 million, and for the TS-22 substation approximately 60 to 150 million.

Q. All right. We jumped ahead to costs, but I want you to backtrack a little bit and talk about where we are in the planning process for TS-22. And this is fine in terms of where we are on the slides. These maps of the TS-22 substation site have changed a bit over time. That change in the shape of that pink box corresponds to, I think, ongoing discussions and work that we are doing with ASLD in coordinating the location for TS-22.

Can you kind of give the Committee a background on the work with ASLD with regard to the entire project, but also in particular with TS-22 and how we ended up with this triangular shape piece added to the original rectangular pink box for TS-22 substation site?

A. (BY MR. DUNCAN) Yes. As I have mentioned previously, we have been, and when I say we, not just in terms of the siting process, but APS engineering and lands have been working closely with the Arizona State Land Department in terms of the project overall, but also specifically to the TS-22 substation siting area. You know, once the size was identified that the need would be for an 80 acre site, through that coordination, the Arizona State Land Department suggested the area that -- this has been discussed previously, but within

the pink area here, they identified this blue outlined area, which is a parcel that they have kind of not formally designated but is identified on some of their planning maps, and that parcel, as mentioned previously, is shaped oddly because it is adjacent to the Deadman Wash on the west side. And once we became aware of that parcel, we recognized that it was outside our original designated -- I shouldn't say designated -- our original proposed TS-22 substation siting area, which has been discussed also previously, which generally was the same on the eastern side here but continued in more of a rectangular shape and did not have this pointy area to the north, nor this pointy area here to the west.

But the Arizona State Land Department asked us to consider it. And the APS team has been considering it and making sure it can be safely built without risk to our substation equipment and also, as discussed by Mr. Spitzkoff, that lines can successfully be connected in and out of the substation and that everything, of course, can fit within the 80-acre parcel.

Q. Can I stop you there for a minute? When you say it is outside of the original box or rectangle, can you generally outline using your laser pointer -- and hopefully the AV crew can follow along with the cursor -- kind of as best you can the shape of the

original TS-22 siting area and then what has changed?

A. (BY MR. DUNCAN) Yes. So I am trying to slowly draw what the shape was previously. It came out to about here, and then straight south, and then back to the east to form a rectangle. That shape matches -- pardon me for just a moment. That shape matches the shape that is shown on Figure 1 in the supplement to amend.

Q. And the supplement is APS Exhibit 2 for the Committee members who are trying to find that on their iPad, right?

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

Q. So the map that was attached to the supplement to the application to amend, which is marked as APS Exhibit 2, shows the original configuration of our TS-22 substation site. And that, I guess that rectangular shape, the original rectangular shape is shown in Figure A1 not only on the project vicinity map, but then also it is, that same shape is shown on Figure A2 and the other maps that are in the supplement, right?

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

Q. And --

A. (BY MR. DUNCAN) And you also asked me what was outside that area. So this triangular portion here at the very tip would be additional to that area. And then

this area, this triangular portion here on the west end as well would be additional.

Q. And that tip on the northern side of the pink rectangle, that's the area, as Mr. Spitzkoff described it, where the 69 and lower voltage facilities will be constructed, is that right?

A. (BY MR. DUNCAN) That's correct.

Q. Okay. All right.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: I guess the Deadman Wash, is that a navigable waterway as determined by the Corps of Engineers, or is that just a wash?

MR. DUNCAN: I would like to direct that to Mr. Turner.

MR. TURNER: That was just ephemeral drainage. It is not perennial waters or intermittent. So there is no navigation on that.

CHMN. CHENAL: Why is it always Deadman Wash? Every wash is Deadman Wash.

MEMBER GENTLES: I think it is located in Bloody Basin, actually.

MR. TURNER: So it is ephemeral drainage, which means it only runs in direct response to a storm event.

MEMBER GRINNELL: Very well. Thank you.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: I have just got one final question on this.

Referring to that pink figure as it now stands, originally it was a rectangle, can you tell me, how far to the west did that line go to form the complete rectangle? Did it go all the way to the bottom of the pointy thing?

MR. DUNCAN: No, it didn't go down to the bottom of the pointy thing.

MEMBER HAENICHEN: All right. Where does it start going down?

MR. DUNCAN: Approximately just about where our angle is about where it went down to the south.

MEMBER HAENICHEN: Okay. Well, then, I don't see -- this seems to be much ado about nothing, but who cares about that pink pointy thing on top? Just let it be there. It doesn't seem to me it is constraining the project in any way.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Mr. Derstine, you are trying to make a point, and somebody else made the same point, that the 69kV part of the substation is the part that is at the top point. Do you think that makes a difference

in our approval of a substation?

MR. DERSTINE: I don't think it does.

MEMBER NOLAND: Then why are you making that point?

MR. DERSTINE: Well, I'm making the point because of the concern, or at least the issue, that was raised about the connection to the 500/230kV line. And I think, as Mr. Spitzkoff pointed out, the connection to TS-22, even though the substation may be configured in a way that strays out beyond the corridor that we are requesting from this Committee, we still have the connectivity by bringing in the relocated line segment into the heart of the TS-22 substation that allows us to connect to the 500 and the 230 facilities. So that's the important piece of that, from my way of thinking.

MEMBER NOLAND: Well, it is. I think we have got it. We just need to deal with it.

MR. DERSTINE: Right.

MEMBER NOLAND: I was thinking that you are saying that we didn't have the authority to approve a substation that the portion was the 69kV. But that's not correct, is it?

MR. DERSTINE: No.

MEMBER NOLAND: Okay. Thank you.

MR. DERSTINE: That's certainly not the position

that I am taking or that APS is taking.

MEMBER NOLAND: Thank you.

MR. DERSTINE: I think, as the colloquy between the Chairman and yourself about how these facilities were described in going back to CEC 120, which was amended by CEC 131, that we are now asking this Committee to amend through this proceeding, the approach that was taken -- and I think it is the right approach -- is to describe a corridor which covers the transmission line, in this case the relocated segment of the transmission line, and then to have the Committee, as was done in those prior cases, generally describe a substation site within which the new substation, TS-22, will be placed. And I think that pins down in terms of the location on the map where TS-22 will be.

Our request is that that be a larger area than the 80 acres that we need to construct the facility and gives us the flexibility for final siting with State Land, but that, you know, I think this Committee can and should define and outline in general of the TS-22 site along the lines of what we are representing on the map in the pink area.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: And how, Mr. Derstine, do you

suggest that we do that? I mean, should we draw a rectangle somewhere and say that's where we want the substation? I am not quite sure what --

MR. DERSTINE: I think you can do it in the way it was done in the past, is with a township and range description in words in the body of the CEC, or in this case the amendment, and then a map which corresponds to that verbal description or narrative description. And I think that places it on the globe.

MEMBER HAENICHEN: Yeah, but we need some help to pinpoint those, those geo points.

MR. DERSTINE: Yes. And we are going to give you language that calls that out, and then the Committee can review that and see if it corresponds to, you know, what the Committee thinks is an acceptable description and location.

MEMBER HAENICHEN: Sounds good to me.

CHMN. CHENAL: And I would like to do that, Mr. Derstine, prior to the end of the testimony.

MR. DERSTINE: Yes.

CHMN. CHENAL: In other words, let's not wait until we are in deliberation to roll all that out. I think we need to flesh that out a little.

MR. DERSTINE: Agreed. We have, you know, as the Chairman knows and the Committee should have in the

exhibits on your iPads, there is an original draft of the recommended opinion and order. We didn't have a revised version of the recommended opinion and order that you can look at, but the description of the 3,000-foot corridor, you know, if the Committee has in mind that you want to change that or narrow it, we will have to work with changing that description on the fly, what is set forth in the recommended opinion and order.

In your exhibits is the 3,000-foot corridor described and shown on the map there on Figure 3, 3B, on the right screen here in the hearing room. And we have a description of the pink area now modified by State Land's triangular piece that we will submit and include in the ROO.

So my intent is to, one, hand out to the Committee today copies of CEC 120 and 131 so you can see what was done in those past cases, and then to hand out a modified recommended opinion and order that has a description of the irregular shaped pink box shown on 3B, if I am looking at this correctly, that's up on the screen.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: I really hate to beat this to death, but again, I would like to see a corridor that encompasses the proposed site, the entire proposed site,

so that we narrow that down. And do that if you want by reducing the southern portion and increasing the northern portion to include that. And I thought that's what we agreed was a possible option.

MR. DERSTINE: It absolutely is a possible option, Member Noland. And if that is your preference, we can put pen to paper and describe a corridor that is narrowed from the -- on the southern end, but then also expands up to the north to encompass the point of the triangle of the pink box.

MEMBER NOLAND: Well, that would be my preference. It is up to the Committee. And I suppose there will be other discussion. But it makes more sense to do it that way, rather than leaving the southern portion of the corridor where it is.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Okay. This is for Mr. Derstine. It is a technicality. But just a few moments ago, you indicated you were going to hand out some things to us. What about the people joining this meeting remotely? They won't be able to see that.

MR. DERSTINE: We have electronic copies and we will send them on to Mr. Brewer, who will then circulate them to members of the Committee who are appearing virtually.

MEMBER HAENICHEN: Okay.

CHMN. CHENAL: Let me just think out loud for a second Member Noland's question. I don't have an answer. But I pose this question. It seems to me in the past, and I could be wrong, but it seems to me we have given corridors for power lines, and I guess I am not exactly sure precisely what we have said as far as substation. My recollection is we have been a little more specific with the general area.

That's a large corridor to say you can put the substation anywhere you want. Maybe that's fine. Maybe we don't care. But maybe, maybe we do. Maybe we want to be a little more specific as to where the substation goes other than just saying it is anywhere you want to in the corridor. I just throw that out. I don't -- you know.

MR. DERSTINE: And I think, yeah, how this Committee wants to describe it. I had suggested what was done in the past was to utilize the corridor to cover the transmission line and get the transmission line from A to B, in this case from the point where we have to relocate the line over to TS-22 and then to where it rejoins the existing line, and then to have the Committee separately describe a parcel or an area within which the new TS-22 substation will be sited.

We already have in CEC 120 a description of a larger site within which Avery is placed, the green substation site. That is a -- that larger area will contain the 64 acres that we are asking this Committee to authorize.

So it is -- can we have -- do you want a corridor that covers the line and the final placement of the line and then a description the substation site, or is it important to this Committee to have a corridor that is large enough to encompass the substation site, and then do you also then want to describe the substation site within that new larger corridor?

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Yeah, Mr. Chairman, I don't think we are qualified to suggest --

MEMBER HAMWAY: I agree.

MEMBER HAENICHEN: -- a placement for the substation, I mean a specific type location. That will probably come out of the studies that are being done by the utility.

MR. DERSTINE: And --

CHMN. CHENAL: My understanding is, though it wouldn't be -- my words weren't well chosen -- it wouldn't be a specific site for the substation, but it would be a siting area within which the substation would

be located, but maybe not as large as the corridor.

MEMBER HAENICHEN: Okay.

CHMN. CHENAL: Member Noland.

And I am not suggesting we do it that way. It was done like that in the last case. But I just throw that out.

Member Noland.

MEMBER NOLAND: Well, Mr. Chairman, they located the Avery within a corridor. And as I understand it, the CEC called out that corridor, not just for the line, but also for the substation. I just would like to do the same thing, or see us do the same thing for the TS-22.

MEMBER HAENICHEN: Right.

CHMN. CHENAL: Correct me if I'm wrong, but I think that gets to the confusion that I had. There were actually two areas called out. There was one area, the corridor for the power line, and then there was another area specifically called out separate from that for the substation.

And that's maybe what I am suggesting we do here. We don't have one corridor for both, we have two, one corridor for the line and one siting area for the substation. And on the Figure 1A, the gray area, this is not -- this is the old case. The gray elbow area, as

Member Haenichen referred to, was the corridor for the power line. And the siting area for the Avery substation separately described in the CEC was the hatched area. So there were two separate, separately described areas, as I understand it.

Member Haenichen.

MEMBER HAENICHEN: That helps me. But, so then would a way to accomplish this be to direct the applicant to suggest such an area for our approval? Because I don't see how we would pick it otherwise.

CHMN. CHENAL: Yes. I think that's an item to come, that they are going to have to guide us. But from the point of view of philosophy, do we do it like that, like in the old case where we had one area for the, one area for the line and a separately described siting area for the substation?

I think what Member Noland is suggesting is maybe we combine the two and move a corridor north and make it large enough to encompass both the line and the substation. So it is a different approach to how we define where to put these facilities.

MEMBER HAENICHEN: Okay. But the substation and the lines are related to one another. And we don't know all the nuances of placement of a substation vis-à-vis the lines that they are going to be connected to. So we

really need a lot of guidance there.

CHMN. CHENAL: Yes.

Member Gentles.

MEMBER GENTLES: Mr. Chair or Mr. Spitzkoff, is the reason why there is no corridor outlining the pink area as presented in this case today, is the reason because you needed more flexibility in terms of where that's actually going to occur, or was there some reason why you didn't propose a corridor around that?

MR. SPITZKOFF: So generally -- is this on? There we go. Okay.

Generally as long as the corridor for the line and the siting area for the substation overlap a little bit or significantly, then that gets you the connectivity between the line and the substation. And I think that's what really, at the end, as we walk, talk through this, you know, right now the overlap of -- if we just say the blue outlined area and the line corridor has a little bit of an overlap, and the Committee may want to see a larger overlap or complete overlap to ensure that that full substation area is encompassed within the line corridor, but generally, like if we look at the Avery situation, the siting area, which is the orange hatch for Avery, pretty much anywhere, if we would have put the substation anywhere within that area,

it would have touched the gray area that the line, the line corridor was in. So we can maintain that connectivity, the back to back connectivity.

MEMBER GENTLES: Is there a possibility -- that is the TS-22 up there in the pink?

MR. SPITZKOFF: Yes.

MEMBER GENTLES: So is there a possibility the actual substation can go north of those hash lines?

CHMN. CHENAL: Outside of the corridor.

MEMBER GENTLES: Outside the corridor, yes.

MR. SPITZKOFF: Not the entirety of the substation. Given the substation has to be 80 acres, and whatever shape you want to put it, a rectangle or a triangle such as it is, if anything of that size, starting at the point of the pink, the pink that's outside of the line corridor, anything that would be of the size of 80 acres would, would come down into the line corridor.

I hope that helps.

MEMBER GENTLES: And then for -- remind me. Does the property line for the plant, does it go all the way up to Carefree Highway?

MR. SPITZKOFF: No. The property line will generally be a couple hundred feet north of the existing --

MEMBER GENTLES: All right.
MR. SPITZKOFF: -- line.
MEMBER GENTLES: Thank you.
CHMN. CHENAL: Member Haenichen.
MEMBER HAENICHEN: Well, at the end of the day, assume this Committee does approve this project that's being proposed, we want to be sure, with these things we have just been discussing, that we haven't hamstrung the utility into an unbuildable configuration. So we want to be absolutely certain that they are satisfied with the result we come up with.
CHMN. CHENAL: Member Noland.
MEMBER NOLAND: They have got 408 acres designated in that pink area, and how we could hamstring them I don't know. They have got a lot of flexibility. I think all we are asking is that it is within a corridor area. And whether it be its own corridor or part of the line and substation corridor, I think we have done it both ways.
CHMN. CHENAL: I think this is a good time to take a lunch break. I am going to suggest that at some point in the afternoon or tomorrow, but the applicant comes back and gives some thought to how it works best for the applicant. Right now my understanding is the applicant is proposing one corridor for the line and a

separate siting area for the substation. You have heard the discussion. Give it some thought and maybe come back with a recommendation as to what you think will work best, and then we can talk about it at that point.

Does that sound good to everybody?

MEMBER HAENICHEN: Perfect.

CHMN. CHENAL: How much time does the Committee want for lunch, a half hour or an hour?

MEMBER HAMWAY: A half hour.

CHMN. CHENAL: A half hour or 45 minutes?

MEMBER HAMWAY: 45.

CHMN. CHENAL: Okay. Going once, going twice. Let's take a 45-minute break, and we will resume the hearing at about 1:15.

(A recess ensued from 12:26 p.m. to 1:28 p.m.

CHMN. CHENAL: All right. Good afternoon, everyone. Let's resume the afternoon session of the hearing, Biscuit Flats project.

Any preliminary matters we need to discuss before we start? Mr. Derstine, Ms. Benally.

MR. DERSTINE: No, I don't think so.

CHMN. CHENAL: Any questions from the Committee?

(No response.)

CHMN. CHENAL: If not, let's proceed with the testimony. Mr. Derstine, Ms. Benally.

BY MR. DERSTINE:

Q. Mr. Duncan, we are going to move on. Yes, we spent the end of our morning focusing on corridors. You are a part of the effort to work on those corridor descriptions, so we are going to get you through your testimony so you can get back to that important task. But for now we have some important things for you to cover in your testimony.

The first area is the outlining of the transmission structures. Why don't you cover those. And again, what we are talking about are the structures that will be used on the relocated line segment, correct?

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

Q. Okay.

A. (BY MR. DUNCAN) So the relocated route that we have been showing, we will use steel monopoles that are going to be similar to the existing structures in their designs. The anticipated height of the new structures is generally between 150 and 165 feet tall. Structures may be, for site specific reasons, up to 195 feet tall, you know, for very specific reasons such as crossing, we have talked about the Deadman Wash may require taller structures to cross that, or in places like the 69kV line crossing once that location has been determined.

Typical span lengths will be between 800 and 1,000 feet.

Q. All right. And the structures that are shown on the right screen, those are the same structures that are contained in Exhibit G to the supplement, which is APS Exhibit 2. Do I have that right?

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

Q. Okay. All right. Beyond structures, we are now getting into some of the statutory requirements that govern a proceeding before the Committee. I think the next section deals with the APS 10-year plan filing. Are you ready to cover that?

A. (BY MR. DUNCAN) Yes. So the project was included in the supplemental 10-year plan, which APS filed on April 16th, 2021. The map here on the right side -- point to this area -- this is the map that was included with that supplemental filing, and it indicates the TS-22 substation and the Avery substation as part of that map.

As part of the work that was done in support of the 10-year plan, it included a reliability analysis, which was performed including the buildout of the semiconductor plant on the provided development time line. When I say provided development timeline, That's the development timeline provide by TSMC.

The analysis demonstrated that system

reliability was maintained throughout the 10-year planning horizon including those planned projects.

Q. So the reliability analysis took into account the anticipated load from the initial phase of the TSMC project and determined that it had no impact on system area reliability. Is that an accurate statement?

A. (BY MR. DUNCAN) Yes, it is.

Q. Okay. Mr. Spitzkoff, you were leaning in. Do you have anything you want to add to that?

A. (BY MR. SPITZKOFF) I don't think I was leaning in.

Q. Okay. I apologize. I just wanted to make sure we weren't -- when I say things like system area reliability, I look to you to make sure I am not saying the wrong thing.

Anything else on the 10-year plan filing, Mr. Duncan?

A. (BY MR. DUNCAN) No.

Q. And you mentioned the supplement. The statute requires that APS and other entities that are planning to construct a transmission line within the next 10 years file a plan on or before the last day of January of each year. You are indicating that this project, the relocation project, was included in a supplement to APS's annual 10-year plan filing. Do I

have that right?

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

Q. Okay. So I mentioned we are getting into areas that require or deal with the statutory requirements and notice requirements before this Committee. Let's start out by having you identify kind of the two key filings that triggered or started the chain of events that brought us here today.

A. (BY MR. DUNCAN) Yeah, you bet.

So the application to amend was filed on March 10th of 2021, and the supplement to amend application was filed on June 11, 2021.

Q. All right. And the application to amend is APS Exhibit 1. The supplement to the application to amend that I think, as I mentioned in my opening, kind of serves as the CEC application for this amendment case, is APS Exhibit 2, right?

A. (BY MR. DUNCAN) That's correct.

Q. Okay. One of the key statutory requirements for a new siting case, and we followed those for this particular proceeding, was to publish the Notice of Hearing. Was that done in this case?

A. (BY MR. DUNCAN) Yes, it was. The Notice of Hearing was published in two newspapers. It was published in The Arizona Republic on June 16th and again

on June 19th, and it was published in the Foothills Focus on June 16th.

Q. And the Affidavit of Publication, that's found at APS Exhibit 11, correct?

A. (BY MR. DUNCAN) Yes.

Q. And the Affidavit of Publication is something that's a document that's completed by those newspapers that says that they published the Notice of Hearing on a particular day, and it shows an example of the notice as it appeared in the paper, right?

A. (BY MR. DUNCAN) That's correct.

Q. Right. Another notice requirement is to provide notice to affected jurisdictions. Did we do that for this case?

A. (BY MR. DUNCAN) Yes, we did. The affected jurisdictions included the Arizona State Land Department, City of Phoenix, and Maricopa County.

Q. All right. And how was the notice to affected jurisdictions delivered? Was it put in the mail? Delivered by hand? How was it done?

A. (BY MR. DUNCAN) Yes, it was both hand delivered and mailed on July 8th, 2021.

Q. All right. And those notices to affected jurisdictions are found at APS Exhibit 14, right?

A. (BY MR. DUNCAN) Yes.

Q. Okay. Another requirement that's not in the statute, but it has become the practice before this Committee, is to post signs along the route or, in this case, the relocation segment. Was that done?

A. (BY MR. DUNCAN) Yes, it was. And I am just going to point here on the right side. It is just a photograph of one of the sign postings. But the four sign locations were placed on June 23rd, 2021.

Q. Okay. And if I look at APS Exhibit 15, I see copies of those four signs. And there is also a map which indicates the location of where those signs were posted, correct?

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

Q. The Chairman's procedural order also requires that we deliver copies of, in this case, the supplement to two library branches that are in some proximity to the project. Was that done here?

A. (BY MR. DUNCAN) Yes, it was. We delivered copies to the -- per the Phoenix library direction, we delivered copies to the main Phoenix library on July 9th, 2021. The main library then took responsibility for delivering them to the Agave Library branch and the Desert Broom Library branch.

Q. Okay. And your communications with the main library concerning the delivery of the supplement to the

branches are found at APS Exhibit 12, right?

A. (BY MR. DUNCAN) Yes.

Q. Okay. And then the court reporter undertakes to deliver copies of the transcripts of the procedural conferences and of this hearing to those same branches, right?

A. (BY MR. DUNCAN) That's correct.

Q. Okay. You are also required to post information on the project website. The Notice of Hearing indicates that that information can be found on the project website. Was that done?

A. (BY MR. DUNCAN) Yes, it was.

Q. Okay. And APS Exhibit 13 is a screen shot of a portion of the APS project website that has links to the various exhibits and filings, is that right?

A. (BY MR. DUNCAN) That's correct.

Q. What other kind of information is found on the project website?

A. (BY MR. DUNCAN) So in addition to just the information to learn about the project, there is also information, as mentioned here a moment ago, the supplemental application, copies of our newsletter, as well as information in general about the siting process and the CEC process itself.

Q. Okay. Does the project website also include a

telephone number or ways in which residents or anyone who is interested can obtain more information about the project?

A. (BY MR. DUNCAN) Yes, it does, as well as information on accessing the virtual open house, which I will speak about momentarily.

Q. Okay. A new development this year is the Chairman's procedural order now requires that we use some form of social media to publicize the project. I gather that was done, right?

A. (BY MR. DUNCAN) Yes, it was.

Q. And we are going to get into detail how you use social media and the forms of social media when you talk about your public outreach and engagement here in a bit.

A. (BY MR. DUNCAN) That's correct.

Q. Well, let's jump into, then, our next section that deals with public involvement and stake -- yes, public and stakeholder involvement.

CHMN. CHENAL: Mr. Derstine, I know Member Gentles got excited when he heard about the order requires social media to notify the public of this. I just --

Mr. Duncan, if you could, just expand a little on what you did in that regard. We talked about it at the prefiling conference, but why don't you just tell us

what that entailed.

MR. DUNCAN: Absolutely. So for both our announcement of the virtual open houses, as well as the announcement of these evidentiary hearings, we used Facebook and Instagram advertising targeted to what we refer to as our notification area, which I will get into momentarily. It is beyond our study area. And through those Facebook ads anybody who was provided with that as a clickable ad and did click on it could not only obtain brief information about the project, but was provided with links on where they could get definitely more information about the project, including the virtual open house and the project website.

BY MR. DERSTINE:

Q. Okay. And you have some slides that provide the Committee with some more information on that in a bit, right?

A. (BY MR. DUNCAN) That's correct.

CHMN. CHENAL: Thank you.

BY MR. DERSTINE:

Q. Start us off here with an overview of the public outreach methods that you used to publicize the project.

A. (BY MR. DUNCAN) Absolutely. So I will go into detail on each of these, but I just want to briefly go through it, what I will be speaking about.

For our outreach we included project mailings, as I mentioned a virtual open house, stakeholder briefings, our project website, project telephone information line, social media, and the use of customer emails.

Q. Why don't you go ahead, and I think you are just going to walk us through each one of those forms of communication and outreach. So please proceed.

A. (BY MR. DUNCAN) Thank you. Yes.

So I want to start out. I will take time to describe this map because I am pretty sure we haven't shown this one yet. This map is a map of our notification area. So the map on the right screen includes a thick blue line. And that blue line encompasses, as you can see here, the dashed black line, which is indicative of our study area. But it also includes areas here to the east of I-17 outside of our study area, which largely is residential but does include some commercial developments.

So this is, when you hear me refer to our notification area, this is the area that I am referring to, so the study area, plus these areas east of I-17 and our study area.

Q. And just briefly, the reason you went east of I-17 is because that's where there is some concentration

of residential developments, right?

A. (BY MR. DUNCAN) Yes.

Q. Okay.

A. (BY MR. DUNCAN) So using this notification area, we identified a mailing list, and project mailings were provided to more than 2100 customers. And that included, these project mailings included a newsletter, which was mailed on June 11th, 2021, which introduced the project and also announced the virtual open house and how to access it and provide comments. And for the same notification area we do plan a second newsletter that we plan to send, assuming that this project is approved through the ACC, to announce the decision to these same customers.

CHMN. CHENAL: Member Gentles has a question.

MEMBER GENTLES: Mr. Chairman, so what is the rationale for including the housing or the residences on the east side of I-17 in your blue outline and not the houses just north of that and just south? It seems to me that those are fairly contiguous, particularly with the size and scope of this project.

MR. DUNCAN: You know, it would be easy to say that through discussions with the Chairman, who suggested that we include those areas, that that would be the limit of the answer. But I believe that a better

answer is just simply that, due to the proximity of the project, I think that these residences are really the closest residences. And even though they are, you know, about a mile away from where our project facilities are, and also on the other side of I-17, which in this area is elevated, blocking views, I still feel like it was appropriate to include them.

But it is hard to define exactly. You know, we could certainly have gone further east, certainly gone further north or south, included residential areas down here or up here as you suggest. But from placement of our facilities we really felt like this would best capture those that could be impacted.

CHMN. CHENAL: Mr. Duncan is correct, Member Gentles. We did discuss the notification area at one of the preliminary hearings that we held before the filing, and kind of landed on that area. You know, we went back and forth. And if I remember, you know, we had discussion about, you know, including a larger area. But I think I just -- that just seemed like it made sense to me. I mean one could argue it could have been --

MEMBER GENTLES: Yeah, I mean it -- I mean when you are -- I assume that when you show us your social media kind of footprint it is probably going to pick up

a little bit more inside what is in those blue lines, which is good.

Just one other observation, it seems like every time we are talking about mailings or notifications, we are always landing on about the 2- or 3,000 number. Is that just coincidence, in terms of customers?

MR. DUNCAN: I can't speak to that. But I know that on some of my past projects I had email lists as high as 15- or 16,000 people.

MEMBER GENTLES: Okay.

MR. DUNCAN: So if it is a coincidence, I can't speak to that.

MEMBER GENTLES: Okay. Thank you.

MR. DUNCAN: But I would just like to add one more thing in response to your earlier question. And that is in particular these residences. This is a commercial development that is located just on the northwest side of this interchange here at State Route 74 and Carefree Highway. And there is significant -- those are very, very large commercial structures, which also are in between any views of our project and those residences, and that serves as another buffer as to why those residences would, I think, be minimally impacted by our changes.

MEMBER GENTLES: All right. Thank you.

MR. DUNCAN: One other mailing that we had done was a postcard, which was, again, prepared and mailed to this notification area, same customers. That was mailed on July 8th, 2021 to announce these evidentiary hearings. The primary reason it was a postcard is just because it was literally falling right on the heels of our newsletter. And other than announcing evidentiary hearings, there wasn't any new information to share over what was in the newsletter.

Next I would like to speak about the virtual open house now. Just a bit of background is that this is our first project that we brought before the Committee where we have used a virtual open house. And I don't think I have to go into a great deal of background as to why a virtual open house was selected versus a traditional open house. We all understand the pandemic conditions. But I just want to speak a little bit about how that was done.

So the virtual open house was a specific web page that was set up and hosted by AECOM. And that was launched on June 14th, 2021. The virtual open house provided customers with information about the project, its purpose and need, and the environmental studies performed. Opportunities to provide comments directly to the project team were explained, including on forms

at the virtual house page, as well as other methods, including through the project email.

Throughout the time of the virtual open house comment window, which we published is about a two-week period, we had approximately 160 unique visitors to the virtual open house. I say unique visitors because the analytics actually tracked more activity than that, but basically unique visitor would be someone who accessed it from a computer that had never accessed or a phone that had not accessed it previously. There were probably in some cases repeat visitors to it. So that 160 is unique IP addresses or computers.

MEMBER GENTLES: Mr. Chairman, I have another question.

CHMN. CHENAL: Member Gentles.

MEMBER GENTLES: Where does this virtual open house live? Is it on the website?

MR. DUNCAN: No. It is on its own website. And I was just about to offer the Committee, we have the ability to take you to the virtual open house and take a quick tour of it so you can see it in action.

MEMBER GENTLES: So this isn't on the Biscuit Flat project section of the APS website?

MR. DUNCAN: There is a link, but it is not hosted by APS. It is hosted by AECOM. It is its own

page.

BY MR. DERSTINE:

Q. But it can be accessed from the project website, is that correct, Mr. Duncan?

A. (BY MR. DUNCAN) That is correct. But it was also published in all of our notification materials, as well as our social media.

MEMBER GENTLES: Okay. Just so I am clear, I am looking at the Biscuit Flats section of the APS website.

MR. DUNCAN: Yes.

MEMBER GENTLES: And so I can access that from here --

MR. DUNCAN: As far as I know. I am -- it --

MEMBER GENTLES: Okay. I just don't see the link. I am just asking.

MR. SPITZKOFF: Member Gentles, when I was on the site a week or two weeks ago, I recall, I think the link was near the bottom of the page. There is one or two links that should reference. I don't know specifically if it said virtual open house or not.

MEMBER GENTLES: Well, as of right now it is not on there. And I imagine, was there a reason why that it is available in a limited period of time or why it would not just be -- that this wouldn't just be available in its entirety whenever somebody wanted to take a look at

it on the website?

MR. DUNCAN: I was just about to speak to that. It is still available and will be available through the remainder of this year, and can be extended if necessary beyond that time frame.

We had a window for public comments, because we typically try to encourage a window so that people who do have a public comment can submit it in a reasonable time for us to include it. If there is a need to include their concerns in our project design or something like that, you know, if it arrives like literally just days before we come to these hearings, it is going to be difficult for us. So there is a defined window that we try to, you know, basically say this is your opportunity to comment. But even then people still -- all the tools work and people can still provide comments even today.

MEMBER GENTLES: So you could shut down the comment period, but keep the virtual open house.

MR. DUNCAN: It is still open and live. In fact, as I say, with this tour, if I may, I can take you there. And this is not a copy; this is live on the web right now.

CHMN. CHENAL: Let's do that.

MR. DUNCAN: Okay.

CHMN. CHENAL: Did you have a question, Member Haenichen?

MEMBER HAENICHEN: No.

MR. DUNCAN: So this is now live. So this is a live look at the page. Mark is controlling it with his laptop. But on this page, you have the ability to -- it is set up to, you know, obviously mimic an actual open house. But let's go ahead and click on one of these so you can --

These are the typical stations that we have at a regular open house. And, well, I know this question is going to come up, but you see your existing land use and future land use maps still reflect our old substation area. When Mr. Turner speaks he will address that.

But nonetheless, these can be accessed, clicked on, and zoomed in or out. So if there is something that someone would like to look at closer up, you have the ability to zoom in on the text or things like that.

And some of these stations have more than one page, but this is all the same very typical information that we share at our virtual open houses. And there is -- we provide a table here with FAQs, as well as a place for people to provide feedback, which is directly shared to the project team. And we have a little introductory video that welcomes people to the page and

kind of gives them a little bit of instruction on how to use the page.

BY MR. DERSTINE:

Q. Can you show us that video, Mr. Duncan.

A. (BY MR. DUNCAN) Yes, I can.

AV TECH: We will need to connect that computer to audio unless you want to play it as is, but you are welcome to do so.

MR. TURNER: I could bend my mike down, but I don't know how well it would sound.

AV TECH: Turn it up. Let's try it.

(A video was played.)

MR. DERSTINE: Mr. Duncan, that looks like it was taken on your back porch.

MR. DUNCAN: Yes, it was.

CHMN. CHENAL: How many times did you have to do that in order to get the one that was the final?

MR. DUNCAN: Actually, my son is in a college program to where he is -- you know, kind of a video production class. And although that was done on my smart phone, he was the cameraman. And that's the second take.

CHMN. CHENAL: Second take, all right.

BY MR. DERSTINE:

Q. Very good. And the reason you did it at home,

just to be clear, is that we have used a professional production team on some other projects, but at that point in time you were restricted in terms of interactions with outside vendors, et cetera, and you had to make do with still getting the virtual open house online, but to came up with that video, you did it using your son at home, right?

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

CHMN. CHENAL: Congratulations.

MR. DERSTINE: And can we clarify for anyone of how to reach the virtual open house?

CHMN. CHENAL: Yes, please.

MR. DERSTINE: I guess Ms. Benally can talk through the steps.

Or my understanding is you go to APS.com and then search under -- is it line siting cases? That takes you then to the Biscuit Flats. And then the Biscuit Flats, the virtual open house can be found under that page.

MEMBER GENTLES: There it is.

MR. DERSTINE: It should be live at this time.

CHMN. CHENAL: All right. Member Gentles has now found it on the Biscuit Flats.

MEMBER GENTLES: I just have a general question, if we have time.

CHMN. CHENAL: We do.

MEMBER GENTLES: So the pandemic has caused us all to do different things. This virtual house was because you couldn't gather in person for the open house, is that correct?

MR. DUNCAN: It was out of concern not only for our employees, but also for our customers.

MEMBER GENTLES: Okay. And so we have learned a few things during this pandemic, right?

MR. DUNCAN: Yes, sir.

MEMBER GENTLES: So do you foresee doing virtual open houses in addition to the in-person open house going forward?

MR. DUNCAN: So as a siting team we have discussed it. I am not going to put APS on the hook right now and commit us to that, but as a siting team we believe it is in our best interest, as well as our customers' best interest, to continue the virtual open houses alongside the regular open houses. So it is our intent to fund both per APS's permission.

MEMBER GENTLES: I think that would be excellent, because you are going to get however many people at the in-person open house, but you get two, three X at the virtual. So that continues to increase the reach, which is what the open house is intended to

do, right?

MR. DUNCAN: We have felt that the virtual open house has been a tremendous success for our outreach efforts, and we really feel that the results speak for themselves.

MEMBER GENTLES: Thank you.

CHMN. CHENAL: Let me jump in and just raise a question with the Committee on that point. And I am glad you asked that, Member Gentles, because that was a question I was going to ask as well, is what role would a virtual open house hold in the future for APS. And I'd kind of like to ask the Committee kind of a similar question.

We also were limited because of COVID to, you know, live presentations, but as we have adapted to COVID, we have gone back to be kind of a hybrid of allowing the public and members of the Committee to appear virtually and in person. I can tell you that I have received some comment from Committee members about wanting the hearings to be live, and maybe do we need the virtual aspect of it.

On the other hand, I know that different Committee members have used the virtual capabilities for very good reasons, for, you know, maybe they would be unable to attend the meeting if it was not for that and

better to have someone appear virtually than not at all.

So I just kind of -- my personal feeling is that we should have the virtual capabilities for the public going forward. I appreciate it adds some expense and complexity to the hearing, but I think it extends the -- it makes it that much easier for the public to attend and participate in the proceedings. But I wanted to get kind of a sounding from the Committee what the Committee feels about having these hearings allowing, you know, the members to appear, appearing virtual.

MEMBER GENTLES: I will throw my two cents in. I think it is fantastic. I think it is great. The more you can make the availability to the public available the better. And that's -- I think you hear that from my comments at every one of these meetings. So that's the reason why I love the virtual, keeping this as a standard operating procedure along with the addition of your social media outreach, which is, I think, going to really exponentially increase your participation rate.

CHMN. CHENAL: And as to the Committee members now, Member Gentles, as to whether --

MEMBER GENTLES: I like the flexibility of appearing virtually, because I mean there are sometimes that, you know, work just precludes us. For instance, we are just talking about a two-week hearing in Tucson

that's going to be a bit challenging for some of our members that can't be there in person two straight weeks. I think it is a great thing. I encourage it.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Mr. Chairman, I was the rabble rouser that passed on my feelings to you early on. I think I have no problem with the public being able to do either virtual or in public. But I do -- it really tends to extend the time of the hearings when we are doing virtual with Committee members. And even the public, the technical aspect, we have run into problems. And I think it has extended the hearings in some ways by even a day because of technical problems, internet problems, all of that.

So, you know, we make a commitment when we agree to this job that we are going to come to hearings. And I know it can be a problem for some people with working and trying to get the time off or whatever. But we need to think about the expense involved with it for the parties, and also the length of time that I think it expands the hearing when you have four or five members appearing virtually.

CHMN. CHENAL: Thank you.

Member Haenichen.

MEMBER HAENICHEN: Yeah. Question for the

applicant. On this virtual hearing thing, does the applicant have a way to know how many people use this service? And then a further question would be by name.

MR. DUNCAN: So, yes, we are provided with analytics. AECOM, through their proprietary software, was able to provide us with analytics. That's how I was able to conclude that there were 160 unique visitors. In addition --

Oh, I am sorry. Are you speaking about the hearing or are you speaking about the virtual open house?

MEMBER HAENICHEN: Virtual.

MR. DUNCAN: The virtual hearing?

MEMBER HAENICHEN: Yeah.

CHMN. CHENAL: Hearing or open house, Member Haenichen? The virtual system has a way for people to find out about the project. I don't know what that, how you want me to phrase it, but --

MEMBER HAENICHEN: I would like to know how many people take advantage of it.

MR. DUNCAN: So in the case of this project, referring to the virtual open house that we toured here?

MEMBER HAENICHEN: Right, that's what I am talking about.

MR. DUNCAN: So we had 160 unique visitors.

Every time a computer, whether it is a cell phone, laptop, or desktop computer, accesses anything, it uses what is referred to as an IP address. It leaves a footprint whenever you visit a website. And this analytics is able to track those IP addresses.

So it is difficult to say that it is 160 individual customers, because one customer could access it through two different computers. But it is a reasonable guess that it was 160 different customer visits. But in terms of it being by name, that is not possible unless the users offer their information.

We did have a sign-in sheet.

MEMBER HAENICHEN: That was my question.

MR. DUNCAN: And there were some users who filled in it. I think we had four users who took the time to fill in the sign-in sheet.

I think it is, my personal opinion is that it would be wrong to prohibit people to access the website without leaving their name. I think we would discourage people from getting the information they need by forcing them to give their name, or we might just get a false name. But we do offer it and ask people to sign in. But it obviously did not occur. I did not have 160 sign-ins.

MEMBER HAENICHEN: Okay. I agree with you, it

would be wrong to restrict access just because you won't give your name. I just was curious about how many people take the time to do it.

MR. DUNCAN: Yes. I guess I would feel like a project perhaps that has more public activity than this one might be a better yardstick for that, because this just overall had low public engagement, not due to our lack of public outreach, but I think just due to the nature of the project. But I, you know, at least just in terms of this project, yeah, we just did not have a lot of sign-ins.

MEMBER HAENICHEN: Okay.

CHMN. CHENAL: I would like to continue with the Committee. The question I would like feedback on from the Committee is a specific one. Should we continue to have Committee members have the capability to appear at hearings virtually versus in person? I would like to hear from the Committee just so I know and I can deal with this going forward.

Member Hamway.

MEMBER HAMWAY: I don't think we are ever going to go back to the point where we can't have a Zoom option. I just don't think -- I don't see the reason to do that.

I agree with Member Noland in that I think you

get more out of a hearing if you are physically here. I mean I just -- I think you don't ask questions as much because you have seen everything.

So I am -- and I know for -- I have attended two hearings virtually. And I know personally I was not as engaged as I am when I am here physically.

But I think it is a great option. Certainly I don't think we would ever want to go back to where we wouldn't allow a Zoom option for this hearing.

CHMN. CHENAL: Member Riggins -- Palmer. Member Riggins.

MEMBER RIGGINS: Yeah, I agree with Member Hamway, and I see Member Noland's concerns as well. I think if it is like the technical issues or anything that, you know, extends the hearing into an extra day, obviously that could be something that's burdensome for the applicant. Hopefully those are, you know, kind of small, small little speed bumps along the way that we are kind of smoothing out as we get more into the world of these hybrid meetings and we are able to overcome those and they don't shut meetings down for half a day or full day.

But personally, I do like the flexibility of being able to do this. I think having the hybrid option, like Member Hamway said, is something that I

really don't see going away, not just for our Committee, but also a lot of the committees that are in state government as well. I know not just from a Committee standpoint, but it does allow a lot more public interaction. So I definitely see a lot of merit in continuing it being a hybrid.

CHMN. CHENAL: Member Palmer, did you have any thoughts?

MEMBER PALMER: I have not done one virtually so I don't know if I can speak to it very well. But I also have been looking out in the next few months and looked at one particular instance where it might allow me to participate if I do it virtually.

CHMN. CHENAL: So what you are saying is I am the only Committee member in Parker? Is that what we are saying?

MEMBER HAMWAY: I am going to Parker.

CHMN. CHENAL: We are good. Okay.

Good. I didn't mean to cut you off.

MEMBER PALMER: No. I think the point is well taken that it is probably part of life as we know it right now. And I don't know that it is going to go back. My preference is always going to be to be in person at these meetings, and so far I have been at each one. But I wouldn't rule out the potential that I might

need to do that at some point.

CHMN. CHENAL: Member Grinnell or Member Drago, if you have any thoughts on that issue.

MEMBER GRINNELL: Mr. Chairman.

MEMBER DRAGO: Mr. Chairman.

CHMN. CHENAL: Yes, Member Drago.

MEMBER GRINNELL: Oh, okay. Thanks, Len.

I think when I first applied for this position I explained that, number one, for the summers I am going to be in and out of the state. But I also understand, you know, Committee Member Noland's position. And frankly, I would rather be there in person if at all possible. But the reality is in today's world it is not possible.

And I will say this. When I am not at the meeting itself, it sort of allows me a little bit more time to read the documents that are mailed to us. Also, any of the emails that are made to us, it affords me an opportunity not to try -- so when I am focused on the meeting, I am focused on the meeting and being able to do that. I don't have to multitask and do other things while I am here.

And to the cost, the one advantage doing this virtually to the applicants is that they are not paying for a hotel room. They are not paying for whatever

little expenses come with having to be there in person. And so from a cost/benefit analysis, I would say there was probably a push.

And for the convenience of being able to participate, I think it is advantageous for the members to be able to do this virtual. It is just a reality of life. I have got family members and situations and business just like everybody else. And it is expanded beyond Arizona. However, I will be in Tucson for two weeks for sure.

CHMN. CHENAL: Member Drago.

Thank you.

MEMBER DRAGO: Yeah, Mr. Chairman. I agree pretty much with what everyone says. But I think having the flexibility is really a huge benefit to the Committee members.

My personal example this week, I came down with COVID and just finished a trip, road trip, and didn't even expect that I wouldn't be there. So I think the opportunity to call in it was fantastic.

So I would hate for us to go back to a situation where we need to be in person or we don't attend. So that would be my preference, is to have the flexibility.

CHMN. CHENAL: I hope you feel better.

MEMBER PALMER: You can go back on the

ventilator now, Len.

CHMN. CHENAL: Member Haenichen.

MEMBER DRAGO: It is a delta strain, but, man, it is a pain, guys. It is a terrible feeling. I can breathe, thank God.

CHMN. CHENAL: Well, get better.

Member Haenichen.

MEMBER HAENICHEN: Well, I am just going to give you my take on this discussion. I have no doubt that this virtual thing is the wave of the future. And in the long run, it will have established a firm place in proceedings like these. But having said that, I think there is a hell of a lot of problems with it, and they are going to have to be worked through by the industry that supports this.

CHMN. CHENAL: Any further comments?

MEMBER HAMWAY: I just had a question when you asked if you were going to be the only one in Parker. Legally would we have a quorum if you were the only one and we were all on video? Would that -- how would that legally constitute a meeting?

CHMN. CHENAL: Well, I think we can meet even if it is, you know --

MEMBER HAMWAY: Zoom.

CHMN. CHENAL: -- Zoom or telephonic means.

MEMBER HAMWAY: Okay.

CHMN. CHENAL: I mean the Corporation Commission itself held meetings when everyone was by Zoom. So I figure if it is good enough for them, it is good enough for us.

MEMBER HAMWAY: Okay.

CHMN. CHENAL: I think that's been settled. I have never researched it, but I am confident that a meeting can occur by, you know, technological means as well as in person. Well, I wish -- I mean the worst thing I heard is Member Drago's.

I hope you get better soon. I mean that's the most important thing. But I guess --

MEMBER DRAGO: Thank you.

CHMN. CHENAL: -- the proof of the efficacy of a Zoom meeting is the fact that you are participating in this meeting when you could not do it in a live setting.

So I mean I guess -- and as far as I am concerned, the more the better. So okay. Yeah, appreciate it. I just thought it was something that I wanted to, you know, poll the Committee. I know it is a little out of order in a sense. But I think it informs me of what I asked of the applicants going forward and, you know, how we set up these hearings.

So I thank you. So monopolized the time.

Mr. Derstine and Ms. Benally, I will turn it back to you.

BY MR. DERSTINE:

Q. All right. So you have done the show and tell and virtual open house. And I guess just the final note on that, when I see 160 unique visitors, if I think back to the open houses that we oftentimes hold or held prior to COVID, oftentimes they took place in a school gymnasium or a community center. And for many projects, you might just have five, 10 people walking in that door. It seems to me on a project like this, where you had 160 visitors, we had engagement in my view, in my opinion, at a higher level than what we might otherwise have had if we held a public open house, you know, in a gym or a community center close to this project.

Do you disagree with that, Mr. Duncan?

A. (BY MR. DUNCAN) No, I agree with that.

Q. Okay. I think your next topic is to talk about the stakeholder briefings.

A. (BY MR. DUNCAN) Yes. Thank you.

So stakeholder briefings were held regularly with the City of Phoenix and the Arizona State Land Department, as has been discussed at length.

The Arizona State Land Department, during our development of this project, provided verbal support for

the alignment of the proposed route, again, placed along the half section line between State Route 74 and the Dove Valley Road alignment.

We also received additional letters of support by the City of Phoenix, TSMC themselves, and the Greater Phoenix Economic Council. And here on the right is just, you know, I am not expecting you to read these, but copies of the letters from TSMC and the City of Phoenix.

We also maintained -- we talked about this already, but we maintained a project web page under the APS.com banner which was available to customers to learn about the project, read project materials, and provided links to the relevant documentation about the siting and CEC processes.

A project telephone information line was maintained to allow customers another avenue to learn about the project, leave comments, or to request a follow-up from a project team member.

And then I already said a little bit about this, but I will add to it. So we used social media, specifically the placement of ads on Facebook and Instagram, as another avenue of engagement with our customers. The ads were directed at customers throughout our notification area.

And yes, Member Gentles, I would believe that, yeah, I probably did. It is really good targeting, but in general, it was focused on that notification area. And this, as I mentioned, our notification area did include those residential areas east of our study area.

So the ads were placed between June 14th and June 28th initially during the window of the public comment session for the virtual open house. But then they were placed again between July 8th and July 22nd to announce the current evidentiary hearings. So the ads at the time of the virtual open house were viewed by more than 33,000 customers.

Now, this information as provided by Facebook and Instagram does not discriminate between repeat visits. So it is possible that that 33,000 is repeat visits by some customers. However, what we do know for certain is that 27 customers clicked on the ad for more information.

And then finally, emails were sent to customers served by lines within the notification area that have provided an email address to APS.

CHMN. CHENAL: Mr. Duncan, what does VOH stand for again?

MR. DUNCAN: I am sorry. That's virtual open house.

CHMN. CHENAL: Thank you.

BY MR. DERSTINE:

Q. And for the record, Mr. Duncan, the newsletter that you mentioned that went out is found at APS-16. The postcard that's announcing this hearing is found at APS Exhibit 17. The letters of support from Taiwan Semiconductor, City of Phoenix, and Greater Phoenix Economic Council, are found at APS-19, 20, and 21. And your virtual open house slides or screen shots are found at APS-22.

A. (BY MR. DUNCAN) That is correct. And just before I move on, I just want to point out what these exhibits are.

This is a portion of our Biscuit Flats project website page. This is not the entirety of it, just the very top. And this here on the right side is indicative of our social media, typical social media ad layout.

MEMBER HAMWAY: Mr. Chairman, I have a question.

So the social media, you had 27 customers click on the ad just from the social media or the emails that you sent. Did you get any numbers about how many people clicked after they received an email?

MR. DUNCAN: So the email, the information that would have been included in those customers' emails would have directed them to the virtual open house and

to our website. And we did not track the number of people that accessed it getting it from the email. The analytics provided by Facebook and Instagram, however, is what provided us with that 27. So that is specific to the social media.

MEMBER HAMWAY: Okay.

MR. DUNCAN: Can I clarify that for you?

MEMBER HAMWAY: No. I am always one that pushes emails to, you know, residents and different things, different customers. And so I guess I was just curious if social media was enough, or if the emails generated an additional. Because I would like, if I were affected by this project, I would like to get an email that let me know there was an evidentiary hearing and all the details. I would like an email for that if I have given you that information in the past.

MR. DUNCAN: And that's exactly what occurred. So all customers that are within our notification area that are fed by power lines, which is 100 percent of people living in the notification area, would have received emails if they provided their email to APS.

MEMBER HAMWAY: Right.

MR. DUNCAN: Now, because of the nature of the way those emails are done, it is likely that customers outside the notification area also received that

information, just because, unlike the Facebook and Instagram ads which could be targeted very specifically, the method for our emails follows the feeders that serve those homes, and those feeders serve both inside and outside the notification area. So, as a matter of fact, it is likely that the email list included people outside that notification area, and in many cases maybe far outside the notification area, which is unfortunate but it is a reality of the nature of determining those lists.

MEMBER HAMWAY: Okay. Yeah, I wouldn't want to get the email if it was 10 miles away.

MR. DUNCAN: I can't speak to how far away people are, but I know with certainty that I had one person who happens to be an employee who lives several miles away and received the email.

CHMN. CHENAL: So any idea, Mr. Duncan, of how many emails were sent?

MR. DUNCAN: No, I do not have that number.

CHMN. CHENAL: All right.

MEMBER DRAGO: Mr. Chairman, this is Member Drago.

CHMN. CHENAL: Yes.

MEMBER DRAGO: Mr. Duncan, it is good to hear you testify. I got a question about TSMC.

So it is always a good idea for companies that large coming into a community to do community outreach. To what extent was TSMC involved with this public outreach that APS did for this project?

MR. DUNCAN: TSMC, other than providing us with information, was not involved.

MEMBER DRAGO: Thank you.

MR. DUNCAN: It is good to see you, Mr. Drago. And I hope you feel better.

MEMBER DRAGO: Thank you.

BY MR. DERSTINE:

Q. I guess on that point, Mr. Duncan, though, are you saying TSMC has not done their own outreach and community relations concerning their project, or are you just simply saying with regard to the outreach for our transmission line relocation project TSMC was not involved?

A. (BY MR. DUNCAN) I am specifically referring to the outreach for the transmission line. I am not aware of the extent of their public outreach for their own project. There probably were requirements by the City of Phoenix. But I don't know what those were or to what level those were done.

MR. DERSTINE: Okay.

MEMBER DRAGO: Mainly for this project

specifically is what my question was related to.

MR. DERSTINE: Okay.

MEMBER DRAGO: Thank you.

BY MR. DERSTINE:

Q. I think this comes to the end of your presentation on public outreach and engagement. Is there anything else you wanted to add on this?

A. (BY MR. DUNCAN) No, there is not.

Q. Okay. Our next section transitions back to Mr. Spitzkoff on noise and EMF.

So, Mr. Spitzkoff, I am trying to find the section. The issues that we are required to address in a new CEC application and also studied were noise, interference with communication facilities. And that also includes electromagnetic fields generated by the transmission lines. Those topics are covered under Exhibit I in the supplement to the application to amend, which is APS Exhibit 2.

Let's start -- or we are going to start with noise analysis, so let's cover that topic?

A. (BY MR. SPITZKOFF) Okay. Sorry. I didn't know if that was my lead in.

Q. That was. That's all you got.

A. (BY MR. SPITZKOFF) That was it? Okay.

So from the noise analysis, really it comes down

to just a handful of factors. First, the existing line and the relocated segment is in the same general area. It is currently all undeveloped, and the only development that's going to be in a reasonable distance right now is going to be the TSMC facility.

The relocated line is going to be consistent with the construction of the existing line. The analysis shows that all noise, noise levels and impacts are going to be consistent with existing lines. So there should be minimal noise impact expected due to relocating this three and a half mile segment.

Q. So my sense of it is that the noise that will be created will be from the construction phase of the project, but once the line is relocated, it should not have any greater noise impact than the existing line, is that right?

A. (BY MR. SPITZKOFF) That's correct.

Q. And I think you and I talked about this at one point in time. And my question was when would I experience or why would I experience noise from, say, a 500/230kV line. And can you answer that question and maybe convey that information to the Committee?

A. (BY MR. SPITZKOFF) Certainly, I could try.

Generally when noise of a transmission line is discussed, it is referring to what is called the corona

effect. And what that basically means, it is the ionization of the air due to the power flowing through the line. And that will happen only in, you know, the proper conditions.

When you get nicks in a line or sharp angles in a line, that provides opportunities for power to escape and potentially ionize the surrounding air. It also requires a higher level of particulate matter in the air or very humid conditions for that to occur also. As a matter of fact, one of the reasons why most pieces of equipment that you will see associated with a line and in a substation tend to be rounded and not, and not squared. You know, that's part of the design of those equipment.

Q. Okay. We covered noise.

In many ways this case is about electromagnetic interference, but a different or certainly a higher sensitivity of electromagnetic interference than what we are used to discussing before the Committee. I think what we have done is you studied the amount of EMF that will be -- is likely to be generated from the 500/230kV line. Why don't you cover that now, and then I will have a few questions about how we compare that and contrast that to the kind of EMF/EMI issues that are driving the relocation of the line.

A. (BY MR. SPITZKOFF) Sure. So what this analysis is, it is what you would typically see in our CEC applications and packets. So we calculate the expected electric field values for what this line will be and specifically the relocated segment. And those values would be well below the IEEE -- IEEE is Institute of Electric and -- oh, boy. I should have written that down. It is an industry group. They have not a standard, recommended values. And this line would be well below what the recommended limits are.

As far as the magnetic fields, again, it would be comparable to the existing lines of this voltage, and the graphs on the right show what the calculated fields would be. If we look at the top graph, the axis going -- what would be the Y axis, so up and down, is representative of the centerline of the structures. And going out along the X axis, so to the left or the right, is the distance off of that centerline.

So, for instance, if you are 100 feet off the centerline, the field value at 100 feet is calculated to be about 20 milligauss value. Previously you heard Mr. Harrison testify the values that, for a semiconductor plant, that they try to maintain at or below are one milligauss, which is an extremely low value. And 100 feet from a 500/230 structure with the

expected amount of power flowing through this line would be about 20 milligauss. Go out to 200 feet, you are going to be about 10 or a little bit under 10 milligauss.

CHMN. CHENAL: Mr. Spitzkoff, what is the difference between the top graph and the bottom graph? I mean the numbers are different, but are they measuring the same thing?

MR. SPITZKOFF: These are just measuring the different parts of the line. So there is one line that is like the east-west run and the other is the north-south section.

CHMN. CHENAL: Thank you.

MEMBER HAMWAY: Mr. Chairman.

At what distance do you meet one milligauss? I know they are asking for a thousand. But at what point does one milligauss happen?

MR. SPITZKOFF: I don't have that number specifically. I believe we calculated those values a few months ago, and it was just short of a thousand, be somewhere just short of a thousand feet, but I do not remember the exact amount of feet.

MEMBER HAMWAY: Thank you.

BY MR. DERSTINE:

Q. I guess when I was asking you away from this

Committee about these charts that are shown on the screen, but they are also contained in Exhibit I on page 6 of the supplement, the supplement being APS Exhibit 2, you indicated that if you extended the graph out, that the level of decrease in EMF takes a long time to taper. You have that, a steep dropoff, as you see, as you travel away over the distance of 50 to 100 to 150 feet. But out at 200 feet, the dissipation of EMF tapers off, and it takes a fairly significant distance to bring it down to that one milligauss level. Is that a correct statement?

A. (BY MR. SPITZKOFF) That's a correct statement. And you can see that in the shape. As you mentioned, as you start going further and getting to the lower range of the field values, the drop in those values becomes less steep.

So, for instance, if you look at the value at 50 feet, say we call that 40 milligauss, and then go to 100 feet, that would be, you know, just under 20. So that's a drop of 20, 20 milligauss, or 50 percent. And if we take that same approach and look at 150, you are at, if we maybe call that 10, and then out at 200, you call that eight or seven, so you can see the decrease starts getting less and less.

Q. Right. And I guess the reality is that -- well,

you have the chart that shows the EMF that's generated by various household appliances. The Committee is used to seeing this kind of graph, the milligauss value at various distances away from those common household appliances. And our modern day environment is that we are experiencing EMFs at certainly a higher level than one milligauss for much of our life. And I can't imagine what the EMF rating is in this room with all these monitors and computers and wi-fi that's spinning around us just here in the hearing room. Is that --

A. (BY MR. SPITZKOFF) Yes, that's correct. Basically in our modern environment, you are never really that far from any electrical source. And that's what is going to generate your magnetic fields. So you are almost constantly in an environment that has a magnetic field.

Q. Right.

CHMN. CHENAL: Member Haenichen has a question.

Go ahead.

MEMBER HAENICHEN: But isn't it true that the applicant is satisfied with the thousand foot level?

MR. SPITZKOFF: Yes, they are. We are.

MEMBER HAENICHEN: Seals it for me.

BY MR. DERSTINE:

Q. Yeah. And that's really the point of this, is

that APS is not an expert in semiconductor manufacturing, far from it. We relied on TSMC and their engineers and their subject matter experts to advise us in terms of the appropriate distance for relocating the line that ensures that they are meeting their EMF manufacturing standards. Do I have that right?

A. (BY MR. SPITZKOFF) You are correct.

Q. Okay. And really the difference in the, as we talked about, the need and the driver for relocating the line is that the extremely high sensitivity to electromagnetic interference of TSMC's manufacturing operations is something that's unique to this case, but it is a very different kind of environment and need than our ability to -- or measurement of EMF that comes from the traditional transmission line that's being built, you know, out anywhere along any street or being built in the project area?

A. (BY MR. SPITZKOFF) Yes, that's correct. You know, as you heard yesterday, the process that they have is to such an extreme for a number of factors. I believe you mentioned the air quality is 10,000 times greater than an operating room. The quality of the water they use is some factor. And, you know, even the vibration in the ground they are sensitive to. And, you know, the sensitivity to electromagnetic fields is among

those. You know, they are, from what we all learned, they are basically layering atom by atom of silicon material. So it is just such an extreme process that, you know, it has that sensitivity.

Q. Right. Anything else you wanted to touch on on electromagnetic fields?

A. (BY MR. SPITZKOFF) That's all I have.

Q. I guess this area, the requirements that we cover are that is there any -- also require that we analyze whether there will be any interference with communication facilities.

Are you aware of any communication facilities that are in the vicinity of the relocated line segment that may cause problems for television or radio transmission?

A. There is nothing in the area -- or let me rephrase that. We are not aware of anything in the area. Being generally an undeveloped area, you would tend to think you would see anything that's there. And there is no communication structures anywhere in the area.

MR. DERSTINE: Okay. So that's it. I think we covered noise and EMF. We covered the topics that Mr. Duncan has covered. We are next ready to move on to the environmental study work.

If you want to take a short recess when we transition to Mr. Turner, or we can jump right in.

CHMN. CHENAL: Oh, let's just take a short recess here, take a 10- or 15-minute break, and then we will resume. Thank you.

(A recess ensued from 2:40 p.m. to 3:01 p.m.)

CHMN. CHENAL: All right. Let's go back on the record and resume the hearing after our break. I think that was a well-timed break, just for a lot of reasons. I just -- things were -- it was an appropriate time to take a break. So it was a good suggestion, Mr. Derstine. And now I guess we are ready to move on to Mr. Turner.

MR. DERSTINE: We are. We are going to move on to Mr. Turner. But before the break, we had a question asking about if there were any analytics on the targeted emails that went out as part of the outreach campaign. And I think Mr. Duncan has those numbers now, so we will put those on the record.

MR. DUNCAN: Yes, I do. So I am going to admit I wasn't even aware that we had the technology to track this kind of information.

So the total number delivered was 7,109. Unique opens, meaning the number of individual customers who opened those emails, was 3,091. And then, finally, the

number of unique clicks, meaning they clicked on an email, or clicked on a link in the email, was 251.

CHMN. CHENAL: Impressive to Member Hamway's point about preferring an email. It seems to bear that out. It looks like a lot of people do that; although, there were 32,000 impressions under the social media. But, still, that's a pretty significant number of email.

MR. DUNCAN: Yeah, email --

CHMN. CHENAL: Opens.

MR. DUNCAN: -- we appreciate having that ability to do that as part of our siting outreach. And APS uses that in some of its other outreach efforts.

MR. DERSTINE: All right. So I think you are out of the seat, Mr. Duncan, and we are going to move on to Ms. Benally and Mr. Turner, covering environmental study work.

DIRECT EXAMINATION CONTINUED

BY MS. BENALLY:

Q. Good afternoon, Mr. Turner.

A. (BY MR. TURNER) Good afternoon.

Q. Oh, you changed spots on me. I was looking over that way. And I didn't recognize --

A. (BY MR. TURNER) I need to see the screen here.

CHMN. CHENAL: It is easy to see how you can

confuse Mr. Turner and Mr. Spitzkoff.

MS. BENALLY: You threw me off at the start of our presentation.

BY MS. BENALLY:

Q. So the case before this Committee is to amend two prior decisions. We have been talking about that yesterday and then certainly throughout this morning. And it is related to Cases 120 and 131. Before you actually get into the environmental studies, I think it would be helpful for the Committee to understand how you approached the environmental study for this, these project changes. And the project changes we have been talking about are the 500/230kV line relocation as well as the new 500/230kV substation, which has also been referred to as TS-22, as well as the expansion of the Avery substation from, you know, the authorized 10 to the 64-acre site. So if you would start with that, that would be helpful.

A. (BY MR. TURNER) Yes. We approached this as a new analysis. We definitely reviewed the past environmental documents associated with Case CEC 131 and 120, but we performed new database searches. As we have talked about, those previous studies are more than a decade and a half old. Therefore, the environmental databases have been updated in that time frame.

We also performed field investigations, and we developed specific conclusions for the project components that you are talking about, the relocation of the transmission line and the two substations.

Q. Okay. So I think we can advance to your next slide, which is, I believe, 137 and 138.

A. (BY MR. TURNER) Yes.

Q. Okay. Would you provide an overview of the environmental studies that you conducted, please.

A. (BY MR. TURNER) Yes. We were responsible for Exhibit A, the land use; Exhibit B, the environmental studies; Exhibit C, the areas of biological wealth; Exhibit D, biological resources; Exhibit E, which is scenic, historic, and archeological sites; Exhibit F, which is recreation; and then Exhibit H, which is existing plans.

Q. And just for the record, these are the factors that are set forth in what is referred to as the line siting statute, A.R.S. 40-360.06, that the Siting Committee is directed to consider that you have included on the list, and they are on the left side of the screen, is that right, the left screen?

A. (BY MR. TURNER) That's correct.

Q. Okay. And these are the factors that are going to be included in your testimony today?

A. (BY MR. TURNER) Yes.

Q. All right. So with that, let's go to your next slide. Let's start with the description of the study area.

Although it has been discussed several times today, as you move into your part of the testimony, I think it is helpful just to reorient the Committee and point out any of the major features in the description to help us understand what the math is.

A. (BY MR. TURNER) Okay. I would be happy to. I will refrain from all the detail others have suggested about I-17 and the other freeways. I do want to point out the one mile buffer, the study limit area that's around there, that is the shape file that we would submit to the database searches with the various agencies.

I do want to call out this bottom subset map, the bottom left map. You can see the dark blue down there is the dark blue you see on the main map. And I just really wanted to point out the sheer volume of state land west of I-17, and south and north as well. So we are on the edge of where development has occurred in the, I was going to say in the neighborhood, in the valley. I just wanted to point out that as we start in our discussions about land use.

Oh, I apologize. One other thing I wanted to point out on the large map, the residential areas are the clear areas of private land on the east side of the map. And those are the closest residences to the project.

Q. Okay. Thank you.

So let's go to your next slide. And I believe you have Figure A-2. Would you please describe the existing land use within the study area and then touch on any jurisdictions within the study area in your testimony.

A. (BY MR. TURNER) Sure. Everything on this map is within the City of Phoenix jurisdiction. As I just mentioned, the bulk of the study area within the one-mile study area is state land. We will go into some specifics in just a minute. Everything in gray here the City of Phoenix has classified in their existing plan as undeveloped land, so everything in gray. The red you see is existing commercial development. The darker blue is also state land. It is the Ben Avery shooting range and the Arizona Game & Fish Department headquarters. There is one recreational trail along Deadman Wash, so that's on the northwest part of the area. And it is a trail that currently stops at 74.

I would like to point out that both the existing

line, which you see in red, and the proposed line, 3.5 miles in black, are all within the same land use category.

I think that's all I had on this slide.

Q. Okay. Do you have a summary of your findings regarding existing land uses that you would like to finish with on this slide?

A. (BY MR. TURNER) The proposed route would result in minimal impacts on existing land uses and recreation opportunities.

Q. Okay. So now let's move to your next map, Figure A-3, and use that to describe existing land use within the study area.

A. (BY MR. TURNER) I will be happy to. This will help clarify where the residential areas are. We had that discussion thread throughout the day.

This is the City of Phoenix 2015 general plan. It is the land use layers that come out of that plan. The salmon color, which makes up the bulk of the study area boundary, is three different categories, the commercial, commerce, and business park. So it has multiple categories all for commercial development. Both the existing line in red and the black line, the proposed, are within that land use category, the commercial area.

The residential areas are going to be located, the proposed future residential areas that the City of Phoenix sees as possible, are west of Deadman Wash. The green areas are open space and they are associated with the -- this is Deadman Wash. On the right side east of I-17 is Skunk Creek. And just off the map outside of our area is a large drainage called New River, which many of you have probably heard of.

Look at my notes here a second.

I do want to point out the City of Phoenix, the North Gateway Village was the original plan that defined this area in the late '90s and early 2000s. They also showed this same parcel as commercial, the blending into residential area, the City of Phoenix, the residential being down closer to where the Loop 303 was being proposed. But in 2015 the City of Phoenix updated that, and that's where you get these land use categories.

The City of Phoenix has further developed their zoning for the parcel west of I-17, south of 74, and north of 303. They call it the North Phoenix 3500 PUD, which is planned unit development. It was finalized last year, 2020. And again, everything is coming up commercial in this area. That's how they see this being developed, a commercial hub.

I would like to point out that the proposed

facility, proposed transmission line that goes up to the half section line is the supported route by Arizona State Land. It minimizes impacts to future roads and parcel development associated with the City of Phoenix's North Phoenix 3500 PUD.

Q. Okay. Thank you for covering existing and future land uses in the area.

Before we move off this topic, these references or maps that you are referring to are included in the Exhibit A of APS's supplement to the application to amend, is that correct?

A. (BY MR. TURNER) That's correct. The North Phoenix 3500 PUD is Map A-4.

Q. Right. And this is included in what's marked as Exhibit APS-2, and it is Exhibit A in that document?

A. (BY MR. TURNER) Yes, ma'am.

Q. All right. So from here then I believe we move to the -- for you to describe the company's efforts to coordinate project plans with the jurisdictions' plans?

A. (BY MR. TURNER) I did forget one element I would like to talk about, this map.

Q. Yes, please do.

A. (BY MR. TURNER) The City of Phoenix has called out several recreational trails in this general area. This came from the 2015 plan I mentioned. And there is

a more current one, the 2020 plan. They don't define the trails, but I would like to just point out where the City of Phoenix envisions that taking place.

It is hard to see, but there is trails on the north and south side of the 74, the Carefree Highway, and they have trails that run east to west on the north side and south side. The Deadman Wash still has a trail, and they added a few more fingers down below. And then the Skunk Creek area, which is outside, that's on the other side of I-17, also has some more trails. And then just within the property is, along the Dove Valley Road alignment, they called out a couple trails that bleed down to Loop 303. These trails are just lines on a map. And when you look at the North Phoenix 3500 PUD plan, they comment that the trails will follow the main circulation routes as they are developed.

Thank you. I just wanted to make sure I pointed that out.

Q. Thank you for raising that.

Do you have anything further that you would like to comment on future land use or your conclusions regarding your findings regarding future land use relative to the project changes?

A. (BY MR. TURNER) Yes. The proposed route would result in minimal impacts on existing or planned land

uses or the recreation opportunities. As I point out, both the existing facility and the proposed line relocation are within the same land use category, the commercial area.

Q. Thank you.

Are you ready now to move to Exhibit H?

A. (BY MR. TURNER) Yes.

Q. Okay. And I believe that's here, the slides that are up on the screen now. Would you describe the company's efforts regarding the coordination of the project plans with existing plans.

A. Yes. We have -- like I mentioned, the 2015 City of Phoenix general plan is the main document that the city will use, along with the North Phoenix 3500 PUD. We sent letters to State Land, the City of Phoenix, Maricopa County, and ADOT requesting more information on their existing and planned developments in the area. No responses were received to those Exhibit H letters.

MEMBER HAMWAY: Is that unusual?

MR. TURNER: I am sorry. I didn't hear the question.

MEMBER HAMWAY: Is not receiving a response usual or unusual?

MR. TURNER: I think it depends on the level of coordination that's already going on elsewhere. As we

mentioned, Mr. Spitzkoff mentioned that they have been having planning meetings with the City of Phoenix and Arizona State Land Department on a regular basis that is project specific, whereas the letters that I sent out as the consultant are more general letters asking for their knowledge of future projects in this care. And it is really just reiterating what we are seeing in the plans and wanting to see if something like the North Phoenix 3500 PUD is coming along in the future or something like that.

MEMBER HAMWAY: Thank you.

BY MS. BENALLY:

Q. And I believe you have one more slide, Mr. Turner?

A. (BY MR. TURNER) Yes. This is a sample of the letter. I believe this one, if I can get my eyes to work, this one was a copy of the City of Phoenix letter. All four letters have similar language, and did have a map that was associated with it.

Q. Okay. Do you have any findings that you would like to share with the Committee regarding proposed changes relative to the existing plans?

A. (BY MR. TURNER) I do not, other than the proposed route would result in minimal impacts of planned development. You know, our project, the City of

Phoenix sees this area as a large commercial development area. And to be honest, the transmission line is the spine that would be what the City of Phoenix needs to develop that area.

Q. Mr. Turner --

CHMN. CHENAL: Member Gentles.

MEMBER GENTLES: I am sorry, just a general question or comment.

Deer Valley airport is not too far from this site. Any impacts on the project or otherwise as a result.

MR. TURNER: No. This is far enough that the FAA restrictions on height are not required.

MEMBER GENTLES: Thank you.

BY MS. BENALLY:

Q. Mr. Turner, would you happen to have the supplement to the application in front of you?

A. (BY MR. TURNER) I will in just a second.

Q. Thank you.

A. (BY MR. TURNER) Okay.

Q. If you don't mind turning to Exhibit A, page A9.

A. (BY MR. TURNER) Okay.

Q. And what is the last chapter or section on that page?

A. (BY MR. TURNER) The conclusions?

Q. And I believe that conclusion, if you just want to read the first sentence, I think that is part of your conclusion regarding planned future development.

A. (BY MR. TURNER) Relocating the transmission line and construction of the Avery substation will accommodate planned future development, including the TSMC facility.

Q. Okay. Thank you.

Okay. Do you have anything else you would like to cover under Exhibit H?

A. (BY MR. TURNER) No.

Q. Okay. So then that takes us to the next chapter, if you will. This is regarding biological resources. You are going to be covering a couple of exhibits in this portion of your testimony. Walk us through the biological studies, including both special status species and then any species of concern.

A. (BY MR. TURNER) Sure.

Q. I am sorry, Mr. Turner. Before you start, this is the first map that we see on the right-hand now that has the triangular section, if you will, of the ASLD preferred location for the TS-22. Thank you for pointing that out, yes.

So as you are having discussions or providing information to the Committee, if you would, also include

any additional testimony, if there is any, regarding that section or that particular change for TS-22?

A. (BY MR. TURNER) Thank you. I will be happy to.

Q. Okay. So with that, let me restate, reorient. Walk us through the biological studies, including special status species and then the species of concern.

A. (BY MR. TURNER) Sure. So I previously mentioned that the one-mile buffer was the shape file that we provided the agencies. We reached out to the Arizona Game & Fish as well as the United States Fish and Wildlife Service. We received databases back from them.

The way they do the database search is they provide beyond their study limits. So our database goes out more than three miles to generate our species list. So any species list from this change has already been incorporated because the boundary is much larger. And we definitely have analyzed the area for these species.

Just as a -- since I am a biologist, I feel obligated to do a little biology here.

We have Skunk Creek along the east side of I-17, and we have the New River, which is just west of our study area. Those are the largest drainages in our area. The project is called Biscuit Flats because it is very flat. From about I-17 all the way across that

study area, it only drops about 20 feet in elevation.

The point of this is there are very few drainages, very few enhanced drainages. You can see Deadman Wash coming through the center part of the study limits. You can see the greenbelt a little bit. The biological response there shows that that is a little bit larger drainage. But everything within here are just ephemeral drainages. We don't have any perennial water, any open water that would have been habitat for some of the species that came out of the list.

So we researched the Game & Fish and the Fish and Wildlife Service. The bulk of their species would require riparian habitat, again, very dense trees along open water. Again, the database search comes back for a broader area. And if you know the study area, Lake Pleasant is within five miles of our area.

The conclusion is there are no listed or threatened or endangered species or their associated habitats within the study limits. We do have -- so that is in regards to threatened and endangered species actually listed and protected by the Endangered Species Act.

There is one species that has potential to be in the area. It is the Sonoran Desert tortoise. It currently is a candidate species. So it is not

protected by the Fish and Wildlife Service at this point.

We do know a lot about this species. The Arizona Game & Fish Department has documented their habitat and have databases that help us understand where those areas are located. They categorize their habitat as high importance, medium importance, and other habitat. And within our study limits we don't have any of those three categories.

But just south of us in the foothills that we have been pointing out south of our area, that is the lowest level habitat, the other habitat category. And then along the west of us, along New River and, more closely, the Agua Fria and the Hieroglyphic Mountains to the west of us about five miles, that's the better quality habitat.

The reason we bring this species up, it has potential to be a transient in our area, but probably does not have significant habitat. We don't feel that there is any mitigation measures that would need to play out for this species, but the landowner, the Arizona State Land Department, through their rights-of-way easements and grants do sometimes require some construction mitigation measures, education mostly to the construction crews of things of what to do.

The potential impacts to any special status species associated with this project is truly the 150-foot right-of-way. And, more in particular, the construction access road would remove vegetation and the pole locations would remove vegetation. Those would be the impacts associated with the construction and operation. In addition, the actual footprint of the substations would remove habitat. But this is all considered minor impacts and nothing specific to a special status species.

So my discussion now bleeds more toward the general wildlife that can be found in the area.

We are in Sonoran Desert scrub, and so habitat or the species within that area sometimes is protected native plants. The Arizona native plant law would protect cacti and some trees. Within our project area, the three tree species that would be salvage restricted and would require remuneration for removal would be ironwood, mesquite, and palo verde trees. And cacti such as the cholla, barrel cactus, saguaro, all of those are salvage restricted plants and would have to go through what is called a native plant inventory. The State Land requires that as part of their easement, and it basically calculates a value off the health of those native plants. So that would be a requirement for this

project.

So that's a physical impact to native plants, and again, that is just construction within the 150-foot right-of-way.

In particular, in addition to native plant impacts, there are general wildlife out there, mice, rats, lots of insects, snakes; all of those are out there and have habitat as well. Creosote flats provide habitat for lots of species, rabbits and a lot of your aerial species hunting those, the birds. Again, the food resources that would be restricted due to this project would occur within that footprint of the 150-foot right-of-way.

So associated with this project, it is minimal impacts. And in regards to general wildlife, we don't feel that there are any impacts that would require any mitigation.

Q. Okay. Thank you, Mr. Turner.

So the exhibits that you referred to in your testimony, both Exhibit C and Exhibit D, are also included in APS's supplement, is that correct?

A. (BY MR. TURNER) Yes.

Q. Okay. Thank you.

All right. So let's now move to your next topic, visual impacts. Describe to the Committee your

evaluation regarding visual resources.

A. (BY MR. TURNER) Yes. Let me advance the slide. Oh, I do want to go back.

So I will point out a lot of questions have come up about what can be viewed from the residential areas. So again, all the residential areas are on the east side of I-17, and the closest would be about a half mile from I-17 and about a mile from the resources.

We selected our KOPs, key observation points, from vantage points along the corridor. And as we discussed, the proposed transmission line is being moved a half mile further north. So we focused our KOPs along that section because it would be the most visible. We did not focus along Loop 303 because the line would be moving further away from there.

We have KOPs at Dove Valley and I-17.

The cursor needs to be moved up a little bit, right in there. Thank you.

Also, from the I-17 and State Route 74, and then from 51st Avenue and State Route 74, we have a couple views. What we will do over the next few slides is I will show the simulations and talk about the impact.

Q. While you are still on that map, Mr. Turner, would you, if you haven't done so already, identify which part of SR-74, which you also have been referring

to as Carefree Highway, has been designated as a scenic corridor.

A. (BY MR. TURNER) Yes. The entire stretch of 74 on this is within the City of Phoenix, and they have designated that as a scenic corridor. That designation came about in two or three folds from the late 1990s into the most current years. And it really restricts what the roadway prism looks like, the median, as well as what development can occur within 100 to 200 feet of the roadway right-of-way or roadway pavement.

And so you are asking me to point it out. It is the entire stretch of 74 in this location.

Q. And since you are at this point the furthest northern tip of the TS-22 proposed site, how far is that from the scenic -- pardon me -- from SR-74?

A. (BY MR. TURNER) So I will give you two different measurements. There is a blue area. The tip of the blue area to State Route 74 is roughly 500 feet, and the tip of the purple, or, excuse me, pink, is roughly 250 feet.

Q. Okay.

A. (BY MR. TURNER) So it is, outside of that area would be restricted by the scenic highway.

Q. Okay, thank you.

A. (BY MR. TURNER) All right. I will move to

the --

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: Just real quick, I noticed on your chart you have in brown the Bureau of Prisons. Is that really an area that is going to be addressed or impacted? I can't see it on your map.

MR. TURNER: The Bureau of Prisons is just at the tip of the map up here. This little stretch is BLM land, and the dark right above it is the Bureau of Prisons. It is outside of the one-mile study limits, but on this map.

MEMBER GRINNELL: All right. I am just wondering why -- okay, thanks.

MR. TURNER: So I mentioned we have prepared some simulations. These are in your binders under Exhibit E. And these are the figures E-1 through E-8. And I will point things out. To me I can see them on the screen, but it may be easier for you to be looking in your binder or on your tablet.

BY MS. BENALLY:

Q. Mr. Turner, when you say binder, are you referring to the exhibit binder?

A. (BY MR. TURNER) Yes.

Q. They are, Mr. Turner, I believe, included in the

supplement to APS's application. And it is behind Exhibit E. That is where four of your simulations are included. And then the new simulation I believe, Mr. Turner, correct me if I'm wrong, is included as an exhibit in the exhibit binder because it is one that was created after you created the original ones as APS-23?

A. (BY MR. TURNER) That is correct. And we will show that simulation after I go through this presentation.

Q. And just for the benefit of the Committee, sometimes it is easier to refer to the exhibits that are in your supplement. So that's available there as well.

I am sorry, Mr. Turner. Go ahead.

A. (BY MR. TURNER) No, that's all right.

Before we jump into the actual simulations, I do want to point out we do classify the existing scenery typically in three classes, Class A being highest quality, distant mountain views, undisturbed. B would be undisturbed foothills, and Class C is the more flat terrain. Our project area has mostly Class C scenic quality, but along the drainages, Deadman Wash, those areas could be classified as B categories.

The sensitive viewers, as I mentioned, were along I-17, the residential areas east of I-17, and the transportation corridors, and that's where we have

focused our KOPs. We are going to compare the current location to the additional facilities.

CHMN. CHENAL: So, Mr. Turner, just quickly, the distance between KOP 1 and the towers that we see in the distance, the line, how far is that?

MR. TURNER: So we are looking at Figure E-1. And so KOP 1 is -- you can see the right-of-way fence in the photograph. That is from State Route 74 and I-17. The proposed -- or excuse me. This is looking at the existing facility so that the red line is where we are looking at, and it is a mile away in this image. So the bottom image is what you would see with your eye. We have enhanced a small portion of it. This yellow box is what gets enhanced, and the line is there. It is still hard to see, but it is a mile away.

CHMN. CHENAL: And when you say enhanced, you referred previously to it being like through binoculars. So it is being -- actually you are getting a -- you are seeing it not as you would with the naked eye, but as though it was magnified, is that correct?

MR. TURNER: Correct, just a small magnification. Personally for me, if you look at the bottom you can see right-of-way fence. And then you look at the top view, and you can see the fence there. You can see it is larger. It is not a high powered

magnification by any means.

So this KOP 1, this is Figure E-1, it is the existing conditions. We are looking a mile into the project area.

The next simulation is the proposed line. And now from the KOP location, if I am looking at the subset map on the right, you can see the KOP location. We are now looking at the black line a half mile south of us instead of a mile south to the red line.

The bottom image is the panoramic shot that was taken out in the field and we have superimposed on the proposed conditions in there. So if you are trying to see what you would see from a half mile away, it would be closer to what you are looking at on the bottom.

The top image, the pole that is lit up with the cursor is the turning structure right there. That would be where the black line bends to the west. So all the poles to the right of that are going west. The poles to the left of that are heading south.

Now we are at KOP 2. This location, again looking at the smaller inset map on the right, it is from the Dove Valley Road alignment. We have basically walked out to the edge of the pavement and taken the photograph. This is of the existing condition, so we are looking at the red line pretty close to where the

green Avery substation will be.

So the bottom image, the power line, if you can see the poles in there, they are a half mile away. And again, we have slightly magnified that so you can just see them on the top image.

So now we are going to look at Figure E-4, and this is a simulation of the Avery substation. Again, we are at the KOP 2 location at the Dove Valley Road alignment looking west to slightly southwest.

The bottom image again shows the simulation as your eye would see it out there. But we have taken a small portion of it and enhanced it so that you can see the substation features and the poles in a little more detail. The poles that have been simulated were the conditions that Mr. Duncan talked about, the 150 to 165 foot high poles, and comparable to what is existing out there today.

BY MS. BENALLY:

Q. Mr. Tuner, you mentioned this is from the Dove Valley Road alignment. Would you say it is I-17 and Dove Valley Road? Is that the --

A. (BY MR. TURNER) Yes. Sorry. Thank you.

All right. I will move on to the next. This is Figure E-5 in your binder if you are looking there, KOP 3. Again, this is the existing conditions. In this

particular case we are along State Route 74 at 51st Avenue, and we are looking to the southeast into the existing facility.

We are looking at the red line. So in the bottom image, anything you would see would be a mile away. It would be very hard. I can't see it in this image. The poles that you do see in the bottom image are the 69kV poles that are running along 51st Avenue.

BY MS. BENALLY:

Q. Mr. Turner, you indicated you are looking into the existing facility. Would you describe what you mean by existing facility?

A. (BY MR. TURNER) The existing transmission line.

Q. Okay, thank you.

A. (BY MR. TURNER) So now we are going to look at the same view, the same photograph. And in this case, we have simulated the transmission line. The transmission line now, the features that you are seeing are associated with the black line on the map and are half a mile south of SR-74, the Carefree Highway. The bottom image would show you what you would see at a half mile away. Your eye can probably pick out some poles. We have enhanced, again, so you can see it up top.

And I would just like to mention that everything in the foreground here is slated for commercial

development, development by the City of Phoenix. And 51st Avenue is one of their main entrances into this large parcel of land that they envision developing. And so these would be higher prices, other commercial properties heading in there, and will be developed.

So now I am also at the same location. The KOP 4 is also from State Route 74 and the 51st Avenue alignment, but instead of looking southeast, we are looking southwest. And in this image, the existing transmission line is a mile away. Again, it is kind of hard to see in the bottom image and still hard to see in the top image, but it is a mile away from State Route 74.

The simulated condition in this case, this is one of the previous sub -- when we initially started looking at this project, if you notice on the sub inset map here, it is that rectangular shape for the pink box. And at this time, when we were analyzing it, we thought the substation would be just south of the line in the southwest corner of the pink box. And so that's what we are going to simulate in this condition.

At this location, again, the power line, the relocated power line is a half mile south of us. And it is hard to see, unfortunately, due to the chollas that are here that are six to eight feet tall, but the

substation was modeled in here. You can see just the tips of some of the A-frame structures in there. And again, in this simulation it was south of the transmission line. I will have another simulation where we will show it in the current configuration.

And I am assuming that's probably what you would probably like me to cut to at this point?

Q. Mr. Turner, so you have another exhibit that you prepared that is marked APS-23, is that correct?

A. (BY MR. TURNER) It is correct, yes.

Q. Okay. And can you talk a little bit about how you ended up adding this additional simulation to the ones that we included, that APS included in their original filing?

A. (BY MR. TURNER) I apologize. I was looking down at my screen to pull up something. Can you rephrase that question?

Q. Sure. Thank you.

Would you explain to the Committee the additional Exhibit APS-23, which is KOP 4. And you are looking at the -- pardon me -- southwest from SR-74 just east of 51st Avenue towards the proposed TS-22 substation.

A. (BY MR. TURNER) Yes.

Q. Describe how you decided to add this additional

simulation.

A. (BY MR. TURNER) Yes. APS came to us recently mentioning that they have had further discussions with State Land that may have refined or altered the location of that proposed substation. And they asked us to model this location as well. So what we have done is we have simulated based off the CAD files that were provided to us.

If I could get the AV team to switch to my computer I will pull that image up.

And so -- boy, that's a big hand. Well, I guess the hand would help for the people on video.

So in this I have been showing the subset map as the rectangle. We did update it for this one. It does show the little blue parcel outlined within the pink box. And that's what we have modeled. And so -- let me pull it down just a little bit.

The substation in this modeling is north of the power line. So the black line is the proposed alignment. It is modeled in this image, and in this case the substation is in the north and west corner of the pink substation siting area. It comes within 500 feet of our location here. So obviously the features are a little bit more prominent in that view.

In general our conclusions are that it is

minimal impacts. I will get into more detail. Obviously this location from a scenic quality would have the most -- closest project components.

MS. BENALLY: Okay. Thank you, Mr. Turner.

So I believe at this point, Mr. Chair, what we would like to propose is going through the virtual project tour again. Mr. Turner walked through it earlier with Mr. Derstine. If you are amenable to that, that's what we would like to do just to kind of look at it from a virtual tour perspective.

CHMN. CHENAL: Sure, just to play it through without stopping.

MS. BENALLY: That's fine.

MR. TURNER: If the Committee would like, I would start the simulated version starting halfway through.

CHMN. CHENAL: Okay, fine.

MR. TURNER: It will take me just a second.

Could you put it back onto my computer, please. I am trying to find the starting point for the -- it is very hard to grab this with a big cursor hand. Oh, I did it. Good.

All right. So I am at the location that we are going to show the simulation. The road in the bottom is the Loop 303. This is the Avery substation. And off in

the distance back here, we will get over to the end, is the TS-22 substation. I will be happy to pause it on the way. I will just do very little narrative.

Again, everything is Biscuit Flats, all Arizona state land, undeveloped. TSMC's property that they purchased recently is down here. They have started construction. Loop 303 is on the bottom on the left side of the image.

If you are curious what this little brown spot is, it is a former cattle pond. There are three on the property.

This is the Avery substation simulation from Key Observation Point No. 2, located at Dove Valley Road and I-17. It is a 64 acre substation.

Again, this is where the existing facility goes out, the Dove Valley Road. That's the alignment, not a road actually. As you see, we are going a half mile further north to the half section line, Dove Valley Road being on the section line and State Route 74 the other section. Again, this is where the line is the closest to State Route 74. It would be a half mile from the viewers at I-17 and State Route 74.

We are moving to the west now along the proposed alignment. The green denotes those new poles. Any light color here could either be a small drainage or a

wildcat road. The tan area on the ground that's coming into view is the TS-22 siting area, roughly 475 acres. That is split by 51st Avenue.

We are going to do another simulation from here. This would be Key Observation Point No. 3. Again, this is looking at the proposed transmission lines which would be a half mile away. This is the configuration of the TS-22, the most current configuration with that little triangle point that comes out. The closest point in this image would be 500 feet away. You can see drainage, how close Deadman Wash comes to that parcel.

This is where the line turns slightly to the southwest for several poles, and then ties back into the existing facility very close to Deadman Wash. The road you see on the right -- we are now looking east. The road on the right is Loop 303 heading towards Interstate 17.

And then this is a view from the far west part of the project looking back east. And I just point out, again, this dirt road that you see here is the maintenance road for the existing transmission line, and we are proposing to move it a half mile north to the half section line and then tying it back in. Again, as we said, this relocation is approximately three and a half miles.

And I think, unless someone has a question, that since we have gone through this before I don't know what else to say on it.

Q. Okay. Thank you, Mr. Turner.

With that, what are your conclusions regarding visual impacts associated with the project changes?

A. (BY MR. TURNER) Yes. I think I need my other slide. The proposed route is expected to create minimal contrast when compared to the existing transmission line. As I mentioned, viewers along Interstate 17, the facility is not getting any closer to them, other than the fact that 17 has a little bit of a curve. It is slightly to the northwest; it is a little closer at this location. We have moved the line a half mile closer to State Route 74. So those are the essential sensitive viewers that would have -- could, if they are looking to the south into the property, see that the transmission line has moved from a mile away to a half mile away.

The residents located on the east side of I-17, their views of the power line and substation are -- will not be visible due to the raised profile of I-17, as well as the commercial development that already exists within the facility, exists just east of I-17.

And the TS-22 substation will be a large feature, and fairly close to State Route 74. We have

mentioned 74 is also called the Carefree Highway. It is a scenic highway. The City of Phoenix restricts land use and development within 200 feet of that line. Everything that we have proposed is outside of that area.

So initially if TS-22 is constructed, without other development in that area, it would be fairly visible from State Route 74. But everything in this area is slated for commercial development and near one of the entryways into this large area that State Land and the City of Phoenix are proposing for commercial development.

MEMBER HAMWAY: Mr. Chairman, I have a question.

So is flooding an issue out here? I just remember a couple years ago along I-17 and New River there was just the massive flooding. And I just don't know if this is where that is or if this is part of a floodplain. I know you talked about washes and that sort of thing. But is flooding an issue here?

MR. TURNER: So you are asking about New River. It is on your map. It is this drainage here on the western edge of the map. I know with the current rain there was flooding out there. I saw a nice clip of that flooding occurring just after this last storm.

To be more specific on your question, there are

only two designated floodplains within the study limits. They are associated with Deadman Wash, which is not just one single drainage. It has branches that are sort of like fingers that expand out. And each of those has a designated 100-year floodplain associated with it.

MEMBER HAMWAY: Okay, thank you.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

The TS-22 substation site will be leased from State Land, is that correct?

MR. TURNER: That is my understanding, yes.

MEMBER NOLAND: So would the scenic route conditions apply to that land since it is the land of a state agency?

MR. TURNER: So I think your question is around scenic highway restrictions. In reviewing the City of Phoenix's document on that, they call out a 200-foot limit in the residential areas of what could be developed in that area and 100 feet within the commercial areas. So all of this is going to be commercial development. They are only going to restrict within 100 feet of the highway.

MEMBER NOLAND: I guess my point is I don't think they have authority over the Arizona State Land Department as far as zoning and other requirements.

MR. TURNER: I wouldn't think so, City of Phoenix, in that regard from a scenic highway standpoint.

MEMBER NOLAND: Yeah. Thank you.

BY MS. BENALLY:

Q. Do you have anything further on visual impacts?

A. (BY MR. TURNER) One second, please.

Mr. Spitzkoff was wanting me to clarify. The City of Phoenix is the one that's zoning this land, and he is correct in that regard. So they would have a say on how that zoning plays out with the State Land. Together the State Land and the City of Phoenix are developing their zoning and planning.

MEMBER NOLAND: I wasn't talking about that. I was talking about the substation site. But it is outside of their limits anyway, so it makes no difference.

MR. TURNER: Okay. Thank you.

Ms. Benally, I apologize, I didn't hear your last question.

BY MS. BENALLY:

Q. That's quite all right. I believe you wrapped your up visual resources and are ready now to move to cultural resources on your topic.

A. (BY MR. TURNER) That's correct.

Q. Talking about cultural resources, would you just describe what your inventory and findings were regarding cultural resources.

A. (BY MR. TURNER) Yes. We actually know a fair bit about the study area. More than 95 percent of the study area has already been surveyed. Only one historic complex, corral complex, within the -- I am trying to get my cursor here to move.

So we are looking at impacts within the right-of-way and within the substation siting areas. More than 95 percent of that area has been previously surveyed. One historic corral area right where the cursor is in the pink area is currently being analyzed by State Land and the State Historic Preservation Office to determine if it should be eligible to include in the Arizona Registry of Historic Places. It is associated with the cattle drive driveway mentioned, and they are still trying to determine that eligibility. At this time it is not a formal site, but that will have to play out as the easement and grants are approved.

CHMN. CHENAL: So anything over 50 years is -- 50 years or older is considered historic, is that true?

MR. TURNER: That's true.

CHMN. CHENAL: Oh, please, please. Please. All right. Well, we have an historic Committee here.

MEMBER HAMWAY: Well, not everyone.

CHMN. CHENAL: Not everyone, no, not everybody.

Well, that begs the question then. What if it is determined to be historic? What effect would that have on placement of the substation site?

MR. TURNER: Sure. You would have to work through that element. Sometimes you would avoid the site. Other times you would, if you couldn't avoid the site, you would document the conditions of that site.

In this case we are talking about an aboveground historic corral as opposed to prehistoric artifacts. So you would do your, we call it, data recovery. You would photograph the area, document it, put it in context of why it is significant historically, and then you would be able to construct in that location. You would be able to abandon that facility.

This is state land, so they have a say. And SHPO, State Historic Preservation Office, would have a say. If this turned out to be a significant find, then they would obviously want to avoid it. Those types of decisions play out during the grant process, and have to develop an agreement of how to address that resource.

CHMN. CHENAL: I am assuming that there are degrees of importance of historic sites that -- where it is. I mean yes, this is a corral, okay. But it is not

a prehistoric, you know, Anasazi, you know, living site, where I would imagine that that may delay or prohibit development, where something of a lesser historic significance like corrals, like you said, would just be documented and one could construct.

MR. TURNER: Correct. Our archeologist, Dr. Gene Rogee, didn't think that this was a major issue by any means. But it does lend itself to look at why we would need a larger siting area for this type of potential issues.

CHMN. CHENAL: And does SHPO kind of have the ultimate say on --

MR. TURNER: SHPO, yes, State Historic Preservation Office.

CHMN. CHENAL: Thanks.

BY MS. BENALLY:

Q. And Mr. Turner, if there were any mitigation or requirements put forth either by ASLD or SHPO, APS would comply with those requirements, is that correct?

A. (BY MR. TURNER) That is correct. You know, they would have to follow the Case 131 and 120; that's the language that was in there as well. That's how that plays out, the process.

Q. Okay. I believe now we are on to your next topic, which is your final in your environmental

assessment, regarding recreational resources. Describe to the Committee the inventory and findings in that area regarding recreational resources.

A. (BY MR. TURNER) Yes. I started to talk about this on another slide. This is the same map we use for the land use. It is Figure A-3. And these are from the 2015 City of Phoenix general plan. The trails are called out. It may be easier in your handouts.

There are trails along State Route 74. East of 17 there is Skunk Creek and several planned trails. Along Deadman Wash and in the residential areas that are proposed there are several trails.

And I also mentioned along Dove Valley Road and cutting across southwest down to Loop 303 is how the City of Phoenix has envisioned possibly developing recreational trails within the study limits, well, in fact, their region. These are not physically in the ground.

The only trail, if you looked at Google Earth, the only trail you would see would be up here, Black Canyon trail. You will have these other -- others are lines on a map that will, as the infrastructure is developed, the trails will then be planned more precisely.

The proposed route would not conflict with any

of the existing or the planned facilities.

I did mention down here was a trail that looks like it is cutting across the Avery boundary. That trail is the end roadway infrastructure, obviously would be redefined if they decide that trail is needed.

The proposed route itself is not being developed as a trail with the City of Phoenix at this time. I just wanted to call that out as well.

Q. Okay. Do you have any particular conclusion you would like to share with the Committee regarding recreational resources, or have you covered all the material?

A. (BY MR. TURNER) I believe I have covered all the material. We don't feel that there is any impacts to recreational facilities.

Q. Okay. Thank you, Mr. Turner.

And that's also found in the APS's supplement to the application under Exhibit F as part of your environmental assessment, is that correct?

A. (BY MR. TURNER) Yes.

MS. BENALLY: Okay, thank you.

Mr. Chairman, that concludes the environmental witness's testimony up to this point.

CHMN. CHENAL: All right. Thank you very much.

I was correlating with the slides on my iPad,

and I didn't know if you completed the one that was environmental compatibility with all the conclusions. I think you did. But then there were some materials after that. And I was, I think --

MR. DERSTINE: I think we have a series of final slides from each panel member that were going to be a part of this conclusion section.

CHMN. CHENAL: Right, right. Okay.

DIRECT EXAMINATION CONTINUED

BY MR. DERSTINE:

Q. And maybe before we do that, Mr. Spitzkoff, I know we were working on answering questions on why is undergrounding so expensive and how expensive is it. I don't know if we have those answers yet.

A. (BY MR. SPITZKOFF) So far I only have partial answers. I can go through why undergrounding lines is more expensive than overhead, but I don't have the specific numbers. I believe the Chairman asked for, what, like a mile of underground costs compared to mile of overhead. But if you want, I can talk about the difference and, you know, why an underground line is more expensive than an overhead.

CHMN. CHENAL: Sure, I would like to hear that.

MR. DERSTINE: Yeah.

MR. SPITZKOFF: Okay. So when you are constructing an overhead line, your general costs are going to be the towers themselves, the conductors, all of the equipment used to attach the conductors and towers, and then the right-of-way or easements that you need.

For underground lines, you still have the right-of-way and easement costs that you would for overhead. But you will have the cost for the underground cable. And underground cable is more expensive than overhead conductor. It is different types of wire. It is not the same wire. You know, we just don't take an overhead conductor and put it underground. It is a different cable.

So that in and of itself is more expensive. You actually have to use more. You basically have to double the number of circuits to get the same capacity in the facilities.

Then you also have --

CHMN. CHENAL: What do you mean by that? There is -- what do you mean by that?

MR. SPITZKOFF: Certainly. So with an overhead line, what you will generally see is three conductors per circuit. And that's because transmission is, it is a three-phase power system. So that's, you know,

generally, you know, what you will see and have seen in pictures.

And I mentioned earlier our standard construction for quite some time, our overhead lines are capable of 3,000 amp of rating for those facilities. And if I use -- if I stick with the 230kV facilities, that equates to about 1200 megawatts. Generally megawatts are easier to reference for like a value.

So now with underground lines, in order to get that same 3,000 amp capacity or 1200 megawatt capacity, you would typically use, end up with six underground conductors. So it is -- you double circuit basically the lines going from A to B. So you are doubling the amount of cable as opposed to overhead conductor.

CHMN. CHENAL: And why is that necessary?

MR. SPITZKOFF: It is the physical parameters of the material. And with underground lines, the biggest factor in their rating -- well, there are two main factors, the conductor, the cable itself, but also its ability to dissipate the heat that's generated. So you can only send so much current through underground cables and generate, you know, proper on the heat. And so what you do, you have two circuits that split that amount of power.

CHMN. CHENAL: Okay. So the reason for the

additional numbers of circuits is more related to heat, generation of heat than loss of energy along the line?

MR. SPITZKOFF: Well, the creation of heat is loss of energy. So underground lines will create more heat and you are losing energy. Heat is energy. And you could only heat it to so much before it, you know, it will just melt down. So the thermal capability of the underground cables themselves, plus the heat and the dissipation of that heat all factors in.

CHMN. CHENAL: Okay. I understand that. And I think I could give Mr. Derstine some tutoring on the side when we take your class on electrical engineering.

MR. DERSTINE: I could use it, I tell you.

CHMN. CHENAL: Okay.

MR. SPITZKOFF: So some of the other factors, and, you know, biggest cost adders is the trenching that you have to do, you know, digging the hole in the ground to put the cables. And the depth of the cables will vary depending upon the soil conditions and other elements that are going on around the line.

If you are in an urban environment, typically you are going to have to deal with other underground conflicts, gas lines, water lines, sewer lines, and things like that. And you have to maintain a certain distance because, again, they all interact with each

other. We don't want to put an underground line close to, say, a sewer line, and the heat that's created by our line starts interfering with the operations of one of the other facilities. And then it would also degrade the performance of our cables. So you have the trenching costs.

Then you have the conduit that the cables are put in. So they are put into a conduit. And then those conduits are encased in concrete to protect those conduits. And then from the concrete up to the existing grade will generally fill that with what is called a fluidized thermal backfill material. It is a specialized material that enhances the heat dissipation capabilities. Generally it is going to be better than just typical dirt or typical earth.

So all of those, all of those factors put together is where you will get the enhanced cost of putting lines underground.

CHMN. CHENAL: Is there -- let me just ask a follow-up question. Is there a rule of thumb on the cost of a mile of, let's say, a 230kV line?

MR. SPITZKOFF: Yes, there is. And the last one I remember is from a number of years ago. So it is going to be outdated. Costs have steadily risen over the last couple years, especially, you know, I am going

to -- that's some of the numbers we are trying to nail down for you. I would say you are probably about 3 million to $5 million a mile, in that neighborhood, for overhead.

CHMN. CHENAL: It is appreciably more for a 500kV line?

MR. SPITZKOFF: Yes.

CHMN. CHENAL: Maybe you can give us those numbers, too, when you have a chance.

MR. SPITZKOFF: Yes.

CHMN. CHENAL: Member Noland has a question.

MEMBER NOLAND: You didn't give us the depth that you normally trench. Could you do that? I know you said there is a difference if it is urban or not. Can you give us those depths just in general?

MR. SPITZKOFF: Yeah. And it is going to depend on the overall environment that it is in. One of the other things with the trenching cost -- I will address your question more specifically in a second or I am going to forget this point.

Again, so the trenching cost is significant for all underground projects. But it increases exponentially depending on what you are digging in. There are some areas around this state where it is extremely hard rock. And so even the trenching costs,

which is a large component, then just ramps up even more when you are in areas like that.

So the depth, again, depending on what is in the area, it could range from six feet to -- or maybe I will start at three feet, to nine feet. And we have probably had some scenarios where we have had to go under that. If you are trying to cross, like go in a road and you are crossing another, another road that might have sewer or water or another line already in it, then you are going to have to dive a lot further down to keep a proper separation.

MEMBER NOLAND: Thank you.

BY MR. DERSTINE:

Q. Just for my curiosity, how do you -- what about maintenance and dealing with outages on an underground line?

A. (BY MR. SPITZKOFF) Yeah. So maintenance, generally for underground lines you are not going to do much maintenance. We are not going to dig them up and, you know, inspect them and put them back. So general maintenance, you know, they are just going to be there.

What really becomes burdensome is when there is a fault on the underground lines. Then you have got to find the fault. You have got to dig it up. You have got to replace it. You have got to, you know, replace

all of that. That takes a significant amount longer time than overhead lines, where you can visually see where the problem is. And it is a lot quicker and easier fix than an underground line, where, you know, again, if you are in an urban environment, you are shutting down streets, you know, where you might have restrictions on times when you can do that.

Q. All right. I think each one of our panel members at this point has a slide in which they will use to kind of do their summary and their conclusions on the various areas in which they have directed their testimony.

Mr. Spitzkoff, I think you are going to start out with your summary on purpose and need?

A. (BY MR. SPITZKOFF) Yes. So to summarize for the purpose and need perspective, the project we have brought forth before you meets the purpose and needs. The relocation of this segment of the line allows TSMC to build out their facilities. The expansion of the Avery substation allows for the 230kV service into the TSMC property.

It also will allow us to maintain the future ability to serve load growth in this area. And the addition of the TS-22 substation will allow for the service of the future phases of TSMC and future

development of the larger Biscuit Flats area. And the 500kV component of the TS-22 substation will allow us to support the 230 system that's in this area that will maintain overall system reliability as, off of this additional load, TSMC plus future loads beyond them are added.

Q. All right. Any final comments on the topics in which you have covered over the past two days?

A. (BY MR. SPITZKOFF) No, no more comments.

Q. All right. Mr. Duncan, you spoke to a number of things, but I think we wanted to -- your slide and your wrap-up issues were directed to the corridor and the route. So why don't you present those to the Committee.

A. (BY MR. DUNCAN) I would be glad to.

So the proposed route, as has been described over the past couple days, meets current and future development needs for the area. As we have demonstrated, the proposed corridor provides the needed flexibility for design and construction in conjunction with our work with our stakeholders. The proposed route is 100 percent on Arizona state trust land, who has stated support and preference for our proposed route.

Q. All right. Now, off camera, you and I were just working on developing a modified corridor description in line with the discussions that we have had with the

Committee here this afternoon. And I think our plan is to present the Committee with two alternative corridor descriptions, one, the corridor description shown on our Figure 1A, the map on the right-hand side of the screen, but then a modified corridor description.

Can you describe the modified corridor. And use your laser pointer about what we are going to present to the Committee as an alternative that they can consider that we are presenting to them that's in response to their comments.

A. (BY MR. DUNCAN) Yeah, I certainly can. I am going to try to do this without creating confusion.

Q. And we are efforting to create a map that coincides with the description you are about to give. We don't have that ready yet. So do your best to describe it using your laser pointer, then if the AV team can try and follow along so that the members who are appearing virtually can see what we are seeing here in the hearing room.

A. (BY MR. DUNCAN) Yes, no problem.

So let me start on the west side of the corridor, I think will be the easiest part here. The dent between the western edge of the corridor as shown on this map and a point approximately 1,000 feet west of our north-south alignment, we are proposing to revise

the bottom end of this, which currently is shown along the Deer Valley alignment to a point 1,000 feet north of the Dove Valley Road alignment, which is approximately in this area through here. So that would extend, again, from the western edge to a point 1,000 feet west of the north south alignment. I will explain why that is the case in just a moment.

So the other revision would be to extend between the western edge of this corridor as shown and the point where the pointy part here, the eastern side of that edge, so between here and that point that's in alignment with that edge, this corridor would be widened to be in alignment with the tip of this pink area so that this portion of the substation siting area is included within the corridor.

From this point that I just described where the line is in alignment with the east side of this point, the corridor would follow the northern edge of our straight part here of the substation siting area to this point, which is in alignment with the current eastern edge of our corridor. This would result in a corridor, again, with the narrowing plus the widening, the point between the western edge and this straight north and up and down area would be 4,000 feet wide. The portion between this area, the straight north-south part of the

substation siting area, and this eastern edge would be 2800 feet wide.

Now, the reason the southern portion of the corridor stopped 1,000 feet west of the north-south alignment shown in black is because if we narrowed the corridor all the way across we would have a portion of our proposed route that would not be in the corridor. So the corridor description is amended to include a 2,000 foot wide north-south corridor along the center on the north-south segment.

What is currently shown on the east side of that alignment is 1,000 feet. So you can imagine that same distance here on the west side. So the bottom would be moved up to a point 1,000 feet north of the Dove Valley alignment except where there is that 2,000-foot north-south segment.

And now that I have confused the hell out of everybody...

Q. It will be certainly easier to see once we have a map of it. And I can assume we can have that ready for tomorrow when we start the hearing?

A. (BY MR. DUNCAN) Yes.

Q. All right.

CHMN. CHENAL: I think I see it.

MEMBER NOLAND: Yeah.

MEMBER PALMER: Makes sense.

CHMN. CHENAL: I think I see it. And I think some other Committee members see it.

Member Noland, do you have --

MEMBER NOLAND: That's exactly what I wanted to see. I just want to know if the pointy part is a term of art.

MR. DUNCAN: I have been officially using the pointy part, so yes.

MR. DERSTINE: It is now.

CHMN. CHENAL: Sounds like something I would say. That's the scary thing.

Yeah, that, I think obviously it would be helpful to have a map of that, but that's the alternative that you should be recommending to us versus kind of the way you were going to do it before, which would have a corridor outline plus a siting area for the TS-22 substation. So I mean I like the -- I like what I just heard. And I like the simplicity of it.

You know, I know it is hard to describe it dealing with a lot of different lines on the map. But I think that would -- I think that's a very good -- something to offer us to consider. And I will bet you that that's the one we go with, but that's just me speaking, and maybe not.

Member Palmer.

MEMBER PALMER: Mr. Chairman, to me that makes sense, and it is much easier to describe as we begin to put points or metes and bounds, whatever we are doing. I think it is a much easier way to put in a document that people can understand.

CHMN. CHENAL: I mean I looked for about two minutes at the description in the recommended ROO, you know, for, I guess maybe it was, a substation. I mean it was basically a legal description, and it was terrifying.

MEMBER HAMWAY: That's your industry, Mr. Chairman.

CHMN. CHENAL: It is terrifying. I mean, you know.

MR. DERSTINE: When you see this one on paper it may be just as scary. But we will see where it goes.

MR. DUNCAN: All right. I am afraid, Mr. Chairman, I wrote that description, and the description I just finished writing is worse.

CHMN. CHENAL: Good. But at least we will have a map that will explain it and make sense of it. So I think that's a good, good development. I think it is very good. And I have to say I think it started with Member Noland's suggestion about moving the corridor to

the north. And since she said that, I kind of liked it.

There is no issue with notice, is there, Mr. Derstine? I know you and I kind of chatted off line just for a moment about the concept of moving the corridor north. And I don't want there to be any issues with the notice from the application, the supplement, notice of hearings and all the notices that went out. I don't see any. I think we are good, but I just --

MR. DERSTINE: I think, given that all of this is on ASLD, one landowner, no other disparate landowners are being affected. The real standard is substantial change. We represented a 3,000-foot corridor; the corridor now is narrowing in spots. It is expanding in certain areas to cover the new shape of the siting area that's being driven by discussions with the sole landowner.

But I don't think there is a notice issue with this change. And if the Committee decides to grant this, the corridor as Mr. Duncan has described, I think that's appropriate. I don't think it violates any sort of notice provisions.

CHMN. CHENAL: And just to add that just so we have a record of it, the corridor is being expanded not for the line but for the substation. The line is going to stay within the original corridor as noticed and as

set forth in the application and the supplement. The only reason to expand the corridor is to encompass the area for the siting area for TS-22. That was never, as I understand it was never explicitly set forth, the location of it, in the application or the supplement. It was generally described to be with a certain area, but I don't think it was pinpointed exactly, a corridor or a siting area, within which it would be located.

So I don't think by expanding the corridor to now include -- basically to have the corridor supplant the siting area and just become the corridor for both to be located, that it does violence to any noticing that we have done. In other words, I don't think anyone is going to be surprised by the placement of the substation within the corridor if we go, that larger corridor, if we go with that route.

And as you say, Mr. Derstine there is no -- doesn't seem like there is any material or substantial change to what was noticed to the public.

MR. DERSTINE: Right. And I think the other piece of that analysis is really was there environmental study work, are there biological impacts of this new area, the new pointy -- to use the item of art -- the new pointy area in pink. Mr. Turner covered that. And what are the new potential visual impacts, I think his

new simulation provides that from State Route 74.

So from an environmental standpoint, there are no issues from the testimony the Committee has heard this afternoon. And again, from a notice of perspective, I don't think what we are doing in terms of expanding the corridor to cover the substation site does violence to any sort of the notice requirements.

CHMN. CHENAL: Finally, to be clear -- just a moment, Mr. Gentles, I will come to you -- to be clear, all of the corridor and all of the siting areas under discussion are still within the land that's owned by one landowner, the Arizona State Land Department. And the area where they are requesting the substation to be sited, that would now be included within the corridor if we go that route, is at their suggestion.

MR. DERSTINE: That's right.

CHMN. CHENAL: Okay, Member Gentles.

MEMBER GENTLES: Mr. Chairman, would we notate the expanded corridor in the CEC?

CHMN. CHENAL: Oh, yes. This would be part of the description; it would be the map attached. It would be both the tortured language that Mr. Duncan has prepared for this expanded area as reflected mercifully and a map be attached.

MEMBER GENTLES: And so you were talking about

violence. I never heard it used that way, but violence to the current, I don't know how you described that, but in terms of notice to the public. So the public basically, the only way they would know if that corridor expanded would be if they read that CEC at this point, if it is included?

CHMN. CHENAL: That would be correct. But I think what we were discussing is it would -- expanding the corridor to now include the substation siting area is not really a major change.

MEMBER GENTLES: Okay.

CHMN. CHENAL: Because the siting area was going to be outside of the corridor and was referenced generally in the application in the notice to the public. We are just now kind of merging the two into one.

MEMBER GENTLES: Okay.

CHMN. CHENAL: That makes sense?

MEMBER GENTLES: It does. Thank you.

BY MR. DERSTINE:

Q. So we touched on the environmental issues. Mr. Turner, you just presented all of your environmental analysis. Why don't you do your summary or your wrap-up of your environmental conclusions.

A. (BY MR. TURNER) Sure. The proposed route and

substation conform with the applicable management plans by the City of Phoenix that's located on land proposed for commercial land uses in close proximity to the existing facility, and results in minimal impacts to the existing land use, recreation, cultural, and biological resources. We feel it is environmentally compatible.

MR. DERSTINE: All right. This is the point in time that I can do a quick closing or we can wrap up for the evening, I can promise to spend five minutes on it in the morning, and then we have our revised map of the new corridor and a recommended opinion and order that contains a legal description of that revised corridor as well as a description of the TS-22 substation site that we can share with the Committee first thing in the morning.

CHMN. CHENAL: I am going to suggest that we wait until the morning for your closing comments, Mr. Derstine. I think, maybe even before that tomorrow, I think it is a good time to break, but we could kind of take a look at, you know, the map, the option that we are being presented we just talked about. And just generally your summation, I assume, will include why it will be a little different format, it will be a recommended order and conditions, that will be attached, but just to kind of summarize that for the Committee.

And then maybe we look, spend a little time looking at the, you know, the description, the language, and the map just so we have a good understanding before we dive into the deliberations.

MR. DERSTINE: Yeah. And I think that's a good time. I think it will be helpful for the Committee for us to have that discussion on the record, have you be able, Committee members be able to ask questions of Mr. Duncan or other panel members about that as they come up so that all is part of the record. And then we can get our various exhibits moved, the admission of exhibits --

CHMN. CHENAL: Sure.

MR. DERSTINE: -- deal with that and any other housekeeping issues. I will do a short closing and then you will move on to deliberation, if that's acceptable.

CHMN. CHENAL: And the recommended order, which we refer to as the ROO, will basically indicate what the changes would be to the previous orders that were entered.

MR. DERSTINE: Yes.

CHMN. CHENAL: And we will adopt it as attached and adopt conditions that would now apply to the construction of these facilities that weren't the standard conditions that were being used back when 120

and 131 were issued.

MR. DERSTINE: That's right. We have -- the conditions that are included in the ROO as an exhibit are not the old conditions under 131. We have incorporated all of the most recent conditions from the last case that this Committee heard, subject to a few modifications that we don't think are -- those conditions apply or we have tweaked the language. But in general, the conditions are the current conditions of the Committee that will apply to the relocation of the three and a half mile line segment.

And then it will have, we can have a red line in paper to hand out to the members of the Committee as well as a paper version of the recommended opinion and order for you to have in your hands and then to see on the screen. And we will kind of walk that through and discuss that before we close the case so that we can answer your questions about that and make sure it is in the form that the Committee would prefer.

CHMN. CHENAL: Good.

Any questions of the Committee before we adjourn for the evening?

MEMBER PALMER: I have one, Mr. Chairman.

CHMN. CHENAL: Sure, Member Palmer.

MEMBER PALMER: It has nothing to do with this

case, but my curiosity has been killing me for two days.

In the northwest corner of that map there is a little square that looks like a farm of some sort. Can anyone tell me what that is?

MR. TURNER: It's a nursery.

MEMBER HAMWAY: Thank you. I was wondering, too.

MR. DERSTINE: Well, as the member representing agriculture, it is important that you ask that question.

CHMN. CHENAL: Touche.

Member Grinnell or Member Drago, any final questions?

MEMBER DRAGO: No, nothing here, Chairman. Thank you.

CHMN. CHENAL: Yeah, good. And get better, Len.

MEMBER DRAGO: Thank you.

CHMN. CHENAL: Okay. Well, if there is nothing else, then we will see everyone tomorrow at 9:00. And thank you very much. I think this was a very productive day.

MR. DERSTINE: Thank you.

(The hearing recessed at 4:35 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 1st day of August, 2021.

COLETTE E. ROSS
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