BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES, SECTIONS 40-360, et seq., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING PROJECT RED HAWK, A SWITCHYARD AND MULTIPLE TRANSFORMERS INTERCONNECTING 230kV STRUCTURES, LOCATED AT SOSSAMAN AND ELLIOT ROADS ALL WITHIN THE CITY OF MESA, ARIZONA IN MARICOPA COUNTY.	DOCKET NO. L-00000B-19-0219-00184 LS CASE NO. 184

At: Mesa, Arizona

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INDEX TO EXAMINATIONS

WITNESSES	PAGE
KIM HUMPHREY	
Direct Examination by Mr. Sundlof	31
Cross-Examination by Mr. Taebel	73
RYAN NORLIN	
Direct Examination by Mr. Sundlof	77
KENDA POLLIO	
Direct Examination by Mr. Sundlof	106
STEPHEN FAIRFAX	
Direct Examination by Mr. Sundlof	136
Cross-Examination by Mr. Taebel	184
SAMANTHA HORGEN	
Direct Examination by Mr. Sundlof	187
GOOGLE EARTH FLYOVER PRESENTATION	125
PUBLIC COMMENT	227

INDEX TO EXHIBITS

NO.	DESCRIPTION	IDENTIFIED	ADMITTED
SRP EXHIBITS			
SRP-1	SRP CEC Application filed September 23, 2019	72	--
SRP-2	Regional Overview Map	13	--
SRP-3	Project Site Map	14	--
SRP-4	SRP Background Information	34	--
SRP-5	SRP Electric Service Territory	33	--
SRP-6	Kim Humphrey	32	--
SRP-7	Typical Substation Concept	18	--
SRP-8	Expanded Substation Concept	39	--
SRP-9	List of Facilities	--	--
SRP-10	Red Hawk Employment Opportunity District Map	66	--
SRP-11	Depiction of Switchyard Location	67	--
SRP-12	CoreSite Data Center Santa Clara, California	16	--
SRP-13	Alchemy Data Center Los Angeles, California	69	--
SRP-14	Equinix Data Center Amsterdam, Netherlands	69	--
SRP-15	SGX Data Center Singapore	69	--
SRP-16	Photograph of Sign	71	--
SRP-17	Sign Posting Locations	71	--
SRP-18	Ryan Norlin	78	--
SRP-19	SRP 500kV System Map	79	--

INDEX TO EXHIBITS (Cont.)

NO.	DESCRIPTION	IDENTIFIED	ADMITTED
SRP-20	SRP 230kV Valley Map	79	--
SRP-21	Diagram showing new switchyard	90	--
SRP-22	230kV Structure	93	--
SRP-23	Substation Simulation	93	--
SRP-24	Switchyard Simulation	94	--
SRP-25	Kenda Pollio	106	--
SRP-26	Exhibit A-1 Jurisdiction Map	109	--
SRP-27	Exhibit A-2 Jurisdiction Map	109	--
SRP-28	Exhibit A-3 Land Use Map	110	--
SRP-29	Exhibit A-6 Zoning Map	110	--
SRP-30	Exhibit F-1 Recreation Map	114	--
SRP-31	Exhibit H-1 Planned Area Developments	115	--
SRP-32	Key Observation Points (KOP)	117	--
SRP-33	KOP 1 - Existing View	118	--
SRP-34	KOP 1 - Proposed View	118	--
SRP-35	KOP 2 - Existing View	119	--
SRP-36	KOP 2 - Proposed View	119	--
SRP-37	KOP 3 - Existing View	119	--
SRP-38	KOP 3 - Proposed View	120	--
SRP-39	Google Flyover	125	--
SRP-40	Environmental Criteria	131	--
SRP-41	Route Tour & Directions	132	--

INDEX TO EXHIBITS (Cont.)

NO.	DESCRIPTION	IDENTIFIED	ADMITTED
SRP-42	Samantha Horgen	188	--
SRP-43	Half Mile Area of Project Site	189	--
SRP-44	2019 Public Process Postcard #1	189	--
SRP-45	Homeowners Map	193	--
SRP-46	2019 Public Process Postcard #2	192	--
SRP-47	2019 Public Process Summary	23	--
SRP-48	Letter from City of Mesa	70	--
SRP-49	Stephen Fairfax	137	--
SRP-50	Growth Chart	--	--
SRP-51	Shift to Hyperscale	149	--
SRP-52	Data Center Four Trends	151	--
SRP-53	Data Center Drivers	153	--
SRP-54	Energy Forecast Chart	143	--
SRP-55	Affidavit of Publication	197	--
SRP-56	Mailings to Affected Jurisdictions	197	--
SRP-57	Additional Jurisdictional Letters	135	--
SRP-58	Additional Letters of Support	196	--
SRP-59	Exhibit A to CEC	--	--
SRP-60	Notice of Hearing	196	--
SRP-61	Red Hawk Interactions Report	224	--
SRP-62	Staff Letter, October 30, 2019	220	--

INDEX TO EXHIBITS (Cont.)

NO.	DESCRIPTION	IDENTIFIED	ADMITTED
CHAIRMAN EXHIBITS			
CHMN-1	Certificate of Environmental Compatibility with edits of Chairman Chenal	218	--

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 Superstition Spring Golf Club, 6542 East Baseline Road, Mesa, Arizona, commencing at 10:12 a.m. on the 5th day of November, 2019.

BEFORE: THOMAS K. CHENAL, Chairman

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

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CHMN. CHENAL: All right. This is the time set for the hearing on the application of SRP for the Red Hawk Project.

Let's begin with a roll call of the Committee. And then, before we get into any presentation by Mr. Sundlof, we're going to have kind of a little discussion about the tablets and some of the technology.

So let's begin with a roll call.

Member Noland, do you want to start the roll call?

MEMBER NOLAND: Sure.

Patricia Noland representing the public.

MEMBER HAMWAY: Mary Hamway representing cities and towns.

MEMBER HAENICHEN: Jack Haenichen representing the public.

MEMBER WOODALL: Laurie Woodall representing the Chairman of the Arizona Corporation Commission, Robert "Bob" Burns.

MEMBER RIGGINS: John Riggins representing the Arizona Department of Water Resources.

MEMBER DRAGO: Len Drago representing the Arizona Department of Environmental Quality.

MEMBER PALMER: Jim Palmer representing agriculture.

CHMN. CHENAL: And my name is Tom Chenal, the chairman, on behalf of the Attorney General's Office.

So, Mr. Sundlof, I believe there's a gentleman whose name is Ken also, who is going to give us kind of an introduction to the tablets?

MR. SUNDLOF: Yes, Chairman Chenal. If it's okay with you, we'll have him do that first.

MR. MILLER: Good morning, ladies and gentlemen. In front of you, you have tablets. All of the files that are needed today, from what I was told, have been preloaded.

Those are touch screens, so you can double-click with either touching the tablets or you can double mouse click. You can use the mouse on the actual keyboards themselves, or there have been some mice provided for you as well.

The Internet icon is going to be that blue E that you'll see on the front there. We are connected through Verizon hot spots. It's a little bit quicker than the open Internet that they provided for us.

I will be sitting in the back corner, if there's any questions. I'll take some now.

CHMN. CHENAL: What's the information to get onto the Verizon hot spot?

MR. MILLER: On the back of the hot spots, the

passwords are labeled. I have connected each of you to the ones closest to you. So the first three are on the first one, the next three are on the second one, and then the last four tablets are on the last one. So they are going to be the number on the white label.

CHMN. CHENAL: Okay. So it's the long number that's pasted on the back. The number and letter configuration is the pass code?

MR. MILLER: That's correct..

CHMN. CHENAL: Thank you.

Any questions from the Committee?

(No response.)

CHMN. CHENAL: All right. Thank you, Ken.

Before we begin, are there any procedural matters we need to discuss?

I will note that the City of Mesa here, represented by Mr. Taebel, has intervened as a matter of right.

Let's do the notices of appearance on behalf of the applicant and the City of Mesa, and then we can begin, Mr. Sundlof, with your opening statement.

MR. SUNDLOF: Thank you, Chairman, Members of the Committee. I'm Kenneth Sundlof.

MS. RAMALEY: Good morning. I'm Karilee Ramaley, in-house counsel for Salt River Project.

MR. TAEBEL: Good morning. Wilbert Taebel here on behalf of the City of Mesa. With me is JD Beatty from the City's Economic Development Department.

CHMN. CHENAL: Thank you very much.

And, Mr. Sundlof, will you be presenting the case, or will Ms. Ramaley also assist in the presentation?

MR. SUNDLOF: Chairman, I'll be presenting the case.

CHMN. CHENAL: All right. Thank you.

Give me one moment, please.

(Off the record.)

CHMN. CHENAL: Just to remind the Committee, this will conclude by Thursday, based on the discussions I've had with Mr. Sundlof and his team. We will have a tour in the morning, which Mr. Sundlof will discuss at some point today during the presentation.

I don't think there's going to be any surprises for this application. We're looking forward to it. It's going to be, in terms of the need for the data center, similar to the project we heard in Goodyear.

So, Mr. Sundlof, if you wish to proceed.

MR. SUNDLOF: Thank you.

Mr. Chairman, Members of the Committee, I am the same Ken Sundlof who twice has announced his

retirement to you. So here I am again, an encore presentation. With me is my co-counsel, Karilee Ramaley, from the Salt River Project.

And I'm pleased to be here. Nice to see you all. And this is an interesting project, and I'm pleased to present it to you.

Every other case I've ever presented to you was a transmission case. This one is not. This is a distribution project to serve a single customer at a single site.

The only reason we're here is because of the voltage levels that the customer has requested. And the customer has requested to interconnect at 230. And if you read the statutes, structures carrying voltages of 230 need to be sited by this committee, so that's why we're here. This is not a transmission project. It doesn't augment the transmission system. It doesn't serve anybody but a single customer.

Let me start out with where it is. You see in Exhibit 2 -- whoops. I'm way ahead of myself here.

Exhibit 2, you can see the Loop 202. And we're in the area in the green there called the inner loop. You can see to the south down here the Phoenix-Mesa Gateway Airport, Williams Airport. And you can see, if you remember, our last project was basically in the lower

right-hand corner of Exhibit 2 along the yet-to-be-built freeway going east.

So the area in the green, it is bounded on the north by SRP's transmission corridor. And that has been a corridor that's been there for many years. It contains a 500kV circuit, two 230kV circuits, and a 69 circuit. It's about 250 feet wide.

To the south is Elliot Road. And you can see it maybe better on SRP-3. And I do want to apologize that it's hard to read these screens. They're far away and we don't have the best resolution, so that's why I asked them to bring in these TV monitors to help you see better. Plus you can pull it up on your screens or you've got it in your books. So, hopefully, we're covered. And I apologize. I mean, I can't read it from here, so I don't think you guys could either.

So on Exhibit 3 is our site. Whoops, I keep hitting the wrong one.

Exhibit 3 is our site. And I said bounded to the east by Sossaman Road, bounded to the south by Elliot Road, bounded to the west by the Roosevelt Water Conservation District, RWCD, canal and flood area.

The site itself is about 187 acres, and it's bounded in the yellow on Exhibit 3. And the site will interconnect at the 230 level from the existing 230kV

lines.

There's a single customer, and the single customer is an affiliate of Google. And Google plans to build a very large hyperscale data center on the site.

What you're going to see here as I go through it is that the customer, Google, is not quite sure what it's going to build yet because the industry changes so quickly. What may be technology today may not be the same technology a year from now, and so they need total flexibility as they build out this site. And so I'm not going to talk about what Google's going to build because I don't know what Google's going to build. And so I'm going to talk more generally about that.

The property in the yellow, the customer site, is zoned in the south part for buildings up to 150 feet. And so what we might expect there is high-rise data centers. We're looking at many hundreds of megawatts of load. And so in order to get them on 187 acres, it is a very intense use.

And I'm going to show you some other pictures of data centers. And these have nothing to do with Google. These are just other examples of high-rise data centers that I thought were interesting to see so you can get a concept of what we're talking about.

So here's one in Santa Clara. That's

Exhibit SRP-12.

Here's one in Los Angeles. And you see the windows. I don't know about this for sure, but many times, these windows are fake because you don't need windows in a data center. In fact, that messes up the climate control of the data center. So I don't know if these are fake, but sometimes they are.

Here's one in the Netherlands. And you can see, once again, high-rise. Not too many windows in that one.

And here is another one in Singapore.

And so I just show you those as concepts of not necessarily of what this one is going to look like, but the fact that there are high-rise hyperscale data centers going up around the world.

Here's what we're going to site. First off, because our customer has not finalized its plans, we can't tell you exactly where everything will go. And that's a little bit different here.

But I can say that we will build a switchyard, and that has to be in the north part of the property. And we'll get to that. Why that needs to be is basically because the zoning in the part south of there is the high-rise zoning, and so it needs to be totally reserved by the customer for a very secure data center campus. We

have that switchyard in the middle of their very secure data center complex. Plus, it's right adjacent to the 230 circuit that we're going to interconnect to, so it's the logical place for it.

After that, We are going to break the 230 line. The 230 line is the dotted blue line. We are going to break that 230 line, and that 230 line goes from Browning to Kyrene, and you're going to hear more about what a strong connection this is. We're going to break that line, drop it into the switchyard. And a switchyard as opposed to a substation is just simply a yard that does not transform voltages. It comes in at 230, and it's going to go out at 230, which is very different. We've never had something like this on our system before. We have no customers taking service at 230kV level.

It will break, come into the switchyard, and then out of the switchyard will come a number of 230 circuits. And we don't know how many for sure. What we're doing is we're asking for up to 22 structures that will support up to 10 circuits. It may not be that much, but we know when we're here on a siting case, we have to ask you for something. So that's what we're going to ask for, maximum of 22 structures and 10 circuits. And then these will go through some number of transformers that will be located throughout the site as needed by the

customer.

My words, not the engineers' words, I call this an expanded substation concept. Because normally -- and here's Exhibit 7 as your normal substation.

Exhibit 7 shows normally, you have a switchyard, and then it has some number of transformers. And in the usual case, you are stepping down to 69, from 230 to 69. And then those 69 circuits go out to neighborhood substations where it's stepped down again and then stepped down again in your house to usable voltages.

We're doing the same thing here, except we are spreading the transformers out. So that's why I call it an expanded switchyard. And we will have a witness that's going to talk about why we want to do this or why the customer has asked us to do this.

So what we're going to do is have the switchyard, and the transformers are closer to the buildings rather than in a central location, but the same concept. Switchyard, transformers. It's the same concept. I can go back.

But here's your typical substation, and here's what we're going to build.

We're going to ask for flexibility as to where all these facilities are located. And the reason is, as

I mentioned, the customer can't tell us exactly right now. And technology changes quickly. And there are also trade secret issues that the customer may not want to divulge to us exactly how it wants to construct this. Very competitive industry.

So we are asking for, other than a switchyard location, we are asking for complete flexibility. This is not unusual. I mean, for our last case, the one that was to the east of Williams Airport, we identified a site that was over 200 acres, and we asked for flexibility to locate the substation anywhere within that site.

Here, we're asking for a site of 170 acres, and we're asking to locate the facilities, and that means the lines and the transformers, as may be needed by the customer.

We're asking for a 20-year term. That's long, and we may not need 20 years. But the buildout of the data center will depend upon a lot of things that's in the customer's control, not our control. So we want to make sure we have plenty of time to allow the customer to build this data center out for a long period of time. That's why we're asking for 20 years.

We will have four witnesses plus another witness that will tell you a little bit about data centers.

Our first witness will be Kim Humphrey, and she will identify the project. And she'll talk about the customer and why we're doing this and how this came about and why we're doing it now rather than later.

Our second witness will be Ryan Norlin, and Ryan is the chief engineer heading up this project. And he's going to talk about more of the technical details, which are very interesting to me as an amateur transmission engineer. He's going to talk about why it is -- why is it that you want to connect at 230 voltage. Why is it that you don't want to have a standard substation configuration. Why do you want to locate the substation where it is. He's going to talk about those technical issues. And please feel free to ask questions to Ryan because he's not nervous at all about testifying. So feel free.

Our next witness will be Kenda Pollio. And you know Kenda well. And she's the finest environmental consultant in Arizona, we think. And she's going to tell you that there aren't a lot of environmental issues here. I mean, there's no burrowing owls, and there's no Native American sites, and there's none of that kind of stuff. This has been farmland that's been farmed for many decades. And there's no fish, there's no wildlife, there's no water. But there is visual. And Kenda has

come up with some pretty good -- she does better every time -- but come up with some really good visual concepts.

And I'm going to warn you that some of the simulations look pretty nasty, but you have to remember that there will be buildings in there too. And so we're not simulating the buildings, because we want to show you the worst case. But there will be buildings in there, and it probably won't be that bad. But I wanted to be honest with you, to give you the best worst-case simulation. So you're going to see those from Kenda.

She also does a good flyover. And it's only one site, so it's not really a route, so a site flyover that you see it from different angles. And, basically, you're seeing farmland.

Our final SRP witness will be Samantha Horgen, and Samantha is going to talk about our public involvement. And, as usual, SRP did a very robust public involvement, involving everybody we could think of that could have an interest. We've reached out to all the public officials, corporation commissioners. We've reached out to businesses, residences, homeowners associations, sent out postcards. We did a website. We sent out another set of postcards. We had an open house. And she's going to talk about all that.

What's interesting is although the public comments are very important and we've got to give them total respect, there weren't that many of them considering what we've had in the past. I mean, I'm not discounting any of them because they are very important. But the interesting part is we didn't have any real opposition to the project. I think the community is very supportive of the Google project.

We had nobody at all saying you shouldn't build this. The bulk of the comments came from -- you see this residential area in the north -- came from homes in that residential area that are on the north side of this 250-foot transmission corridor. And although there were a scattering of other comments, like maybe two or three from the east, they were more questions like what's this going to do to my property value, is there any MF issue, and things like that.

But the people on the north had a concern about the visual. And they are facing a transmission corridor that already has quite a few conductors in it. And I mean, obviously, more is more. And so you're going to hear from those people that they are concerned about the visual impact of the switchyard. Nobody talked too much about the transmission lines, just the visual impact of the switchyard.

And the switchyard, it's going to have the 230 circuit broken, so you'll have two sets of lines coming in, and then you'll have the switching mechanisms and busses and all that and switches, and you'll have some number of lines coming out, so it's not a small thing. Even though it doesn't have transformers, it's going to be a fairly large facility.

But Samantha will talk to you about who showed up at the open house and what they said and the tenor of the comments, which I think I've said to you.

But all in all, not too bad.

And there's a -- and I kind of talked about that. Exhibit 47 is a summary of the public process, and Samantha will talk a little bit more about that with that.

Our final witness is not somebody that has to do with this case because we're not siting a data center. But Chairman Chenal asked us if we could expound on these data centers because we see more and more of them coming, and we see an evolution to larger data centers, and they're using a lot of power, and this one will be using a lot of power. They're using a lot of power, and he wanted to hear more about it.

So the first thing I did is I prepared testimony for an SRP witness. And we thought about it

some more, and we thought, No, let's do this right. And so we're going to bring a data center expert in. He'll be here this afternoon, and his name is Steve Fairfax. And he's good. I think you're going to like him. He's going to tell you about where these things are going. He's going to talk about the growth. And he can -- I mean, hopefully, he's there to answer your questions.

So we have a basic presentation for Mr. Fairfax, but he can obviously answer any questions that any of you have about data. He's very good. I had lunch with him the other day. I was very impressed.

CHMN. CHENAL: Well, we've waited for years to have somebody who could try to keep up with Member Haenichen from MIT, so now we have a witness that's got two degrees from MIT, so this will be interesting.

MR. SUNDLOF: The battle of the MITs. I'm looking forward to it.

So let me just say, this is a -- to me, this is an easy case. We don't have any private land. It's all on -- everything is on the 187 acres or on SRP's own corridor when you break the line.

We don't have any opposition to the project. We have an important but not that many public comments about visual aspects of the project. And this is a wonderful thing for Mesa. And I think Mr. Taebel will

probably chime in at some point to talk about the importance of this to Mesa. And Mesa has zoned this as a special area to allow for this kind of development. It is, by the way -- you'll see on the other side of the 202, east side, is the Elliot Tech Corridor.

So this is basically the area. And you heard that on our last case too. This whole area in here in the center of Exhibit 2 is the area where the City of Mesa is really targeting this kind of growth, high tech growth. And one spawns the next and the next. And so it's really thrilling to have Google coming in and building a major data center in East Mesa. And we're proud to be able to be a part of it, and we're proud to be able to get in front of it.

And one of the reasons we're here now is we need to get in front of it. We need to be able to build that switchyard because this may happen fast or part of it might happen fast and part of it might happen slow, but we need to be ready the way SRP always is.

And so I thank you for your attention, and that concludes my opening statement. Thank you.

CHMN. CHENAL: Thank you, Mr. Sundlof.

Are there any questions based on Mr. Sundlof's opening statement?

(No response.)

CHMN. CHENAL: All right. Not at this time. I'm sure there's going to be questions throughout the testimony.

Mr. Taebel, do you have any comments you'd like to make as an opening statement?

MR. TAEBEL: As Mr. Sundlof said, the City is here in support of this project. It is an important project for the City.

And I have Mr. Beatty here who will be available to testify about zoning and the planning process if there are questions from the Committee. Thank you.

CHMN. CHENAL: Very good.

Member Haenichen.

MEMBER HAENICHEN: I just had a couple of I guess you might call them procedural questions. But later on, I will be asking some questions about the source of this energy. So I'm wondering -- I didn't see on the list of presenters that you showed us, is there going to be some electrical, technical-type guy from the utility, from the applicant, available?

MR. SUNDLOF: Mr. Ryan Norlin will be talking about that. That's part of his prepared testimony. What you're going to see is this is an extremely strong connection. It comes from, on one side, the Browning

substation and the other side, the Santan substation. Santan has its own generation. Browning connects at the 500 level in several directions, as does Santan indirectly through Kyrene. And so you've got a 230 line that has the capability of 800 megawatts. So even with everything it's carrying right now, it has the ability, and there's been studies done, to very reliably provide around 500 megawatts.

And, also, and I should have mentioned this, and Mr. Norlin will mention this, because you've got the 500 and two 230 circuits, it's possible to drop the second 230 also into the substation. That's not our application here. We're not proposing that. But it gives us that kind of flexibility. So what you've got is you've got transmission coming from the east of Browning dropping in, and you have transmission coming from the west from Santan dropping in, so it gives you your N-2 configuration on a very robust 230 system. And then if you ever wanted to, you could drop two more 230 circuits and give you an N-3 configuration, which is very reliable. But Mr. Norlin can answer your questions in more detail.

MEMBER HAENICHEN: The other thing I was curious about, it really probably doesn't have anything to do with this hearing directly, but I would like a

discussion of the -- we're going to talk about the electrical infrastructure, obviously, to feed this thing. But I would like to know about the communications infrastructure to take the output of this center out.

MR. SUNDLOF: Well, Mr. Haenichen, we're not prepared, but we'll do our best on communications structure.

CHMN. CHENAL: All right. Just a couple procedural matters before we begin with the presentation by the applicant.

We'll take breaks every 90 minutes, as is the normal custom and practice.

We'll have a tour. Mr. Sundlof, could you just give a brief explanation of the tour just for our planning purposes because not every member of the Committee may go on it, but probably a lot of us will.

MR. SUNDLOF: This is a single fairly square site and not a lot of tour to be had other than looking at it at from different angles. It's just about 3 miles from here. We will have a van available tomorrow morning, and we have a route tour that Kenda will discuss in her testimony.

But what it basically does is take you to different vantage points so you can see the homes, you can see the east side, you can see the south side, which

is the dairy. And I should have mentioned, that little cut-out you see there on the upper left of the parcel is a Gilbert Unified School District maintenance yard, and the Gilbert School District has no opposition to the project exactly.

So, actually, we'll stop -- we got permission from the Gilbert School District to stop on their property. And we'll stop there and look from there, and then I think we'll be going along south on the road also so you can see it from different angles.

CHMN. CHENAL: All right. So if we meet here at 9, then by the time we take the van and do the tour and come back -- I think during one of our hearings, prehearing conference, someone suggested it might take an hour. But we're probably going to take a little more than an hour, more like two hours, if I had to guess. By the time you get everyone aboard and you get out and come back, it's probably going to be a couple hours.

I know Member Noland won't be here tomorrow morning, so we're going to have to make the decision before we break today whether we come back from that and resume the rest of the morning or we start up in the afternoon when Member Noland's back. So we can make that decision later today.

And then, Mr. Sundlof, again, just procedural

so we can discuss the timing, I think you had indicated that we could possibly finish tomorrow afternoon. I'm skeptical, based on the number of witnesses and what I anticipate will be a lot of questions. And my strong preference always is that we don't begin deliberations in the middle of an afternoon when we can start fresh the next morning. So that's another -- we'll just have to play it by ear to see what the desire of the Committee is. But my experience is that if we're getting into the afternoon, we do a better job, I think, when we're fresh the next morning. But we'll play that by ear and see how we go.

I'm always skeptical of the estimates of the attorneys of how long these hearings take. I'm batting a a thousand when I add a day to whatever they tell me.

Okay. So are there any questions from the Committee? Are there any matters we should discuss before we start with the hearing in chief by SRP?

Yes, Member Woodall.

MEMBER WOODALL: Could one of your witnesses let us know if there are any natural gas pipelines which go through the subject property?

MR. SUNDLOF: I will make sure that I ask that.

MEMBER WOODALL: Thank you.

CHMN. CHENAL: Mr. Sundlof, it's all yours.

MR. SUNDLOF: Thank you, Mr. Chairman. I call my first witness. The first witness is Kim Humphrey.

Would you please take the stand, Kim.

CHMN. CHENAL: And just a reminder, this evening we have a public comment. Member Drago asked me, and I think that starts at 5:30 this evening.

Ms. Humphrey, do you prefer an oath or an affirmation?

MS. HUMPHREY: Oath is fine.

(Kim Humphrey was duly sworn.)

CHMN. CHENAL: Mr. Sundlof.

KIM HUMPHREY,

called as a witness herein, having been previously duly sworn by the Chairman to speak the whole truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUNDLOF:

Q. Would you please state your name and your affiliation with Salt River Project.

A. My name is Kim Humphrey, and I'm manager of a group called Strategic System Projects for Salt River Project. My group is responsible for successful

completion of customer-dedicated substations, large generator interconnection projects, and high-profile system projects. We provide project management, technical guidance, financial oversight, contract execution, and enhanced communications across the SRP organization.

Q. And what's your role with respect to this project?

A. I am the siting manager for the Red Hawk siting project.

Ryan Norlin, who will testify following me, works in my organization, and he's the lead project engineer. He's responsible for the design and construction of the electric infrastructure.

Q. Ms. Humphrey, Exhibit 6 is a summary of your background. Can you go through that for us?

A. Yes.

I have a Bachelor's of Science degree in electrical engineering from the University of Arizona, an MBA from Arizona State University, and I'm a registered professional engineer in the state of Arizona.

I've worked for SRP for 13 years and, in that time, had a chance to be in different organizations, which include transmission line design, construction, and maintenance; transmission planning; energy efficiency;

resource planning; and key account management.

Prior to that, I worked for IBM.

Q. Thank you, Ms. Humphrey.

I think all the members have heard this before, but can you very briefly describe the Salt River Project, give a little background on SRP.

A. Yes.

SRP has a rich history in the Valley. It was formed at the turn of the century when some of the local farmers realized they couldn't have sustainable crops without a reliable water source. So they put up their land as collateral for one of the first Bureau of Reclamation projects. And that project was to build a dam on the Salt River. That's the name of our company, the Salt River Project, or SRP.

SRP has grown with Central Arizona. From its beginning, SRP has been a key driver in the development, bringing reliable water and power to homes and businesses.

The map on the left shows the SRP service territory. And you can see in the left section is our service area. It's bound on the south by the Gila River, then on the west by the Agua Fria, and it stretches from Glendale all the way to the Superstitions.

The section to the right is our eastern mining

area, where SRP provides services to our mining customers. SRP has supported the mining sector --

Q. Can I just -- you're referring to Exhibit 5?

A. Yes. Excuse me. SRP Exhibit 5. Thank you, Ken.

SRP has supported growth in the mining sector, in the semiconductor sector, and other sectors, all of which have spurred overall economic development in the Valley. Large data centers have the potential to play a similar role. And our ability to provide reliable, flexible, and a low-cost home for them is in the Valley's best interest.

As shown on Exhibit 4, today, SRP serves over a million customers in our 2900-square-mile service territory, and we do it from a variety of generation resources.

SRP is one of the largest publicly owned electric utilities in the nation. It is our mission to anticipate and meet the needs of our customers. And this project is an example of SRP's proactive planning.

Q. Let's turn to the project before us. And, Ms. Humphrey, can you begin by generally describing the project.

A. Yes.

Every other electric line project that we've

brought before you has been a transmission project. And a transmission project design is designed to move a large amount of power from one area to another and then distribute that to multiple customers. This project is different. It's a distribution project designed for a single customer, and it is that single customer that is requesting the system infrastructure. And this infrastructure is not designed to serve multiple customers nor is it designed to augment SRP's transmission capacity.

The customer requesting these improvements is a yet-to-be-named affiliate of Google. The improvements will serve a large data center to be located on the 187 acres that we call the project site or the customer site.

And if you look at Exhibit 3, that is the area outlined in yellow. It's also the front side of your placemat.

All the project facilities will be located entirely on that 187-acre customer parcel or in the adjacent SRP right-of-way. There is no other land involved.

Normally, a distribution project would not come before you. But because of the voltages requested by the customer, we are bringing this project to you.

Q. Why don't you begin by describing the site

location and the site using Exhibits 2 and 3.

A. Thank you.

As Ken mentioned, if we look at the regional overview, our project is the little green box there in an area known as the inner loop. And it's called the inner loop because it's bound to the north by U.S. 60, and then the Loop 202 swings around.

Other significant features in this area, as Ken mentioned, are the Phoenix-Mesa Gateway Airport. That's in the southern piece, and you can see the diagonal lines of the runways are a significant feature that you can observe.

Also, directly to the east of the project is the Elliot Road Technology Corridor. That's the area outlined with that green and white dotted line. That corridor sits adjacent to a high-voltage transmission corridor, and it's an area that the City of Mesa is attracting high tech customers to locate there.

To zoom in a little bit, we can see the project site more clearly. And, again, as Ken mentioned, it's bound to the north by our high-voltage transmission corridor. And we have in there a 500kV line, two 230kV lines, and a 69kV line.

To the north of that property is a residential community. And then, as we go clockwise around the

project site, outlined in red is the Paloma Community Church and soccer complex. And that's where we held the open house.

Continuing to the east is primarily undeveloped property.

To the south is a dairy.

And then to the west is the Roosevelt Water Conservation District canal and flood area.

It's not quite a perfect square. You can see a little notch. And it's been mentioned that's the Gilbert Unified School District maintenance and operations center. And that's actually where we'll start the tour of the site tomorrow.

The 187-acre parcel was formerly used for agriculture.

Q. Okay. You mentioned that the project will serve a single customer. I think we've mentioned who the customer is, but can you describe who the customer is and what the customer has told SRP that it intends to do on the site.

A. Yes. The customer is a yet-to-be-named affiliate of Google. The use of the site will be for a data center. The project is designed to serve a single customer only, and all the facilities will be located on the customer's site or in the adjacent right-of-way.

We anticipate SRP can serve in the neighborhood of 500 megawatts utilizing up to ten 230kV lines on the project site.

Q. Please describe the facilities that SRP intends to permit.

A. Okay. The way that we've described the project is that we are seeking to permit an expanded substation. And let me explain.

Generally, applications that come before you include a substation. And in a typical siting case, that voltage is 230, and then it's stepped down by transformers to 69, where it's distributed out to multiple other distribution centers and multiple customers.

Exhibit 7 shows a typical substation concept with the transformers located with the protection equipment. And I might add, in a substation, you have protection devices and transformers. And so here, we're showing those in the same area.

For this project, we are basically proposing a substation, but elements of the substation will be spread across the 187-acre Google parcel.

The components, switchyard, transmission are 230kV circuits going out to transformers located near the building. So the only difference in the expanded

substation concept is that the transformers are located near the load, near the building, as opposed to being collocated with the protection equipment in the switchyard.

And Exhibit 8 is an example of the expanded substation concept. And I want to stress, these are just concepts. These are not locations of where Google might locate their buildings. We're just trying to illustrate what we're talking about with our expanded substation.

CHMN. CHENAL: So, Ms. Humphrey, I have a question.

MS. HUMPHREY: Yes.

CHMN. CHENAL: Can you explain -- we know what a switchyard is generally, but this is a kind of different use of -- well, it may not be a different use of a switchyard, but the way it's being proposed is a little different than it's been presented to us in the past. What does a switchyard do? I guess, generally, to a layman, it takes the lines and allows it to be separated into other lines.

But can you explain in a little more detail what the purpose of a switchyard is? Because, ironically, this Committee has jurisdiction over switchyards, but not substations.

MS. HUMPHREY: Interesting. All right. Yes.

MR. SUNDLOF: Mr. Chairman, you've anticipated my next question.

Q. BY MR. SUNDLOF: Please go ahead.

A. A switchyard is a type of substation facility that connects two or more transmission lines of the same voltage together; therefore, there's not transformers required. The switchyard monitors and protects each high-voltage circuit, and it provides operational control to ensure that the system is safe, reliable, and maintainable.

The substation has transformers. For this project, the voltage coming into the switchyard and the voltage exiting the switchyard is 230kV. That 230kV voltage will then be transmitted over circuits to the transformer located in the property.

And it will then be stepped down to such a usable voltage as the customer may require. We have not yet determined the low-side voltage.

CHMN. CHENAL: Member Noland.

MR. SUNDLOF: You may ask me my opinion on that legal question, and my opinion is they all have switchyards incorporated in them. A substation has a switchyard. Under the Committee's jurisdiction, we will always bring substations to you.

CHMN. CHENAL: Yes. And I shouldn't speak so

quickly on substations as not being within the jurisdiction, but there is a view that some people believe that's not the case. I don't necessarily subscribe to that because substations have switchyards, and we have jurisdiction specifically over that.

But, yes, Member Noland.

MEMBER NOLAND: Thank you.

Ms. Humphrey, a couple of different times, you have referred to the protection around the switchyard.

MS. HUMPHREY: Yes.

MEMBER NOLAND: Can you describe that a little further. And what would then be the protection element of the various transformers?

MS. HUMPHREY: I think that Ryan Norlin, who testifies following me, will go into even more detail on that, and it might be best if we wait to have Ryan answer that question.

MEMBER NOLAND: Okay.

Q. BY MR. SUNDLOF: Can you answer it at all?

A. Well, I think that you have protection, so you have relays in there that are looking for current levels that should be within a certain zone. And if they start exceeding that, you'll have equipment that will open. And we say "open" because it's then breaking the current and isolating that part of the system from any

catastrophic events that might be occurring in another part of the system so that we don't allow that catastrophic or unplanned fault to travel throughout the system.

Does that make sense?

MEMBER NOLAND: Absolutely not. But it will have to do for now.

I think that my concern is, is there normally some type of protection for the transformers themselves within the switchyard that will not be there when they're moved at various points around the property?

MS. HUMPHREY: I think that the answer to that will be no. The transformers, where we locate them, will also have protection located with them. So you can see that in the simulation that that protection equipment is there. We would not leave those pieces of equipment unprotected.

MR. SUNDLOF: And the simulations are coming in the next few witnesses.

CHMN. CHENAL: So one more question: Am I correct in thinking, just from very layman's terms, that a switchyard, for purposes of this kind of a project, is kind of like a circuit breaker in the sense that for a residential property, the power line comes into the circuit breaker, and then it's split into the various

areas of the house when you have circuit breakers to -- in case one trips, you're not jeopardizing the entire system, just that particular circuit for the lights in the garage or whatever?

MS. HUMPHREY: That would not be a wrong comparison. It has the protection equipment and also allows you to switch the power to different lines that might be required.

CHMN. CHENAL: Thank you.

MS. HUMPHREY: I would like to also add that one of the benefits of this is its reliability, the economies of scale, and the expanded substation minimizes loss. And these are some of the reasons that our customer has requested this configuration. And Ryan will go into more detail in his testimony.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: I'm not trying to say I'm emulating the great Albert Einstein, but he came up with a thing called the thought experiment. And that's what I want to do here.

So we're going to make believe that this hearing has come to a close or is coming to a close and we have issued a Certificate of Environmental Compatibility.

Here's my question: Since we have -- in our

domain are voltages that are higher than distribution voltages, and 230 is one of those. If we approve this thing, a number of those 230 lines that are going to end up in the ultimate configuration won't be there, and we won't know where they go.

Would this present any legal issues later? Particularly, I'm thinking of viewshed issues. People will say, Oh, if we knew they were going to put it there, we never would have agreed with it. That's my question.

MR. SUNDLOF: Member Haenichen, let me start by answering that.

We don't know where they're all going to go. I would not be surprised if they all went along the various perimeters of the property to be able to keep the center of the property for the secure data center. We've tried to simulate those as best we can. And you'll see, one of our simulations shows four circuits, two lines going along the perimeter, so that is a possibility. And I think we've tried not to hide that, that that's a real possibility.

MEMBER HAENICHEN: Yes, but what I'm thinking of is in the ensuing years, when these are physically put in place, there might be an uprising from the public. And is that something that we should be concerned about? Or is it even legal for us to do this?

MR. SUNDLOF: Well, let me respond. I mean, this is not unusual. I think about some of the older cases where you had a half-mile corridor. You can put the transmission anywhere within that half-mile corridor. It's not unusual.

We've tried to notify the public as best we can about the worst-case locations. And I'm not sure what else we can do with it. I don't see a legal issue as long as you permit it.

MEMBER HAENICHEN: That didn't answer my question. And I'm not a legal person, so I don't know. Well, I mean, I'm legal. I'm born.

But I just think about these things and worry about them.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: Mr. Taebel, I would like to know at some point what role the City of Mesa may or may not have with respect to the specific siting of the substations that will be on the property, if you have any. So that would be helpful to me. Thank you.

CHMN. CHENAL: One more question I'm probably anticipating, Mr. Sundlof. This is the way things go. The more specific the project, we don't probably have quite as many questions. But when it's an open-ended -- it's more conceptual than it is specific, it probably is

going to generate questions.

So I note in the application that there is anticipated to be like 22 -- why do I think of the number 22 --

MR. SUNDLOF: 22 structures.

CHMN. CHENAL: -- structures. But, I mean, isn't that also an unknown? Because until it's decided where the data center buildings are going to be located and how many, my gosh, there's 187 acres. I mean, some of that -- I'm thinking of the Singapore data center. It was very high. It only took probably -- I don't know how many acres, five, ten acres for that individual building. And I expect there are height limitations based on the zoning of this property. But, I mean, who's to say it's 22 versus 5 versus -- I mean, how do we determine that?

MR. SUNDLOF: Chairman Chenal, let me respond to that.

First, we've worked closely with the customer here. And it is essential to the success of this project that we have that flexibility, and the customer has made that very clear to us. We have given you a maximum number. In other words, we won't go over 22. Maybe it is going to be five. I don't know. It depends on how this gets built out and how many buildings that Google eventually builds. But we know we have to site the

facilities. We know we have to tell you what we're siting. And so what we're telling you is we're siting 22 double-circuit structures. We may not build them all.

CHMN. CHENAL: Okay. Fair enough.

Member Haenichen.

MEMBER HAENICHEN: In every transmission line hearing that I can recall, and I've been involved in a number of them, when the public gets involved, they always ask the question, Well, why don't you just have the applicant bury these lines? All of the lawyers in my neighborhood are running around, and I have to patiently explain to them that it costs a fortune to bury high-voltage transmission lines.

Now, I'm going to be one of those inquisitors right now. If you could have your technical people just come up with a rough ballpark of what it would cost to bury these 230kV lines that are within this relatively small piece of land, I'm not saying that anything is going to come of it, but I'd just like to know that, what that would cost.

MR. SUNDLOF: I think we can give you an estimate, Mr. Haenichen. And I didn't mention it in my opening, but we will get to it in the testimony, this is all getting paid for by the customer. There's no SRP customer money involved.

MEMBER HAENICHEN: I understand.

MR. SUNDLOF: And so it's just money. And so we'll give you an estimate, but it's expensive stuff.

CHMN. CHENAL: Okay. Thank you.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: Ms. Humphrey, with what you've talked about in mind, talk about the specific components of this project that we are asking for siting authority.

A. All right. There are specifically four components of the project.

And if you'll glance again at SRP-3, you'll see the red and blue dotted lines on the northern part of the property represents the transmission lines, the red representing the 500 and the blue, double-circuits 230.

One of those goes from Santan to Browning, and that's the blue line. We need to break that line, relocate some poles, and drop the two lines, one coming from the east, one coming from the west, into the switchyard.

The switchyard is the second component. And that will be the switchyard and the related structures. And these contain the protective devices that you were asking about earlier. With the switchyard in place, some power will flow through the switchyard as it does now, and some power will be diverted into the project.

The third component is up to 22 230kV structures supporting up to ten 230kV circuits. And then those circuits will connect to transformers, and the transformers will be as required by the customer as the site develops. And, again, the stepdown voltage has not yet been determined.

Q. Okay. And we touched on this a little bit, but are you able to give us more detail on this project?

A. Well, we can say that a yet-to-be-formed or -named affiliate of Google plans a major data center. Yet here we're faced with another area where the project is different. It's the customer's intention to build the data center over time. Over time, the data center technology can change, the customer's needs can change. The customer has asked us to be as flexible as possible in order to give them the opportunity in the future to design their distribution system as their needs develop.

Q. And what does this mean for this case?

A. It means that we can describe where we'll interconnect with our transmission system, where we'll locate the switchyard. But after that, it's a little open-ended.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Okay. If we approve this CEC allowing that flexibility we've just been talking

about, as Mr. Sundlof has pointed out, this is going to occur on the -- their customer's property. Does that permission convey to the customer, the right to put this stuff wherever they want?

MR. SUNDLOF: Mr. Haenichen, that's the authority we're asking for. We're asking for the customer to be able to determine in the future where exactly it needs these circuits and transformers.

MEMBER HAENICHEN: Oh, I know that's what you're asking for, but a part of that was a legal question. Would it legally convey?

MR. SUNDLOF: Our opinion on that is this is not a lot different than other cases where we've asked for authority to site facilities in a large area.

For example, in our last case, the Southeast Intertie -- whatever it's called -- Southeast project east of the Mesa airport, we asked for permission to site a substation anywhere within 200 acres. So we don't see this as being any different legally, nor is it any different than the cases where you could locate a transmission line within a half-mile corridor. That is within the discretion of the Committee, and it would be no different.

MEMBER HAENICHEN: And I maintain it is different, because in that case that you just described,

they had all of the applicant's privilege to do that that we have given them. But now, we're saying that some other entity would have that. I'm not a legal guy, but I worry about stuff like this.

MR. SUNDLOF: We're the applicant. SRP is the applicant. Google is not the applicant. SRP is the one that's going to be able to build these facilities, and we'll listen to the customer as to where to build. It's not the customer making the decision. It's SRP making the decision with the input of the customer.

MEMBER HAENICHEN: So you're saying SRP will install these 230 lines inside the property at the appropriate time?

MR. SUNDLOF: That's exactly right. SRP is the applicant, and SRP will build out this project.

MEMBER HAENICHEN: Okay.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: Excuse me, Mr. Sundlof. So SRP is ultimately going to be the owner of all these electrical facilities?

MR. SUNDLOF: As it stands right now, yes. SRP is the applicant, and SRP will be the owner. In the future, something may happen, but right now, that's the case.

MEMBER WOODALL: The reason I was asking the

City of Mesa if they were going to have any role subsequent to this about the specific location of the substation and potentially fencing, etc., etc., was I wanted to know if there's going to be any public process that will take place with respect to both the switchyard and the substations. And we can wait until it's time for the City of Mesa, but that's where I was going from with all of that. On the other hand, if you're bursting to tell us, Mr. Taebel, feel free.

MR. TAEBEL: The City's position is that the development of the property is still subject to the site development process, design review, and permitting. And, ultimately, those processes would, in part, result in presumably the location of all of these facilities. And I anticipate that the project would be willing to coordinate the ultimate locations with the City to the extent it's reasonable and considers aesthetics and the customer's demand.

MEMBER WOODALL: Thank you. That addresses a concern of mine. Thank you, sir.

CHMN. CHENAL: And, Mr. Taebel, I think it would be important to have testimony on that process.

MR. TAEBEL: Understood, Mr. Chairman.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Yes, Mr. Chairman.

I'm going to have several questions about the zoning and height restrictions and so on when we get to that point, so please make sure you have someone to answer that.

Also, Mr. Sundlof, are you considering this whole site a corridor?

MR. SUNDLOF: I don't think it's a corridor at all. I just think it's a fairly square site. I don't view this as being a corridor case, but you could look at it that way. You could say the whole site is a corridor. I guess you could look at it that way.

MEMBER NOLAND: You say tomato, and I say tomahto.

MR. SUNDLOF: That's fair.

MEMBER NOLAND: Remember, we went through this the last case.

MR. SUNDLOF: Yeah.

MEMBER NOLAND: And so I just wanted to be sure we weren't going to like pop off with a new kind of process as we're going to use on this case.

MR. SUNDLOF: We can call it a corridor.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: All right. Please proceed.

Q. BY MR. SUNDLOF: Okay. Ms. Humphrey, can you describe the uses that you expect will be added to this

parcel?

A. Yes. Our customer proposes to build a data center on the 187-acre parcel. The center is not yet planned, and we're siting these facilities to stay ahead of the development. We need to site now to give the customer the flexibility to build its data center facility over time.

Data center technology is changing rapidly, and we need to provide a foundation for the growth necessary in this dynamic industry. We anticipate the data center will consist of multiple buildings using large amounts of power. The data center will develop over time, and that's why we are unclear as to the ultimate load and the ultimate configuration of our facilities.

We request the flexibility for this reason. This request is similar to the level of flexibility we requested on the last siting project east of the airport.

Q. Ms. Humphrey, is it unusual to have 230kV circuits serving a customer?

A. Yes, it is. And it will be unique to our system.

Ryan Norlin, who will testify following my testimony, will better explain the reasons and advantages of this approach. I will simply say the expanded substation concept will allow SRP to serve a large

customer load in a very reliable manner.

CHMN. CHENAL: Let me ask a question, Mr. Sundlof, of Ms. Humphrey.

We had a data center case in Goodyear. The months seem to blend together now, but it was like a month, month and a half ago.

We learned in that hearing, and similarly, it was a 230kV line that was going to provide power to two parcels, Microsoft and another data center owner. More power for those two parcels than the entire city of Goodyear used last year, which was somewhere around 480, 490 megawatts. And these two projects would consume, if my recollection is correct, over 600 megawatts of power.

And this may be for the next witness, not to make him even more nervous than apparently he is, but I think you had testified, Ms. Humphrey, that this -- the circuit would allow for something like 500 megawatts of power to go to this parcel over 20 years. And based on what little knowledge I have, having gleaned from the previous case, that seems like it's going to be woefully inadequate as these data centers move forward and it's developed.

MS. HUMPHREY: So your question is?

CHMN. CHENAL: Very good. And that's exactly what a good lawyer would ask.

Is 500 megawatts enough power for this project which anticipates a 20-year CEC?

MS. HUMPHREY: It is what we have modeled and what we are anticipating serving the customer with.

MR. SUNDLOF: And it's what the customer requested?

MS. HUMPHREY: Yes.

And I think you also mentioned -- there's more power available. They've picked a very optimum location should their needs exceed that.

And I think our data center expert will also be able to tell you that there are things going on to be energy efficient in what they're doing, so that growth is very difficult to predict at this time.

CHMN. CHENAL: So the line itself now, the -- what's the name of the power --

MS. HUMPHREY: The Santan-to-Browning 230kV line.

CHMN. CHENAL: Yes. The Santan-to-Browning presently has the capacity of something like 800 megawatts of power; is that correct?

MS. HUMPHREY: Generally, an unencumbered 230 line would have that capacity, yes.

CHMN. CHENAL: Is there a way to increase that amount above 800? Could the line handle that kind of

power?

MS. HUMPHREY: Can the existing line handle that?

CHMN. CHENAL: Yes.

MS. HUMPHREY: Well, there are loads on that line. And so what we have modeled is in the neighborhood of 500 megawatts, and it can handle that without any mitigation.

CHMN. CHENAL: But can a 230kV line carry more than 800 megawatts of power?

MS. HUMPHREY: I'm not sure of the answer to that.

Q. BY MR. SUNDLOF: Ms. Humphrey, let me ask it this way: If 800 megawatts is the normal carrying capacity of a 230 line, how would you augment capacity if you had to do it on this site? I think the answer is, you would add the second circuit.

A. That would be a way to do it.

CHMN. CHENAL: All right. Now I'm a little confused because I thought there were going to be two circuits coming into this property. So if the two circuits allowed for 500, I don't understand the answer.

MR. SUNDLOF: Well, let me explain, Mr. Chairman. This application is only for the two circuits coming into the switchyard, breaking a single

230 line. That's because the customer has asked us for that amount of power. And that's the amount of power that the customer predicts using according to its request of Salt River Project.

If, in the future -- and the data centers will get into the trade-off between electricity use and data center processing.

In the future, in the unlikely event that Google decides it needs more power, we will have the ability in the future -- and it's not part of this application, but the ability in the future to break the second 230 circuit and also bring that into the switchyard, so it would give you hundreds of more megawatts of capacity were that to be needed.

MS. HUMPHREY: Can I add, too, that I don't know if you were getting at redundancy in that you have two lines coming in. And so we designed the configuration so that if we lose one, we can still service the customer's full load with the other, so that we are having more than -- well, more than just the 500 capable coming in, but not with the redundancy of N-1.

Did that help where you were going?

CHMN. CHENAL: That does help a little. I'm sorry, I'm still just a little confused on probably a key point of this entire project.

My understanding is there's going to be two lines coming into the switchyard from the 230kV line, on a 230kV line that can carry upwards of 800 megawatts a year. And this project will -- is modeled to provide 500 of those 800 megawatts to this project via the two circuits, I guess, that are coming into the property?

MS. HUMPHREY: Yes.

CHMN. CHENAL: I'm still confused as to how, if the need of this project is for more than 500 megawatts of power, where that additional power is coming from and how it would come to the property. And that's just my lack of understanding of electrical engineering.

MR. SUNDLOF: I'll let the witness respond, but our application is to take a single 230 line and just break it and drop it into the switchyard. That gives us a source from the east and a source from the west.

There is a second 230 line also in that corridor that we're not touching, and it's not part of this application. And we don't anticipate having to touch it. All we're saying is that if we had to, we've got another whole 230 line that's intact that we could break into the switchyard also.

CHMN. CHENAL: And I understand that. I'm sorry, I didn't understand there were two 230kV lines that were available.

MR. SUNDLOF: Yes.

CHMN. CHENAL: Okay. Now I understand.

Member Woodall.

MEMBER WOODALL: Mr. Sundlof, I understand you want a 20-year term for this CEC. Could you give me an idea, without breaching any confidential or proprietary information with respect to your contract with the proposed user, about what would be the triggering event for you to actually start constructing this at some point during your presentation.

MR. SUNDLOF: Well, the witness can talk about this more, but the concept is to build a switchyard out fairly quickly. That gives us the base upon which to add 230 circuits going to buildings. We will do that upon direction of the customer, and it will take about 18 months to do something like that, but we want to be ready for it. The triggering event will be the customer telling us to build it. And, of course, the customer is paying for it, so they're not going to lightly tell us to do that. And then we'll build it.

MEMBER WOODALL: But as the witness would indicate, it's likely that would take place relatively early in the 20-year timeframe.

MR. SUNDLOF: I'm sorry. I lost track of your question. I'm sorry.

20 years is way out there. Maybe that's more than we need. I was the one that said, Put 20 years in there, figuring you might cut us to 15. But it's a safe amount. And I don't want to have to go back later on if this takes a long time, so I asked for 20 years to be safe.

I don't know how long it's going to take to build out. I think that depends on the -- like I said, a very competitive industry. It depends on Google's needs as we go forward. And it will also depend upon technology because the technology of the servers in the data center is changing, and they can use less power. There's all sorts of things that are beyond our knowledge and control.

MEMBER WOODALL: The main thrust of my question was when would you actually start. And I think you were characterizing what the witness would say, that they would build the switchyard fairly quickly.

Q. BY MR. SUNDLOF: Ms. Humphrey; is that correct?

A. That is correct. And what you also said is correct, that we would not build the switchyard until we had finances provided by the customer.

Q. But the plan is to build the switchyard fairly soon and then add circuits to it as requested by the customer?

A. Correct. It's phased implementation.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Ms. Humphrey, I don't know if you're the right person to ask, but we can start with you and go from there.

Can you describe how the power or the circuits are going to get from the switchyard to the transformers?

MS. HUMPHREY: I think that our technical engineer, Ryan Norlin, would do better than myself, so I'll let you --

MR. SUNDLOF: Well, why don't you go ahead and give it a try.

MS. HUMPHREY: Repeat the question, then.

MEMBER NOLAND: Well, we know how the lines are coming into the switchyard, the 230kV. How is the power going to get from the switchyard to the transformers? Since this is a different set-up than any we've seen before, I need to know, are there going to be structures? Are they going to be poles?

MS. HUMPHREY: I understand our question, yes.

So there will be up to ten 230kV circuits that will leave the switchyard and go to transformers located on the customer's site. And those up to ten circuits will be supported by up to 22 structures around the

property.

MR. SUNDLOF: In other words, you're going to have what looks like transmission lines coming out of the switchyard to each transformer or to a series of transformers?

MS. HUMPHREY: Yes.

MEMBER NOLAND: And have you given us the specs for those poles?

MS. HUMPHREY: Yes. They'll be between 110 to 130 feet tall. Some will be single circuit. Some will be double circuit. They'll be made of a tubular metal. And we have a picture we can show in Ryan's testimony.

MEMBER NOLAND: Okay. Mr. Sundlof, I'm going to tell you right now that I would be more comfortable with this entire site as a corridor.

MR. SUNDLOF: I'm fine with that.

MEMBER NOLAND: It's another different one. You just do this every time now, don't you. It's got to be like not the norm. It's got to be something outside the box. And I just have to wrap my head around this.

MR. SUNDLOF: Member Noland, I don't mean to be outside the box, but this one is a little bit outside the box. It's a distribution project on a single square site, so yeah.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Right now -- let's just talk about the one 230kV line that's actually going to carry the energy into the site.

Right now, where is the energy that's on that line sourced, to the east or the west?

MR. SUNDLOF: Both. But go ahead and answer, and we can have Mr. Norlin augment the answer.

MS. HUMPHREY: I think what Ken has stated earlier, this is a very strong source. You've got the Browning Substation that has high-generation sources connecting into it as well as coming from Santan. So you've got strong generation sources to support that load.

When you break the line, in essence, you now have two new sources entering that switchyard, the generation that flows through Browning and the generation that comes from the Santan side.

MEMBER HAENICHEN: Okay. But when you do that now, the connection between the east part of the existing line and the west of it has been broken. Do you feed it back to it?

MS. HUMPHREY: Well, that's where we said some of that power will go through the switchyard as if the line was never broken, and some will be diverted into the

project.

MEMBER HAENICHEN: But let's just talk about the physical wires that do all this, the new wires that are going to exist.

MS. HUMPHREY: Yes.

MEMBER HAENICHEN: Not the little ones going off to the Google buildings.

Just give us more detail on that.

MS. HUMPHREY: On what is in the switchyard?

MEMBER HAENICHEN: No. What goes in and comes out; not to the user's buildings he's going to build, but ...

MS. HUMPHREY: Okay. So the Santan-to-Browning line that's currently a single line will be broken. We'll relocate the poles to allow the line coming from Browning to go into the switchyard and the line coming from Santan to go into the switchyard.

So the switchyard will have equipment, breakers and buses, that allow that electricity to still flow, but some of it can be diverted into the project. So you can still have the electricity flowing over that line. It just flows through the switchyard and back out.

MEMBER HAENICHEN: Okay. What I was confused about is right now, forgetting this project altogether, that line has the flexibility to flow energy in either

direction; right?

MS. HUMPHREY: Yes.

MEMBER HAENICHEN: For existing loads.

MS. HUMPHREY: Yes.

MEMBER HAENICHEN: Is that capability still going to be present after this is all said and done?

MS. HUMPHREY: Yes.

CHMN. CHENAL: Mr. Sundlof.

Q. BY MR. SUNDLOF: Thank you.

I want to get back to the project components.

Are there constraints on the location of the switchyard?

A. Yes. Because of the zoning and the plans of the customer, we've been asked to locate the switchyard on the northern boundary of the property adjacent to our transmission corridor.

Exhibit 10 is the map showing the zoning allowed by the City of Mesa.

You can see the upper section in the darker green, the upper part is limited to buildings with a height no greater than 50 feet.

The lower part of the property, that's kind of in the lighter yellowish-green, has a height restriction for buildings of up to 150 feet.

Our customer's ultimate plan is to use the

150-foot area for buildings. They don't have a specific plan at this time, but it's essential to the Google project that this area not be encumbered by the switchyard. For this reason, we're asking for the authority to build the switchyard adjacent to the transmission corridor to allow the customer to maximize the use of the 150-foot area for their campus buildings.

The switchyard location is generally depicted in SRP-11. You can see the relocated poles, the existing transmission corridor, and the switchyard located generally next to the transmission corridor.

Q. Can you expand on the possible nature of the buildings that Google will build on this site?

A. No, I cannot. Google has not provided us information on the nature of the buildings. But we do understand that the buildings will be multi-story and that the usable land for this purpose needs to be maximized.

Q. And the site needs to be very secure?

A. Yes.

CHMN. CHENAL: Excuse me. Can you go back to that Exhibit 11.

Question: The poles that I see in Exhibit 11 on either side of the switchyard --

MS. HUMPHREY: Yes.

CHMN. CHENAL: -- I guess I don't know which way is north because it seems like it would violate the 50-foot restriction.

MS. HUMPHREY: The 50-foot restriction is for buildings.

CHMN. CHENAL: And does it also apply to the poles?

MS. HUMPHREY: No, it does not.

CHMN. CHENAL: Okay. Thank you.

MR. SUNDLOF: Mr. Chairman, it's always been our position that that is your prerogative to permit the electric facilities, so it's not covered by general zoning.

Q. BY MR. SUNDLOF: Okay. So you can't tell us about the buildings.

CHMN. CHENAL: Excuse me. Member Noland has a question.

MEMBER NOLAND: Mr. Sundlof, SRP, being the quasi-governmental body that it is, would not have to comply with that zoning, would they?

MR. SUNDLOF: Well, that's a very interesting legal question. And my answer would be, if you want -- I'm not under oath, but my answer would be that's somewhat of an open question depending on what it is SRP is building. Whether it's building a building or a

transmission line, they're different answers.

SRP has this position that it is not generally subject to zoning of municipalities because it is itself a municipal corporation.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Please proceed.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: We don't know what the buildings will look like. Give us some examples of other data center buildings that are high-rises.

A. Here are some examples that we pulled from the Internet. These have nothing to do with what Google plans as we're unaware of their specific plans.

These first two are multi-story data centers in the United States. The one, SRP-12, is the data center in Santa Clara. And the second exhibit, SRP-13, is a data center in Los Angeles.

These next two, as Ken mentioned, were competing internationally for this data center business. The one on the left shows a multi-story data center in Amsterdam, Exhibit SRP-14. And Exhibit SRP-15, the one on the right, shows a multi-story data center in Singapore.

Q. And our data center expert can give us more details on what those look like?

A. Yes.

CHMN. CHENAL: Just to follow up on the previous testimony, the data centers would be limited to 150 feet; is that correct?

MS. HUMPHREY: That is the zoning requirement from the City of Mesa.

CHMN. CHENAL: Thank you.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: What term are you requesting for the CEC?

A. We're requesting a term of 20 years. This is a long term, but it's consistent with the long-term buildout plans of the customer. And as all of the facilities will be located on the 187-acre customer parcel or on the existing SRP right-of-way, we don't believe there's a need to suggest a shorter term.

Q. Okay. Let me ask you to summarize your testimony, please.

A. All right. We at SRP are proud to be part of the planning and development of this world-class project.

As the letter from the Mesa mayor describes, and that would be shown in Exhibit SRP-48, this project is an integral part of the overall Mesa plan to develop high-tech uses in the areas generally surrounding the Phoenix-Mesa Gateway Airport.

SRP requests that this Committee grant its application.

Q. And a few more technical questions.

Has SRP posted signs notifying the public of this application and hearing?

A. Yes. Exhibit SRP-16 shows an example of the signs that were posted on the property.

Exhibit SRP-17 shows the locations of where those signs were posted, and they were posted on September 27th. We'll see them when we tour the site tomorrow.

Q. They're still there, then, unless they've been shot.

Has a copy of the application been made available to the public?

A. Yes. The entire application is available on our website. We've also deposited a copy at the Mesa Public Library located at 64 East First Street in Mesa, and there are copies available at the Corporation Commission.

Q. And has SRP included this project in its ten-year plan?

A. Yes. SRP filed an amendment to its ten-year plan on October 21st to include this project.

Q. Finally, was the application in this case

prepared under your direction, the application that's been marked as Exhibit 1?

A. Yes. Exhibit SRP-1 is our complete application to the Committee.

MR. SUNDLOF: No further questions for this witness.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: This is for the City of Mesa.

How many stories do you typically see in 150 feet?

MR. SUNDLOF: I think that's a question for the data center expert, actually, because he's going to talk about the floor plates.

MEMBER HAMWAY: Yeah. I know it's a little different for a data center, but I believe people understand stories better than feet.

CHMN. CHENAL: I'd still like to hear the answer, assuming it's not a data project but just an office building, how many stories would typically be within 150 feet.

MR. TAEBEL: So I think what I'd propose is let Mr. Beatty and I come back tomorrow. And when we testify, we'll provide some additional information on that.

CHMN. CHENAL: That's fine.

MEMBER HAMWAY: Thank you.

CHMN. CHENAL: Any other questions from the Committee for Ms. Humphrey?

Mr. Taebel, do you have any questions of the witness?

MR. TAEBEL: Just two or three, maybe.

CROSS-EXAMINATION

BY MR. TAEBEL:

Q. Ms. Humphrey, in the course of your duties with SRP, have you had occasion to work with the City of Mesa?

A. Yes, I have.

Q. In a capacity perhaps both as a customer and also as a local municipal corporation and government?

A. Primarily with SRP. I live in central Phoenix.

Q. When you've worked with the City -- we're a large customer of the Project?

A. Yes.

Q. In the case of this particular project, SRP is willing to make reasonable efforts to coordinate the aesthetics of the switching yard with the City?

A. Yes.

Q. Similarly, the Project is willing to make reasonable efforts to coordinate the ultimate location of the sort of expanded parts of the facility, the

transformers, as we work through the City's design review and site planning process?

A. Yes, I believe so.

MR. TAEBEL: That's all I have.

CHMN. CHENAL: Member Palmer.

MEMBER PALMER: So looking at this, it appears that the only thing to date that's been developed is on the north side of the project. And as this moves south, do I understand there really hasn't been any -- it looks like maybe the remnants of a dairy and some agricultural property. There hasn't been any real development on any of the other sides of this project; is that correct?

MS. HUMPHREY: That is correct.

MEMBER PALMER: So I guess where I'm going with this, if -- my understanding, then, would be if this were approved and as this goes along, anything that develops around that would have the advantage of knowing potentially what is going to be there? Do I ...

MS. HUMPHREY: Yes, I would believe so.

MEMBER PALMER: Thank you.

CHMN. CHENAL: All right. Any further questions at this time of Ms. Humphrey?

(No response.)

CHMN. CHENAL: Ms. Humphrey, thank you for your testimony. It may be that there will be additional

questions that we'll need to ask of you as this goes forward. Are you planning on attending the rest of the hearing?

MS. HUMPHREY: I will be here.

CHMN. CHENAL: All right. Very good. Thank you very much.

(The witness was excused.)

CHMN. CHENAL: I see it's about 20 till. I'd like to take a five-minute break. We haven't been quite 90 minutes, but just a five-minute break. We'll come back and resume and go till noon, and then we'll break for lunch.

(A recess was taken from 11:41 a.m. to 12:00 p.m.)

CHMN. CHENAL: I just wanted to go back on the record for a moment to say it's noon, and it makes the most sense just to have our lunch break now, and we'll resume at 1:00. And it just makes the most sense to do that. So we'll be starting a new witness.

So we'll resume at 1:00. Thanks.

(A recess was taken from 12:00 p.m. to 1:04 p.m.)

(Member Gentles joined the hearing.)

CHMN. CHENAL: All right. Good afternoon, everyone. This is the time set for the continuation of

the hearing on the application for the Red Hawk Project.

Before we begin, we're joined by Member Gentles.

Member Gentles, you wanted to make a disclosure on the record just to make sure there's no problem. So please let us know what you have. Thank you.

MEMBER GENTLES: Thank you, Mr. Chairman.

I just wanted to disclose that on my non-profit board, which I'm executive director of, SRP is on the board. I don't believe that presents any conflict, but if there is any issue or challenge with that, I'd be happy to hear from you.

CHMN. CHENAL: Thank you.

Does SRP have any objection or concern with Mr. Gentles continuing to hear this matter?

MR. SUNDLOF: SRP has no objection or concern.

CHMN. CHENAL: Mr. Taebel on behalf of Mesa?

MR. TAEBEL: Mesa has no objection or concern.

CHMN. CHENAL: Thank you.

Just to make the record clear, Mr. Gentles was not able to attend the hearing this morning, but he'll be part of the proceeding and deliberations for the rest of the hearing.

So I guess this is the time set for your next witness, Mr. Norlin. Mr. Sundlof, is there anything we

need to discuss before you call your next witness?

MR. SUNDLOF: Nothing else. I'm ready to call our next witness.

CHMN. CHENAL: All right. Let's bring your next witness up, and we'll swear him in.

MR. SUNDLOF: I'd like to call Ryan Norlin.

CHMN. CHENAL: Mr. Norlin, would you raise your right hand, please. Do you prefer an oath or an affirmation?

MR. NORLIN: Oath.

RYAN NORLIN,

called as a witness herein, having been first duly sworn by the Chairman to speak the truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUNDLOF:

Q. Please state your name.

A. Ryan Norlin.

Q. And, Mr. Norlin, please describe your educational and professional background.

A. I'm a senior engineer in strategic system projects for Salt River Project. I'm a project manager and lead engineer.

I'm a project manager and a lead engineer for customer-dedicated substation projects and large generator interconnection projects. I'm responsible for developing and executing the project scope. I recently completed the installation of Howard's nearby 69kV dedicated substation in Eastmark for data center customer EdgeCore.

Prior to SRP, I worked for the utility company MidAmerican Energy in Davenport, Iowa, where I designed and managed high-voltage substation projects.

I have a Bachelor of Science degree in electrical engineering from Iowa State University, and I'm a licensed professional engineer in the states of Arizona and Illinois.

Q. Mr. Norlin, your background is described in Exhibit 18?

A. Yes.

Q. And please try to speak up a little bit.

A. Yes.

Q. Thank you.

What's your role in the project?

A. I'm the lead project engineer.

Q. Okay. And what's the purpose of your testimony?

A. Today I will describe the purpose of the

proposed electrical configuration and emphasize the need for flexibility.

Q. Thank you.

Let's start with the basic description of the SRP transmission and distribution system. And some members have heard this before, but go ahead and describe SRP's system.

A. Sure.

SRP generally maintains five voltages on its transmission and distribution systems: 500kV, 230kV, 115kV, 69kV, and 12kV.

As shown on Exhibit SRP-19, SRP's highest voltage is the 500kV system. This is a bulk power system designed to bring large amounts of energy from distant sources across the state.

There are seven entry points into the Phoenix Metro where the 500 system is stepped down to 230kV.

Browning Substation is an example of one of these substations.

SRP's 230 system is shown on Exhibit SRP-20 on the right. This system is generally located more central to the Valley. Power is injected from the 500kV as well as 230kV generators located in the Valley.

The system is configured similar to our freeways, with the loops of transmission lines linking

the transmission substations together. You can see these loops in here. This is what I was talking about that's like our freeways.

The loops provide redundancy and improve reliability in the event of a line fault or a scheduled system maintenance.

The 115kV system, which is not shown on either map, is used to primarily serve our customers in the eastern mining area.

Then there's the 69kV system, which carries power to smaller, more concentrated load areas. The voltage is stepped down from 230kV to 69kV in our transmission substations. Several 69 lines exit each substation to source several distribution substations. SRP owns approximately 215 69kV distribution substations.

A typical distribution substation has four transformers in it and can serve 4 square miles of residential and commercial load. Generally, our large load customers are served by their own dedicated 69kV substation. Of the 215 distribution substations, 30 are customer-dedicated substations.

Finally, there's the 12kV system, which is fed by transformers within the distribution substations. Each one of those four transformers can serve up to five 12kV circuits. These circuits are routed to our

customers where the voltage is stepped down one last time to the service voltage. Most of you know that as 120/240 volts.

Q. This application contemplates a project that will interconnect to the customer at the 230kV level. Is this typical?

A. No, this is not typical.

The usual residential and commercial customer, as I mentioned, receives power from the 12kV system. And I mentioned that most of our large-load customers receive power from the 69 system. And then we have the mining area in -- the eastern mining area that is connected to the 115 system. But at this time, we have no customers that are served by the 230kV system.

CHMN. CHENAL: I have a question, Mr. Norlin.

MR. NORLIN: Yes.

CHMN. CHENAL: Can we go back to the Exhibit 19.

MR. NORLIN: Yes.

CHMN. CHENAL: So this project, the Red --

MR. NORLIN: The Red Hawk project.

CHMN. CHENAL: -- is going to be on the line between -- I'm looking at the map. It's the Browning.

MR. NORLIN: Yes.

CHMN. CHENAL: And what's the other side of it?

MR. NORLIN: So here's Browning. On Exhibit SRP-20, here's Browning. And then there's a 230 line that's going over to Santan. This is the line that we are interconnecting into.

CHMN. CHENAL: All right. And I was looking for the Santan line on Exhibit 19.

MR. NORLIN: So this is a 500kV map. If I recall, Santan has no 500kV.

CHMN. CHENAL: Okay. So let's go to Exhibit 19 for just a moment.

MR. NORLIN: Yes.

CHMN. CHENAL: The 500kV line -- this is more background.

MR. NORLIN: Yes.

CHMN. CHENAL: Okay. The 500kV line from Navajo --

MR. NORLIN: Yes.

CHMN. CHENAL: -- is APS. What is the source of the generation? Is that a coal?

MR. NORLIN: That is a coal facility.

CHMN. CHENAL: And then if we look over to the east, the Springerville and Cholla.

MR. NORLIN: Yes.

CHMN. CHENAL: Are those also coal-fired --

MR. NORLIN: I'll be honest, I am not certain

of the resource.

CHMN. CHENAL: Okay.

MR. NORLIN: But this 345 line that connects this to Springerville, we don't own that line. I believe we do take some of the power from Springerville, but I don't want to misexplain that.

CHMN. CHENAL: What I'm getting to is the source of the power --

MR. NORLIN: Yes.

CHMN. CHENAL: -- from Browning and the source of the power from Santan.

MR. NORLIN: So there are three 500 lines into Browning. I believe they are Pinal Central -- I've got to look at my map. I'm struggling to read it from there. Silver King, Pinal Central, and Kyrene.

Here's Pinal Central. Kyrene is over here. So there's generation coming here from the west side that's getting to Browning as well as the east side.

CHMN. CHENAL: And then for Santan?

MR. NORLIN: Santan is a generating station. It's connected at the 230 level. And there are lines from Santan to other facilities, Corbell, Kyrene. So there's generation here. Kyrene, this triangle symbol, is going through Corbell, Santan.

CHMN. CHENAL: I'm not using the word

"generation" in an appropriate sense, then.

MR. NORLIN: Okay.

CHMN. CHENAL: What is the source of the power on the line in the sense of is it nuclear? Is it hydro? Is it coal?

MR. NORLIN: It's not specific. We can't track each electron. So it's just being injected into the system, and we make sure the generation matches the load. It will just go where it goes, just like water.

There's no way to actually -- I mean, without doing renewable credits or something like that, there's no way to track who's getting what.

CHMN. CHENAL: I was looking at the map and seeing if there's a way to do it from the power place, but once it gets into the grid, it's obviously hard to track.

MR. NORLIN: Correct.

CHMN. CHENAL: Well, okay. Go ahead with the testimony, became I'm going to have questions about the use of the load that's on the existing Browning-Santan line and questions about that, but I'll ask those later.

MR. NORLIN: Sure. Okay.

Q. BY MR. SUNDLOF: Mr. Norlin, you mentioned this is the first customer to request interconnection at the 230kV level. Why are you doing it differently here?

A. So this is the request of the customer, but there are several advantages to connecting to the 230 system, especially for a large load customer.

Q. And what are those advantages?

A. There are several. So one major advantage is the power reliability is generally enhanced at higher voltages. And reliable power is this customer's single most critical request of SRP as a utility.

Interconnecting this large load to the 230 system simplifies the delivery model. The generated electricity has a more direct path to the load with fewer voltage conversions and, therefore, fewer overall components.

The power is stepped down just one time from 230kV to the customer-specified distribution voltage. In general, fewer components result in a more reliable system.

Q. Are there other reasons?

A. Yes, there are. Thank you, Ken.

Additionally, transmission lines 100kV and greater are generally considered by NERC, which is a federal agency, to be part of a bulk electric system, which imposes more stringent and robust standards on the utility. Also, at higher voltages, engineered transmission structures with greater conductor-faced

basing and longer insulators are used, which limits the likelihood that wildlife and debris will cause a fault.

Finally, the proposed approach of locating the 230kV transformers near the buildings eliminates the need for several dozen long, less efficient, and expensive medium-voltage distribution circuits.

For example, suppose the 230kV was stepped down to 12kV at the switchyard and 112kV circuits were routed thousands of feet to the customer's load.

Q. Mr. Norlin, you mentioned that other customers receive service at the 69 level. Is that possible here?

A. Technically, yes, it is possible to serve these transformers with 69 lines. But this would require the addition of unnecessary and costly transformers in the switchyard to step down the voltage from 230kV to 69kV. In turn, this may increase the size of the switchyard and reduce reliability to the customer as more equipment means more potential failures.

Q. And, Mr. Norlin, cost is also a factor?

A. Yes. With this in mind, the reliability and the economic benefits of the 230kV distribution make it an attractive option for a customer operating at this scale.

Q. And we've heard testimony that the customer has asked that the switchyard be located immediately adjacent

to the corridor on the north end of the property. Could you put it somewhere else?

A. Theoretically, yes, the switchyard could be located elsewhere on the property. But as previously mentioned, our request is to locate the switchyard along the transmission corridor. This will allow the customer to maximize the use of the remaining land for their secure data center. And any other options are inferior, given SRP's need to access to the switchyard and the amount of space it requires.

Consistent with the zoning granted by Mesa, we will not interfere with the customer's objectives in this way.

Q. Is SRP able to determine the distribution pole locations and the transformer locations at this time?

A. No, not at this time. As the customer's site plans develop, the locations of the distribution poles and transformers will be located, but not before then. This is why we are requesting the flexibility to use these facilities anywhere on the customer's property. The only exception is the switchyard; and as I mentioned, we're requesting to locate that along the transmission line corridor.

Q. Is this request for flexibility unusual?

A. No, this request for flexibility is not

unusual. This was mentioned previously, but we generally request the authority to locate a substation within an even larger area.

For example, in our last case, which was the project east of the Phoenix-Mesa Gateway Airport, we requested and we were granted the flexibility to locate the substation anywhere within a 200-acre area.

As explained by Ms. Humphrey, the project is much like building a substation, except we are using a greater footprint to locate the transformers immediately adjacent to the buildings. We see this request the same as our last and the request of other applicants.

CHMN. CHENAL: Excuse me. I have a question.

MR. NORLIN: Yes.

CHMN. CHENAL: Why is it -- will the transformers step down the power to the same voltage for the entire project?

MR. NORLIN: Theoretically, they could, but they don't have to. There could be several transformers. We're talking about ten 230kV circuits that exit the switchyard to go to customer buildings that will be located in distribution substations. In theory, they could be different secondary voltages. They could be -- as the customer's design is implemented, it could change in the future to be a different voltage if they wanted.

CHMN. CHENAL: Because I'm trying to understand why it's more efficient to take the power from the switchyard to all these different transformers versus just stepping down the power at the switchyard and then just taking the lines to the various points.

MR. NORLIN: Similar to our 500kV transmission lines, when we're going longer distances, we want to be at a higher voltage. As you go shorter distances, you lower the voltage.

So it is most efficient to take the 230kV as close to the load as possible. This will limit the current in the conductor, which will limit the losses in the line. There's power lost in the conductor.

CHMN. CHENAL: Okay. Thank you.

Q. BY MR. SUNDLOF: Mr. Norlin, also, you may have to have two sets of transformers instead of one. In other words, one to step it down to 69 at the substation and another to step it down to whatever usable voltage that the customer requests?

A. Yes, it could be. If it went from 230 to 69 to 12, that's more transformers.

Q. Or another voltage as the customer may specify?

A. Correct.

Q. So data centers don't all take voltage at 12kV?

A. That's correct.

Q. What about pole locations? Can we set any standards on pole locations?

A. No. We thought about that, and we cannot at this time. This is a relatively small parcel for the intense purposes that the customer plans to develop. The customer requires the flexibility to locate these facilities as they plan their site.

Q. Is it important to SRP to facilitate the construction of this data center for the customer?

A. Yes.

Q. So let's go back to the maps. And you've had several questions about the advantages of the configuration you've described. Please expand on those.

A. Yes, sure.

Exhibit SRP-21 here on the right shows the new switchyard. It's referred to as SY-33, switchyard 33. It interconnects directly to the existing Browning-Santan 230kV line.

Our transmission planning study shows that the Browning-to-Santan 230 line can serve in the neighborhood of 500 megawatts of new load with no disruption to the rest of the customers or our system.

With this configuration, we have the ability to provide power from two directions. In other words, an N-1 configuration where one line can fault and the other

can still serve 100 percent of the load. So one source is from Browning, and one source is from Santan.

Q. And that gives you the N-2 configuration?

A. That gives us N-1.

Q. N-1.

A. Three sources and one can fail, so it's 2-1. You'll still have one source remaining.

So these lines provide a very strong connection to the system with no degradation of system reliability. Also, with this location, if necessary, we can interconnect a second 230 line which is located just north of the Santan-Browning line. This is the Browning-Corbell line. It's located in the same transmission line corridor. It could be brought in if desired someday or needed. This would provide even more reliability, up to N-3, but more likely, just more power.

Q. Okay. And will this interconnection in any way disrupt the system or result in less reliability to other customers?

A. No. This area of the system is very strong electrically, so the interconnection will not disrupt the system. The switchyard interconnects the Browning and Santan substations, right here, each of which is connected to either a generating station or 500kV transmission lines. We talked about how Santan is a

generating station. And there are three 500kV transmission lines into Browning. Both have very strong sources. This gives SRP the ability to provide hundreds of megawatts of power without any adverse effect on the system or other customers. And though we do not expect it, there's a possibility to bring in a second line.

CHMN. CHENAL: I have a question, Mr. Norlin.

Could we go back to the previous slide.

So presently, the line, the Browning-Santan line, has a capacity of approximately 800 megawatts; is that correct?

MR. NORLIN: I think that's fair to say, yes. That's what we would rate a new 230kV transmission line with no load on it.

CHMN. CHENAL: And if it can allow this project to absorb 500 of those 800 megawatts --

MR. NORLIN: Yes.

CHMN. CHENAL: -- then -- I mean, it seems to me there's an awful lot of excess capacity on this 230kV line that's not being used. And I guess I'm surprised by that. Could you explain that?

MR. NORLIN: Well, remember, we've got different sources. So if we're going to pull a lot of load here at SY-33, we could inject more power into Browning if we need it.

Also we don't build facilities and put 100 percent load on them. If, say, 300 megawatts was being used, that line was needed, and it just has 800 megawatts of capacity, that's just -- when you build a 230 line, that standard conductor gives you that capacity. So it happens to be available.

CHMN. CHENAL: Thank you.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: Mr. Norlin, Ms. Humphrey was asked a little more detail on the appearance of the components.

Can you expand on that?

A. Sure. SRP Exhibit 22 here on the left shows a typical 230kV structure. It can handle two 230 circuits on it, one on the left and one on the right, or one if we only need one. So we would call those double circuits, and it could also be framed single circuit. We expect to install 22 of these structures to carry up to ten 230kV circuits. These circuits will serve the onsite transformers that are on this property.

Exhibit SRP-23 shows a typical distribution substation. There's two transformers shown in this layout, one here on the left, one here on the right. These will be located near the buildings and built as the customer's load grows.

We emphasize that this layout here on the right, SRP-23, it may or may not be built this way. This is an example of a distribution substation.

Our environmental consultant, Kenda Pollio, will provide additional simulations of these facilities.

CHMN. CHENAL: Quick question: How many acres does the substation on Exhibit 23 occupy?

MR. NORLIN: So this is shown as 250 feet by 300 feet. I don't know what that is in acres.

MEMBER HAMWAY: One and a half acres.

CHMN. CHENAL: We're told one and a half acres.

Q. BY MR. SUNDLOF: Mr. Norlin, what span lengths do you expect?

A. We expect nominal span lengths, between 600 feet and 800 feet.

Q. Okay. Just describe the switchyard in a lot more detail.

A. As mentioned, our environmental consultant, Kenda Pollio, will provide simulations of all project components.

Exhibit SRP-24 shows a possible layout of the 230kV switchyard. The switchyard includes poles to support the Browning-to-Santan transmission line interconnection, which does not count. So this interconnection does not include the 22 poles that would

hold the ten circuits exiting the switchyard.

So we're looking south. To the north, at the bottom of the page, is the existing transmission corridor. So this area right here. There will be poles that will need to be moved and changed and added to loop in to break this line and bring it into the switchyard.

CHMN. CHENAL: One question: What are the poles, then, to the south of the switchyard?

MR. NORLIN: On Exhibit SRP-24, we're depicting the possibility of poles here on the south, and we haven't shown a total of ten circuits because we don't know exactly where they'll go. But we're showing you that there will be poles needed to take those circuits out.

And in these simulations, you will see a couple circuits running here to the east and down to the south. And you'll see what that looks like. But it would be inaccurate for me to try to show you anything more.

CHMN. CHENAL: So on Exhibit 24, the poles to the north of the switch station are existing poles, and the poles to the south are potential poles; is that correct?

MR. NORLIN: On Exhibit SRP-24, the existing transmission line corridor has poles to support the existing circuits, but we will need to modify where

they're located and possibly add new ones. So in this depiction, there are three poles shown here. I believe at least one of those is new.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: Thank you.

Mr. Norlin, on your switchyards, typically, do you fence those in?

MR. NORLIN: Yes. Those -- our standard practice would be to put a chain link fence around the facility to secure it.

MEMBER NOLAND: Do you ever do walls that are more solid?

MR. NORLIN: So our standard is not to put in a wall. It's to put in a chain link fence. Some cities, some communities, make us put a wall in. A lot of times, that's funded by studies -- funds that the substations have --

Q. BY MR. SUNDLOF: Mr. Norlin, are you open to the idea of a wall here?

A. Yes.

MEMBER NOLAND: Well, I understood, also, that the client is very concerned with security and having a closed type of development, so that might be something that we discuss.

I'm just confused as to why this isn't a

transmission line case since there are transmission lines that you're projecting throughout this site that are going to be new.

Mr. Sundlof, you said right from the beginning this was not a transmission line case. It was just for the switchyard.

MR. SUNDLOF: Member Noland, this is really a legal question, so I'll try to answer it.

The distinction between transmission and distribution is a legal one. Often, you look at FERC standards, Federal Energy Regulatory Commission standards. Transmission is basically designed to move bulk power to multiple customers. Distribution is designed to bring power to a single customer.

There is a seven-part test that FERC applies as to what is distribution and what is transmission. And this particular project, because it serves a single customer, it doesn't go to any other customers, there's no interconnection to it, it doesn't augment the transmission system, would be considered distribution under FERC legal standards. And that's why we call it that.

Transmission would be, for example, if I were going to connect to a substation and go somewhere else, then it would be transmission. But if it dead-ends into

a single customer, it's distribution, even though it is at higher voltages.

You've asked a really good question, and a lot of people struggle with that because normally, we say anything over, say, 115 -- 110, 115 kilovolts is transmission. Anything under is distribution. But it's not necessarily always the case, and this is the exception.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: To that point, Mr. Sundlof, I don't have a statute in front of me, the Arizona siting statute. I can pull it up. But wouldn't the circuits emanating from the switchyard be considered transmission lines under the definition of the Arizona statute?

MR. SUNDLOF: Mr. Chairman, yes, they would, because the statute defines conductors that transmit more than 110 or 115kV, and this would be well above that. So that's why we're here.

CHMN. CHENAL: So, to Member Noland's point, these would be transmission lines under the Arizona statute but would not be a transmission project under the FERC analysis that you just referred to; is that correct?

MR. SUNDLOF: Correct.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Well, Mr. Chairman, this just

enhances my desire to make the entire property a corridor.

CHMN. CHENAL: I'm sure we'll have a few more questions as we go forward on that point.

MR. SUNDLOF: Okay. Any more questions on the electrical aspects of the project? I'm going to move into cost now, so I just wanted to see if there were any other questions of this witness.

(No response.)

Q. BY MR. SUNDLOF: Mr. Norlin, can you estimate the cost of this project?

A. Because the ultimate scope of the project is still uncertain, we can only give estimates.

We estimate the switchyard and the related facilities will cost approximately $36.5 million. And we estimate each 230kV distribution circuit and transformer will range between approximately 8 million and 10 and a half million dollars, depending on the exact configuration. That's overhead.

You also asked about undergrounding.

Q. Let me get to that in a second.

So in order to figure out the overall costs of the project, the Committee could, assuming there's ten circuits, could multiply 10 times 8, 10.5 million, to come up with an overall cost, but we don't know that

that's what it would be.

A. Correct. And that 8 million was on the low end. There was also the high end of 10 and a half.

Q. Yes.

A. And also totally dependent on what we build.

Q. Okay. Let me get to the underground question.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

Before you do, we talked about that the client, whoever they are, is paying for the construction and all of that; is that correct? All that millions you just talked about?

MR. NORLIN: That's correct. Since these are customer-dedicated facilities, they will be paid solely by the Google affiliate.

MEMBER NOLAND: What happens if a transformer is hit by lightning and goes out or something else happens? Will they pay for the repair and for all of the maintenance?

MR. NORLIN: Yes. Essentially, with our dedicated substations, we give them the option to pay for maintenance from SRP. That is a requirement. But the option is for equipment replacement. If they elect to pay monthly, if something fails, we will pay for it, SRP will, but the customer has been paying months and months

on this. Otherwise, they can pay -- they can just pay for maintenance. And then if something fails, they have to pay SRP's cost to replace the asset.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: So just so the numbers -- I have the numbers. The outside cost, the high-end cost, would be ten circuits at I think you said 10 and a half million dollars for each one. So you're a little over $100 million there and then 36, 37 million dollars for the switchyard facility. So the entire project at the high end would be in the neighborhood of $140 million; is that correct?

MR. NORLIN: That's correct.

Q. BY MR. SUNDLOF: Okay. Let me get to underground.

First, as Member Noland has pointed out, the customer, Google, will be paying for this project. So in order to entice Google to locate in Mesa, we want to keep the cost down as reasonably it can be kept down; is that correct?

A. That's correct.

Q. And that's one of the goals of SRP?

A. Yes. And use our standard practices. We build overhead projects. We don't --

Q. So let's suppose we did want to look at

undergrounding. I guess you could do anything, but how difficult would it be and how expensive would it be to underground this project?

A. It would be costly. Without knowing the site plan, I can't say how difficult that is. But I would say it's between 8 and 14 million dollars per single circuit underground per mile. That doesn't include the transformer. I would estimate that a single-circuit overhead line for a mile is a million dollars. So it's 8 to 14 times more expensive to go underground.

Q. Okay. 8 to 14 --

A. 8 to 14.

Q. -- times more expensive?

A. Correct.

Q. And that's not something the customer has requested or that SRP would entertain?

A. That's correct.

Q. Can you summarize your testimony, please.

A. Sure.

SRP is proud to provide a strong and reliable interconnection for this major customer. We feel that the project brings great benefits to the city of Mesa and the surrounding communities.

MR. SUNDLOF: Thank you. I have no further questions for this witness.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So when you're saying a million dollars a mile, your substation is like 1.8 miles. I mean, square. I was trying to do the math on that, trying to figure that out.

So my point is, I think it's a little misleading pricewise to say it's a million dollars a mile when you've got feet. They're going to go feet. They're not going to go miles.

MR. NORLIN: Well, I believe that the site is around or a little bigger than a half mile by a half mile. It's realistic that there could be a mile of circuit underground depending on where these substations and transformers are located.

MEMBER HAENICHEN: A mile total?

MR. NORLIN: Yes, per circuit.

Q. BY MR. SUNDLOF: If I may, what is the cost to underground per mile?

A. I said it was 8 to 14 million dollars per mile.

Overhead, doing a single-circuit pole line would be about a million dollars per mile.

MEMBER HAMWAY: My mistake.

CHMN. CHENAL: Any further questions?

Member Woodall.

MEMBER WOODALL: Is the customer going to pay

tariffed rates for the power, or do you have a special contract? Or that hasn't been determined yet?

MR. SUNDLOF: Member Woodall, this is a retail customer, and the customer will take service under retail price plans that SRP has published. This is not a transmission interconnection.

MEMBER WOODALL: Thank you very much.

CHMN. CHENAL: I may have a few questions before we get to Mr. Taebel in case he has some questions.

MR. TAEBEL: No questions, Mr. Chairman.

CHMN. CHENAL: All right. Question on interconnection: Is there going to be any interconnection agreement involved with this project?

MR. NORLIN: So we would have an interconnection agreement for a large generator interconnection. This will have a design and construction agreement and an agreement for electric service. That would identify the retail rate that they pay electricity.

Q. BY MR. SUNDLOF: Well, Mr. Norlin, but this is not a FERC interconnection.

A. Correct, it is not.

CHMN. CHENAL: So I understand better, when you said an interconnection agreement is where there's

generation, could you explain that a little more so I understand that.

MR. NORLIN: Yes. So that would be on a wholesale site. We would have an interconnection agreement. This is not a wholesale project. This is a retail project. So we will have an agreement for electric service.

CHMN. CHENAL: So there will be no interconnection agreement for this project; is that correct?

MR. NORLIN: That's correct.

CHMN. CHENAL: And there obviously will be no transmission agreement for this project.

MR. NORLIN: There will be an agreement for the facilities, the design and construction of the switchyard and all of the other infrastructure.

CHMN. CHENAL: That will become important when we look at my proposed conditions, which probably won't be necessary now.

Okay. We covered a lot of material with you, Mr. Norlin, and I know some of that, you kind of read. There's a lot there that I'm sure there's going to be some questions that come up later. So are you planning on attending the rest of the hearing?

MR. NORLIN: I will be here.

CHMN. CHENAL: Very good. All right. Thank you very much.

(The witness was excused.)

MR. SUNDLOF: Mr. Chairman, if I may call my next witness.

CHMN. CHENAL: Yes, you may.

MR. SUNDLOF: Kenda Pollio, please.

CHMN. CHENAL: All right. Ms. Pollio, do you prefer an oath or affirmation?

MS. POLLIO: Oath.

KENDA POLLIO,

called as a witness herein, having been first duly sworn by the Chairman to speak the whole truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUNDLOF:

Q. Please state your name and your professional affiliation.

A. My name is Kenda Pollio. I'm a principal with the environmental consulting firm of ENValue.

Q. Exhibit 25 on the screen summarizes your background. Can you go through that, please.

A. I can. I have a Bachelor of Science in

environmental studies and urban and regional planning from Florida State University. I have a master's degree in environmental policy from the University of South Florida. I'm an American Institute of Certified Planner.

I have 29 years of environmental consulting experience. I specifically specialize in transmission line siting and permitting and government compliance. I've worked on over 125 transmission line and utility projects.

I've testified before this Committee 16 times, and I've testified for other transmission line and power plant committees about 25 times.

Q. Thank you.

Please describe your role with respect to this project.

A. I'm the project manager for ENValue. We basically serve to do the environmental analysis and prepare the CEC application in front of you.

Q. And can you describe the environmental analysis that you conducted to support the CEC application in this project.

A. Yes.

We conducted a very robust environmental analysis to support the application.

The project site was analyzed for physical,

natural, and social resources. These are all based on the state regulations for siting these type of facilities.

Many resources were analyzed that are in your application. In there, you will see that there are no or negligible impacts to the project or from the project associated with most of those resources.

Specifically, there are no environmental studies that are included in Exhibit B because there are no federal lands or there's no trigger for NEPA or the Natural -- sorry, National Environmental Policy Act.

There is no impact to fish, wildlife, and plant life. This is all discussed in Exhibits C and D of your application.

We did not find that there was any appreciable noise or interference with communication signals. That's discussed in Exhibit I.

We also did not see any appreciable interference with historic sites, structures, or archeological sites. That's presented in Exhibit E.

Therefore, my testimony is going to focus on the exhibits in the CEC that include more land use and visual resources. That would be Exhibit A, which is land use; Exhibit F, which is recreation; Exhibit H, which is planned uses; and aesthetics is included in a portion of

Exhibit E. So I'll just really focus on those resources.

Q. And, Ms. Pollio, before I forget, are you aware of any natural gas pipelines on or adjacent to the property?

A. We have not seen or are aware of any natural gas pipelines on the project site.

Q. Did you have someone check that today for sure?

A. Actually, we did. We sent someone out in the field just now and got confirmation that there are no pipelines. I did not want you all to see a pipeline marker tomorrow that I had not yet seen. So, since I'm under oath, I wanted to ensure that, so we did.

Q. Okay. Let's go through the exhibits. We'll start with the land use and the analysis that went into Exhibit A.

A. Okay. So you'll see on the left-hand screen is Exhibit A-1, which is also SRP-26. Exhibit A-2 is SRP-27. These are all included in Exhibit A, which is land use, in your application.

The land ownership of the project site consists of private parcels. These are under the City of Mesa's jurisdiction, as we discussed in previous testimony and today.

The surrounding area has a land ownership that consists of private parcels. City of Mesa, there's some

Town of Gilbert, as well as some parcels to the south that are Maricopa County jurisdiction or islands. They're kind of on inlays or islands that are owned or under the jurisdiction of Maricopa County.

The project area includes a number of different linear features, which include roadways, the electric infrastructure, or the two high-voltage transmission lines to the north of the project site.

There is no state, federal, or tribal land in the area or in the close project vicinity. However, there is the Roosevelt Water Conservation District canal and Maricopa County Flood Control channel that are to the west of the project site.

Q. Can you describe the land use and zoning of the project site.

A. Yeah.

Again, these are part of Exhibit A of your application. Exhibit A-3 is land use, and Exhibit A-6 is zoning, and those are also introduced as Exhibit SRP-28 and 29 on the screen.

Exhibit A-3 specifically has been produced to reflect the actual land use on site. It's been field verified, and you will see this land use when you go out to the field tomorrow if you choose to take the route tour.

You can see it's agricultural, commercial. There's industrial, office, open space, some institutional, residential, and utility land in the vicinity. You'll also see the existing land use of the project site really is vacant and historically had been agricultural.

The City of Mesa has classified the zoning into base zones or districts or overlay districts. And, again, this is reflected, basically, on A-6, which is zoning, which is on your right-hand screen, which is SRP-29.

You can see the zoning in the area, similar to what I just described in the land use, but the zoning categories are agricultural, neighborhood, commercial.

There is employment opportunity, which I'll talk about in a minute.

Light industrial, there's general industrial, and there's also some planned uses and a number of residential. And you can see the color represents those different categories on the screen.

The project site has recently been rezoned from light industrial to planned employment park -- I'm sorry -- and planned employment park to an employment opportunity district. It's basically the Red Hawk Employment Opportunity District.

The City of Mesa approved the Development Agreement of the data center associated with this proposed site. The Development Agreement approved a buildout of a $1 billion 750,000-square-foot data center. I'll talk about this in a minute as well, but this is included -- the development plan and information about that is in Exhibit H-1 of your application.

CHMN. CHENAL: Ms. Pollio, just a quick question: Before the property was rezoned, did it exclude this project? Or what was changed that is now allowed that wasn't allowed before, I guess, is my question.

MS. POLLIO: My understanding is that the process that was gone through was to implement the overlay district, which is the Red Hawk Employment Opportunity District, and that development plan, which is included. If you look in Exhibit H-1, that basically was the process they went through to specifically designate the facility for a data center.

CHMN. CHENAL: I'm probably going to have that question of Mesa and the witness. I'm just kind of curious what -- I guess this is a special overlay. I understand that. But what did the previous zoning allow that doesn't allow for this project is kind of what I'm kind of interested in knowing about. Just more curiosity

than anything. We'll wait for Mesa's witness for that.

Thanks.

MS. POLLIO: There's also been discussion in previous testimony about the City of Mesa's anticipated growth in the area and some of the other overlay areas. And this may also go to your question.

The Elliot Road Technology Corridor was created in 2014. We are not included in that but are close in proximity to that Elliot Road Technology Corridor. It was created in 2014 by the City of Mesa to expedite the entitlements process to attract high technology facilities. This is in compliance with all of the Mesa plans that have identified this type of growth for this technology-type area.

This corridor, the Elliot Road Corridor, is about 1,000 acres, and it stretches from Elliot Road to Signal Butte. Well, from Elliot Road to Signal Butte to Hawes. And in a figure here in a minute, you'll see the outline or the boundary of that technology corridor.

Projects that may have taken up to six months to go through an entitlement process now can be done within weeks. There's also tax incentives to be within that corridor. And so that's really one of the things that kind of leads itself to those overlaying districts.

Q. BY MR. SUNDLOF: And is this land use

compatible with the City of Mesa's plans?

A. Yes. Based on what I just identified, both the land use and the zoning is compatible for this project.

Q. Let's go to another land use category, which is Exhibit F and titled Recreation. Can you explain that.

A. Yes. So Exhibit F-1, which is in Exhibit F of your CEC application, is recreation. That's Exhibit SRP-30 on the left-hand screen. The right-hand screen identifies the project site again, just so you can zoom in a little bit more, and the facilities I'm going to talk about are on both.

But as shown on Figure F-1, the only recreational facility that's within 1,000 feet of the project site -- and the blue line that circled around the project site is that 1,000-foot boundary -- the only facility that's within that is the Paloma Soccer Complex to the east and the Wild West Paintball and Air Soft Park to the southeast.

There's also a neighborhood park that's inside that boundary, and you can see that to the north in the residential area. And that's a linear green corridor that's part of the residential community. Basically, an open space greenbelt-type area.

There are additional recreational facilities in the vicinity of the project. These include two golf

courses, one of which is the Superstition Springs, which is where we are today. The other is Sunland Village East Golf Course.

There are two sports complexes within a mile of the project site, one to the south and one to the west. They're also on Figure F-1.

In summary, the project site is not available for public recreational purposes. It would not preclude recreational use around the site. The project site would not infringe on any open space or designated recreational land, and it would allow the development plan -- the project would allow development plans or anything with the City of Mesa in dealing with recreation around the project site. So we feel it's very compatible with the recreational facilities in the region.

Q. Let's go on to Exhibit H, which is the Planned Area Developments.

A. Okay. So Exhibit H-1, as you just said, Planned Area Developments, is included in Exhibit H of your application. It's also SRP-31.

Again, you can see that we've identified the 1,000-foot boundary -- in this case, it's red -- around the project site. And a lot of the primary features on SRP-31 are also on SRP-3.

Information regarding the planned area

developments near the project site were gathered from the City of Mesa, the Town of Gilbert, and Maricopa County. There are currently no permitted or planned PADs within that 1,000-foot buffer that's identified on Exhibit H-1 from the project site.

As we previously have discussed, the project site has been rezoned to create the Red Hawk Employment Opportunity District, and the City of Mesa has approved that plan for the data center associated with that employment district.

As I mentioned previously, the plan and the staff report are included in Exhibit H-1 of your application.

There are two additional planned area developments outside that 1,000-foot buffer that are also on SRP-31. The Hawes Crossing Planned Area Development is a large mixed-use planned area development that's located southeast of the site. So the yellow area outside the project boundary is all part of that Hawes Crossing Planned Area Development.

There's another very small planned area development, which is the blue small square that you see to the east of the project site, and that is a construction company.

Though not within the 1,000 feet of the project

site, but it is on this map, and we've outlined it in a green and white line, you can see the relationship of the project site to the Elliot Road Technology Corridor that I mentioned earlier in my testimony. And you can see, again, we're very close in proximity to that.

So based on the Elliot Road Corridor, there's no PADs within 1,000 feet. We feel that the project is compatible with planned area developments in proximity of the site.

Q. Okay. Ms. Pollio, let's get to the good part and talk about the aesthetics included in Exhibit E and the visual simulations.

A. Okay. So in Exhibit E -- there are two portions of Exhibit E. One is the historic or archeological portion, and the other is the visual or the aesthetics. I want to concentrate on the visual and aesthetics. And this is where you will find the existing conditions and the simulations associated with the project facilities.

Exhibit SRP-32, on the left-hand screen, identifies the key observation points. So we reference those as KOPs. But, basically, it's a key observation point. And we select those based on where a person would view the facility. So if there are sensitive receptors rather than for travelers on roadways, we see those as

key observation points. We selected three for this area, and you can see those key observation points identified on SRP-32.

Now, what we'll do is we'll look at each one of those separately. So let's start with the first one.

So the first one is key observation point No. 1. And on SRP-33 on the right-hand screen, you can see the existing view. And this is actually on the northern side of the project site in the residential area looking south, south to southwest, from -- there's a road, Peralta, which is a road that's part of the residential area.

You can see the roundabout in the foreground of the photo. You can see the existing transmission line structures of the high-voltage corridor in the middle ground. And in the background, as it transitions from green to brown, that basically is where you can denote kind of the residential areas on the green, and you can denote kind of the viewshed of where the project site starts, and that's the brownish area. Again, it's vacant agricultural fallow land.

KOP 1 proposed view, which is on the left-hand screen, which is SRP-34, is the same view except we've actually rendered the switchyard. And so you can see the switchyard facility in the background. So you can see

the foreground is kind of where we are from the residential facilities in the roundabout. The middle ground, you can see our existing transmission line structures. In the background is the switchyard. So you can see the switchyard as well as you can see some other structures emanating from the switchyard.

Okay. The next one is KOP No. 2. You can see the existing view, which is SRP-35. This is on south Sossaman Road at the sports complex. So the Paloma Sports Complex you could note on a number of the different maps. It's kind of in the northeast corner right outside the property. You can see both roadways. Kind of the driveway to the sports complex is in the foreground. The middle ground is Sossaman Road. In the background, you can see our transmission line corridor as well as the site to the left part of the photo or what would be the south part of the photo.

KOP 2 is on SRP-36, this is the proposed view with the simulated structures and switchyard in the background. So, again, you can see the facilities that we superimposed or rendered into the photo. Again, it's the switchyard and proposed transmission lines.

Okay. The third KOP or key observation point is on SRP-37 and 38.

The existing view you can see is South Sossaman

and East Elliot Road. So that is the intersection that we took the photo from. It's looking to the northwest. So, again, looking northwest from the southeast corner outside the project site, but looking onto the project site. Again, you can see the intersection in the foreground. The middle ground is obviously the project site. And the background, you can see the transmission structures, the existing structures, in the background.

For the proposed view, which is SRP-38, you can see that we've rendered or simulated in a substation. This was described in previous testimony, and the substation model was included, so that model was put on the property again. This is just an example of where it could potentially be. But we did want to identify what the substation looks like on the site so you could see what those facilities rendered into a photo look like.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So next to that substation would be a 150-foot building?

MS. POLLIO: Potentially.

MEMBER HAMWAY: This substation is going to go with one of the buildings; right?

MS. POLLIO: Absolutely. We do know the location of the switchyard, which is the first simulation and the second simulation, you could see that location.

This is basically an example of what a substation would look like. But I think to your point is that with -- in kind of a data center campus setting, a 150-foot building would be located adjacent to either -- inside or outside of that. So it really depends on what the data center looks like, but you are correct.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So near the switching yard --

CHMN. CHENAL: Could you put your finger on it.

MEMBER HAMWAY: So near the switching yard, I think in one of the maps, you had kind of a line drawn all the way across the top of the area that didn't allow for the 150; is that right? Or in that corner where key observation point 2 is, could there be 150-foot buildings adjacent to -- I don't know my north and south from here. So running east from the switchyard, would there be in that corner the ability for 150-foot buildings?

MS. POLLIO: My understanding about the development plan that was approved is there is a -- that northern portion, there is a strip that precludes that height. So the buildings at that height would be outside of that or to the south of that strip.

MEMBER HAMWAY: So the Red Hawk Employment Opportunity District, is that what allowed for the 150-foot buildings?

MS. POLLIO: That is my understanding, is that development plan, which is part of that -- which created the overlay district, yes.

MEMBER HAMWAY: Okay. So how many other employment opportunity districts are there in Mesa, and do they have buildings as tall as 150 feet in them?

MS. POLLIO: I do not know the answer to that.

MEMBER HAMWAY: Okay.

CHMN. CHENAL: So a couple of follow-up questions.

Ms. Pollio, do you know what the height restriction was before the 150-foot overlay was approved?

MS. POLLIO: I do not know what the previous zoning restrictions were.

CHMN. CHENAL: All right. We'll ask the Mesa witness about that.

And next, looking at Exhibit 38, with my laser, there's four poles that are depicted along the main road there. Those would be part of the 22, up to 22 poles; is that correct?

MS. POLLIO: That's correct. But that placement is really just a visual simulation, as Mr. Sundlof just mentioned, kind of worst case just so we could show you what that looked like.

CHMN. CHENAL: Okay. Thank you.

Q. BY MR. SUNDLOF: Ms. Pollio, and I think you just said this, but you purposely did not simulate buildings in the simulations?

A. That is correct, because we just did not know what those would look like.

Q. But there will be buildings somewhere in there, probably quite a few of them, that will mitigate the visual impact?

A. Absolutely. If you look at the square footage that was allowed in this overlay district, it's very large buildings and a number of them, it would appear to be. So that would actually be blended in with the electric utility infrastructure. So we think that that will create, I guess, a more visually aesthetic campus-like setting.

CHMN. CHENAL: Sure.

Member Hamway.

MEMBER HAMWAY: So the number of buildings that you're showing, the five, that's just a random number that you selected?

MS. POLLIO: So for the simulations, we have just simulated one substation.

MEMBER HAMWAY: Earlier, you had photos of a substation and five physical structures. Not photos, just little blocks, you know, a drawing.

MS. POLLIO: So that would have probably been in earlier testimony that showed what the layout may potentially be.

MEMBER HAMWAY: So my question is, is five the max? Is it just a random number? I don't know. I'm just trying to get a sense of how many physical 150-foot structures would be on that site.

MR. SUNDLOF: Could I answer that.

The exhibit that you're talking about, which was Exhibit No. 8, was just sort of a cartoonist's depiction of the difference between a substation with all the transformers. It has nothing to do with what might be built there. It was just for demonstrative purposes.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Just as a point of reference for the Committee, those three or four structures we see in the simulation there, how tall are they?

MS. POLLIO: I need to check to make sure I know -- I want to make sure I know exactly how much we simulated, but I think 130 feet.

MEMBER HAENICHEN: Okay. What I was getting at was just if we can now imagine some of those buildings, would they be about the same height as those poles, the biggest ones, in theory?

MS. POLLIO: I would say relatively, yes.

Q. BY MR. SUNDLOF: And let's move to the video flyover of the project. Can you conduct the video flyover for us.

A. Yes.

So we did prepare a video flyover, and we'll start it.

Q. And what exhibit is this?

A. This is Exhibit -- I want to make sure that I get this right -- 39. And if we need to stop it or pause it, we can do that.

It starts slow and then moves fast.

(Flyover video shown.)

MS. POLLIO: So, obviously, we're doing a site tour, which is a little bit different than a route tour.

But you can see that we're coming in from the north side. You can see the road that I mentioned, Peralta, to the north of the project site. So we're looking south. So the north part is the residential area.

We've simulated in the switchyard, which you can see in that corner. So, basically, the brown area is the project site. The switchyard we're zooming into. You can see the transmission line corridor to the north, which looks like to the south based on this viewshed, but you can see it in the foreground.

As we go around, you can see where the residential area is and the existing transmission corridor is located. This just kind of gives you a sense of a 360-degree view of what the switchyard and components have been simulated. So that's how we got the simulations.

We're moving towards the east, going down Sossaman Road. This is Sossaman Road as you go north to south along the eastern boundary.

This is the substation we just spoke of in KOP No. 3. You can see that this is -- again, we have just simulated where that is as a possible location, but you can get a sense of the size and scale of that facility in relationship to the overall project site.

And that concludes the route tour.

MR. SUNDLOF: Anybody want to see it again? It was kind of fast.

CHMN. CHENAL: You're right that it turns from a biplane into an alien spacecraft. Just amazing.

Can we play it again? I have a question again about what's depicted.

MS. POLLIO: Sure. And we can stop it. I did want to -- the speed varies. So just let us know when you'd like to stop or pause.

(Flyover video shown.)

MS. POLLIO: Also, just to point -- on the actual tour tomorrow, this is the facility, the school district maintenance facility, that we can access. And you can stop and look at the project site from that.

CHMN. CHENAL: Let's pause it there.

Can you back it up just a little. Stop it there.

So on the right of the screen, this is Exhibit -- which number is this?

MS. POLLIO: 39.

CHMN. CHENAL: The right of the screen depicts an existing corridor; is that correct?

MS. POLLIO: That is correct.

CHMN. CHENAL: Transmission corridor. Okay.

Now, there's a switchyard that's depicted, obviously. And then there's a series of poles. And I just want to make sure I understand what those are. They're obviously not there. Are those depictions of the potential 22 poles that are being discussed, or is it something else?

MS. POLLIO: They are depictions of the possible locations of those 22 structures that would be on site.

CHMN. CHENAL: All right. I get that they're depictions, that we don't know where they're going to be.

But the ones that are depicted there, other than the transmission corridor, those are part of the ones that are included within the 22?

MS. POLLIO: Correct.

CHMN. CHENAL: Okay.

All right. That's the question I had on the flyover.

MR. SUNDLOF: Shall we proceed?

CHMN. CHENAL: Sure. We can proceed.

(Flyover video shown.)

CHMN. CHENAL: Let's stop it right there. Another question.

I understand we're looking now at a substation, depiction of a substation, that you had included within one of the key observation points, No. 3.

And I don't know, Ms. Pollio, if this is for you or for another witness, but we've had testimony that there could be up to ten circuits that would emanate from the switchyard to a substation. So this substation would be connected to the switchyard by one of those ten circuits. Is that your understanding?

MR. SUNDLOF: I think the testimony is that this substation has two transformers, so likely two circuits.

CHMN. CHENAL: Okay. Two.

For each data center building, will there be one substation required, or is it possible that a substation could service more than one data center building? I guess that's my question.

MS. POLLIO: Yes, I think that's correct, that they -- again, I don't think the configuration, knowing exactly what's going on with each building and the location, but you could assume that potentially that could occur.

CHMN. CHENAL: Okay.

So I'll get back to the -- as you described, Mr. Sundlof, the cartoonish depiction really is abstract in the sense that you could have up to ten lines servicing ten substations, but those substations could service more than one building. So there could be a substantial number of buildings on this 187-acre parcel.

MR. SUNDLOF: Or you could have four circuits going to one substation. We just don't know.

CHMN. CHENAL: Again, I think it would be important -- and I'm looking at Mr. Taebel and Mesa. I think it's going to be important to have testimony on the Development Agreement that's -- I don't know if it's a development agreement that's entered into between Mesa and the ultimate customer or if it's with SRP and Mesa, but a little discussion about what restrictions or how

this property can be developed. I think it would just be good to have that for the record. I don't know who should provide that. I'm thinking it's Mesa, but maybe one of the applicant's witnesses could too.

MR. SUNDLOF: I think it's Mesa.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: I probably should have asked this of another witness, but the areas of land upon which the electrical facilities are going to be constructed, is SRP going to have a leased right-of-way or fee title, or what's going to be -- for example, looking at the switchyard, how is that going to be handled?

MR. SUNDLOF: I think I can handle that.

SRP will get land rights from the applicant that likely will be easements with transmission line, perhaps. The ownership of the substation site is not determined yet.

MEMBER WOODALL: And for the switchyard, the same?

MR. SUNDLOF: The switchyard, probably a fee ownership.

MEMBER WOODALL: But SRP will own it for a fee?

MR. SUNDLOF: Yes.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: I'm not sure you're the right

person, but has there been any simulations depicting the massing of the buildings?

MS. POLLIO: Not that I'm aware.

MEMBER HAMWAY: Thank you.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: Ms. Pollio, looking at the entire project, have you compared its compatibility to the environmental factors set forth in Arizona law, particularly 40-360.06?

A. Yes, we have.

Q. And what are your conclusions?

A. It's my professional conclusion that the project is acceptable under all the criteria in the statutes. Specifically, as included on Exhibit SRP-40, the project is suitable with the environmental criteria, specifically land use and zoning, plans for development in the vicinity. As I've stated, there's no impact to fish, wildlife, or plant life. No appreciable noise or interference with communication signals. The site is not naturally available for recreational purposes. There's no appreciable interference with significant areas, historic sites, structures, or archeological sites. And, therefore, the project is compatible with the total environment of the area.

Q. Thank you.

We'll get to the letters from Mesa and others in the next testimony, but do you have additional jurisdictional letters that have come in after the filing?

A. Yes, we do. We received some letters from several tribes as a response to our inquiry, us submitting our Class I cultural report to those tribes. We received letters from the White Mountain Apache, Hopi, San Carlos Apache, and an email from the Gila River Indian Community. All stated that they have no issue associated with the project, and some of them would like to be kept informed and see any additional data associated with the project. But at this point, they are good with the Class I report and the project.

Q. Okay. Let's go to the proposed route tour. Can you describe to the Committee the route tour that we have planned, should they choose to have one?

A. Yes.

Exhibit SRP-41 is the route tour and directions. You can see there's a map on the left-hand side and specific directions and proposed stops on the right.

We have a van that would be here at 9 a.m. We're going to have some breakfast here for everyone, and you can pick up coffee. We'll have waters in the van.

And we'll take off.

Again, it's very close in proximity. We've identified the four stops that are identified. You can see the first stop. Again, you can see the red indicates the directions. I won't on go through all of it because they're on the screen.

But generally, we'll make our first stop at the school district facility, that maintenance facility. You can get a very good view from that northern portion.

We also have a stop in the actual residential area where that first KOP was taken by that roundabout at Peralta.

We will also go to the Paloma church and sports complex parking lot. It's a good pull-off for you to see visually that eastern -- from the east, the site.

And then we'll go down and kind of run the perimeter of the site so you get a view of the entire site.

We think that based on the van being here at 9, by the time it's all said and done, as you mentioned earlier, it will be probably 90 minutes to two hours.

MR. SUNDLOF: I have no more questions of this witness.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: Ms. Pollio, the transmission

corridor with the 500 and the 230kV lines which appear to be south of the housing development and, of course, north of the proposed project, is that used for passive recreation at all, or is it fenced?

MS. POLLIO: It is not designated as passive recreation, but it does appear to be an area where people walk their dogs and use as kind of a trail system. It is not fenced. It's open. But definitely, you see people out there.

MEMBER WOODALL: Thank you, ma'am.

CHMN. CHENAL: I see the Development Agreement, Exhibit H, is attached as Exhibit H-1 to the application. And it does get into some of the developmental restrictions on the property.

I think I'll ask -- I will probably have a few questions, but I'll reserve those questions for the witness on behalf of Mesa.

Any further questions from the Committee?

MR. SUNDLOF: Mr. Chairman, maybe it's time for a break; but when we get back, we do have our data center expert here, and maybe I'd like to call him out of order so we can get him done.

CHMN. CHENAL: Sure, we can do that.

And then we'll finish up with Ms. Pollio. And if Mr. Taebel has any questions for follow-up, we can do

that as well.

So let's take a 15-minute break, and we'll resume at approximately a quarter till.

(A recess was taken from 2:26 p.m. to 2:48 p.m.)

CHMN. CHENAL: Mr. Sundlof, I believe you have maybe a question or two still of the witness, and then we want to take a witness out of order, which is fine.

MR. SUNDLOF: Mr. Chairman, we just neglected to introduce an exhibit, and I wanted to ask Kenda Pollio to introduce the jurisdictional letters that she described.

MS. POLLIO: Yes. The jurisdictional letters that included the tribal letters I explained is Exhibit SRP-57.

(The witness was excused.)

MR. SUNDLOF: We have our data center expert here, and I'd like to call him out of order because he's here and we'd like to get him done. It's Steve Fairfax, and he'll introduce himself.

Steve, will you please take the stand.

I have some prepared testimony from Mr. Fairfax, but please feel free to ask him anything you want about data centers, and he'll answer to the best of his ability.

So we'll call Steve Fairfax.

CHMN. CHENAL: Good afternoon, Mr. Fairfax, do you prefer an oath or affirmation, sir?

MR. FAIRFAX: Oath is fine.

STEPHEN FAIRFAX,

called as a witness herein, having been first duly sworn by the Chairman to speak the whole truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUNDLOF:

Q. Mr. Fairfax, please state your name and your professional affiliation.

A. My name is Stephen Fairfax. I own MTechnology, Inc. We are a consulting firm that specializes in calculating the reliability of data centers.

Q. Where are you located?

A. Boston area, Massachusetts.

Q. And what does MTechnology do?

A. Primarily, we create mathematical models of data centers using a technique that's described in various national standards that allows us to calculate the reliability of data centers and identify which parts of the data centers are most likely to participate in

failures.

Q. And, Mr. Fairfax, using Exhibit SRP-49, can you describe your professional experience.

A. I graduated from MIT in 1984. I have two master's degrees, one in physics, one in electrical engineering and computer science.

I spent a total of about 20 years in nuclear fusion research before I changed careers and began studying data center reliability. And for the past 25 years or so, I've been exclusively working in the data center space.

Q. So which is more difficult, nuclear fusion research or data centers?

A. Well, they're very different. Unfortunately, nuclear fusion doesn't work yet. Data centers work.

Q. Okay. I want to clarify something. You are not going to talk about the particular customer that we're dealing with here. You're going to talk in general terms; right?

A. That's correct. My comments are general.

Q. Okay. Tell us how the storage of digital information has changed in recent years.

A. Well, primarily, it's exploded. It's gone from -- you'll have to excuse my memory, but it's gone up by a factor of 10 or 11 in just a matter of a few years

to 44 zettabytes, I believe it is. A zettabyte is something like a trillion gigabytes. So it's growing extremely rapidly.

Q. And I understand there will be many billions of smart devices.

A. That's right.

Well, predictions are hard, but the current predictions are that the number of smart devices on the Internet will -- the so-called Internet of things, things like the doorbells that have cameras in them and so forth, that those will outnumber the human race by a factor of 7 or so in just a few years.

Q. Okay. Can you expand by talking about the paper you've published.

A. I've published approximately 30 papers, some in nuclear fusion, and most recently in the data center space. The last paper I published was just about a month ago. It was a summary of the reliability of a fleet of about 2,000 standby diesel generators.

Q. Okay. We're here talking about providing power to a large data center. Why do data centers use so much power, and how do they use it?

A. Well, primarily, they use so much power because there is so much data. A small data center might have some thousands of computer servers. And in addition to

the servers which are processing information, they have some sort of memory storage. They also have to have devices that can switch and route the data as it comes in and out of the data center.

All of those things use electric power. Because of the tremendous explosion in both the amount of data that's stored, which we talked about just a minute ago, and the processing of the data, the amount of power has gone up dramatically.

Luckily for us, the efficiency of both storage and servers and switching has also gone up dramatically. So modern storage is processing something like 10,000 times as much data per given amount of energy as they did, say, 20 years ago.

Q. Is there also electricity needed for climate control on these centers?

A. That's right. If you put a megawatt into a building, you must take a megawatt back out, or it will just get warmer and warmer. And most computers have strict limits on how hot they can operate. So, yes, most data centers have very substantial cooling systems, and the modern trend is to invest quite substantially in making those as efficient as possible.

Q. Okay. Tell me, why is data center growth difficult to forecast?

A. Well, my testimony has a quote from Yogi Berra that predictions are hard, especially about the future.

And the models that we make at --

Q. Did he really say that? Now, come on.

A. I honestly don't know, but it's certainly attributed to him.

At MTechnology, what we were doing is we were making predictions. We were predicting how likely it is that a data center will fail. And we have a saying there that all models are wrong, but some models are useful. We hope that our models are useful. That's why our customers come back.

As far as why it's so hard for data centers to predict the growth, there's a couple of factors. One is the people who want to design and build and own a data center, they have to predict the need for that data center quite a few years in advance. As, you know, this proceeding shows, there are issues of permitting, there are issues of finance, there are issues of finding suitable locations, and so forth. And so they have to look ahead and make projections about what might be needed and where some years in the future. Of course, the further out that goes, the more difficult that problem gets.

The data center space is extremely competitive,

and it moves at lightning speed. And so if a large customer comes out with a requirement for 20 or 30 megawatts -- let's just make up a number -- of capacity, even a firm that was exceptionally nimble and quick and able to build, say, in a year, they would lose to firms that already had that capacity available. So they have to be built in advance and ready to go to respond to these kind of requests, or they will certainly lose to people who already have built them.

The other parts are, you know, the data center economy is influenced by the larger U.S. economy, and it's proven to be very, very difficult to predict that with any accuracy. And so a major downturn such as we had in 2008, that did impact the data center industry. Not very long, for a year or two, but it certainly did change plans and cancel some projects and delayed others and so forth. So all of these combine to make predicting the future growth quite difficult, particularly for any one particular site or one particular facility.

CHMN. CHENAL: Excuse me. Member Haenichen has a question.

MEMBER HAENICHEN: Mr. Fairfax, rewinding back to the electrical energy going into a data center. For the benefit of the Committee, could you estimate what percentage of that is for the actual use by the

semiconductor devices as compared to removing heat from them?

MR. FAIRFAX: That's an excellent question. The data center industry voluntarily developed a standard for that already. It's not an official national standard, but it's a consensus standard, if you will. They call it power utilization effectiveness, PUE. And it's just the total power that goes into the data center divided by the power that goes to the computer equipment.

And when that first came out, PUEs in some cases were 1.7, 1.8, something like that. These days, it's quite common to see PUEs under 1.1, and some are as low as 1.04 or 1.06. Even 1.02 gets claimed in some cases. For example, if you build one in the far north and you can basically open the windows for cooling, you can get really amazing PUEs with techniques like that.

MEMBER HAENICHEN: Do you envision further great gains in the power consumption per computation or whatever in semiconductor devices as they particularly go to smaller and smaller structures?

MR. FAIRFAX: Yeah. There's this law that's been in place or growth trend called Moore's law about the density of semiconductors doubling every few years. We're starting to run into some limits on that. It's getting harder and harder to achieve that growth rate.

But new things are coming along such as quantum computing that may upend computing as we know it and sort of reset what you can expect.

So the short answer is yes, I do expect it to continue improving.

MEMBER HAENICHEN: Thank you.

MR. SUNDLOF: Thank you.

Q. BY MR. SUNDLOF: That kind of brings up a question on Exhibit 54 as one example of an energy forecast. But as you said, is it correct that you really can't forecast with great accuracy?

A. That's true. Aggregates like this are a little bit easier. But, again, hopefully not, but if there was some major economic disruption to the country or the world in the next couple of years, you would probably see a dent in that smooth curve that's up there now.

But, you know, in general, this kind of growth has been going on for some time. As you can see, from 2012 to almost 2020 now, it's been growing quite steadily. And so projecting it into the future is not such a big extrapolation.

CHMN. CHENAL: Quick question, Mr. Fairfax. What is ICT? I see the word information and communication technology. But below that are the consumer devices, so it's something other than devices.

Is it data? How would you define it?

MR. FAIRFAX: It actually takes a fair amount of energy to produce things like integrated circuits or servers. You have metal and copper and so forth. I believe what this particular graph is referring to is the energy that goes into manufacturing all of this technology and producing it.

CHMN. CHENAL: The hardware?

MR. FAIRFAX: Exactly, hardware.

CHMN. CHENAL: I see. Okay. Thank you.

Q. BY MR. SUNDLOF: Okay. Please describe why the data center loads appear to be growing so exponentially.

A. Well, a very large driver is this explosive growth of the sheer volume of data that's being handled, so it takes energy to store the data. For most technologies, it takes small amounts but not zero amounts of energy to keep the data stored. And then it takes energy again to retrieve it when you want to use it. So just the volume of data alone will drive some growth in power.

But then, on top of that, data by itself is often not particularly useful. Data, for example, that shows a map all by itself is unuseful. But then when you pick up your phone and ask it how do I get from where I am to this place I want to be and it's processed, that's

useful. But that processing, that solving of the problem that you just posed, that takes additional energy.

So the amount of data that's being stored is growing explosively, and the amount of processing that's going on is also growing explosively.

Q. We've heard the term "cloud storage." Can you tell us what that is.

A. Well, in general, the cloud is not something up in the sky in this context. It's very, very large data centers with huge numbers of servers and switches and storage devices and so forth. And people can basically rent or buy both memory and processing power.

So, for example, I can go to Amazon Web Services, and they will give me a cloud-based account with a bit of storage and a bit of processing for free, absolutely free. And then, if I want to increase said storage, let's say, to back up all my home computers or my work computers or store all my photos or whatever, for a few dollars a month, they will store it at Amazon. And it will never be forgotten, because they don't store it in one place. They might store it in five places or 20. You don't really know. All you know is that you send it off somewhere; and then when you ask for it, it comes back. It's safely held for you.

CHMN. CHENAL: I have a question. I'm sorry to

interrupt, but you're probably used to it by now.

MR. SUNDLOF: Actually, I want you to interrupt, particularly with this witness, because I don't want ask this.

CHMN. CHENAL: I know we're not going to talk about with you, Mr. Fairfax, this particular project per se, but I'm interested in the scale of data centers in the United States and worldwide. And a project like this facility, I don't even know how to measure the potential amount of storage this facility has on 187 acres using 600 or 500 megawatts of power. I guess that's a question we should have asked, is how much potential storage.

This is not a fair question, but what percentage -- I mean, how many data centers like this project are there in the United States and that are anticipated to be built in, you know, the next, say, five or ten years? I mean, what percentage of data centers would this project make up, I mean, to give us some context?

MR. FAIRFAX: Sure. Well, just to give you an idea about the growth, first of all, for some context, when I started in this field 20-odd years ago, American Express had some of the largest data centers in the country. And if memory serves -- and it is 20 years ago, so I hope you won't told me too tight to this -- but it

was something like 6 megawatts for a huge data center, for the biggest data center there was.

Last year, I was working in a data center that was 240 megawatts. So that gives you an idea of the growth over 15, 20 years, something like that.

The current estimates are there's something like 400 of these very large facilities, we call them hyperscale facilities, and there's not a hard definition of what "hyperscale" means. I usually think of anything bigger than 100 megawatts as hyperscale, and there's approximately 400 of those worldwide. The U.S. has a substantial fraction of those, but not all of them.

So this would either be one very large hyperscale facility -- I honestly don't know what the development plans are -- or with the numbers you're mentioning, it might be five or six hyperscale facilities. So I hope that puts it in some perspective for you.

CHMN. CHENAL: So they're measured in the power usage of the facility as opposed to the, what, gigabytes of storage capacity?

MR. FAIRFAX: Power is sort of constant. It applies to all things. I've worked on evaluating data centers that had relatively little storage but did massive amounts of processing because they were doing

things like simulating new integrated circuits. So the processing load was much, much larger than the storage load.

But, of course, if you go to someplace like the census department or the IRS, there's much more storage than there is heavy duty processing. So it really depends on the application as to what that ratio is. But all of them use power, so that's sort of the common denominator.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So when you first introduced yourself, you said that your company determines reliability of data centers.

MR. FAIRFAX: We calculate it, yes.

MEMBER HAMWAY: So when you're done calculating, do you give like a J.D. Power award to a data center? So if I'm a customer and I'm looking for a well-built data center, would your company give it a silver rating or a gold rating or ...

MR. FAIRFAX: Well, we have a rating that I proposed, and it doesn't have quite the name recognition of J.D. Power, but we call it a class. And a Class 1 data center means it has a 1 percent chance of failing in a year. And most modern data centers are much better than that. So we talk about a Class .2 or a Class .5 or

something like that. So just to put that in perspective, if it's a Class .2, that means that, an average, we would expect that data center to run for 500 years before it failed.

MEMBER HAMWAY: I have another follow-up question. So in your opinion, is it more important for a data center to be multi-story or spread out?

MR. FAIRFAX: That really depends on a lot of things that, frankly, aren't my main expertise. For example, in Singapore, land is so incredibly expensive that they're going straight up. And in a place like this facility, I could imagine that it might be more economical to spread out a little. But, again, this is not my long suit.

MEMBER HAMWAY: Thank you.

Q. BY MR. SUNDLOF: Let's look at Exhibit 51, if you would.

We mentioned hyperscale data centers. Can you talk about the projected shift to hyperscale data centers, which you defined as over 100 megawatts.

A. Yeah.

Again, it's approximate, but I think most people in the industry would at least tolerate that definition. And yes, the hyperscale is probably the segment that's growing the fastest, at least in terms of

money and power, something on the order of $100 billion a year being invested in these facilities.

Q. What's the advantage of having a hyperscale rather than a smaller data center?

A. Well, in electric power -- the terms "economy of scale" are often thrown around in our society rather carelessly. But in electric power, there really are economies of scale.

So, for example, if I want to buy a transformer that can handle 10 megawatts, it doesn't cost ten times what a transformer that handles 1 megawatt costs. It might cost four times or eight times or something like that, but it doesn't cost ten times. So if I can go to a larger scale and use 10-megawatt transformers instead of 1-megawatt transformers, that will save a lot of money. And that's one of the reasons that power plants, for example, tend to be quite large as opposed to small enough to run just a single business or a city block or something like that. They tend to be big because economies of scale again kick in.

And the same thing applies to these hyperscale facilities. By gaining these economies of scale, they gain on capital. They gain on the efficiency. They can make investments in better efficiency and so forth that a smaller facility would find difficult to afford. And all

of that provides a powerful economic incentive to build bigger and bigger and bigger.

Q. Okay. Can you put up Exhibit No. 52.

Can you describe the trends that influence the growth of data centers using 52.

A. Yes. So they're identified in my written testimony for big drivers. There are others. There's a lot going on here. But these are four major drivers.

We've discussed cloud computing a little bit, this idea of computing being more of a service that you rent as opposed to something that you have in your own building.

Social media, of course. 20 years ago, Facebook didn't exist. And it was, I think, seven or eight years later, they had a billion monthly users. And now they connect to, supposedly on a monthly basis, something like one-third of the human race. And, of course, they have competitors too. They're not the only ones. So we've had this explosive growth in social media. And just the sheer volume of, you know, cute cat pictures and family photographs and so forth that are uploaded every second to these facilities is just staggering.

Software platforms. So particularly larger companies where you might have 10- or 20,000 employees,

and each of those employees these days has a computer. Trying to maintain all those machines so they have the current software and the latest antivirus and all the other things you need, that's a huge challenge, a huge enterprise. And so you have these big IT departments with people running around trying to keep up with all of that.

Well, these days, you can have all of your major business applications run on a cloud provider. And so your word processing, your accounting software, your spreadsheets, all that sort of thing, can be run in the cloud. And all of that software is not running in your building on your PCs. They're just conduits to the processors that are actually doing it. And so that's also growing very rapidly. You might hear the term "software as a service" for that.

And then last, but not least, and this is a huge one, you know, content delivery. Of course, probably everyone in this room has a phone. And if you want, you can pull up a video in the matter of a few seconds. Videos are many, many, many megabytes. And they have to be sent over the network and down to you. And it turns out it's not real efficient to store them all in one place and then take up a lot of the network bandwidth to get them to you.

There's a lot of very smart people spending a lot of time figuring out how to predict where to store the video that you're likely to call up so that it's relatively close to you. And so all of these things are growing very rapidly. They're all very both storage and processing intensive and driving this growth. And again, there are others. These are four major ones.

Q. Let's put up Exhibit 53. Let's talk about the drivers toward the hyperscale data centers. 53 is a list of those. Can you expand on that?

CHMN. CHENAL: Let me just ask a question before we get to that on the topic you just mentioned, Mr. Fairfax.

We know that when highways are behind the curve of traffic, cars, bad things happen. Road blocks, blockage, traffic jams, all that sort of thing.

I anticipate the same thing can happen and does happen with data centers keeping pace with, you know, the factors you just mentioned, the growth of data. And where is the industry, the data center industry, in terms of staying ahead of the curve of the growth of -- the increase in data? One of the other slides showed from 2014 to 2025, an exponential increase in data. So how does the industry manage that demand and try to stay ahead of it to avoid problems?

MR. FAIRFAX: Well, I would say in general, they manage it fairly well in that there aren't major blockages and outages and so forth. Now, there are, and they make the news. When banking applications go down and, you know, some fraction of the country can't access their bank accounts, you hear about that.

But in terms of perhaps your question, which is more not necessarily failures, but things like traffic jams and shortages, the market is so dynamic and so many competitors that, in general, there's ample capacity and ample choices, and they're competing with each other on price and time and location and so forth.

But the capacity tends to be there because, again, there's a lot of money being spent. That's the con. But there's a lot of money being made providing all of these services.

CHMN. CHENAL: Thank you.

Member Haenichen.

MEMBER HAENICHEN: Isn't it true, then, that the growth of the data center business, we'll call it that, might be limited just by the bandwidth available to do all this stuff? I mean, if it's in there, in the data center, the data, and you can't get it out, you're stuck. So what's the status of that equation right now?

MR. FAIRFAX: Well, it's an excellent point and

a good question.

Let me go back to, say, around the year 2000, Y2K. The industry was grappling with what they called the last mile problem, which is that there had been fiber-optic backbones, very high-speed links, linking most major cities across the oceans and so forth. So once you got to those backbones, there was plenty of capacity, plenty of speed. But there was a gap between your business or your home and those high-speed highways, if you will, super highways. That's not gone, but it's much better today.

So in a number of cities, you can buy fiber optic straight to your house and get 100 megabyte or gigabyte per second speeds. Most businesses can get access to quite high a speed. There are certainly rural areas and isolated places where speed is still an issue. But in general, it's much better now than it used to be.

MEMBER HAENICHEN: It's still a problem in Heber, Arizona.

MR. FAIRFAX: I have a place in Texas, a little out in the country, and I don't get very good speed there and probably never will.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So security. I'm a 30-year-old -- I mean, I'm not 30 years old. But 30

years ago, I was an operating systems programmer, and I've been to scores of data centers. And that was back in the day when they used to open it up and invite everybody in and were proud to show off their data centers. Obviously, those days are gone.

So talk about how you secure one of these facilities. And then also an unplanned outage. Where are the generators, and how do you plan for an outage?

MR. FAIRFAX: Two good questions.

Security is similar to reliability. In reliability, we worry about random failures of equipment. In security, you worry about -- but they're not random. There's some hostile group or person that's causing the failures.

Security is really multifaceted. So there's physical security, access to the data center. And that's handled really quite well in most of them. No one can just walk in. You have to have an invitation. You have to present ID. They have, you know, man traps and so forth that let only one person at a time through. Visitors usually are required to be escorted. At some data centers, you're given a little bracelet. And as you walk around, the lights overhead turn different colors to let people know if you're in a place you should or should not be. So there's a lot of pretty good physical

security.

A big challenge, and this is true not just of data centers but just everywhere, is the insiders. So when you have trusted a person that's allowed to get in, and somehow, for whatever reason, they decide to do something that's not appropriate, that's much harder to detect. And I can't talk at any greater length about that. That's not my strength or my field, but that's a tough challenge.

And then there's the sort of external security of people trying to probe the defenses of the data center and get at data that they should not and so forth. And, again, it's an ongoing challenge. It's a constant race. Attackers find new ways to break in; and the defenders fix it, and the attackers find yet another way.

I was just at a conference here in Phoenix last week, where one of the speakers, a colleague of mine, described the printing of scratch lottery tickets. And he explained to us that there's nineteen layers of printing in every lottery ticket. He said, Why is that? Well, because the bad guys have figured out 18 different ways to print them. And when they find another, then there will be 20 layers on the ticket.

So it's a constant race. And, yes, there are data breaches constantly. And they usually come down to

some sort of bad practice. But that challenge will never go away. That's going to be with us.

MEMBER HAMWAY: And then generators, should there be a complete outage.

MR. FAIRFAX: So most data centers maintain a standby set of generators, typically diesel fuel. So they have diesel fuel stored on site. And because the consequences of failure of power is so severe -- when I started in this field 29 years ago, we would talk strictly about financial consequences of failure, and the numbers were staggering, you know, millions of dollars an hour. And the thing that you have to understand is, literally, in the blink of an eye, in a 20th of a second, if the power is off for that long, the servers all fail. And it takes a long time to get them restarted and back to doing their normal job. Usually, at MTech, my company, we estimate typically a day for something like that.

And so, in addition to generators, there are these large systems that are called noninterruptible power supplies that are basically batteries connected to some special power electronics that will keep the power going for five minutes or so. When the power goes out, generators come on. They're typically ready to provide power anywhere from ten seconds to a minute. And because

the price of an outage is so high, a data center that might need, let's say, 10 generators, they'll buy 12 or 15 just in case some of them might be out for service and one or two of them might not start for whatever reason. And they just can't tolerate that, so they always have redundant machines. But most data centers are protected that way.

Now, a few use things like fuel cells run off natural gas that provide their power, so they have utility power and fuel cell power. Some of these very large facilities, these 3- and 400 megawatt facilities, site themselves near transmission lines, particularly where there's two or more transmission networks in an area, because transmission lines tend to be extremely reliable. And the hope there is that they can reduce or even eliminate the number of diesel machines that they have to have.

CHMN. CHENAL: Member Hamway and then Member Haenichen.

MEMBER HAMWAY: So are there any data centers that are running off the grid solely on solar or wind power?

MR. FAIRFAX: Well, one thing about data centers is they run 24 by 7. The place where I was speaking last week is called the 7x24 Exchange. That's

the name of the organization. So data centers run 7 by 24, and, of course, solar fails every night. So most data centers, especially the larger ones, they're very keen on the sustainability and environmental footprint. So most of the large data center operators buy contracts for solar, wind, renewable energy, the equivalent to the energy that they will use. But of course, when it's midnight, no, they're not running on solar power. They're running on something else. But they buy that energy, so they're supporting the solar power elsewhere.

MEMBER HAMWAY: Thank you.

MR. FAIRFAX: You're welcome.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: In an issue of the MIT Technology Review a year or so ago, the entire issue was devoted to this subject. And in big block letters on the front cover, it said: Why your computer will never be secure.

Now, my question is -- I don't know if you read that or not -- do you think that statement could be expanded to apply to data centers as well?

MR. FAIRFAX: I think the answer is yes. It may be secure today, but, again, it's a constant race. And someone will come up with that 20th way to hack a lottery ticket sooner or later. So in that sense, yes,

it will never be secure.

Part of it is, you know, the statement is a little misleading in that there's an implication that there's absolute security. And, of course, that's not the world we live in. You can't have absolute security when you get in your car and drive to the corner grocery store.

MEMBER HAENICHEN: I agree with your analysis. But how does the society and a mountain of users of this concept deal with that realization?

MR. FAIRFAX: In a variety of ways. The data center industry in terms of just data centers is currently not tightly regulated, and so there's a lot of competition. And the incentives and the penalties for making mistakes tend to be financial and loss of customers and things like that.

Now, a lot of -- there are relatively strong laws about disclosure of consumer data, data breaches, medical data, government data. And so those are more regulated and punished by legal means in addition to the financial ones. So there are incentives in place. But it's a neverending race between the good guys and the bad guys.

MEMBER HAENICHEN: But as a user, then, is one way to deal with this insurance?

MR. FAIRFAX: If you can get it, that would be fine. But for most people, the loss of either having your very private information disclosed or losing some big chunk of your data, how do you insure against that? So insurance, for some people, it helps, but it generally won't make you whole.

MEMBER HAENICHEN: It's depressing.

MR. FAIRFAX: It can be.

CHMN. CHENAL: Well, to add to the depression, you mentioned, Mr. Fairfax -- and, by the way, I find this very interesting, and thank you. And I know this is not exactly on point for the application, but I did ask, and I really appreciate the applicant making you available and giving us this background. I'm sure we all find it very interesting.

You mentioned if only for a second the power is lost to a data center, the system will shut down. Can you talk about that for a moment. I think you mentioned it will take some time for it to get back online. But is there some damage to or potential for loss of information? I'd be interested to hear about that.

MR. FAIRFAX: There is potential for loss of information. It was much bigger potential, let's say, 20 years ago where the information that was stored was literally stored in one facility, and perhaps they had

backups off site as magnetic tapes or something like that. So it was never completely lost. But, for example, if the data center went down just before the backup had taken place, you might lose a day's worth of data.

Now, these days, because the storage is -- not only is there so much more, but it's so much cheaper and connectivity is much better. So, at one point, for example, I heard that if you store something, let's say, in Gmail, one of the big email sources, that it's actually stored on average in 17 different places. So it's very hard to lose. It might take some effort to recover it, but it's hard to lose.

But, nonetheless, there are series disruptions. One case that we investigated, this was several years ago, but there was a failure in a data center, a loss of power, and it shut down the ATM for a major bank for pretty much the entire East Coast. And to give you an idea of the scale of things, the power was turned back on in a minute. In less than a minute, actually.

Eight hours later -- they had 10,000 servers that went down. Eight hours later, 99 percent of those servers were responding to pings, which means 1 percent of 10,000, or 100 servers, were dead and not responding to pings. Pings mean it's just that they say, Are you

alive and that the answer is yes. But they're not doing any processing yet. So it was something like 17 hours or 20 hours before the ATM network was back to normal.

These days, it's more than inconvenience and the financial disruption. There was a case in London not terribly long ago where the 911 call center, which is run by a data center, went down. And for some hours, people who -- you know, in automobile accidents, heart attacks, things like that, the responders were delayed by sometimes substantial amounts of time. And that cost lives. People died as a direct result of that outage.

And as our society grows ever more dependent on always on, reliable data centers, things like that become more important. So it's no longer just money and inconvenience but actual human health and safety that's at stake.

MEMBER HAMWAY: I had one more question.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So do you see small companies eliminating their IT departments for the most part and moving this off site to one of these data centers?

MR. FAIRFAX: Some do. Mine doesn't, for example.

MEMBER HAMWAY: What does that say?

MR. FAIRFAX: Well, in part, because we're

given extremely sensitive information about the design of data centers, and our clients are just much more comfortable in having that locked up. It's all encrypted and that sort of thing, but it's in our possession.

MEMBER HAMWAY: I was kind of thinking of municipal data centers. Every municipality pretty much has their own IT department running their own servers and running their own UPS system, their own generators, and everything else. And I was just curious, do you see a trend of moving away from that and going to a more centralized hyperscale data center?

MR. FAIRFAX: Yes, absolutely. The trend is moving that direction. Now, there will always be some people who, correctly or otherwise, convince themselves, as I have, that they need to have local control. But the move is very much so.

For example, I'm aware of at least one hyperscale facility, 100-megawatt-class facility, that was set up specifically to handle very sensitive classified government data. So, again, now you're having government data that's classified. And people are providing cloud-based solutions that provides the necessary levels of security and so forth that meets the applicable federal standards for handling that kind of information.

So the trend is definitely that way. It will never go 100 percent. But there are more people moving away from what we call enterprise data centers than there are moving towards them.

CHMN. CHENAL: Member Gentles.

MEMBER GENTLES: Mr. Chair, thank you.

Mr. Fairfax, can you give us some context around the size and scale of this data center as it relates to other data centers in Arizona?

MR. FAIRFAX: This would be a fairly large one. I've worked at half a dozen data centers primarily in the Phoenix area, but they are older data centers, so they are 5 to 30 megawatts, let's say. To my knowledge, this would be one of the largest ones.

CHMN. CHENAL: Member Haenichen and then Member Noland.

MEMBER HAENICHEN: This discussion we just had reminds me of something I just read recently about the car industry, and has to do with the utilization of resources. Automobiles have horrible utilization efficiency, if that's an appropriate word. And that's why the self-driving car things seem to be indicating that 50 years from now, you won't have a car. You'll just order one to come to your house and take you someplace.

Doesn't a little bit of that same argument apply to the question Member Hamway asked?

MR. FAIRFAX: Yes, it does. And the data centers respond to that a couple different ways. So all modern servers can turn their power down. So when they're not being commanded to do a heavy computational load, they can back themselves off and use much, much less power than when they're being fully utilized.

In addition, you heard me perhaps mention earlier in my testimony here Amazon Web Services. Amazon does an enormous fraction of their business on Black Friday and the run-up to the holidays. All the rest of the year, those servers are not highly utilized, so Amazon is a formidable competitor in selling cloud services because they have all these machines and all this infrastructure, and so they put it to good use.

But you certainly don't want a situation where every server is 100 percent utilized at every instant; because then if you do have a failure, you do have a spike in demand, then things are going to slow down. So you always want to have some sort of buffer, if you will.

MEMBER HAENICHEN: That's like having two quarterbacks on the football team.

MR. FAIRFAX: One gets injured. Exactly.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you.

Mr. Fairfax, this is the third data center that we have dealt with transmission lines or whatever in the last month, basically. Would you say that that's because of the reliability of Arizona electrical systems and the reasonable cost of land as compared to, say, like California, where they're doing blackouts and brownouts and nobody can afford to buy a house there, let alone build humongous data centers?

MR. FAIRFAX: Well, yes, that's certainly two of the factors, the price of the land, the price of electricity here. When you're paying a 10-megawatt or 100-megawatt electric bill, that's a lot of money, and pennies per kilowatt hour really matter. And part of it, too, is just the availability of power. So there are huge swaths of the country where, if you go to the local utility and say, I'd like 100 megawatts, please, they'll tell you no. They just don't have it. They couldn't give it to you if you wanted it.

And here, you're blessed by having excellent transmission facilities which are very reliable and sufficient generation available to move these relatively large amounts of power into your data center. That's not true a lot of places.

MEMBER NOLAND: Well, where are the largest

concentration of these data centers in the past couple of years? Can you give me an idea of a few places?

MR. FAIRFAX: Well, there's a huge concentration in Ashburn, Virginia, which is sort of the Washington, D.C., metro area. And I forget how many thousands of megawatts it is because it literally changes every day. But there's an enormous concentration there.

Silicon Valley, West Coast, also has quite a number.

And then more and more now, because of the scale, they're spreading out a little bit in that if someone finds a utility that indeed can sell them 100 megawatts, you build that data center. And now that power is used and you can't necessarily build any more, at least not right away. So they're sort of spreading out and finding the places where power is available and affordable. And as you pointed out, land and zoning and, you know, commute. If you have a 100-megawatt data center, will they let you put up 100 megawatt of standby diesels? Not everyone will allow that either. So there are some concentrations, but these bigger facilities are sort of moving around to where they can be placed.

MEMBER NOLAND: So would I be correct in saying that there's probably three major factors that they're looking at, electrical availability and reliability, land

that's affordable in their plan, and probably tax incentives?

MR. FAIRFAX: I can't comment on the tax incentives. That's really not my field. But certainly the price of electric power.

MEMBER NOLAND: The price.

MR. FAIRFAX: So here, it's relatively inexpensive compared to, let's say, California or the East Coast. And, again, at these large power facilities, the price of power is a major factor.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Gentles and then Member Hamway.

MEMBER GENTLES: So this might sound like a very similar question, but what's the impact on the surrounding community of all that power being used by the data center?

MR. FAIRFAX: Data centers typically go out of their way to be inconspicuous. So everyone in this room probably drives by a data center on a regular basis, and you don't know it because they really take great pains not to attract attention to themselves. Something this big, people are going to know that it's there, but it's not a steel mill or some kind of factory where there's going to be noise and dust and other things like that.

They're fairly quiet. There's actually not a lot of employees. During construction, you might have a thousand people or more working at the site. But once it's running, these facilities don't have thousands and thousands of people coming and commuting to them every day. So the impact in general is limited.

MEMBER GENTLES: What about the power impact on the surrounding community and households and other usages?

MR. FAIRFAX: Well, you know, households are served on what we call a distribution system. So the power is sent around on utility poles at typically 15,000 or 24,000 volts or something like that. And then transformers either in front of the house on the street or up on the utility poles bring it down to 240. Those eventually go back to a substation and connect to the transmission system.

These very large data centers connect directly to the transmission system. The average home or business won't know at all that the data center is there in terms of power.

Now, I'll expand just a little bit. As these data centers get bigger and bigger, some of them are what we call grid interactive data centers.

So for example, there's one in Yuma, Arizona,

that's quite isolated, not a lot of generation nearby, not a lot of homeowners either. It's a pretty isolated place. But there's a 25-megawatt generator array that just sits there all the time watching the frequency. And if the frequency starts to go down, which means there's not enough power going to the building, 25 megawatts of diesel are online in nine seconds. And so those people are benefiting. Their power is more reliable, and so everyone in that area is benefiting because of that.

And so in a less direct way, because the transmission facilities and the substations there will all be upgraded, modernized, scrutinized and so forth, there's an indirect benefit for consumers.

CHMN. CHENAL: Member Hamway and then Member Haenichen.

MEMBER HAMWAY: So just to drill down a little bit on Member Gentles' question about noise, I agree it's not like a steel plant where there's clanging of metal and all this kind of stuff, but there is a constant hum 24/7; correct?

MR. FAIRFAX: I don't know about a hum. Usually, the noise that you can hear when you're close to it is air moving. There's always a fair amount of air moving through data centers because there's a lot of heat to be removed. So that's what you hear.

So other than that, no. I mean, substations hum, yes. But there's one big substation --

MEMBER HAMWAY: No, there's going to be 20. I know, this isn't about this application.

MR. FAIRFAX: But substations, because they're relatively small, you put brick walls around them, sound attenuating features reflect it away from people and so forth. But the data centers themselves, no, they don't hum particularly. But they do move air, so you hear a little bit of air. Again, they want to be inconspicuous. They don't want to attract attention. So they do a lot of things to control those sounds so that at the perimeter, where the public is allowed to be, it's not very noticeable.

MEMBER HAMWAY: So how about heat as these buildings dissipate the heat? On a 120-degree day, how does that affect -- and I know the more it's spanned out, you're not going to feel it, but I'm just curious if you've done any numbers about how much heat these things generate.

MR. FAIRFAX: If you have a 100-megawatt data center, it generates 100 megawatts of heat. It all goes into heat eventually.

MEMBER HAMWAY: How does somebody like me understand that?

MR. FAIRFAX: Well, the way it's typically gotten rid of, you call reject that heat. How do you reject that heat?

There's two major ways. Cooling towers, which use evaporation of water. So in some climates, at least on some days, you would see condensation coming up. Around here, it's so dry, you don't usually see any condensation.

Other utilities use refrigeration where they basically have big radiators that are hot from the refrigerators, and they blow fans across them. So you see nothing at all from that. And then there are very large data centers that -- I've been to one that's 60 miles south of the arctic circle. Two words: Free cooling. That's why they're there. So that's another approach. They're not coming here, of course.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: This is my last question, I promise.

Data centers have customers. Some of them don't even realize they're a customer of the data center. But talk a little bit about how the data flows from the data center to the customers back and forth.

MR. FAIRFAX: Well, of course, there's many kinds of customers. So if you're at the Pentagon or a

hospital, you're one kind of customer. If you're a consumer like all of us in our capacity, say, in our home, we're another kind.

As a consumer, it's actually pretty complicated. If you're the Pentagon and you're handling classified information, you can probably point to a pipe where that data is flowing.

But where does the data flow if I do an Internet search and pull up a video and then email a link to someone else? That data is probably passing through half a dozen or a dozen data centers to and from you as part of that whole interaction. So that gets quite complicated.

Some colleagues of mine, Mark Mills and Peter Huber, tried to figure that out in 1999 when the Internet was younger but growing rapidly. And in those days, the mobile devices were BlackBerries. That was the best that we had. And their estimate, with careful study, was that that BlackBerry you held in your hand consumed -- among all these data centers, switches, routers, communications, so forth, consumed as much energy as the refrigerator in your house, with the refrigerator in most homes as the biggest single energy user. Perhaps here, heating and cooling is right up there.

MEMBER HAENICHEN: Hair dryers.

MR. FAIRFAX: So, you know, of course, now the phones that we all carry with us are hundreds of times more capable than the BlackBerries were and do all kinds of things that the BlackBerries couldn't do. Luckily, as I mentioned earlier, the efficiency of processing and the efficiency of storage and so forth has increased manyfold. So it's not a thousand refrigerators that's behind your phone, but it's probably still close to one, you know, somewhere in that range.

MEMBER HAENICHEN: So it's basically radio signals have a lot to do with it.

MR. FAIRFAX: That's basically it. From your phone just to get to the -- a radio signal, it goes through some sort of WiFi connector, and then it has to go through some more or less complicated path to get to a high-speed fiber that sends it out to a search engine or a retailer that you're trying to buy something from or a social networking data center or what have you. So, yes, there are several steps along the way.

CHMN. CHENAL: Member Riggins.

MEMBER RIGGINS: In general, historically, do these data centers develop the full buildout immediately, or do you sometimes see where they develop portions of the project and then expand as the demand grows?

MR. FAIRFAX: So 20 years ago, there was a

constant theme in the data center world that they would design for a certain amount of power. Let me say 10 megawatts. That would be a very large data center back then. And they thought they would be there in three years. Well, because the processing equipment got more and more efficient, they might not ever get to 10 megawatts. Or the other thing that would happen is they would, in fact, grow so fast that they couldn't fill all the floor space because they used up 10 megawatts, but they hadn't used all the square footage of the floor space. So there were sort of errors in either direction.

These days, it's much more common, particularly with the hyperscale facilities, they don't put, you know, 100 megawatts in one building. Typically, the buildings contain what they call data halls, and a data hall might be a few megawatts. It varies, depending on design. But on day one, when that data center goes live, if you will, some number of data halls will be fully populated, and they'll be right online in pretty much full capacity. But then they build more data halls as they go along, so each hall on these big facilities use close to full capacity.

But, yeah, they don't build 500 megawatts and do, you know, if we build it, they will come. They do it a bit at a time.

MEMBER RIGGINS: Thank you.

CHMN. CHENAL: It looks like we're back to Mr. Sundlof for a question and resume the testimony. His powerful direct examination. Are you going to charge the client for the last hour and a half of direct examination?

Please proceed. We're actually looking at Exhibit 53.

Q. BY MR. SUNDLOF: Well, you've talked about most of Exhibit 53, which is drivers toward hyperscale data centers. Is there anything else you want to add?

A. Yes. I've talked about data halls, cooling methodology. We've talked quite a bit about power and real estate.

But I didn't touch on this software resiliency. So let's pick a social media site. This all just goes through search engines or applications, so I'll pick on social media.

If a social media data center goes down, the user generally doesn't know it because they have a network around the country and around the globe. And so if you notice anything, you'll notice that the page takes a little longer to load, maybe a few tenths of a second longer to load or a second longer to load. And that's because they are running multiple instances of the same

software with access to the same data center at multiple data centers around the world.

Big financial firms do this for their most critical data. It's expensive, so they don't do it for everything. But let's say they're trading stocks and might have some billions of dollars at risk at any one moment, they just can't tolerate losing that. And so they'll actually have synchronized data centers. And even if one goes down, the show goes on. So that's what I mean when I talk about software resiliency.

Q. Mr. Fairfax, let me just kind of conclude. Can you predict the use of power as it relates to the growth of data centers?

A. Only in the broad brush terms, such as we showed earlier. Basically, we can make projections based upon the trends that we see today. What I can't predict is either big upsets, due to an economic shock or something like that, or there can also be some marvelous new application that none of us here have thought about. As I mentioned earlier, no one knew what Facebook was. There was nothing like it 20 years ago. And now, it connects a big fraction of the human race. So if someone else comes along with some other similarly great and wonderful idea, you could see that curve get much steeper than what we're showing here.

So in that sense, no, I can't predict it with any accuracy.

Q. Better technologies might be more power-efficient on the horizon?

A. Oh, that's happening constantly. Servers in data centers are typically replaced every 18 months. And it's not because they're worn out. It's because the new servers are that much faster and that much more efficient that it actually pays them to going to the expense of changing them out.

Q. I don't know if you were here, but the witness showed us some examples of high-rise data centers in other places. I don't have a picture, but describe what these look like inside. What's the floor plate like and what's the height?

A. Modern data centers involve racks of equipment. The shape of the rack is left over from telephone company days. So they're called a 19-inch rack. 19 inches is what the AT&T and the Bell companies used. But they have 20 or 50 racks in a row, and then they might have 100 rows of these things, so you see racks and racks and racks just on and on and on at data centers.

Typically, 20 years ago, they were built on what was called the raised floor. It was just that. It was a floor that was raised 1 to 4 feet in the air. And

the cool air was shoved up in the floor and then came up to cool the equipment. That's expensive.

And so these days, most data centers, the racks are sitting on concrete. So that means all the power, all the cooling, all the fiber optics for connectivity, all the Ethernet cables, all that has to go overhead. So while the racks are 6 to 8 feet tall, the floors tend to be about 30 feet tall in order to allow room for all this other equipment that's overhead. So, for example, a data center going up in Singapore, it's only 5 or 6 floors, but it's something like 150 feet. They're tall floors.

Q. And we saw one picture with windows in it. Is it common to have windows in data centers?

A. There are real windows in that very small portion of the data center where people have offices. And that's the small part.

Other than that, when you see windows on the side of a data center, they're usually fake. They're there to make it look unobtrusive so that you don't notice this big ugly metal building. It looks more like a standard office building or commercial building.

Q. So you're not going to see a big sign that says Data Center Here?

A. No. I am an expert at this, so I spot them. There are telltale signs. But no, they go out of their

way to be unobtrusive.

MR. SUNDLOF: I don't have any other questions of this witness.

Oh, I have one more.

Q. BY MR. SUNDLOF: Member Haenichen brought up the communications issue. What kind of communications infrastructure would you need to come in and out of a 4- or 500 megawatt hyperdata center?

A. It will be primarily fiber optic, perhaps some coaxial-type things. It's not unusual for data centers to have -- well, in fact, always, data centers will have multiple providers. So they won't just buy fiber from one provider. They'll buy it from three or five or more for the same reason. They cannot tolerate to be out of business. So if a backhoe cuts a cable in one place, the data center goes on.

They also buy satellite connections. That's sort of an extreme backup because there are delays associated with getting to and from a satellite. But they always have multiple means, and it's typically these days some sort of cable, a fiber cable or Ethernet-type cable.

MR. SUNDLOF: I have no other questions, Your Honor.

CHMN. CHENAL: I have one more.

I think you touched on, Mr. Fairfax, security against, say, terrorist intentions. I guess part of that concern is mitigated because a lot of the data is in different places. But in terms of protecting these facilities, what kind of security is in place to avoid terrorist activities?

MR. FAIRFAX: Again, I don't advertise myself as a security expert, but I see these things. I notice them. It's usually multiple layers. So there will be a perimeter security of some sort. High fences, monitoring, cameras, all of that. And once you get over the fence, you're still not near the data center. You have some distance to travel where it's on open ground where it's hard to conceal yourself.

The gates. I've been at data centers where the front gate would literally stop a tank. Again, because there's so much concentrated in one area, they can afford to spend money for really high-grade security.

Oftentimes, the workforce in a data center, the biggest single element of the workforce are the security people. It doesn't take many people to operate one of these facilities once it's built. They're largely automatic. But you do need to provide security, so you have a substantial population of security people, both patrolling and managing the entry and exit points.

And then there's a lot of architectural features that are put in, like curves in the road so a vehicle can't get up to a high rate of speed and things that look potted plants but are actually very substantial concrete barriers that most vehicles couldn't get past. So they use a lot of things. Again, most of it is deliberately not obvious. They tend to make it look nice and make it just look like part of the landscaping so that it doesn't look like the fortress that it is.

CHMN. CHENAL: Any further questions from the Committee?

(No response.)

CHMN. CHENAL: Mr. Taebel, do you have any questions?

MR. TAEBEL: One question, Mr. Chairman. Thank you.

CROSS-EXAMINATION

BY MR. TAEBEL:

Q. Mr. Fairfax, you had mentioned that the servers sort of have the ability to throttle down their use if the demand is low. Can you speak just a little bit to sort of the relationship for a hyperscale facility between sort of the peak demand and more of the average demand.

A. That really varies from facility to facility. So, of course, the owners of the facility want to keep the equipment not 100 percent utilized, but highly utilized. They always have to have some buffer.

I mentioned earlier a data center that simulated new CPU chips, new integrated circuits. That facility was running close to 100 percent all the time, 24/7. Something like, let's say, a social media site, it depends upon where the daylight is at that point. Who's online, how many people are online, and what they're doing. So it really varies a lot. It's hard to give a simple answer to that question.

MR. TAEBEL: Thank you.

CHMN. CHENAL: All right. Mr. Fairfax, thank you for your testimony. I found it very interesting to hear and really appreciate you coming to provide it to us. Thank you.

MR. FAIRFAX: It was my pleasure. Thank you.

CHMN. CHENAL: Thanks.

(The witness was excused.)

CHMN. CHENAL: Mr. Sundlof, it's time to maybe take a break. We've been at it for over an hour, an hour and 15 minutes or so. And since we're finished with Mr. Fairfax, who will your next witness be?

MR. SUNDLOF: Our next witness will be Samantha

Horgen. And that is our last witness, and that is our public involvement witness.

CHMN. CHENAL: Let's take a 20-minute break, and then we'll resume and carry on as far as we go. Thank you.

(A recess was taken from 4:02 p.m. to 4:29 p.m.)

CHMN. CHENAL: Let's complete the afternoon portion of the hearing.

We finished with Mr. Fairfax, and now we'll begin with Ms. Horgen.

So, Mr. Sundlof, if you want to proceed with your next witness, we can swear her in.

MR. SUNDLOF: We'd like to call Samantha Horgen.

CHMN. CHENAL: Ms. Horgen, would you prefer an oath or affirmation?

MS. HORGEN: Oath, please.

SAMANTHA HORGEN,

called as a witness herein, having been first duly sworn by the Chairman to speak the whole truth and nothing but the truth, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUNDLOF:

Q. Please state your name and your professional affiliation.

A. My name is Samantha Horgen, and I'm employed by SRP as a public involvement siting representative.

Q. Is this your first time testifying before the Committee?

A. Yes, it is.

Q. Tell me what you're job is. What is a public involvement siting representative?

A. My job pursues constructive communication and interaction with the public on a variety of projects. The projects could include siting new infrastructure, pole replacements, 69kV subtransmission projects, or even wellsite expansion projects.

For these types of projects, we listen to the community, try to understand what their concerns are, and pass that along to our project team and management. I remain the point of contact for most of these projects

from the very beginning of the project to the very end until it goes into construction or into service.

I also responded to a variety of inquiries from the public on an SRP hotline, this particular number throughout that service territory, and it usually is relating to existing facilities or future facilities.

Q. Exhibit 42 is a summary of your background. Can you expand on that?

A. Yes. As noted on SRP-42, I have a Bachelor of Science degree in business management from ASU. I also have a master's degree in business administration from Western International University.

I've been with SRP for 16 years. And public involvement is really unique. We have the great opportunity to be able to look at a project from the customers' point of view while still trying to work towards accomplishing that goal of getting the project completed.

Q. And what is your role with respect to Project Red Hawk?

A. I'm the lead in facilitating the public outreach for this project. With the help of a really great team, I worked with multifunctional departments within SRP as well as our consultant ENValue.

I also coordinated the interactions with the

public and worked under the direction of the project manager and project team.

Q. Okay. So describe the public process that you conducted in this case.

A. Well, really, as typical with any type of SRP project, we did our public project very robust and inclusive with all the public. I believe we reached out to all parties who might have an interest in this project.

Q. Let's start from the beginning. What did you do to announce the project to the public?

A. We launched the project on August 21st of this year. On that date, we sent postcards out to the property owners within a half mile of the 187-acre project site.

Exhibit 43 is a map showing the half-mile square area of where we sent our postcards. This notification area is identified in red.

In all, we sent 1,520 postcards. And a copy of the postcard is also shown as Exhibit SRP-44 on your left screen, and the postcard is also contained in the application.

Q. It says SRP Allium Project. What's that?

A. Well, good question.

So, initially, the postcard went out as SRP

Allium Project. The customer requested that name initially. But after that postcard was sent out, they requested that we change the name to Project Red Hawk. We did this by making this as seamless as we could. We actually changed our website to reflect that the project was formally known as Allium. We also included this on our second postcard as "formally known as Allium." And any callers that called us or left a website comment, we responded to them with the same, formally known as Allium.

Now, Allium was the original name. And I believe the reason that it was changed is because Allium was actually the builder or the person that was going to build their data center. And generally, they do not like to name a project after the builder, and so they changed the name.

CHMN. CHENAL: So the super secret customer, the subsidiary of Google that's going to do the project, is Allium?

MR. SUNDLOF: There was some secrecy involved, Mr. Chairman.

Q. BY MR. SUNDLOF: Okay. You said you announced the project on August 21.

What else did you do to announce the project?

A. We activated our website. And over time, we

did update the website to include the facility simulations which you have seen. We also added additional map details to make the project a little bit clearer. The postcards all referred to our website and our dedicated hotline number for public inquiries and public comments.

Q. Did you take proactive steps other than sending out the postcard, proactive steps to contact interested parties?

A. Yes. After public launch, we began to proactively contact key stakeholders in the notification area. The stakeholders that we reached out to were identified as significant businesses, developers bordering the project site, or schools nearby. And we also contacted the property management for these subdivisions that you see here to the north.

SRP also contacted the public officials representing the general area as well as our corporation commissioners and Staff.

Q. Were you able to actually make contact with all the key stakeholders that you identified?

A. Yes. We contacted all the key stakeholders by phone or by email. And we asked if they received our initial postcard. If not, we did email that to them. We also asked if they had any questions, concerns about the

project. We also encouraged them to view the website for any project updates and provided that dedicated hotline number.

Q. The application in this case was filed on September 23rd. What did you do after that time?

A. After we filed the CEC, on September 25th, we sent an eblast, which we just call -- is really an email. And we sent the email to those who contacted us on the website and to those who we had actually proactively reached out at that point. We sent them a copy of the postcard, the second postcard that was going to be coming out in advance.

Q. You said an eblast. Who gets this eblast?

A. Anybody that contacted us by website, we sent them an email. And we also sent those who we, again, proactively reached out. Those bordering landowners that we talked to, any of the schools that we had talked to at that point, all of them received the email with the second postcard.

And the second postcard was actually mailed the following day, September 26th, to the exact same mailing address as the first one, with the exception that I did add an additional address by request of a landowner.

The second postcard is shown on Exhibit SRP-46 and is in the supplemental material.

Additionally, we did call the website commenters and anybody who called our hotline to provide the updated information that was going to be on our website because at this point, in the second postcard, we did have more visual renderings posted. We wanted to make sure they were aware of that.

Q. What else happened around that time?

A. We issued a news release describing the project. We invited the public to the public open house that was going to be October 14th. And we also included information about the project.

And on September 28th, we published the formal Notice of Hearing in The Arizona Republic and in the East Valley Tribune on September 29th.

Q. Did you hold the open house?

A. We did.

Q. Okay. Well, tell us about it.

A. Okay. So we held the open house on the evening of October 14th, 2019, from 5 p.m. to 7 p.m. It was actually held at the Paloma Community and Church soccer complex. This is located just adjacent to the project site here.

And there were 30 people who attended our open house. Most of them were the homeowners from the northern end of the project. Exhibit SRP-45 shows the

homes owned by the attendees. We've identified them here in green.

Q. Did anybody attend the open house from the east or the south or the west?

A. Yes. As we note on Exhibit SRP-45, there was one landowner that did attend from the east. You can see here, it's identified as a green box or green square.

And I would like to point out, we did not have anybody from the south or the west that I'm aware of. But I would like to point out that we did not have any opposition from the adjoining or bordering landowners nor did we have any opposition from the schools or expressed any opposition from the schools.

Q. Okay. Now, you had public comments at the open house, and you also had comments on the hotline or written comments on the website. Can you describe the general tenor of those public comments that you did receive?

A. Yes. The main issue that we received from the very beginning to kind of the open house portion is the visual impact of the switchyard. And although the homes are adjacent to the existing SRP transmission corridor, there was some concern about the view of the switchyard and its location and proximity to the neighborhood.

I will say that you've probably seen some of

the renderings, but without having any kind of building renderings next to the website, it does appear very stark in its natural form there. So maybe if we had some building renderings, it wouldn't have been such a center focus of this project.

Q. Is SRP willing to mitigate this concern?

A. Yes. SRP is open to screening the north side of the switchyard.

Q. Okay. Can you summarize your overall public outreach efforts.

A. Sure.

As summarized by Exhibit SRP-47, we did the following:

We had 44 jurisdictional briefings with elected and/or staff.

On October 14th, 2019, we had an open house of 30 attendees.

We had 25 calls or emails for proactive outreach.

On August 21st, 2019, we sent 1,520 postcards, and this was actually launching the project.

On September 26th, 2019, we sent out a second postcard to 1,521. And that was announcing the filing, inviting them to the open house as well for the second postcard.

On September 25th, 2019, we had 14 emails that we sent an update to, which we called one eblast.

From the very beginning of the project to, I would say, through October 21st -- and that is actually the wrong date. So just as a correction, it's not 10/28. It's 10/21 -- we had 819 visits to the website. And we had 29 comments to the website and three callers to our hotline.

Q. Let me go to other indications of support. What other indications of support have you received?

A. Yes. We received a letter from the City of Mesa supporting the project. This is shown on the screen as Exhibit SRP-48 on your left side.

We also received a letter of support from the Greater Phoenix Economic Council, Mesa Chamber of Commerce, Phoenix East Valley Partnership, Tech Council, and Williams Aviation Consultants.

Copies of these letters are in your exhibit notebook, and they're designated as SRP-58.

Q. All right. Let me turn to the Notice of Hearing. Did you publish the Notice of Hearing signed by the chairman?

A. Yes. It's noted as Exhibit SRP-60.

Q. And where did you publish it?

A. We published in The Arizona Republic and East

Valley Tribune.

Q. And are affidavits of publication attached as Exhibit 55 in the book?

A. Yes, SRP-55.

Q. Did you also do mailings to affected jurisdictions?

A. Yes, we did. To City of Mesa and Maricopa County. And that's SRP-56.

Q. Does this complete your testimony?

A. Yes.

Q. That wasn't so bad. No further questions.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: Excuse me, Ms. Horgen. Did you have a copy of the application posted on the project website?

MS. HORGEN: Yes, a copy of the CEC application is posted on the website.

MEMBER WOODALL: And at your open house, what excerpts from the application did you have available for members of the public? In other words, did you have copies of the potential transmission structures?

MS. HORGEN: Yes. We had all the renderings, the simulations that you guys previously saw, on large poster boards so they could see them.

We walked them through basically what we know

from the project now. We walked them from the beginning to the very end, even including the hearing and next steps for this project. So it would start the hearing and then move to the ACC.

MEMBER WOODALL: So you had copies of the --

MS. HORGEN: We did not have copies of the application, but we had simulations and the types of poles that would be put in. We had what a typical substation might look like and what a typical switchyard might look like.

MEMBER WOODALL: And I believe in the application, in Exhibit maybe G, you have diagrams of potential transmission structures. Those were available at the open house?

MS. HORGEN: I'm not aware if those are the ones.

I'm getting a nod that yes, those are the ones.

MEMBER WOODALL: Thank you. That's all I have. Thank you, ma'am.

CHMN. CHENAL: Yes, Member Gentles.

MEMBER GENTLES: Mr. Chair, thank you.

Just a couple questions. Let's see. Going back to that slide that shows the aggregate number of households contacted, 1,521, how does that relate to the total number of households in the half-mile square

radius?

MS. HORGEN: That's actually encompassing the entire notification area. So on our total mailing list, we had 1,521 for the second postcard. It's not identifying if it's households or if it's landowner, developer.

MEMBER GENTLES: So how many households in that half-mile radius?

MS. HORGEN: How many households are there?

MEMBER GENTLES: Uh-huh.

MS. HORGEN: I don't know.

MEMBER GENTLES: So you wouldn't be able to tell me what percentage that you reached with those two mailings?

MS. HORGEN: No.

Q. BY MR. SUNDLOF: You sent it to every parcel in the half-mile area; right?

A. Within a half-mile area, we sent it to every single parcel. And as far as the homeowners, we also did contact the property management, specifically, the property management to the north, Desert Morrison Place. Speaking with their property manager, they were going to send it on what they called a residential portal. And it serves as like an email address for them. And so that actually went -- she assured me that that would actually

go to all the residents, which I felt good about because then we cover even a bigger base. Rather than just a half mile, we actually reached any parcels or any portions that were cut off, if that makes sense.

MEMBER GENTLES: Can you say that again. Which portals?

MS. HORGEN: Oh, no. So the property management company had a system in place where --

MEMBER GENTLES: So the HOA in that area?

MS. HORGEN: Yes. So it was a system in place to provide any information that they had to their community. And so we called them. They said, We'll add this and send the postcard on through our portal. And so I feel like our reach was a little farther than really just a half mile to the residential.

MEMBER GENTLES: So are you suggesting that you reached 100 percent of the households in that half mile?

MS. HORGEN: I can't guarantee that, but I would say that our efforts were trying to reach as far as we could.

MEMBER GENTLES: Okay. Thank you.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So at the open house, were the 30 people that were there, were they aware that this was going to be a data center?

MS. HORGEN: Yes.

MEMBER HAMWAY: So they did know a data center?

MS. HORGEN: Yes.

MEMBER HAMWAY: And were they aware that there were going to be buildings of potential height of 150 feet?

MS. HORGEN: I believe that was explained to them as they walked through our displays. But yes, even on our website, we did post a little caption on the map that says: This does not reflect future buildings or some other infrastructure that may be placed on the property.

Actually, I talked to one customer in particular by phone, and she said, Well, maybe the buildings might actually shield the view of some of the infrastructure.

MEMBER HAMWAY: Oh, they will.

CHMN. CHENAL: Member Hamway, can you use your microphone.

MEMBER HAMWAY: Yes. I'm sorry.

So are we going to be able to see these comments?

MS. HORGEN: I have comments prepared if you'd like to see those.

MEMBER HAMWAY: I'd like to see them.

MS. HORGEN: Sure.

MEMBER GENTLES: Mr. Chair.

CHMN. CHENAL: Member Gentles.

MEMBER GENTLES: So are those the aggregate of all these comments from the open houses and other ...

MS. HORGEN: All of them, all interactions that we've had.

MEMBER GENTLES: And then also your reply to them?

MS. HORGEN: Yes. In kind of bullet form, so it's not the second format. It's really bullet form in response.

MEMBER GENTLES: I had another question, but I can't remember right now, so come back to me.

Oh, I remember.

CHMN. CHENAL: Please proceed.

MEMBER GENTLES: All right. So you sent out a news release.

MS. HORGEN: Yes.

MEMBER GENTLES: And what was the result of that?

MS. HORGEN: We received additional comments through the website. Some said that they were probably going to attend the open house, because it did have the invitation to the open house there. Some said they were

going to make it to the hearing, but nothing significantly different than what we had heard.

MEMBER GENTLES: So was the release published?

MS. HORGEN: Yes.

MEMBER GENTLES: In the East Valley Times or something?

MS. HORGEN: Well, that was where our Notice of Hearing went. I don't know exactly where our -- I don't know where it actually goes. I'm sorry. But there was a news release, which is a typical standard for these types of projects.

MEMBER GENTLES: So I was just wondering if it actually got picked up anywhere.

MS. HORGEN: Like if we dropped it some --

MEMBER GENTLES: If the news release was picked up by a paper or anything like that or news station or -- you know.

MS. HORGEN: No.

MEMBER GENTLES: Okay. Thanks.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: Just one quick follow-up. Was the City of Mesa representatives at your open house?

MS. HORGEN: I don't recall seeing City of Mesa there.

CHMN. CHENAL: Ms. Horgen, looking at

Exhibit 47, can you summarize just generally the nature of the -- to the extent there is opposition to the project, what the opposition consisted of.

MS. HORGEN: Sure.

I had some comments from the public stating that they -- a couple saying they didn't want a project such as this near their neighborhood. But then others were very specific to say that they didn't want the switchyard in particular as close to the neighborhood. Others stated EMF concerns. Some stated property values. By the time they went to the open house, it was more of like an aesthetics, What are you going to do to shield our view? In particular, someone, and I'll quote, said, Can you camouflage or hide it?

CHMN. CHENAL: Did you understand the "it" to be the switchyard?

MS. HORGEN: Hide the switchyard, yes.

CHMN. CHENAL: So you had indicated SRP is willing to somehow screen or camouflage the north side of the switchyard; is that correct?

MS. HORGEN: Correct.

CHMN. CHENAL: And that's a result of the outreach; correct?

MS. HORGEN: Yes.

CHMN. CHENAL: Are there any other mitigation

measures that SRP has decided to take as a result of any of the -- to the extent there's been any opposition or negative comments, are there any other mitigation actions that SRP is willing to take?

MS. HORGEN: Currently, that's the only discussion I've had about a mitigation, is screening the north side.

CHMN. CHENAL: Do you anticipate there to be people at the public comment session this evening at 5:30?

MS. HORGEN: I expect some to come. I know we encouraged them to come at the open house.

CHMN. CHENAL: Thank you.

Member Woodall.

MEMBER WOODALL: Since we're talking about mitigation measures, Mr. Taebel, perhaps, you could tell us if you're putting on a witness some time, whether or not you could make any specific requests of the applicant for mitigation measures relating specifically to the switchyard.

MR. TAEBEL: So, to my knowledge, the City hasn't made any specific requests in terms of mitigation measures.

However, I would make the observation that one of the proposed conditions of the certificate that

ultimately would be issued addresses sort of screening. And the City probably has some comments in terms of the terms of that condition that we'd like to propose.

MEMBER WOODALL: I would encourage you to put those in writing as soon as is practicable so that we can give them our earnest consideration, sir.

MR. TAEBEL: Understood.

CHMN. CHENAL: Yes, Member Gentles.

MEMBER GENTLES: So I do appreciate the volume of outreach that you've shown here. I'm always curious about effectiveness of the outreach. And so, in your estimation, do you believe that your outreach, based on the channels and the total amount of touches that you had, was effective?

MS. HORGEN: I do.

MEMBER GENTLES: Thank you, Mr. Chair.

CHMN. CHENAL: How are you liking the first time up at bat?

MS. HORGEN: Oh, it's fun.

MEMBER GENTLES: Oh, Mr. Chair, I can give her more if you'd like.

CHMN. CHENAL: Oh, we're not finished with Ms. Horgen by any means.

Question: You said you had the comments in a bullet format summary. I assume your attorney will

submit that as an exhibit?

MR. SUNDLOF: Mr. Chairman, we're putting it together right now, and we'll have it before we leave tonight.

CHMN. CHENAL: Very good. And as I cautioned all the other witnesses, maybe not Ms. Pollio, but the other ones, we may have some questions based on that document tomorrow.

MS. HORGEN: Okay.

CHMN. CHENAL: It might provoke some questions.

Mr. Gentles, I think you probably have a few more questions.

MEMBER GENTLES: Well, I didn't read the MIT report, but I'll probably read this pretty closely.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: We don't want to let you off too easy. It's trial by fire here.

Were there any comments or questions about the transformers and poles that were going to be throughout the property? And also the fact that you say that, you know, what's going to go around the transformers and it would be like secure fencing or whatever. Were there any comments by the neighbors on that part?

MS. HORGEN: I didn't get a lot of comments specific to transformers. I did get questions about pole

heights. And then, in a general way, they kind of talked about the concern of EMF related to any of the structure at all.

MEMBER NOLAND: Mr. Chairman, my biggest concern here, and there's probably nothing we can do about it, but the way that these transformers are laid out throughout the property and the number of them and with, you know, cyclone fencing around them and the size, it's so different from what we've done before. And I think it's very, very vague.

CHMN. CHENAL: Yes. And to your point, Member Noland, if I understand, based on the testimony, there could be up to ten circuits emanating from the switchyard. But each circuit could supply -- well, then there would be substations for each of those circuits and any number of buildings that could be provided power from that. It is vague. It's something a little different than we've dealt with in the past.

Member Woodall.

MEMBER NOLAND: Mr. Chairman, can I just follow up?

CHMN. CHENAL: Sure, please.

MEMBER NOLAND: And that's the problem. It's very different without having all of your transformers within the switchyard or one substation area, whatever it

is. I have no idea what this is going to look like, how it's going to be situated. It's real squishy trying to nail down what's going where and what it's going to look like.

So we need to think about that in the future as far as splitting things out from switchyards or from a substation and what part do we play in that, and how much information do you give the public about that and what it's going to look like.

Thank you.

CHMN. CHENAL: Thank you.

Member Woodall.

MEMBER WOODALL: Mr. Taebel, does the City of Mesa have any position with respect to what type of screening, if any, they would find desirable for the transformers, what we're calling the substations?

MR. TAEBEL: I would anticipate that we'll be able to have some testimony about that issue tomorrow.

MEMBER WOODALL: To that extent, I would encourage you to confer with the applicant prior to your testimony to determine if there could be some agreed-upon position of the parties. I mean, I'm not arm-twisting you, but, obviously, if you can chat ahead of time, it's always helpful.

Thank you.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: Mr. Taebel, in their rezoning and development plan, I noticed that Mesa said they can have a fence of 4 feet in height along the perimeter. A secure perimeter fence can be 10 feet in height and made of anti-climb material. And also, their fencing can be any of five different types with a masonry wall, steel anti-climb security fencing, iron or wrought iron, wire mesh, or pipe rail or post-and-rail fencing. It doesn't say that they have to. It just says they may use fences, and they may use any one of those five materials to construct them.

So I think we need to have a little idea of what Mesa normally likes to see in something like a switchyard or these other substations. And are you going to require that with the final development plan, or is it going to be up to the applicant?

MR. TAEBEL: So I just passed some proposed language to my counterparts here with the project in terms of the conditions. And they haven't had an opportunity to review that yet, so I'm working with them on that. Mr. Beatty will be available. I don't know if he'll have an answer to all of these questions.

But in terms of the siting process, there is a

development agreement that's not the same document that you were looking at there, and it's not Exhibit H-1, that talks about the fact that in order to ultimately build on the property, the developer, the data center in this case, will have to go through the typical process or largely the typical process in order to ultimately build out. So there will be a site plan review, a design review, and, ultimately, there will be building permitting.

And so, hopefully, I can have some additional discussions with SRP here, and maybe we can have some additional comments for tomorrow.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So will any of the site review, will they ever go to the level of the council, or are they all done with staff and with the planning and zoning group?

MR. TAEBEL: So the Exhibit H-1, so that went to the city council, and that was approved at a council meeting.

The Development Agreement itself also went to the city council and was approved in an open meeting.

In terms of the future process, most of it is an administrative process. But if I understand, the design review portion does have a public component, and

we can have some additional testimony about that.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Woodall.

MEMBER WOODALL: Just for clarification, I'm not suggesting that you and SRP decide that the transformers will be fenced with block walls with bougainvillea in front because you don't even have the buildings designed yet. And I'm assuming that this is going to be reviewed like an integrated whole. I'm just suggesting that the parties get together to get some gentlemen's understanding about what would be going on. So I just want to make that really clear.

I'm not looking for specific what you're going to do where because you don't even have the buildings yet, and I just want to make that clear.

MR. SUNDLOF: And I just want to mention that --

CHMN. CHENAL: Mr. Sundlof, would you use the microphone.

MR. SUNDLOF: Mr. Taebel just gave us two changes to conditions. And we're okay with those, so I think we're in agreement on how we are going to interact on those issues.

And I don't want to cut off questioning, but ...

CHMN. CHENAL: All right. Let's do it in order because I think we're getting a little afar from Ms. Horgen and her testimony.

You're still up, so we'll keep you there.

MS. HORGEN: Okay.

CHMN. CHENAL: I'm sure Mr. Gentles will have at least one more question for you.

And I want to make sure, Mr. Taebel, if you have any questions, any follow-up questions, of Ms. Horgen, that you have the opportunity to ask those. If you want to do it now, that's fine. If you want to continue with our discussion of the matters we were discussing about Mesa's process, we can do that as well. I just want to make sure you have the opportunity to ask Ms. Horgen any follow-up questions.

MR. TAEBEL: I don't have any questions right this minute.

CHMN. CHENAL: Okay.

Member Noland.

MEMBER NOLAND: I have a question for you, Ms. Horgen. Was there a representative of the Google affiliate at any of these public meetings?

MS. HORGEN: No.

MEMBER NOLAND: So they didn't hear any of the concerns by the neighbors, they weren't there to answer

any of the questions?

MS. HORGEN: I did actually pass along some of the major comments that were being repeated by the public to them, so they were aware of the comments. And, as a matter of fact, I believe I did send them a copy with -- taking out the names and addresses and all that to them at a point in time on the project so they could see what the concerns were.

MEMBER NOLAND: Did you hear back from them?

MS. HORGEN: Really, I think that's kind of where we came up with the wall part of the mitigation. So ...

MEMBER NOLAND: Okay. Thank you.

CHMN. CHENAL: The wall. You mean the screening?

MS. HORGEN: The wall being a mitigating factor.

CHMN. CHENAL: The screening wall for the switchyard, the north side?

MS. HORGEN: Right.

CHMN. CHENAL: Okay. Thank you.

I'm trying to put in words what I'd like to hear some more testimony about tomorrow with respect to the Mesa process. I'll dangerously tell you what's on my mind. And that is that this project is a little bit

different than what we've grappled with before. It basically is kind of a -- I mean, it's like a -- it is, in a sense, like a corridor. But in the past, the corridor that we've created has been, it seems, a little more restricted. I mean, transmission lines, you know, there's some poles going through and some wires. I know there's some substations we've allowed in some previous cases.

But this is 187 acres. And basically, and I understand why, but this is pretty much a blank piece of paper. And when we give the -- assuming we do a CEC, basically, we know where the switchyard will go, and that's about it. We don't know where any of the substations, the poles, the transformers. It's just a little different than something we're used to.

So I'd kind of like to get a little more of a comfort level that the public will have a say in what this thing is going to look like as it develops. And I want to get some comfort from Mesa that there's going to be some control over that process.

And as part of the little concern I have is there's the Development Agreement that's in Exhibit H-1 that seems pretty -- having done that work when I was in private practice, it seems a little open-ended. I mean, it's not very restrictive in what it allows. I just

didn't study it, but I -- we haven't had testimony on it, but it seems pretty open-ended.

So that's my not-very-well-articulated concern, that as a buffer for a very permissive CEC, that I can take comfort -- just speaking for myself, that I can take comfort that the public is going to be somewhat protected because we don't know exactly where all this stuff is going to be located. And I just want to take some comfort in knowing a little better that the processes that Mesa has, the limitations based on this now disclosed additional development agreement, and just to give a little more, I don't know, formality to the process.

Member Gentles.

MEMBER GENTLES: Mr. Chair, so this is -- it's a bit of a leap of faith, "trust me" kind of conversation, if you will. And I don't mean that in any negative way.

From my days working at the Greater Phoenix Economic Council on these site selection projects, I did many of them over the five years I was there. So I understand the need for the veil of secrecy, if you will, until the project is finally announced and more formalized.

I do have the same concern with the public,

that the public has enough information to go on for that very sizable development that's in their backyard. So I have those similar concerns, but I do appreciate the fact that there has to be some still yet confidentiality because of who the client is. But I'm really curious to understand how you communicated that to the public. So I hope we'll see some of that in your responses to their concerns.

CHMN. CHENAL: And I want to also say that I appreciate why there's flexibility needed. So I think that's been well presented, and it's very understandable and it's a given. I don't think that's a problem.

So I'm just wanting more information. You know, it looks like a great project. I just want to make sure that we have a good record and that we have the appropriate conditions, you know, what we need in there. I'm not throwing cold water at all on the project. It's just as you've retired two or three times and keep coming back with projects outside the box, we --

MR. SUNDLOF: I'm not going to announce my retirement this time.

CHMN. CHENAL: This is something we haven't really grappled with. And it's wonderful. It's great. It's thought provoking. So it's not a negative in any sense.

Anyway, those are some comments I had that I wanted to share.

Now, before we leave -- and I'm sure there's still going to be at least one more question for Ms. Horgen. I'm going to provide -- as I do in cases, I'm going to provide you, and I'm going to mark it as Chairman's Exhibit 1, a -- we took your proposed CEC, and I made a few edits, changes, threw in some conditions.

And, again, I want to make this absolutely clear. I'm not proposing these, but these are some conditions that have been in some previous cases, and it's just for discussion. And I can tell you right now that one of them probably is not even necessary on an interconnect. But until we hear the testimony, we really don't know. So that, I'm sure, will not be something that's necessary. The others, maybe, maybe not. There's a few edits to clean things up.

Before we break, I will provide a copy to the court reporter, and I would ask the applicant to -- when we actually start deliberations, I don't know if this is going to be tomorrow afternoon or Thursday morning, but to create what would be on the left-hand side of the screen, and we'll give it -- you're up to Exhibit 60, I believe.

MR. SUNDLOF: We have a new one, Exhibit 61,

that I want to talk about when you're done.

CHMN. CHENAL: So whatever your last exhibit is, we'll make the draft CEC the way you wanted it to read with --

MR. SUNDLOF: Our initial submission.

CHMN. CHENAL: Your initial submission with my edits, if you will, will be the exhibit after your last exhibit. And that will be on the left-hand side of the screen. And then, on the right-hand side of the screen, we'll give that the last exhibit number.

And as we work through, we will have the edits made as we go through the process, and we'll refer to those two exhibits. Let's say it's 62 and 63. And we'll work through that process.

And when we finally vote on the CEC, as soon as we vote in favor of it, what is on the right-hand side of the screen, that last exhibit, will become the final CEC that will be -- changes will be accepted, proofread, and that's what will be finally signed and approved. I think that's the best way to go through the process.

MR. SUNDLOF: That sounds good.

MEMBER WOODALL: Mr. Chairman.

CHMN. CHENAL: Yes, Member Woodall.

MEMBER WOODALL: Are you intending on filing what we call your version of the CEC in the docket? I'm

talking about the Chairman's version.

CHMN. CHENAL: I can do that. I'm going to make it as an exhibit to this hearing.

MEMBER WOODALL: Okay. The issue with that is I don't have it ahead of time, and so my personal request would be I would like to see a printed copy of that before we enter our deliberations. And I would also request in the future that it be filed in the docket because when it's an exhibit to the transcript, it's a little tougher to find for people who may be wandering through eDocket. So that's just a personal request of mine. Thank you.

CHMN. CHENAL: And I will provide you with a written copy before we leave tonight. And that's what I intend to hand out and provide to the court reporter. And in the future, we'll do that as an exhibit in the docket before the hearing.

There's also the Staff's letter of the response to the letter that I always write. And, Mr. Sundlof, is that an exhibit for SRP? Is that in as one of your exhibits?

MR. SUNDLOF: No, it's not, but it needs to be. And I will have that marked as Exhibit 62.

CHMN. CHENAL: Okay. And, again, the two that I just mentioned will be the last two. Your version with

my edits will be the second to last, and then what we end up with will be the last.

MR. SUNDLOF: And I have a new exhibit, 61, when you're ready.

CHMN. CHENAL: That will be fine.

Member Noland.

MEMBER NOLAND: Mr. Taebel, whoever you have here tomorrow, I would like them to be able to answer some specific questions about rezoning, about this rezoning, and also about the development plans that involve the switchyard area. I'd like to know who the applicant was for the rezoning and when it was filed and when the public hearings were held.

MR. TAEBEL: Mr. Chairman, Members of the Committee, I understand the various concerns that have been expressed.

I think Mr. Beatty will be able to testify as to many of these questions. I don't know that I can anticipate that every question that you have may be answered, but we will do our best.

I would point out that I think Exhibit H-1 does contain some of the information that you actually just asked about in terms of the identity of the applicant. That document was prepared by Pew & Lake, a local law firm that does a lot of zoning work. And so some of that

information should already be in the record, and hopefully we can help you look at it.

MEMBER NOLAND: Mr. Chairman, I have read all of H-1, and it's not very specific. It's very vague. And it's the attorney for the applicant, not the applicant. And if you have more information than that -- I would assume Mesa would require to know who is doing a rezoning, who actually owns the land and is doing the rezoning, and who will be held accountable. And it's not going to be the attorney.

MR. TAEBEL: So, again, I think Mr. Beatty can answer some of these questions.

MEMBER NOLAND: Okay.

CHMN. CHENAL: Member Hamway and then Member Woodall.

MEMBER HAMWAY: I'd like to add that I'm interested in the Employment Opportunity District that Mesa has set up and how many you have set up and if they all have the same kind of general requirements for height and setbacks and things like that. So I'm interested in other opportunity zones and the process for creating those.

MR. TAEBEL: I think I'd just ask for the indulgence of the Committee. I mean, I think if we can get some testimony tomorrow, that would be very helpful.

MEMBER WOODALL: And, Mr. Taebel, if I can be excruciatingly blunt, what I'm really interested in is getting an idea of what role and what information the public is going to have in determining what is actually going to be built on this site, including the transformers. So that's what I'm looking for. So to the extent that you can provide whatever detailed public notice, because you've heard several of the Committee members express concerns that we don't know what's going on here.

So I personally want to know how the members of the public in the city of Mesa are going to be apprised of those plans. Is that clear?

MR. TAEBEL: Is it too early to announce my retirement?

(Laughter.)

MEMBER WOODALL: But you understand, there have been several Committee members that have expressed concerns that we don't know. So I want to know what the City of Mesa is doing to make sure its citizens know. It should be pretty easy to do.

MR. TAEBEL: I understand the concern.

CHMN. CHENAL: I hope you can retire more successfully than Mr. Sundlof.

MR. TAEBEL: The trend isn't good.

CHMN. CHENAL: Do we have any more questions for Ms. Horgen?

MEMBER GENTLES: Mr. Chairman, I think she has done a fairly decent job, so I'll yield for now.

MR. SUNDLOF: Mr. Chairman, I have a few more.

CHMN. CHENAL: And in all seriousness, I think we might have some questions after we get the summary tomorrow.

MR. SUNDLOF: So I've got the summary of all the public comments, and it's marked as Exhibit 61.

Q. BY MR. SUNDLOF: And, Ms. Horgen, can you identify Exhibit 61 as your summary of all the public comments and the outreach to the public officials?

A. Yes. SRP Exhibit 61 is going to be the summary of public comments and also those comments and interactions with the corporation commissioners and public officials.

Q. And has that been distributed to the Committee members?

A. Kenda is doing that right now.

Q. Please do so.

CHMN. CHENAL: Any further questions of Ms. Horgen?

MR. SUNDLOF: We will be marking as Exhibit 62 the letter from the ACC Staff.

Q. BY MR. SUNDLOF: And can you confirm that we've received a letter from the ACC Staff? And I know it's not in front of you, but it will be soon.

A. SRP Exhibit 62 will be from ACC Staff.

MR. SUNDLOF: Yes.

I have no further questions.

CHMN. CHENAL: We'll just assume, Ms. Horgen, tomorrow, when we resume testimony, we'll resume with you. And it will simply be any follow-up questions with regard to the chart, SRP Exhibit 61.

MS. HORGEN: Okay.

CHMN. CHENAL: So nothing to worry about. So thank you. You did very well.

MS. HORGEN: Thank you.

CHMN. CHENAL: Let me pass out Chairman's Exhibit 1. I don't have it marked or indicated as such, but this is going to be the CEC with a few edits to the parties, to the Committee, and to the court reporter.

And unless there's anything else we need to talk about -- well, there is one item we need to talk about.

Tomorrow's hearing. We have the tour at 9. We can figure we'll be back, ready to go, comfortably by about 11. Lunch can be either at 11:30 or 12. I think it's probably fair to say we're going to be going into

the afternoon.

Member Noland, you're going to be back with us probably after lunch or maybe by lunch?

MEMBER NOLAND: Not by lunch. Maybe shortly thereafter.

CHMN. CHENAL: What is the Committee's preference as far as when we resume the hearing? Do we want to resume it after we come back from the tour, or would we rather wait until after lunch?

MEMBER WOODALL: I would just as soon we do it when we come back. I think if we do a push here, we could probably get Mesa testimony and the deliberations done in one day, but that's just me.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: Though nobody may want to do this, if you could have lunch a little earlier, like 11:30 or 11:45, then I won't miss much of the testimony. I would appreciate that.

CHMN. CHENAL: We can do that. I think we can do it at 11:30. And then we'll see where we go. We might want to begin deliberations tomorrow. I expressed my preference. But if we have the time, we should probably proceed.

Member Haenichen.

MEMBER HAENICHEN: Did I hear you say you'll have some breakfast tomorrow?

MR. SUNDLOF: We'll have some breakfast for you and coffee and to-go cups.

CHMN. CHENAL: All right. Well, I will pass out my exhibit, and then let's take a -- let's make it a ten-minute break, and then we'll resume with the public comment. So thank you everyone for your cooperation.

(A recess was taken from 5:24 p.m. to 5:38 p.m.)

CHMN. CHENAL: Good evening, everybody. This is the time set for the public comment for the Red Hawk Project, the SRP Red Hawk Project.

We've had hearings today. They're going to continue to tomorrow, and they could continue into Thursday for deliberations.

And the purpose of the application is to obtain a Certificate of Environmental Compatibility, that if this Committee votes in favor of it, to authorize construction of the facilities requested in the application with conditions placed covering certain factors.

As part of our hearings -- and my name is Tom Chenal. I chair the Committee.

As part of the process, we take public comment.

We take public comment the evening of the first day of the hearing, and we are prepared to take public comment at other times throughout the hearing as necessary to accommodate people's schedules.

So we have a number of people here tonight who wish to speak. We also have a number of written comment sheets. People do not want to speak, but they have left their written comments, which I'll summarize very briefly at the end. And if people change their mind and want to come up and speak, they can do so.

This is a very important part of the process. It's not evidence, but it's something that we take to heart. And it shapes our questions and the evidence that we ask the applicant to provide, and it shapes the conditions that we impose upon any certificate of compatibility that we do issue.

So in no particular order -- and these were handed to me -- I'm just going to read off starting with the first person to come up. And introduce yourself and your address, and we have a way to contact you. And I want to make sure we have that for each person because, in the future, if there's any changes made to the -- if the applicant comes back down the road a year or two or three, whatever, and asks to change the Certificate of Environmental Compatibility, if we issue one, there's a

condition that they have to notify you that they're seeking a change and give you notice of the hearing before the Arizona Corporation Commission.

So we would ask you to keep your comments to around three minutes. I'm not going to put a stopwatch on anybody, but we have a number of people that wish to speak and that we want to hear from. So I would ask you to keep your comments to about three minutes.

We're not supposed to interact with you. So we'll listen to your comments, but we're not supposed to ask questions of you and get into an exchange back and forth. But be advised we will be taking notes, and we will take the information you give us and use it when we continue our hearing tomorrow.

And I'm sorry if I'm going to butcher some of your names, the pronunciation.

Adam Baum.

If you would be kind enough to come up to the podium, sir, and provide your name and address. And then we're happy to hear your comment, sir.

MR. BAUM: So my name is Adam Baum. I reside at 7221 East Pampa Avenue in Mesa. I'm approximately three blocks up from the affected area.

My comments are around the siting of the switchyard. I did attend the October open house, and the

person I talked to, I would say, wasn't as forthcoming with information as could have been. It was sort of like peeling back the onion. The part about how that particular site was chosen, and the answer was, Well, it was the most technically feasible to be done.

True, but the site could be moved further south, either south of the Cheap Smart Storage facility or even to the far corner of Sossaman and Elliot. It's really just cost. And I know SRP is obligated to put in power, but the cost could be offset with Google putting in some of the cost sharing and move it out away from the housing.

The other thing I would like to stress is if it does have to go there, could there be some sort of visual interface between the switchyard and the housing developments.

You can't tell on this map, but that top yellow line there roughly is a berm that people jog on. It's a jogging path. It's right under the easement before the line. It's just actually to the south of it. People walk their dogs, they run, they bike out there. So something that actually separates between the people and the switchyard would be greatly appreciated.

CHMN. CHENAL: Thank you, Mr. Baum.

I'm going to violate my own rule. Can you tell

us where you live?

MR. BAUM: Let's see. So there's 72nd, which is this street up here. And I am actually in the -- my neighbors across the street are far enough away they did not get the postcard. I am within the magic footage, whatever distance there is. So I'm just on that line.

CHMN. CHENAL: Thank you, very much, sir.

And, again, we'll follow up questions with the applicant based on the information we hear this evening. So don't take our lack of follow-up questions with you as not interested in your comments. I want to make that point clear to everybody. We are very interested in what you have to say, so thank you.

MEMBER GENTLES: Mr. Chair, so we're not allowed to ask any questions?

CHMN. CHENAL: We're really not supposed to do that.

MEMBER GENTLES: So we can ask them tomorrow?

CHMN. CHENAL: We can ask the applicant tomorrow.

As a courtesy to the people here, I don't think we should get into follow-up questions of the applicant right now, but take copious notes for tomorrow.

All right. Mr. Baum, thank you.

Next, Ms. Meribeth Bosse.

And if I could ask you to state your name and address.

MS. BOSSE: Sure. Meribeth Bosse. And our address is 7159 East Peralta Circle. And I'll show you on the map.

CHMN. CHENAL: Please do.

MS. BOSSE: My house is right here. So our back window looks out to where this proposed site will be. And so we went to the open house, forum, whatever you want to call it, and actually was taken around by the project manager of SRP. And none of our questions could be answered very well. Where is this going to go? Well, we can't really say. This is the proposed site, but it's up to Google. We heard that a bunch of times. It's up to Google. Are they going to do any type of -- it's up to Google. It's up to the customer, even though we're customers as well.

I just want to go on the record in saying that I'm against this. I've heard people say they haven't heard anything against it. I want to go on the record saying I'm not for this. When we bought our house, we didn't want to look at a transformer or whatever it's called. Electrical -- there's already the power lines, and we don't want to look at any more than that.

So I just want to go on the record as saying

I'm not for it. However, I do feel like we're helpless to stop it. It's going to happen. I feel like we can't make it stop. So I just want to reiterate what Mr. -- I think it was Baum said, that we would like to at least not have it right up against our homes where the walking path is, where all that is that we use. Put it behind the school. Put it further down.

I know there's more of a cost, but I believe Google -- or I think we were told Google is paying for all of that. And a show of good faith, good neighbor, and move it far away and not right in our face. Like here you go. We're going to put that right there and you can look at it. So I made a T-shirt. It says, Keep Desert Place Great. Build a Wall.

And I've driven around and looked. There's other places where they have a wall, and then there's trees and just not make it so obvious. Because the pictures that they show, it's just like barren. Right there, look at it.

So I would like to say, one, don't have it. Two, if we're going to get stuck with it, please put it as far away from us as possible.

CHMN. CHENAL: Thank you, Ms. Bosse.

Next, Mr. Brian Bosse.

MR. BOSSE: So Meribeth is my wife, and I'm up

here because she made me come up here.

(Laughter.)

MR. BOSSE: So I'll reiterate some of the things she said. So I actually live in the same home with her. So it is right there.

I would like to reiterate the fact that, yeah, we've heard the testimony this morning by the SRP attorneys that there's been very little or no opposition to this. It's ridiculous. At least maybe their sample space of where they're taking that from doesn't include me or doesn't include that open house that happened in October. Certainly, we've expressed our concerns or our disapproval of it.

We were trying to figure out, what can we do to help mitigate the impact of this. My wife has already pointed out that the answers were not forthcoming. SRP clearly passed the buck. And it may be that SRP has no say in any of this. But they clearly put it onto the new owners of that piece of property that this is up to them and what they're going to do.

Now, the people were very nice, but, again, it wasn't very informative, and we were basically being told, Here is what's going to happen. And I do appreciate that. You know, no punches were pulled there. As Meribeth said, the pictures were very stark, and you

could see exactly what was going to go in.

So I want to also say yes, we're opposed. We're against it. I do think that it would be appropriate and show goodwill towards being a good neighbor to take into consideration where they put this substation. It doesn't have to go where it is placed. As the previous gentleman, Mr. Baum, mentioned, I can see why from a financial standpoint, that's the cheapest place to put it. But it also happens to have the biggest impact on the closest neighbors around. And there's plenty of areas around there where it wouldn't impact neighbors at all if it were moved. And so our preference would be for it to be moved.

But then also, some type of beautification take place of where they do that. And I would hope that the new owners of the property would consider that. I don't know how much of that rests with SRP. And I'm not quite sure what the criteria is for environmental compatibility. Clearly, it's going to stick out like a sore thumb in the area. Part of the reason we bought where we bought is we thought it was just a beautiful area to be in. And now that's changed.

I hear it's selfish. I mean, my property values will be impacted significantly by this. We've already sat and talked about do we need to sell? And

that's a terrible thing. We just moved there in July of '18, and we love the community and we love our neighbors. And now we're having those kinds of conversations. And I just hope that's all taken into consideration.

We would love to cooperate and work with SRP, work with the new owners of that property, and hopefully we can show ourselves to be good neighbors and to be considerate of one another here. And that's what I think our ask is here.

I'm open to any questions. I know you said no, but I'll answer questions because ...

CHMN. CHENAL: You have to be careful what you ask for. Besides the fact that we're not allowed to do it, it could go on and be a long night.

Thanks, Mr. Bosse. We appreciate very much you taking the time to come out here.

MR. BOSSE: Thank you very much.

CHMN. CHENAL: Next in my stack of people to speak would be Joshua Snyder.

And, Mr. Snyder, if you could give your name and address and also indicate where you live in relation to the project, that would be helpful. Thank you.

MR. SNYDER: My name is Joshua Snyder. I live at 7553 East Plata Avenue. Same area as the last three speakers, but I'm a little bit more up in this general

area.

CHMN. CHENAL: Thank you.

MR. SNYDER: So not to sound like a broken record, obviously, the location of the switchyard is a very important thing in this matter being that our entire neighborhood would have to look at it. We are very open to the project and understand why it has to happen; but are, again, at the same time, against it because of the location of the switchyard and just the overall site.

So not to go on again about those things that you already heard about three times now.

Other things to consider is we do have a central park there, which, as you see in the middle, it's just brown right now in the picture. But there are a lot of activities that do go on there such as sports. There's tons of kids in the neighborhood. And one of the things is, even though my wife and I do not have kids, is the safety of the switchyard. Someone mentioned that there is no wall. We saw a chain link fence which could easily be cut. Kids could get into it if they so chose to. Teenagers do what teenagers do, that sort of thing.

But at the same time, in that area, there's a lot of unused space that if you actually stand in that area, even to the very far north on what is Guadalupe there, you can see that, what would be the switchyard.

So, yes, it is unsightly, but there's a lot of potential there for our neighborhood to grow. And something that we would not want to look at, really, is that switchyard.

Secondly, with our neighborhood growing. In the top far corner, you see a lot of brown area there on the southwest corner of Sossaman and Guadalupe is going to be a new neighborhood or a new builder coming in. And so to take into consideration their property values as well would be the switchyard and how would that impact the potential buyer of that land and affecting our neighborhood.

You know, when I was in school, I was a biology major, so a lot of the science behind what a switchyard does and everything there caught my attention.

And to the south of Elliot there, there's a farmland. And I don't know technically what they do. I know they do dairy, but I don't know if they do any sort of slaughtering or anything like that there. But the fact that our food comes from there kind of concerned me because, yes, they say that the electrical impact is not significant to make any sort of health risk, but we don't really know that. I couldn't find any major studies on that by any means. So I would be open to hearing those sort of things if that is something that's available.

And I think I covered everything my wife wants

me to say.

Thank you very much for your time.

CHMN. CHENAL: Thank you. Thank you very much.

Next person, Mr. Eric Winters.

MR. WINTERS: Good evening. My name is Eric Winters, 7234 East Peralta, Mesa. And I'm right here.

So Peralta is the southernmost east-west street in our community. And I'm south-facing. So my understanding from what I learned when I attended the SRP open house meeting a month ago is that I'm going to be looking at this.

So my wife and I, of course, do oppose this. As you can imagine, as the speakers before me said, we built that home. We moved in May of '17. Had we known that this was going to be there, never would have bought the home.

So we're talking about site planning of a switchyard that I understand is necessary for Google's use. Again, this is a permanent fixture, but so is my home, so are our neighbors' homes. And so I hope that we can find some sort of common ground that we can all be happy.

I'm a civil engineer by profession. I do land development. I've done that for almost 12 years in the East Valley. So I've been in several meetings like this

one where the neighbors get to speak. The City is there, other interested parties such as the utility company tonight. But I've never been in this position as a neighbor concerned for my property, so here I am today.

But I bring it up because in almost every case, everyone involved comes together, and everyone walks away happy. So I understand Google purchased the property. They have the right to construct there as long as they meet codes and zoning and everything else set forth by the City of Mesa. I understand that their use requires SRP infrastructure.

Do I wish that this is all gone? Yes. But I'm a realist. I understand that it's most likely going to happen. So I ask that we work together and find a place for this switchyard that, again, my wife and I and my neighbors won't have to look at every day. I understand it's a necessity for Google's operation, but it is an eyesore to the public. So I would hope that we could find a location better than what's proposed there.

I understand -- I would ask, like has been said before, that it get pushed further south into the property. I understand that the runs are longer from the existing infrastructure. I understand that's more money. But I hope that Google would do that and be a good neighbor to us all so we can all coexist.

That's it.

CHMN. CHENAL: Thank you very much, sir.

Next, Mr. Rob Gilligan.

MR. GILLIGAN: Hi. My name is Rob Gilligan. I live at 7102 East Plata Avenue. That would be roughly here.

I know that one of the items that was listed on the board at the information meeting was the criteria being visual and aesthetic. I don't know how anyone could consider a switchyard aesthetically pleasing to anyone. I'm sure none of you would want it next to your home, and I'm surprised that it's even being considered to be immediately adjacent to a residential community.

Now, as others have stated, there are other locations here. I don't think it's more expensive than is necessary to comply with everyone else's needs, not just Google's. And why don't they put it in the middle of their building structure so that it is not any more visible to anyone else on any road than it needs to be.

At the very least, it could be anywhere on the far west border of that property and be significantly less, at least judging by the visuals that SRP provided, which showed a structure far in excess of what I had anticipated when I got the announcement. This is a pretty unsightly thing. It's high. It's not just

towers. There seem to be a whole lot of adjacent items around it that are -- I don't know whether they are additional transformers or whatever. It looks less like a server farm and more like a transformer farm.

It's pretty ugly, even by their own visuals that they sent. And it would seem to me that the City would want to make that as unobtrusive as possible to the residents who are already there. And I think it's, at the very least, doable if they can't put it somewhere else entirely, then just pipe in their electric.

But this is beyond me why they would propose to put it in such a negatively impacting location. It's offensive, really.

Thank you.

Oh, and how disingenuous it is that people are saying there's been no objection? I would ask any one of the 600 homeowners in our Desert Place community, there isn't anybody who's in favor of this. And I know I voiced my objection to it at that informational meeting, as did others who were there. So that's -- you know, I mean the politest thing I can say about that opinion was they were misinformed.

CHMN. CHENAL: Thank you.

Next, Mr. Michael Park.

MR. PARK: Hi. My name's Mike Park. I live at

7160 East Portobello, about I think three streets away. Right here.

I also went to the informational meeting and expressed my opposition at that point. So, again, like everybody else, I don't know where this is coming from that there was very little opposition.

I have a similar comment as everybody else. I strongly oppose this location. I think it's ridiculous. I am a civil engineer, just like Eric, I think it is. I worked in land development a long time. I've presented a lot of projects to planning commissions and city councils. And I've been hammered on transitional zoning. This is just terrible planning to put this right next to residential. There needs to be some land transition from the residential into something like this. This is just terrible.

So I strongly oppose it. And to make the reason for the location because it's cheap, I wish I could come up with that excuse when I present projects and try to get approvals at cities. I would probably be laughed at. So at least take that into consideration.

Thank you.

CHMN. CHENAL: Thank you.

All right. Does anyone else wish to speak? I'm going to do my best to quickly summarize the

statements I have from people who don't want to speak, but they've made written comment. I'm not going to read every word into the record because it will be part of the record.

If anyone wants to speak or if I get to you and you want to speak instead of having me summarize it, just step up to the microphone and let me know.

So I have Sheila Lehker, L-e-h-k-e-r. And, again, this is all going to be part of the record, so I don't have to read the address in.

The questions are: What aesthetic provisions are being considered specific to homeowners' views?

Next, what considerations have been given to reduce the noise and interference ongoing? For example, what will be done to avoid interruptions to WiFi, radio, etc.?

The last point: During construction, what provisions are in place to reduce dust specific to residential homes nearby?

And I should read the address. It's 7264 East Pampa Avenue, Mesa.

Next, Mr. Steven Smith, 7346 East Plata Avenue, Mesa.

Comment: I recommend that using plantings, berms, and decorative walls or trees to make the look of

the perimeter as natural and camouflaged as possible. The SRP electrical generating plant on Warner Road in Gilbert is a superb existing example of making the project blend in with and near residential areas.

Next, Mr. Ted Tyler, 7264 East Pampa Avenue, Mesa.

How would improvements, if any, compare with APS power plant on Warner and Val Vista?

The last comment I have is Catherine Jardine Kniss, K-n-i-s-s. I may have misspelled that. 7145 East Posada Avenue, Mesa.

We strongly oppose as the basis of demand -- on the basis of decreased property values and an eyesore. Very disappointed that the city approved this development.

Member Woodall, did you have a comment?

MEMBER WOODALL: Mr. Taebel, I know you've been listening attentively to the comments of some of the residents of your city. And we do have copies of your addresses. I would appreciate it if sometime tomorrow, you could let me know the possibility for making sure that the people who submitted public comment here today will have some form of notification when there are discussions with respect to potential mitigation measures for the substation. So I would appreciate if you could

tell me that tomorrow. I realize you may not be able to today.

MR. TAEBEL: I'll see what I can find out.

MEMBER WOODALL: Okay. That would be extremely helpful because we do have their addresses. We know where they live. They've expressed concerns and they've articulated suggestions with respect to mitigation measures, so it would be nice to know what the City could do to contact them.

Thank you.

CHMN. CHENAL: All right. Are there any other comments that people would like to make?

I will remind you that we will continue the hearing in the morning. We have a tour of the property, and we'll be back here at 11:30. Well, we'll have lunch, and then we'll continue the hearing in the afternoon.

I guess we didn't say what time. I'm going to suggest -- what time should we continue the hearing so that we give notice to people? If we have lunch at 11:30 --

MEMBER NOLAND: 12:30?

CHMN. CHENAL: 12:30. All right. We'll continue the hearing at 12:30. Is that okay for the applicant and Mesa?

We'll continue the hearing at 12:30. So we'll

take public comment then as well if there are other people that wish to come. We can take additional public comment at 12:30. Or if people show up during the course -- I don't know how long it's going to go before we shut the hearing off and begin deliberations. But until the hearing is concluded, we'll continue to take public comment.

I want to thank everyone for providing your comments.

MEMBER WOODALL: I have one question of the applicant, if I may.

CHMN. CHENAL: Sure.

MEMBER WOODALL: Mr. Sundlof, are you planning to have copies of the transcript of this proceeding posted on the project website or not?

MR. SUNDLOF: I don't know the answer to that; but if you ask us to do that, we will do it.

MEMBER WOODALL: Well, I'm just thinking that those people who may not be able to come tomorrow, if they might find informative the comments of the City of Mesa with respect to this. So that's the only reason why I ask the question. I'm not asking you to do anything in particular. But if you think it's a good idea, of course, I wouldn't argue against it.

Thank you.

MR. SUNDLOF: Thank you.

CHMN. CHENAL: So thank you for your comments. We take it to heart. We're not really allowed to ask follow-up questions. But your comments are noted by us, and you can rest assured, tomorrow, when we begin the hearing again, we'll be asking the applicant follow-up questions based on what we've heard tonight.

So, with that being said, we have the tour tomorrow at 9. We'll come back here for lunch at 11:30 and resume the hearing at 12:30.

Are there any other procedural matters we need to discuss?

(No response.)

CHMN. CHENAL: If not, we'll adjourn the public comment session. I thank you again, and we'll see everyone tomorrow.

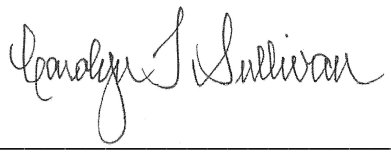
(The hearing recessed at 6:10 p.m.)

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 12th day of November, 2019.



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