BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES 40-360, ET SEQ., FOR CERTIFICATES OF ENVIRONMENTAL COMPATIBILITY FOR THE WESTWING 230 KILOVOLT (KV) INTERCONNECTION PROJECT, WHICH AUTHORIZES THE CONSTRUCTION OF A NEW SINGLE-CIRCUIT 230KV TRANSMISSION LINE ORIGINATING AT THE WESTWING SUBSTATION (SECTION 12, TOWNSHIP 4 NORTH, RANGE 1 WEST) AND TERMINATING AT THE PLANNED AES BATTERY ENERGY STORAGE SYSTEM SUBSTATION (SECTION 1, TOWNSHIP 4 NORTH, RANGE 1 WEST), LOCATED IN PEORIA, MARICOPA COUNTY, ARIZONA.	) DOCKET NO. L-00000D-21-0257-00190) LS CASE NO. 190) VOLUME I (Pages 1-140)	

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BE IT REMEMBERED that the above-entitled and numbered matter came on regularly to be heard before the Arizona Power Plant and Transmission Line Siting Committee, at the DoubleTree by Hilton Phoenix North, 10220 North Metro Parkway East, Phoenix, Arizona, commencing at 1:25 p.m. on the 23rd of August, 2021.

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

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For the Arizona Corporation Commission Utilities Division Staff:

Ms. Maureen Scott, Deputy Chief Counsel Litigation and Appeals
Mr. Antonio Arias and Ms. Katherine Kane,
Staff Attorneys, Legal Division
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CHMN. CHENAL: Good afternoon, everybody. This is the time set for the hearing on the APS Westwing 230kV interconnection project.

We have a full Committee either in person or by video. So first item is call to order, and then a roll call of the Committee.

And Member Hamway, may we start with you, please.

MEMBER HAMWAY: Yes. Thank you, Mr. Chairman. Mary Hamway representing cities and counties.

MEMBER NOLAND: Patricia Noland representing the public.

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

MEMBER GENTLES: Karl Gentles representing the public.

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

MEMBER BRANUM: Zachary Branum, Arizona Corporation Commission.

MEMBER PALMER: Jim Palmer representing agriculture.

MEMBER HAENICHEN: Jack Haenichen representing the public.

CHMN. CHENAL: All right. And my name is Tom

Chenal, Chairman of the Committee, with the Attorney General's Office.

May we have appearances, please.

MEMBER GRINNELL: Rick Grinnell.

CHMN. CHENAL: I am sorry, Member Grinnell. Excuse me.

MEMBER GRINNELL: That's okay.

Rick Grinnell representing counties.

CHMN. CHENAL: Sorry, Member Grinnell.

MEMBER GRINNELL: Can you hear me?

CHMN. CHENAL: We have these new screens in front of us and you are bigger than life. I don't know how I missed you.

Let's start with the applicant and then we will go into the intervenors and we will deal with that.

So may we have appearances, please, from APS.

MS. SPINA: Good afternoon, Mr. Chairman, members of the Committee. My name is Jennifer Spina. I am in-house counsel for Arizona Public Service Company. And I would also like to enter the appearance of my colleague, Linda Benally, who is also in-house counsel for APS.

MR. DERSTINE: Good afternoon. Matt Derstine, Snell & Wilmer, appearing on behalf of Arizona Public Service Company.

MS. GRABEL: Good afternoon, Chairman, Committee members. Meghan Grabel from Osborn Maledon on behalf of intervenor AES Corporation.

MS. SCOTT: Good afternoon, Chairman Chenal, Committee members. Maureen Scott, Antonio Arias, and Katherine Kane on behalf of the Commission Staff.

CHMN. CHENAL: Okay. Well, welcome, everyone. A couple items of note. I believe our mikes are hot most of the time, if not all the time, so just any casual comments will be picked up. So just make a note of that.

Let's deal with the intervention issues; there are two. One is really by right, by state agency, Staff of the Corporation Commission. And the Corporation Commission Utilities Division Staff gives notice of intent to intervene as a party. I believe they have the automatic right to do so under the statute. So there is no objection anyway, I can't imagine, in this case. So Utilities Division Staff is granted intervention.

The next is from the AES Energy Storage, LLC associated with the energy storage, the battery storage facility here. It seems like an integral participant in these hearings and the intended recipient of CEC-2 in connection with the application.

Ms. Grabel, anything you would like to say

before we rule on the motion to intervene?

MS. GRABEL: No, Chairman. I think you captured why I think AES is suited to intervene in this matter. We both own the battery storage to wit which will interconnect to the Westwing substation and will receive CEC-2 after it has been granted to APS.

CHMN. CHENAL: All right. Any further discussion from the Committee or objection by the Committee to allowing AES to intervene in this action?

(No response.)

CHMN. CHENAL: Hearing none, AES is granted intervention in this proceeding.

A couple more housekeeping items just before we turn it over to the parties for their opening statements. We will take a break every 90 minutes, as is the tradition. We will have a public comment session this evening at 5:30. And if there are any people who are here who the applicant or any of the parties are aware that would like to give public comment sitting in the audience, you let me know, and then we will take them out of order just as a courtesy to them. And we keep the public comment to three minutes. So it is just a matter of courtesy to the public that wish to give public comment.

I have not asked the applicant to propose or to

prepare for a tour of this facility. I think COVID is still an issue with us. And just given the nature of this hearing, I think, you know, with as I asked for a robust flyover, that I thought would be sufficient and would obviate the need for a tour in this case.

Are there any other matters from the parties or from the Committee that we should discuss before we begin opening statements from the parties?

(No response.)

CHMN. CHENAL: I don't hear any.

I assume that the procedural order has been complied with with respect the disclosure of exhibits and witness summaries.

MR. DERSTINE: Yes.

MS. SPINA: Yes, Mr. Chairman.

CHMN. CHENAL: Okay. If there is no procedural matters, then let's turn it over for an opening statement from the applicant and intervenors and commence with the hearing, swear the witnesses in, and proceed with the hearing.

MR. DERSTINE: Thank you, Mr. Chairman, members of the Committee.

I have handled a number of transmission line siting cases before this Committee, and through that process I have come to learn that every case different.

They have their own facts and issues, and sometimes we don't understand or know all the facts and issues until fairly late in the process, sometimes right before the hearing. We may have a late intervenor raising issues that we didn't anticipate.

So here we are ready to present the Westwing 230kV interconnection project to the Committee, and I was thinking about what I would say about this case in opening. And it kept occurring to me that this is a simple case. It is a simple transmission line siting case. And that worried me a bit because I haven't thought that about any recent cases that I have handled before this Committee. But having thought through and prepared for the hearing this week, I do think this is a simple transmission line siting case.

And when I say I think it is a simple transmission line siting case, I mean that in the Merriam-Webster dictionary definition of simple: Plain, basic, uncomplicated in form, nature or design. And so let me tell you why I think this transmission line siting case is plain, basic, uncomplicated in nature or design.

It has a simple or basic purpose. That is to interconnect the AES battery storage project with the Westwing substation. It has a simple and plain need,

and that is that APS has an obligation to provide interconnection services pursuant to its open access tariffs and FERC orders. It has an obligation to interconnect. That's the need.

The transmission line is an uncomplicated design. It is a short half-mile 230kV gen-tie line. That line is going to be constructed in two segments. The first segment leaves the Westwing substation, extends there on an existing Calderwood to Westwing 69kV line. So the new 230 circuit will be collocated with the existing 69. And it will extend north until it reaches what you will hear is the point of demarcation, which is the last structure just out of the AES battery storage project. And that last segment, Segment 2 on the slide, is a short seven-tenths of a mile single circuit 230kV line that drops into the AES project substation.

So simple, uncomplicated, short half-mile 230kV line, it is in a basic location, an existing transmission corridor. Much of it, as I mentioned, it is in existing right-of-way for the existing 69kV line, where the new 230 circuit will be collocated, so the 69 circuit will be rebuilt and the new 230 circuit will be collocated with the 69 until it then reaches that last structure outside of the AES project.

We took a site visit, and I think what you will see through the virtual flyover and the drone footage that will show the project area is that this project is in and among a lot of transmission structures. It is in the heart of an existing transmission corridor. That's the simple location.

And the environmental impact analysis is simple and straightforward. There is no impact to listed species, in fact, very little impact to animal or plant life. There is no impact to existing or future land use plans. There is no visual impacts from the project, as I said, because it is nestled in and among a bunch of larger transmission structures that are already there. There is no recreational or cultural impacts.

And our corridor and right-of-way request is pretty simple and straightforward. It is a 100- to 400-foot corridor, but the larger section, the 400-foot corridor is largely within the Westwing substation or just outside of the boundary of the Westwing substation on land that's owned by the Westwing participants. And the right-of-way is 100 to 150 feet. Again, most of it is going to be rebuilt in the existing 69kV right-of-way.

So my question: Is if it is so damn simple, why is Staff here? And it is a good question. But I think

Staff isn't here because this isn't a simple transmission line siting project. Staff is here raising questions about what is at the end of the line, the battery storage project. And they have a letter in the docket -- and it is among your exhibits -- in which they have raised a number of questions about the safety of this battery storage project, the potential risks to the Westwing and Perkins substations, potential risk to the residential developments that are there in the project area.

And APS will do its best to address and answer those questions. Some of the questions that Staff raises will be better addressed and answered by AES, who is now a party to the case. But APS has expertise in battery storage. And obviously this is interconnecting at Westwing, so a number of the questions that Staff has raised APS is here and happy to answer.

There was a battery storage fire in April of 2019 at the McMicken substation. That fire was widely reported. And I think Staff's questions and concerns over this battery storage project are driven to some extent by that fire and wanting to know more about this project and how it is better or different from the battery storage project that had the fire in 2019. And we think those are questions that can and should be

answered.

So putting aside the issue of whether or not this Committee has jurisdiction to site a battery storage project -- which I think Staff would sit here and tell you that it does not -- we agree that this is an appropriate forum to answer questions and to educate this Committee and to educate the Commission about battery storage safety and, in particular, this project.

How will the case be presented? APS will have a witness panel. You see the four gentlemen sitting across from me there. They will be our first -- our witness panel. I think AES will have witnesses it will present. Ms. Grabel will speak to that in her opening, I think. And Staff is here. I don't know if they will have witnesses, but they will certainly be a part of the case and will be asking questions.

The key exhibit is the CEC application, the application that seeks a certificate of environmental compatibility to site the transmission line, the issue that's before this Committee.

The slide presentations and maps that the witnesses will use to present and support their testimony will be important. You have those in your iPads and they are also in paper format.

There will be a flyover simulation that will

show the landscape and where the project is being constructed, and there is also drone images that give the Committee a good understanding, I think, of where this project is being built.

And last, Staff's letter that, as I indicated, raises a number of questions about what is at the end of the line, the battery storage project, I think is an important thing for the Committee to consider.

So in summary, I think it is a simple line siting case. It is a half-mile 230kV gen-tie line. It is located in an existing transmission corridor. It is largely constructed with an existing 69kV line in that right-of-way for the existing line. APS has an obligation to interconnect this gen-tie line at Westwing under the FERC open access tariffs and orders. The project balances the need with the impact on the environment. And therefore the project is in the public interest.

So at the end of the case we will ask the Committee to grant two CECs, the first CEC for the segment, the longer segment that extends out of Westwing that APS will construct, own, and operate, and the second CEC, CEC-2, for the short segment, seven-tenths of a mile, that AES will own.

And with that, we are ready to present our case

to you. And we appreciate your time.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Yes, Member Haenichen.

MEMBER HAENICHEN: Mr. Derstine, at one point in your opening statement you were referring to segments of the proposed line, and one of them you called seven-tenths of a mile. And I believe you meant seven-hundredths of a mile.

MR. DERSTINE: You are right, shorter than seven-tenths. Thank you, Member Haenichen. My math is nowhere near as good as yours. But you are right, very short. I should have said -- I should have stuck there.

Any other questions?

CHMN. CHENAL: All right. Thank you, Mr. Derstine.

Ms. Grabel.

MS. GRABEL: Thank you, Chairman, Committee members. Again, Meghan Grabel on behalf of AES Corporation.

By way of background, AES is a Fortune 500 global power company that provides affordable, sustainable energy to 14 countries around the world through its diverse portfolio of distribution businesses as well as thermal and renewable generation facilities.

AES operates one of the largest battery based

energy storage fleets in the world, with over 1,000 megawatts of storage resources in various stages of development. It has been in the battery energy storage business for almost three years, which is pretty much the entirety of this industry, beginning in 2008.

In response to a competitive RFP issued pursuant to the Arizona Corporation Commission's procurement rules, APS selected AES to deliver a 100 megawatt four-hour duration battery based energy storage system, or what is sometimes referred to in this proceeding as the ESP, short for energy storage project.

The ESP owned and operated by AES will provide critical peaking capacity and unmatched operational flexibility to APS, enabling the utility to make the most efficient use of renewable energy, lowering costs and emissions, and providing increased reliability for APS's customers.

The ESP that will interconnect on the grid over the transmission infrastructure at issue in this proceeding is top of the line, as you will hear. It will be low profile to residents and passersby, located directly adjacent to the massive infrastructure intensive Westwing substation and entirely surrounded by concrete wall. In fact, AES secured the unanimous approval of the Maricopa County Board of Supervisors for

a zone change to accommodate the ESP, a proceeding that required outreach to landowners within 300 feet of the project, none of whom oppose the plant.

In addition, through a NEPA process conducted by WAPA, or the Western Area Power Administration, notification was sent to 700 potentially affected landowners within one half mile of the ESP. That zoning change ensured that land would be used only for battery storage with little trafficking to disrupt the area residents given the remote operation of the facility and would prevent more intensive and disruptive industrial use.

With respect to safety, as you will hear in detail, the EPS will use the most advanced technology batteries and sophisticated safety and control systems that are available today. AES carefully analyzed the unfortunate event at the McMicken battery plant to which Mr. Derstine just referred, and took extensive safety precautions to ensure that a similar event cannot occur here.

Indeed, a condition of the zoning change that was approved by the Maricopa County Board of Supervisors was that the plant design and safety features have to be approved by the Arizona Fire & Medical Authority before a construction certificate may be authorized for the

building of the plant. Regulatory conditions are clearly already in place to make sure that the ESP does not place first responders, let alone area residents, at risk. Keep in mind that the closest home to the ESP batteries is almost 300 feet away, the height of the Statue of Liberty. You will hear more about the site design and safety features with the ESP during the AES panel presentation.

With respect to the intertie, APS and AES analyzed various preliminary interconnection alternatives, and ultimately identified the proposed route as the most direct, feasible, and least impactful alternative. The overall transmission project here is needed to serve the ESP, and will allow for its connection to the regional electric grid.

Logistically, AES intends to present two witnesses, speaking on a panel from a single PowerPoint presentation. The first is Mr. Manish Kumar, managing director of energy storage at AES, who will talk about the company, the site, and how the site design and safety features of the ESP not only meet, but exceed industry standards. Second on the panel is Mr. Kris Kjellman, the energy storage project manager at AES, who will also address safety features of the ESP, the environmental permitting process, and firefighter and

public outreach.

In addition, we will hear answers to some questions that I will pose on direct in response to some questions that Staff asked us off line from Mr. Piers Lewis, a solution engineer with Fluence Energy, who will address technical questions regarding safety for battery storage projects, as well as Ms. Shruti Ramaker for Stantec who can address questions associated with the permitting process AES undertook with respect to the ESP.

With that, I am happy to answer any questions you may have.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Ms. Grabel, at several points in the statement you just made you referred to numbers relating to capacity. I think one of them strikes my memory as 1,000 megawatts. I know it is not this project. Did you mean 1,000 megawatts or did you mean 1,000 megawatt hours, which is energy?

MS. GRABEL: I mean 1,000 megawatts. That was in reference to all of the various plants that AES Corporation owns globally, 1,000 megawatts.

MEMBER HAENICHEN: Okay. But what does it mean to say that it is a 1,000 megawatt storage facility?

MS. GRABEL: That that is the capacity of the

plant.

MEMBER HAENICHEN: Well, to me it would have to be megawatt hours. Megawatts is power; megawatt hours is energy. So which is it?

MS. GRABEL: With respect to this specific project, Member Haenichen, it is a 100 megawatt plant which serves 400 megawatt hours because it is four-hour duration of the battery --

MEMBER HAENICHEN: Okay. That's the point. We have to have the hours in there.

MS. GRABEL: We will certainly do that with respect to the specific project as the presentation continues.

MEMBER HAENICHEN: Yeah. I think this happens so often now, and people will get that confused. So be careful with it. Thank you.

MS. GRABEL: Fair enough.

CHMN. CHENAL: Ms. Grabel, you had mentioned that this battery storage facility will -- is it renewable power that the storage facility will hold?

MS. GRABEL: It will.

CHMN. CHENAL: Okay. And what is the generation source of the battery storage facility?

MS. GRABEL: I absolutely think -- this is just a battery storage. I think we are going to need to ask

that question of my witness tomorrow.

CHMN. CHENAL: It will come out in the testimony. I am just -- as I was reading the materials and that, I just wondered if, where is the -- I understand it is storing power, but where is the power coming from. And I just, you know, it would be good to have that in the record.

MS. GRABEL: Certainly.

CHMN. CHENAL: Any further questions? If not, Ms. Scott or Ms. Kane.

MS. SCOTT: Thank you, Chairman Chenal and Committee members. The Utilities Division Staff is happy to be here today. We have several issues that are of concern to us with respect to this application.

I want to state at the outset, though, that the Utilities Division Staff and the Commission both favor storage, and we all know it is necessary to transition to renewables on a large scale basis. Nonetheless, as I said, there are some significant issues associated with this application.

We will not be presenting a witness in this proceeding. However, our intent is to cross-examine most, if not all, of the witnesses presented by APS and AES. Our purpose in doing so is to ensure that with respect to those issues that are significant to us, and

we believe to you, that there is a complete and full record for you on which to make your decision.

With respect to the lines themselves, you know, I tend to agree with the other attorneys, Mr. Derstine, as far as on its face it seems to be a simple matter for you. But believe me, it is not. These are some very complex issues you are facing.

Some of the issues that Staff has identified in this proceeding which it will be trying to expand the record on are safety issues. We want to ensure that adequate notice was given to all affected landowners and residential customers in the vicinity. We want to flush out the record more on the location of this facility and alternative locations that were considered. We also want to flush out the record more on the cost of this project.

There are also important issues raised with respect to the risk to the operation and reliability of the grid. And, of course, that's also paramount to the Commission and will be when it considers this matter.

Those are largely the questions that we will have. And we hope that our participation today will be of benefit to all of you in our development of the record. Thank you.

CHMN. CHENAL: Thank you, Ms. Scott.

Any questions from the Committee?

(No response.)

CHMN. CHENAL: Okay. This is going to be an interesting hearing. It looked so tantalizingly simple, right up until the moment when it wasn't.

Okay. If there is nothing else, then I will turn it over to the applicant and its attorneys to begin the presentation of the case. And perhaps at this point -- give me one moment.

I will swear in the witness panel. I have done this enough I know it by heart, believe me, but some people ask for an affirmation, so I want to make sure I do that correctly.

I will ask you each if you would like an oath or affirmation. And then if all want an oath, for example, we will do it at the same time; if not, we will do it individually.

Mr. Clark, oath or affirmation?

MR. CLARK: I will take an oath.

CHMN. CHENAL: Okay. Mr. Petry.

MR. PETRY: Affirmation, please.

CHMN. CHENAL: Okay. Mr. Duncan.

MR. DUNCAN: Oath.

CHMN. CHENAL: Mr. Spitzkoff.

MR. SPITZKOFF: Affirmation.

CHMN. CHENAL: Okay. Let's take the oaths first. Mr. Clark and Mr. Duncan, please raise your right hands.

(Kevin Duncan and Daniel Clark were duly sworn.)

CHMN. CHENAL: Mr. Petry and Mr. Spitzkoff, please raise your right hands.

(Jason Spitzkoff and Devin Petry were duly affirmed.)

CHMN. CHENAL: Thank you very much.

MS. SPINA: Thank you, Mr. Chairman.

JASON SPITZKOFF, KEVIN DUNCAN, DEVIN PETRY and DANIEL CLARK,

called as witnesses on behalf of APS, having been previously duly sworn or affirmed by the Chairman to speak the truth and nothing but the truth, were examined and testified as follows:

DIRECT EXAMINATION

BY MS. SPINA:

Q. Thank you, APS panelists. I would like to begin with you, Mr. Spitzkoff. Would you please state your full name and business address for the record.

A. BY MR. SPITZKOFF: Yes. My name is Jason Spitzkoff. My position is manager of transmission

planning, transmission contracts and services, and facilities siting.

Q. And your business address?

A. BY MR. SPITZKOFF: That is 2121 West Cheryl Drive, Phoenix, Arizona 85021.

Q. Thank you.

And as the manager of transmission planning, transmission contracts, and services and facilities siting -- which, by the way, is a mouthful -- you had a significant involvement in the Westwing project, is that correct?

A. BY MR. SPITZKOFF: Yes.

Q. And do you have PowerPoint slides that you would like to present to the Committee?

A. BY MR. SPITZKOFF: Yes.

Q. Would you provide an overview of your educational background and work experience, please.

A. BY MR. SPITZKOFF: Yes. I received my education at Rutgers University where I received a bachelor's of science in electrical engineering and a bachelor of arts in economics.

My professional experience extends over 20 years with Arizona Public Service, the first 14 years as a transmission planning engineer, three years as a supervisor of transmission planning and engineering, and

my current role is manager of transmission, the transmission planning, transmission contracts and services and facilities siting.

Q. Thank you, Mr. Spitzkoff.

And do you have industry experience as well?

A. BY MR. SPITZKOFF: Yes, I do. On a national level I was a member of the NERC planning committee. And NERC is the North American Electric Reliability Corporation. And then on a regional level, I have been a member of various WECC committees. WECC is Western Electricity Coordinating Council. And then at a subregional level I was a member of WestConnect's planning management committee. WestConnect is the subregional planning organization that covers most, if not all, the southwest.

For APS, I have been subject matter expert for multiple biennial transmission assessments, and I have testified in three siting cases, most recently in the two CEC amendments a month ago for CECs 120 and 131.

Q. Thank you, Mr. Spitzkoff.

And in preparation for today's hearing, did you prepare a summary of your planned testimony?

A. BY MR. SPITZKOFF: I did.

Q. And was that summary filed with the ACC on August 16th this year?

A. BY MR. SPITZKOFF: Yes, yes.
Q. And is that summary accurately reflected in the document contained in the exhibit binder and on the iPads and marked as Exhibit APS-2?
A. BY MR. SPITZKOFF: Yes.
Q. Do you have any corrections to that exhibit?
A. BY MR. SPITZKOFF: No.
Q. Okay. I would like to now move to your presentation. Did you prepare the PowerPoint slides that you will be presenting to the Committee over the course of this hearing?
A. BY MR. SPITZKOFF: Yes.
Q. And are they accurately reflected in the documents contained in the exhibit binder and the iPads and marked as Exhibit APS-6?
A. BY MR. SPITZKOFF: Yes.
Q. Do you have any corrections to that exhibit?
A. BY MR. SPITZKOFF: No.
Q. And is your portion of Exhibit APS-6 true and correct, to the best of your knowledge?
A. BY MR. SPITZKOFF: Yes.
Q. Thank you, Mr. Spitzkoff.
I would like to next move to Mr. Duncan.
Oh, I guess I am out of order here. I am sorry. We will jump to Mr. Clark.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: Yes. Could you pull the microphone just a little closer. You kind of fade off at the end.

MS. SPINA: Yes. I will do my best to have that not be the case.

MEMBER NOLAND: Thank you.

BY MS. SPINA:

Q. Okay. Good afternoon, Mr. Clark.

A. BY MR. CLARK: Good afternoon.

Q. Would you please state your name and business address for the record.

A. BY MR. CLARK: Yes, ma'am. I am Daniel Clark. I work at APS. The location is 400 North Fifth Street, Phoenix, Arizona.

Q. Thank you.

And you are an energy innovation advisor in the distributed resource group at APS, is that correct?

A. BY MR. CLARK: Correct.

Q. And would you please provide an overview of your educational background and work experience.

A. BY MR. CLARK: Sure. So I went to the Missouri University of Science and Technology where I received a bachelor of science in electrical engineering. I serve

as the battery energy storage SME for APS.

Prior to APS I spent 10 years as an electrical engineer with Burns & McDonnell. And I have been at APS for a little over two years. And as I mentioned, I have been working on battery energy storage now for a little over five years.

Q. And are you also involved in the industry or in any industry groups?

A. BY MR. CLARK: I am. I am a member of the National Fire Protection Association. I am contributing to the NFPA 855 standard, which is the standard for battery energy storage safety, or a standard for battery storage safety. I am a member of the Institute of Electrical and Electronics Engineers, which also will be developing standards for battery energy storage, among other documents.

I contribute and am a member of the Electric Power Research Institute, specifically P94, which deals with battery energy storage projects, as well as doing safety research on batteries. And lastly, I participate in work groups with the Edison Electric Institute as they relate to battery energy storage.

Q. Thank you, Mr. Clark.

Would you please describe your involvement in the Westwing project.

A. BY MR. CLARK: I served as an advisor and technical resource for the evaluation of the AES ESP power purchase agreement.

Q. And in preparation for today's hearing, did you prepare a summary of your planned testimony?

A. BY MR. CLARK: I did.

Q. And that summary was filed with the ACC on August 16th, is that correct?

A. BY MR. CLARK: Yes.

Q. And is that summary accurately reflected in the document contained in the exhibit binder and marked as Exhibit APS-5?

A. BY MR. CLARK: Yes.

Q. And do you have any corrections to that exhibit?

A. BY MR. CLARK: I don't.

Q. All right. Let's now move to your presentation. Did you prepare the PowerPoint slides that you will be presenting to the Committee over the course of this hearing?

A. BY MR. CLARK: I did.

Q. And are they accurately reflected in the document contained in the exhibit binder and iPads and marked as APS-6?

A. BY MR. CLARK: Yes.

Q. And do you have any corrections to that exhibit?

A. BY MR. CLARK: No corrections to the exhibit. I would like to add an exhibit that I will show in parallel with that exhibit.

MS. SPINA: Okay. Members of the Committee, Mr. Chairman, we originally had prepared the slide deck using the map as the right screen for all of the witnesses, including Mr. Clark. Upon further discussion, we thought it made more sense to include a graphic depicting a battery array in lieu of the map for Mr. Clark's testimony. So that is the exhibit that he is referring to. It is Exhibit APS-22.

We did already clear that with counsel for AES and Commission Staff, and there were no objections. So unless you have an objection, we would suggest that we proceed in that fashion.

CHMN. CHENAL: That's fine. And we will admit the exhibits at the end of the testimony --

MS. SPINA: Understood.

CHMN. CHENAL: -- en masse.

BY MS. SPINA:

Q. Mr. Clark, is your portion of Exhibit APS-6 true and correct, to the best of your knowledge?

A. BY MR. CLARK: It is.

Q. Thank you.

Okay. Mr. Duncan, I think we will head back to

you, assuming my slides are now in the correct order.

Okay. Mr. Duncan, would you please state your full name and business address for the record?

A. BY MR. DUNCAN: Yes. My name is Kevin Duncan, and I am senior siting consultant for APS in the transmission and facilities siting team. My address is 2121 West Cheryl Drive, Phoenix, Arizona 85021.

Q. And Mr. Duncan, how have you been involved in the Westwing project?

A. BY MR. DUNCAN: My role was as the project manager of the siting process.

Q. Okay. Would you provide an overview of your educational background and work experience, please.

A. BY MR. DUNCAN: Yes. I earned my master's of business administration from Benedictine University, and my bachelor of science in urban planning from the University of Utah.

I have 20 years of combined experience. The first 14 years was as an environmental planner and consultant, and I have been in my current role for six years at APS. And I have testified in front of this Committee six previous times.

Q. Thank you.

And are you familiar with the document that APS filed with the ACC on July 13th, 2021 that initiated

this proceeding?

A. BY MR. DUNCAN: Yes, I am.

Q. Could you please describe that filing.

A. BY MR. DUNCAN: That filing is the CEC application.

Q. And as project manager for the Westwing project, you supervised the preparation of the certificate application that was filed with the ACC, is that correct?

A. BY MR. DUNCAN: That is correct.

Q. And have you had an opportunity to review that application after it was filed?

A. BY MR. DUNCAN: Yes, I did.

Q. And is the application accurately reflected in the document contained in the exhibit binder and iPads and marked as Exhibit APS-1?

A. BY MR. DUNCAN: Yes.

Q. Do you have any corrections that you would like to make to APS Exhibit 1?

A. BY MR. DUNCAN: No, I have no corrections.

Q. Okay. And in preparation for this hearing did you prepare a summary of your planned testimony?

A. BY MR. DUNCAN: Yes, I did.

Q. And that summary was filed with the ACC on August 16th, 2021, is that correct?

A. BY MR. DUNCAN: That is correct.
Q. And is that summary accurately reflected in the document contained in the exhibit binder and iPads and marked as Exhibit APS-3?
A. BY MR. DUNCAN: Yes.
Q. Do you have any corrections to that exhibit?
A. BY MR. DUNCAN: No, I do not.
Q. Okay. And did you prepare the PowerPoint slides that you will be presenting to the Committee over the course of the hearing?
A. BY MR. DUNCAN: Yes, I did.
Q. And are they accurately reflected in the documents contained in the exhibit binder and marked as Exhibit APS-6?
A. BY MR. DUNCAN: Yes.
Q. And do you have any corrections to that exhibit?
A. BY MR. DUNCAN: No, I do not.
Q. And is your portion of Exhibit APS-6 true and correct, to the best of your knowledge?
A. BY MR. DUNCAN: Yes, it is.
Q. Thank you, Mr. Duncan.
Turning now to Mr. Petry, would you please state your full name and business address for the record.
A. BY MR. PETRY: Yes. My name is Devin Petry. My business address is 20 East Thomas Road, Suite 1700,

Phoenix, Arizona 85012.

Q. Thank you.

And would you please provide your title and place of employment for the Committee.

A. BY MR. PETRY: Yes. I'm an environmental project manager at SWCA Environmental Consultants. And I have 13 years of experience in environmental planning, facility siting, and permitting.

Q. Okay. Could you provide an overview of SWCA Environmental Consultants, please.

A. BY MR. PETRY: Yes. SWCA is an environmental consulting firm based out of Phoenix, Arizona. And we provide comprehensive environmental planning, permitting, regulatory compliance, natural and cultural resource management studies, and other environmental services here in Arizona and across the United States.

Q. Thank you.

Would you also provide an overview of your educational background, work experience, and any relevant industry activity, please.

A. BY MR. PETRY: Yes. So I received a bachelor of arts in geography from the University of Arizona. And I have previously testified before the Siting Committee in Cases 162, 174, and 183.

Q. Would you please describe your involvement with

the Westwing project.

A. BY MR. PETRY: Yes. SWCA was retained by APS to assist in the preparation of the application for a CEC and to assist in the public involvement program, as well as to perform the environmental resource studies that support the CEC application.

Q. I would like to turn now to the exhibits you are sponsoring in this proceeding. First, did you prepare a summary of the testimony you planned to provide in this proceeding?

A. BY MR. PETRY: Yes.

Q. And that summary was filed with the ACC on August 16th, is that correct?

A. BY MR. PETRY: Yes.

Q. And is that summary accurately reflected in the documents contained in the exhibit binder and iPads and marked as Exhibit APS-4?

A. BY MR. PETRY: Yes.

Q. Do you have any corrections?

A. BY MR. PETRY: No.

Q. Okay. And did you prepare the PowerPoint slides that you will be presenting to the Committee?

A. BY MR. PETRY: Yes.

Q. And are they accurately reflected in the documents contained in the exhibit binder and iPads and

marked as Exhibit APS-6?

A. BY MR. PETRY: Yes.

Q. And do you have any corrections to your presentation?

A. BY MR. PETRY: No, I do not.

Q. And is your portion of the Exhibit APS-6 true and correct, to the best of your knowledge?

A. BY MR. PETRY: Yes.

Q. Okay. Your PowerPoint presentation includes a number of maps, photos, and other information. Would you take a moment to share the sources of those pieces of information with the Committee.

A. BY MR. PETRY: The source of the maps and photos and other information contained within my testimony and slides largely came from work that I oversaw at SWCA, including the development of those maps and materials and publicly available aerial imagery sources.

Q. And was that information also included in the CEC application that APS filed with the ACC on July 13th, and which is now designated as Exhibit APS-1?

A. BY MR. PETRY: Yes.

Q. And would you please identify the environmental exhibits that were prepared by you or under your direction that are included in Exhibit APS-1.

A. BY MR. PETRY: Yes. SWCA collected data and

completed the resource studies included in Exhibits A through F and Exhibit H of the application.

Pardon me.

Q. I am sorry. Go ahead, Mr. Petry.

A. BY MR. PETRY: I personally coordinated these efforts and oversaw the compilation of those exhibits.

Q. Thank you.

And do you have any corrections to Exhibit APS-1?

A. BY MR. PETRY: No.

Q. Okay. And to the best of your knowledge, that exhibit is true and correct?

A. BY MR. PETRY: Yes.

Q. Thank you, Mr. Petry.

MS. SPINA: Mr. Chairman and members of the Committee, that concludes my introductions of the APS witnesses. As previously mentioned, witnesses Spitzkoff, Duncan, and Petry will be presented as a panel. And with your permission, I don't think we need to excuse Mr. Clark from the table, so I will ask him to remain seated there.

But with that I would like to begin, and I would like to start with Mr. Spitzkoff. He will be referring to the PowerPoint slides contained in Exhibit APS-6, and beginning on page 31 of the PDF or paper copy.

BY MS. SPINA:

Q. Mr. Spitzkoff, would you please begin by providing an overview of APS's service territory and transmission system.

A. BY MR. SPITZKOFF: Yes. So APS has been serving the state and territory of Arizona for over 125 years. We serve customers within 11 of Arizona's 15 counties. Our service area encompasses over 34,000 square miles. And that's depicted on the slide on the right. The areas in blue represent the APS service territory.

APS serves about 1.3 million customers. We have nearly 500 substations, roughly 300,000 transformers, and more than 550,000 poles and structures. APS also has approximately 6,000 miles of transmission lines, 11,000 miles of distribution overhead lines, and 22,000 miles of distribution underground cable.

CHMN. CHENAL: Mr. Spitzkoff, what is the underground cable distribution system, 22,000 miles on there?

MR. SPITZKOFF: That is basically the individual feeders that leave a substation at generally a 12kV voltage level, leave the substation, go into the neighborhoods and the individual houses, businesses, et cetera. A lot of those are underground facilities.

CHMN. CHENAL: Thank you.

BY MS. SPINA:

Q. Mr. Spitzkoff, would you please share the purpose and need of the project with the Committee.

A. BY MR. SPITZKOFF: Certainly. The purpose for this project is to interconnect the BESS, the battery energy storage project, or storage system, to the Westwing 230kV bus.

The need is to satisfy the generation interconnection requirements that APS has as a FERC jurisdictional entity. And this project provides a reliable route for the BESS to enter the Westwing substation.

Q. Mr. Spitzkoff, in two of the opening statements we heard that APS is seeking two CECs, is that correct?

A. BY MR. SPITZKOFF: Yes.

Q. And can you please explain why APS is seeking two CECs. And using the map shown on the right, could you describe the facilities that are reflected in each of the two CECs.

A. BY MR. SPITZKOFF: Yes. So I will first provide an overview of the map on the right on what the Committee is seeing.

So the main bulk of the map here that I am outlining is the Westwing substation. The lines that are in red are 500kV lines exiting the substation. The

lines in the blue and yellow that you see exiting to the east and the one to the north, those are 230 and 69kV lines exiting the substation.

The area in the dotted, shown in the dotted overlay is the location of the BESS facility. And what you are seeing with the white speckled dots here, this is an RV storage area. The white is covered parking overhangs that are over the RV storage area. And -- whoops. And this area is a new residential development over here.

So for this project, the two parts of the CEC are shown in the green and black line here -- I am sorry -- the blue, the blue and black portion of the line, which stops at this point over here, which we call the point of demarcation. And then the second part of the project, or what would be covered under CEC-2, is the green and black, which comes off of that last structure and drops into the AES facility.

I will also note that this can be seen on the placemats that are in front of the Committee members. The same picture is on one side, and a zoomed-in version is on the other side that also shows the corridor overlay that we will be discussing later. We are asking for two CECs in this case because of the nature of the different responsibilities on those portions of the

line.

The blue and black portion is following an existing APS 69kV line that you can see underneath it in the yellow line. That 69 line will be rebuilt to be a double circuit 230 capable -- sorry. It will be rebuilt on structures that will be capable of double circuit 230kV lines on top and the 69kV line underneath those.

Because the bulk of the line is within the APS operated Westwing substation, and the substation wall is shown out here, so everything from here up to that wall is inside the substation, and collocated with the APS 69kV line, APS will be taking on the construction of that part of the facility. We will also be doing all ongoing maintenance and operation of that portion of the line.

The remaining portion from the point of demarcation into the AES yard, the construction, operation, and maintenance will be the responsibility of AES, because it is no longer collocated with the APS facility. And because of those two responsibilities, that's why we are asking for the two separate CECs for this case.

Q. Mr. Spitzkoff, so at some point in the future then does APS plan to transfer CEC-2 to AES?

A. BY MR. SPITZKOFF: Yes.

Q. Okay. Thank you.

CHMN. CHENAL: A couple questions, if I may here. Just orient us with the slide on the right screen.

Oh, my gosh, my laser pointer is not working. Don't worry. I think I have another one, Mr. Spitzkoff.

Thank you, Mr. Duncan. Appreciate it.

The area I am circling, which is to the right of the 230 line, what is that? Did you say that was a residential, the beginning of a residential neighborhood?

MR. SPITZKOFF: It is an existing residential neighborhood at this point in time.

CHMN. CHENAL: Okay. And then so the two, for the north of -- is it Happy Valley Road? There appears to be another residential neighborhood, is that correct?

MR. SPITZKOFF: That's correct.

CHMN. CHENAL: And then to the north of the first residential neighborhood I pointed to, that's the church, is that correct?

MR. SPITZKOFF: That's correct.

CHMN. CHENAL: And then to the west of the residential neighborhood there is a series of, I don't know what that is, sheds or some -- what is that structure? What are those structures?

MR. SPITZKOFF: Those are, I guess I would call them, canopies. It is covered parking. But it is for RVs; it is an RV storage park.

CHMN. CHENAL: Okay. Now, more substantively, two questions. First, under need, you first testified that the need of this project is to satisfy the generation interconnection requirement. What is the generation interconnection requirement, please?

MR. SPITZKOFF: Mr. Chairman, I have a series of slides to discuss that as I myself promised to at the, I believe it was, the Hashknife case to go into generation interconnections.

CHMN. CHENAL: Okay. And then you will indicate whose requirement it is as well, correct?

MR. SPITZKOFF: Yes.

CHMN. CHENAL: Okay. I will wait patiently.

Mr. Gentles.

MEMBER GENTLES: You said these two areas here are existing homes?

MR. SPITZKOFF: Yes.

MEMBER GENTLES: How many homes are we talking about in those two areas, here and here?

MR. SPITZKOFF: I don't have that info. I don't know if my panelists --

MR. PETRY: Member Gentles, we don't have an

exact number of homes in those areas. But in the closest residential development to the transmission line project, it would be that development you see to the east of the RV storage facility, and our estimate is it is in the dozens of homes in that location. We can come up with an accurate count.

MEMBER GENTLES: Right here?

MR. PETRY: Correct, yes.

MEMBER GENTLES: And then this was another residential area here?

MR. PETRY: Yes. It is on the north side of the Happy Valley Road.

MEMBER GENTLES: And so you don't know the totality of the number of homes in there?

MR. PETRY: Not in that area, no.

MEMBER GENTLES: Are they developed yet?

MR. PETRY: Yes, they are. We don't have the total house number count, but we can provide that to the Committee.

MEMBER GENTLES: So should we assume that, when you did your public outreach and since, your initial information went to both of those neighborhoods?

MR. PETRY: Oh, yes.

MEMBER GENTLES: So you have a number on that one right? I saw 2300 in your --

MR. PETRY: Yes. And Member Gentles, Mr. Duncan will be providing more testimony around the public efforts and total number of outreach, total number of individuals contacted as part of that outreach.

BY MS. SPINA:

Q. Okay. Mr. Spitzkoff, before we turn to the generation interconnection requirements, I would like to take a moment and back up and discuss AES's request for interconnection into APS's transmission system. Can you provide an overview of that request for the Committee, please.

A. BY MR. SPITZKOFF: Certainly. APS received a generator interconnection request from AES on September 29th, 2018. That project was assigned a queue number, No. 292. And I will explain what the generation queue is as we go through this.

The requested point of interconnection, or POI, was at the Westwing 230kV bus. The request was for a 200 megawatt battery storage project. And all of that information is represented in the slide on the right.

In a few slides I will show you a full page of the APS queue, what that looks like, but I pulled out the information for this project and enlarged it a little bit. And you can see Queue No. 292 here, 200 megawatt project, location in Maricopa County at

Westwing 230kV, original projected in-service date, the status of the projects, type of service, the date they made their request, the type of facility, so battery storage, the studies that are currently available, and the process, the stage of the process that it is currently located -- currently within.

And APS, for an interconnection request at Westwing, either 500kV or 230kV, is the entity that processes generator interconnection requests at those locations on behalf of the joint owners at Westwing. The Westwing substation is a joint owned facility. APS being the operating agent, we are the ones that process the interconnection requests.

Q. Mr. Spitzkoff, who determines where the point of interconnection will be?

A. BY MR. SPITZKOFF: The customer determines where the interconnection point will be.

Q. Okay. So turning to your next slide, would you please describe the Westwing substation.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: If we could go back to that previous slide, I just want to, yeah, ask about the amount of battery storage.

You are talking about battery storage. And I

just want to make sure at some point by someone that the life of the batteries will be addressed, and also the, once a battery is expired, the appropriate, I guess, discarding of those batteries will be addressed. Am I to assume that?

MR. SPITZKOFF: Yes, I believe.

MS. GRABEL: Yes.

CHMN. CHENAL: Okay.

MEMBER GRINNELL: I just want to ensure we address that, because that's an important issue as well.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Mr. Chairman, thank you.

I am going to keep asking this question until I get an answer. What do you mean by a 200 megawatt? What --

MR. SPITZKOFF: Certainly, Member Haenichen. The size of the full development of the AES site is for 200 megawatts --

MEMBER HAENICHEN: Stop right there.

MR. SPITZKOFF: -- with a four-hour duration.

MEMBER HAENICHEN: Okay. Why don't you call it in megawatt hours. That's really what you are storing.

MR. SPITZKOFF: Yes, I agree to that. However, in the interconnection space, we have to study what the instantaneous output that is put onto the grid is. So

from an interconnection perspective, 200 megawatts is the most important factor for an interconnection.

MEMBER HAENICHEN: The rate at which you can deliver energy over that line at the rate of 200 megawatts.

MR. SPITZKOFF: Of that project.

MEMBER HAENICHEN: Yeah.

MR. SPITZKOFF: Yes.

MEMBER HAENICHEN: So the battery unit that the other company is going to introduce, is going to store when it is fully charged up, how many megawatt hours?

MR. SPITZKOFF: So 200 megawatts at four hours, 800 megawatt hours.

MEMBER HAENICHEN: Okay. To me that's the most important number of all. Now, admittedly the rate at which you can do it is important to you. You are providing access to the 800 megawatt hour facility. But you are -- you can do it only as -- is it because the batteries can't take it at a higher rate than 200 megawatts? Because you could put a higher capacity line in there.

MR. SPITZKOFF: It is not a function of the lines. It is a function of the battery system.

MEMBER HAENICHEN: Yeah, the rate at which they can take charge.

MR. SPITZKOFF: They can charge and output.

MEMBER HAENICHEN: Without overheating.

MR. SPITZKOFF: Correct.

MEMBER HAENICHEN: Are those two rates about the same, charge and discharge?

MR. SPITZKOFF: From my experience they are about the same. But I am not a battery energy storage expert.

MEMBER HAENICHEN: Is there going to be somebody here that can answer that type of question?

MR. SPITZKOFF: Yes, there will be.

MEMBER HAENICHEN: Thank you.

BY MS. SPINA:

Q. Mr. Spitzkoff, you were, I think, going to walk us through the Westwing substation.

A. BY MR. SPITZKOFF: Yes. So using the map on the right, I wanted to provide an idea of where the Westwing substation is in the world. And I will orient the Committee to the map here.

Starting up here in the top corner, this is Interstate 17. And then down across the bottom here is Loop 101, and you can see as it turns to the south. As we go further to the west, this is Loop 303 as it comes up and around, and all the way back into I-17. And the Westwing substation is just about at the Happy Valley

corridor, which I think is -- that's a little hard for me to see here, but I think it is right in this area here, so just off of Happy Valley and Loop 303.

Q. And Mr. Spitzkoff, would you walk us through the configuration of the substation, please. It is on your next slide.

A. BY MR. SPITZKOFF: Yes. The slides are not advancing.

Q. Oh.

A. BY MR. SPITZKOFF: Okay. So the Westwing substation consists of five 500kV lines; I pointed them out earlier. They are the red lines you can see leaving the substation.

There are three 500/230kV transformers and one 500/345kV transformer. And those transformers are located down here. And 345 part of the yard is largely indicated under the inset here.

And there is one 345kV line that leaves the yard. There are six 230kV lines. Most of them you can see leaving the yard in the easterly direction over here. And there are two 230kV transformers which are on the east side of the 230 switchyard. This location is the 230 yard. Underneath that is the 69kV, and then underneath is 12kV.

The bulk of what you see on the western part of

the yard up here is the 500kV facilities. So these are 500kV buses, switches, breakers for the lines and transformers.

The 500kV yard is joint owned. Some of the lines are owned by the Navajo participants. The Navajo participants entail anywhere from four to six different owners, depending on what part of the system. And those, they own some of the 500/230 transformers and the 230 -- the two 500kV lines that go up to the north, these 500kV lines go all the way to the Navajo switchyard, which is located in Page, Arizona, the northern border of Arizona.

The 500kV facilities are owned by the ANPP participants. That's the Arizona Nuclear Power Project participant. And they own a 500/230kV transformer and also these two 500kV lines, which are the Palo Verde to Westwing 500kV lines. So these two lines go off to the Palo Verde switchyard.

The 345 facilities are owned by Tucson. That 345kV line that leaves there goes down into southern Arizona and ultimately into Tucson's service territory. The 230 lines are owned -- each of the lines are wholly owned by individual facilities, but there are lines owned by WAPA, or Western Area Power Administration, SRP, APS, and CAWCD, Central Arizona Water Conservation

District.

The 69kV and 12kV portions of the yard are wholly owned by APS. The 69 lines and 12kV lines exiting Westwing are APS facilities.

Q. Mr. Spitzkoff, I believe you mentioned previously that, although the Westwing substation is a joint participant project that is owned by multiple utilities, APS is the operating agent for the substation and therefore has responsibility for conducting the interconnection studies and facilitating the interconnection, is that correct?

A. BY MR. SPITZKOFF: Yes.

Q. Okay. If I could, I would like you to take another step backward, a little bit of a higher level, and just set the stage a bit with respect to the interconnection process as a whole.

And Mr. Chairman, I think this gets to your question.

Let's start with a very basic foundational question. Does APS have an obligation to allow entities like AES to interconnect into its system?

A. BY MR. SPITZKOFF: Yes, we do.

Q. And where does that obligation come from?

A. BY MR. SPITZKOFF: That obligation comes from FERC and the open access transmission tariff that APS

has on file as part of APS being a FERC jurisdictional utility and FERC being the federal electric reliability -- oh.

Q. I think it's the Federal Energy Regulatory Commission.

A. BY MR. SPITZKOFF: Yeah, thank you.

Q. Yes, my pleasure.

Okay. So you indicated that APS has an open access transmission tariff on file with FERC that is governed by FERC. Does that open access transmission tariff, or OATT, set forth the rules and requirements for interconnections?

A. BY MR. SPITZKOFF: Yes, it does. So FERC Order 888 provided for that transmission owners have to provide nondiscriminating service comparable to that provided by transmission owners to themselves. Again, that was set forth in FERC Order 888.

That was further expanded by future orders, specifically FERC Order 2003, which set forth what, within APS's OATT, what is Attachment O. And that's the large generator interconnection process. And then Attachment P, which is the small generator interconnection process, was from FERC Order 2006.

CHMN. CHENAL: Mr. Spitzkoff, what is the difference between the large generator and a small

generator?

MR. SPITZKOFF: Mr. Chairman, a large generator is anything greater than 20 megawatts and a small generator is 20 megawatts or less.

CHMN. CHENAL: So this project is a large generator interconnection project?

MR. SPITZKOFF: Correct.

CHMN. CHENAL: Thank you.

BY MS. SPINA:

Q. Mr. Spitzkoff, in addition to the rules and requirements set forth in Attachment O and Attachment P to APS's open access transmission tariff, are there any other rules and requirements that are applicable that you would like to touch on?

A. BY MR. SPITZKOFF: Yes, there are a number of additional rules. I will touch on just a few of them that I think are relevant. And the main one is that any transmission provider that has an OATT and receives generator interconnection requests is required to publicly post and maintain a generator interconnection queue. That queue needs to be posted publicly, and generally they are posted on an entity's OASIS site.

OASIS stands for open access same time information system. It is a publicly accessible website that any member of the public can view, and the posting

of the APS queue is on there. And what I am showing on the right screen is one page of the APS queue. It is basically just a list, a running list of all generator interconnection requests that have been made to APS operated facilities that APS would be responsible for processing. And this particular page, I believe it is 2 of 6, is where you will find the Queue 292 project that I provided as a blow-up in the earlier slide. So this is the same information that was there, queue number, point of interconnection, size, et cetera.

It is high level information about each request, the status of the request. And one point that you will notice here, there is no customer information that's publicly posted here. The customer information is confidential. And that's part of the FERC requirement, that that information is confidential.

There is one exception to that, and that's if the interconnection request is from an affiliate of the transmission provider. So if an affiliate of APS submits a generator interconnection request, then APS posts that information, you know, what number that request is in this table.

I have already discussed that the AES project is Queue 292. We can share that information because it has been already publicly disclosed by the 10-year plan

filing, this CEC filing, et cetera. So I am not going to get any fines for releasing that information.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: Can you answer this question? How many total population -- what is the total population that is currently being serviced by this facility, number one? And what is the anticipated population increase going to be after, if this board should approve this CEC?

MR. SPITZKOFF: So if I could maybe rephrase your question to make sure I understand, the anticipated population served by this facility, are you asking about the Westwing facility or the population that the battery storage project would serve?

MEMBER GRINNELL: I am asking what the current amount of power, the numbers of people or residences or whatever, however you quantify it, the number of people currently being serviced by the existing facility, and what would be the additional number of persons, or however you quantify it, be increased. I am trying to determine a need here. And that's why I am trying to satisfy my question here.

MR. SPITZKOFF: Certainly. So I will try, and I think I have to break my answer into two pieces.

MEMBER GRINNELL: Okay.

MR. SPITZKOFF: First, the Westwing substation itself is, you know, a collection of lines and transformers that come in. And it has -- given the size of the substation, the nature of that substation, it really, the facilities at Westwing service the entire valley, the entire State of Arizona. And even, you know, the southwest grid itself from the battery storage project, if, you know, in relation to what 100 megawatts or 200 megawatts would serve, I think we use a rule of thumb it is 200 or 250 customers per megawatt. So if you multiplied 200 by 200, so 400,000 customers would be an approximate value.

MEMBER GRINNELL: Are you saying --

MR. SPITZKOFF: 40,000. I added a zero. Thank you.

MEMBER GRINNELL: So are you saying that the Westwing basically provides service to 3 to 5 million people --

MR. SPITZKOFF: Well --

MEMBER GRINNELL: -- in Arizona?

MR. SPITZKOFF: We operate an interconnected transmission system, and Westwing has a number of large transmission lines. So while the 12kV lines themselves, which would be most directly applicable to specific

customers that are served, there are four 12kV feeders that come out of there. We can get the customer count on those feeders if needed. It would be in the few thousand, I believe.

But the, you know, Westwing is part of the interconnected transmission grid. So it is part of the overall system.

MEMBER GRINNELL: I guess my question, or my clarity for myself is that this particular facility and area is a very significant asset to power for the State of Arizona; would that be a fair statement?

MR. SPITZKOFF: Yes, I would, I would agree.

MEMBER GRINNELL: Thank you, Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Thank you, Mr. Chairman.

Mr. Spitzkoff, the question was asked earlier, I believe by the Chairman of this Committee, about what is the generation source for this battery array. And isn't it true that there is no simple answer to that? It doesn't have, for example, a direct line coming in from a solar facility. So isn't it true that this facility, battery facility I am talking about, and ones like it which will proliferate over time are intended to address the problem with renewable resources, and that is their intermittency?

MR. SPITZKOFF: Yes, to a degree. And it will also address the excess solar that is on the system during the day.

MEMBER HAENICHEN: Right.

MR. SPITZKOFF: So in the middle of the day, fall or winter day, when load isn't very high but all of the solar plants are outputting power, storage projects can soak up that power --

MEMBER HAENICHEN: Right.

MR. SPITZKOFF: -- that's abundant at that time, and then generate it or put it back onto the grid after the sun goes down when those, all of the solar plants aren't on line, yet the peak system load is coming up.

MEMBER HAENICHEN: Right. But I think we can't think about this storage facility in isolation by itself. It is going to be a network of such facilities that serve these two needs, one, the peak problem with solar, which now is just wasted, we don't -- we can't store it, and then the other is the intermittency due to the rainfall and that kind of stuff. So this is kind of part of the grand plan to make a gradual transition over to renewables. Is that a fair statement?

MR. SPITZKOFF: Yes. Storage is a key component of furthering the renewable goals of the state, and really the country.

MEMBER HAENICHEN: Thank you.

CHMN. CHENAL: Ms. Spina, we just make it difficult for you. That's the reason we ask those questions, is to throw you off.

MS. SPINA: No, I love it. The more questions, the more we put Mr. Spitzkoff --

CHMN. CHENAL: Don't encourage us.

MS. SPINA: Okay. All right.

BY MS. SPINA:

Q. Well, Mr. Spitzkoff, turning back, I think you had advanced the slide, but before we move off, or I guess maybe I will just use it as an intro, this slide on the right-hand side is really just a snapshot of APS's existing interconnection queue, correct?

A. BY MR. SPITZKOFF: Correct.

Q. Okay. And what else can you tell us about APS's generator interconnection queue?

A. BY MR. SPITZKOFF: Yes. I just wanted to provide some statistics on the current queue right now. We have 119 active interconnection requests. And just for reference, Queue No. 394 is the latest number. So since the inception of our queue until today we have now had 394 requests for interconnections.

The capacity of the generation that make up the is 37,000 megawatts, there is four main fuel sources and

combinations of those fuel sources. The main fuel sources are PV solar, or PV photovoltaic solar, wind, battery storage projects, and gas. The largest single fuel source that makes up the 119 active requests is actually projects that are a combination of PV solar and battery storage projects. And going from my memory it was 58 of those 119 are some combination of a solar and storage in one project.

The graph on the right screen really just graphs out the last two years of the growth of APS's queue. So on the left side is the number of interconnection requests we had at the close of April 1st, 2019. So at that point, we had 52 requests.

The queue has been around for more than two years. So I brought in the carryover projects that were already in, already requested, that were 40 projects. And then within that last six-month window that ended April 1st, we received 12 new requests for the 52 total. Then after the next six-month window, that went to 62, then grew to 79, 93, and 119.

Now, as we are progressing, some of those existing earlier projects are dropping off. Their studies have been completed, the customers have dropped out, or they are going into construction. And there is more new requests coming in at a faster rate than they

are processing, being completed, or dropping out. So it is growing, the queue is growing in total numbers.

This is also a reflection of utilities', you know, announcements and desires towards moving towards renewable projects and retiring some of their more traditional generation fleets.

Q. Mr. Spitzkoff, could you explain why this graph uses six-month intervals for the data?

A. BY MR. SPITZKOFF: Yes, I can. APS operates our interconnection queue in two cluster windows. So we have two six-month windows. Within those windows we receive interconnection requests, and then as the window closes, all of the projects that have requested interconnection within that window are clustered together into a common study. Well, they are clustered together and then they may be broken up by electrical regional differences, but basically that group then gets studied together. We open up the next queue. We gather interconnection requests for the next six months. Then we close that window, and we do the same thing. So the process just repeats in six-month windows that we call cluster windows.

Our cluster windows run from April 1st to September 30th. So that's the first six-month window. And then from October 1st back around to March 31st is

the second window.

Q. Thank you.

So if a generator wants to interconnect into APS's transmission system, how would it go about doing that?

A. BY MR. SPITZKOFF: Certainly. Okay. So an entity -- well, actually, first, just on the slide on the right, I have broken the generator interconnection process into three main buckets. The first bucket is the recording and validating interconnection requests. The middle bucket is the study processes. And then the final bucket is the application process.

So for the first bucket, the entities must make a valid interconnection request. They do that by filing an interconnection application to APS. That application must contain a certain minimum set of information such as what you saw in the queue, the queue posting that I had earlier. You know, it has to have the point of interconnection. It has to have the size of the project, what type of facility. And by type I mean is it a solar, battery, combination, et cetera. Then another factor it must have to become a valid request, we must have the appropriate deposit amounts.

So every request, whoever is requesting interconnection has to also deposit dollar values.

Those values are different depending on the size of the project. So a small project has a smaller amount. A large project, up to 70 megawatts, so basically from 20 to 70 megawatts, has, I believe it is, a $125,000 deposit requirement. And then 70 megawatts or larger, it is a $250,000 deposit requirement.

Another piece that is required to make it a valid request, the applicant must provide demonstration of site control, or absent site control, they can deposit an additional amount of money if they don't have site control.

Site control on private land can be a couple of different things. It can be outright ownership of the land, or it can be any contractual agreement or a letter of intent from a landowner to the developer that states that that interconnection customer has the right to develop a project on that land. If it is a federal land, there is different other ways that site control can be demonstrated, same thing for state land. There are ways site control can be demonstrated for those types of land ownership.

Q. Okay. And so what happens after the interconnection request is submitted? What is the next step in the process?

A. BY MR. SPITZKOFF: Certainly.

There is one more point that I touched on earlier. You know, there are many joint owned facilities in the State of Arizona, especially on the transmission system. So applications are typically made to the owner of a facility. But when you are dealing with joint owned facilities, then generally the application is made to the operating agent of those facilities. And that's the entity that does day-to-day operations, maintenance of a particular facility.

And that's the case with the Westwing 230kV yard. The 230 yard at Westwing is jointly owned. And, you know, for this project, for the AES project it is specifically owned by APS, SRP, and the United States Bureau of Reclamation, USBR. And again, as I mentioned earlier, APS is the operating agent of Westwing 230. So APS is the entity that processes interconnection requests.

Okay. The next step in the process, after an application has been deemed valid, would go to the study process. So at the kick-off of the study process APS and the interconnection customer hold a scoping meeting. And that's a meeting between APS and the customer to talk about their request, make sure we understand the nature of their request, provide any public information or any information that we know of at that time about

their requested point of interconnection, and agree to basically the study parameters for that request.

Then once that meeting happens, a study agreement is posed or presented to the interconnection customer. So the first study in the process is a system impact study. And the cost for all the studies in this process are paid for by the application fees that I discussed earlier that the applicant -- interconnection customer pays. So all of the costs that APS incurs in performing the study, any consultants that we may need to use, their cost, all study costs are covered by those application fees. Once the studies are done, any unused portion of those fees are returned to the applicant.

Okay. So the system impact study is the first study that's performed. And it does basically what its title says. It determines the impact to the system of interconnecting the new facility, so what is the impact of interconnecting a new generator at the specific requested point of interconnection and the size that was requested. And we do that by running a number of reliability studies. We call them power flow studies. That's -- it is a model of the whole western interconnection that we have. And we perform reliability analysis using that model.

We basically take a snapshot of existing

conditions, you know, what does the system look like before the project that we are studying. Then we will model the new project. We will put that model into the system. We will rerun all of the same reliability studies. And what I mean by that is we take contingencies of the system.

So we will put the generator model in there. We will inject the output of the generator with all lines in service. We will see what the effects are, are there any thermal overloads, are there any voltage concerns or any system stability concerns. And then we will also run simulations where we will take outages of the, all lines, transformers and system elements for the system to see that even under scenario conditions, the reliability of the system is maintained, that there are no negative reliability impacts due to the addition of the new facility.

Any negative reliability impacts that are found, we are required to identify those impacts and identify mitigations of those reliability problems. So if we put a generator in there and run the studies and show that for a specific outage there is another line that might overload, it might load greater than its rated capacity, we would have to identify a remedy for that. And that remedy could be rebuilding that line to a higher

capacity, or possibly building another line that would allow a reroute of the power. So part of the studies is to identify the network upgrades that would be required to mitigate any of the reliability impacts.

CHMN. CHENAL: Member Haenichen has a question.

MEMBER HAENICHEN: Yeah, for Mr. Spitzkoff.

In this, this study box, the center box, when those studies are performed, are existing storage facilities that are connected into the system kept in the picture, too?

MR. SPITZKOFF: Every existing facility is in the model.

MEMBER HAENICHEN: In general would it be fair to say that usually the storage facilities would have a good effect on the study?

MR. SPITZKOFF: In general, yes. But you have -- it is a little bit more complicated than that, because storage facilities also are loads. But you don't expect a storage facility to act as a load during the peak times of the system, because that's when you want them exporting. But in general your statement is correct.

MEMBER HAENICHEN: Thank you.

MR. SPITZKOFF: Okay. So once those network upgrades are identified, we wrap up the system impact

study with a report that is provided to the interconnection customer. Those reports are also publicly posted and available on APS's OASIS site. Within those reports you will find generally three types of facilities that are identified.

If there are network upgrades, those will be identified. And those are upgrades to parts of the system that are beyond the point of interconnection.

You will also find facilities that are called transmission provider interconnection facilities. And the -- let me -- I am going to advance to a map. There is one. The transmission provider interconnection facilities would be akin to what the blue and black facilities are. So APS, as the transmission provider, we are the ones providing those facilities.

And then the green would be akin to the third type, which would be customer interconnection facilities. And those are interconnection facilities because they are, it is part of the generation tie line back to the generator. So it is not out on the network. It is not on one of these lines or any other line that's part of the overall global network. It is basically the single use facility of the generator coming into their interconnection point.

After a system impact study, then -- let me just

go back to this -- then we perform a facility study. Oh, actually -- so after the system impact study is done, again, I said we deliver the results to the interconnection customer, the interconnection customer can choose to continue with the project to the next stage, or they can choose to drop out. If for some reason there is a large amount of network upgrades identified or if, you know, whatever business reason they were trying to develop the project for falls through, you know, they can drop out of the study process at any time. But if they want to continue, if they see the results and they are still developing the project, we move to the facilities study phase.

What the facility study phase is is the upgrades that were identified in the system impact study, if there were network upgrades or if it is just transmission provider interconnection facilities, we do a deeper dive on the cost and construction timelines of those facilities.

So the system impact study includes estimated costs for all those upgrades and estimated construction timelines for all those, but it is at a higher, a higher level. If the project moves to facility study, then our teams go into a deeper level. It is another step towards indicating that the interconnection customer is,

has a feasible project, is interested in actually building the project, and is going to continue to move forward. So we spend another, another study period just on the construction aspects of it. All of the reliability studies have already been performed. The facility study is about the construction estimates at that point.

At the end of the facility study, again we deliver that report to the interconnection customer. That report is also posted on our OASIS, so it is publicly available. And if the interconnection customer continues to or wishes to continue to move forward to the next step, we would move on to the interconnection agreements, or they could also decide that at this point they want to drop out from the interconnection process.

BY MS. SPINA:

Q. Okay. So Mr. Spitzkoff, you, I think, alluded to the next step, but I would like you to elaborate on it a little. Let's assume that an interconnection customer has now been through the impact study and facilities study and wants to continue pursuing interconnection. What comes next?

CHMN. CHENAL: Let me suggest before we get into this, this might be a time for our afternoon break.

MS. SPINA: Yes, Mr. Chairman. I thought you

might be going there. I think there is actually one or two questions left before Mr. Spitzkoff concludes his portion of his testimony.

CHMN. CHENAL: All right. Let's complete it. I just saw a large screen with a bunch of data there. I didn't know if it was going to be two questions or it was going to be a 20-minute explanation.

MS. SPINA: I think it might be a little more than two minutes, but I think much less than 20.

CHMN. CHENAL: Okay.

MR. SPITZKOFF: Yes, I will definitely keep it under 20.

So the interconnection agreement phase is basically the last step of the interconnection process. So upon completion of all interconnection studies, an interconnection agreement is offered to the interconnection customer. These agreements are found, the pro forma version of these agreements are found in APS's OATT. The large generator agreement is found in Attachment O, as I indicated earlier, and the small generator agreement is in Attachment P.

Again, the difference between the two, large generator is a project greater than 20 megawatts, small generator is a project 20 megawatts or less. And the interconnection agreement is, it is a FERC related

agreement.

So they are, you know, FERC agreements. They are -- while we do have a pro forma version of those agreements, there can be some negotiation on the terms and conditions that are found within those agreements. However, if a change is made to those agreements, then we have to specifically file that with FERC because it is no longer the pro forma agreement. But if no changes are made, then we just file the pro forma agreement in our quarterly filings with FERC.

The agreements spell out all sorts of responsibilities of all of the parties in relation to the construction of the facilities, the ongoing operational requirements, even, you know, all things such as insurance and risk and indemnifications. You know, it is what you kind of expect in normal agreements. Plus, you know, being agreements to interconnect a generator, it also has generator specific information on there.

So I think that is maybe two minutes.

CHMN. CHENAL: I assume that the customer's name is no longer confidential at that point, is that correct?

MR. SPITZKOFF: Yes, because agreements are filed with FERC, they are publicly available.

CHMN. CHENAL: That was under two minutes, so that's very good.

Let's take a 15-minute break, and then we will come back and resume the afternoon portion of the hearing.

(A recess ensued from 3:08 p.m. to 3:46 p.m.)

CHMN. CHENAL: Let's go back on the record. And I think we are discussing with Mr. Spitzkoff the generator interconnection agreements.

Before we resume with his testimony, Mr. Spitzkoff, I wanted to ask a question about -- excuse me for one moment. I am going to pull it up. It is APS Exhibit 19. It is the letter from Staff back to me. And there is some discussion in there, in that letter. And I don't need you to discuss this right now, I am sure we will get into it, but it says in January 2020 -- this is on page 3 of the letter. It says:

In January 2020, APS performed a generator interconnection system impact study as part of the FERC large generator interconnection process. This study combined eight interconnection requests, with the APS Westwing 230kV interconnection project being one of them.

Then it talks about the following: Power flow,

post-transient, transient stability, short-circuit network analysis were evaluated for the study. It says as a result of the study, no voltage or transient stability concerns were identified; however, there were thermal loading concerns attributed to multiple projects, et cetera, et cetera.

And then it also, in the next paragraph, says:

APS has reviewed the technology selected by AES for their ESP and considers it industry leading. The applicant requires -- this is the part I am getting to -- the applicant requires AES to design and construct their battery energy storage system project with the safety systems based on lessons learned from the McMicken energy storage facility incident.

And it says:

From a study commissioned by APS, it was determined that the catastrophic failure was an extensive cascading thermal runaway event. As a result of this event, APS is requiring AES to include BESS hazard mitigation analysis, plume and deflagration studies, personal protection equipment, and fire department emergency response plans.

So I guess it is a long way of me asking a question. Would the studies that you said were done for this large generator interconnection agreement, would

they get into things such as a BESS hazard mitigation analysis or the plume and deflagration studies?

MR. SPITZKOFF: Chairman, the studies for interconnection would not. I think we are -- we have run into a case where the word studies is sort of, you know, ubiquitous sometimes.

So what I just went through are interconnection studies, the reliability of the electrical grid from electrical hazards. These studies are more safety studies specific to battery energy storage projects. And Mr. Clark and even AES's witnesses will get into some of that information.

CHMN. CHENAL: So the concern, the potential safety issues with the battery storage system are not so much the result of the interconnection; it is based on the technology itself?

MR. SPITZKOFF: Mr. Chairman, I would only be speculating about Staff's ultimate concern. However, we will touch on both pieces of that, one piece coming up in just a short moment and then another piece later on.

CHMN. CHENAL: And just one -- just so I understand the way this project is set up, the power, this, this gen-tie line really is a two-way street for the battery storage system; it actually energizes or charges the battery storage system at one point during

the day, or whenever it charges it, and then it draws back it out over that same line, correct?

MR. SPITZKOFF: Correct.

CHMN. CHENAL: So the source of the power for the battery storage facility is going to be the power coming into the substation and then connecting to the battery storage system via the line that we are discussing?

MR. SPITZKOFF: Correct.

CHMN. CHENAL: Okay.

BY MS. SPINA:

Q. Okay. So Mr. Spitzkoff, we had just concluded before we took a break, I think, on the interconnection process itself, starting out with the application and sort of the completeness of that application, what types of evidence needs to be shown before the process moves forward to the study process and then the LGIA/SGIA process or agreement phase of the process. And I wanted to ask you, is there a point during this process when the interconnection customer is informed of the Arizona line siting requirements?

A. BY MR. SPITZKOFF: Yes, there is. And that is at the outset of the project, when a valid interconnection request has been determined and APS's response back to that customer, which includes a number

of things, including their queue number and the fact that it has been accepted, information is provided in regards to the requirement to file 10-year plans in the State of Arizona. And then also, at the scoping meetings, we have a discussion, knowing the voltage that the project is going to be at.

And so if we take this project as an example, it is 230kV. We inform any interconnection customer of requirements to site transmission lines in the State of Arizona, anything 115kV or higher over, you know, a series of structures or more, and, you know, make sure they are aware of that, factor that into, you know, any development of their project that they have to perform.

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

CHMN. CHENAL: Yes, Member Hamway.

MEMBER HAMWAY: So in any of these studies, has there been any outreach to residents who might be affected in that one half mile? So is this just all internal discussion or have you done any outreach to residents at this point?

MR. SPITZKOFF: So for the interconnection studies there is no public outreach. However, part of siting of the transmission line, that included all of the typical public outreach on, you know, there is a

transmission line project coming up and the nature of the project. And all that went into the study area that will be shown by Mr. Duncan later.

MEMBER HAMWAY: Okay. So did those notices to residents go out because of the line siting, or because they are requirements of either your facility study or your other one -- what were the two other ones -- system impact or facilities? So there is no outreach to residents during either of those studies?

MR. SPITZKOFF: No, there is not. Those studies are for the impact of the reliability of the system. Typically most projects APS is not involved in the construction of the facility or almost all of the generator tie line that would be built. APS is only involved from the substation fence inward.

This case is slightly unique because it is collocating with our existing 69 line, so we do extend a little past the substation facility. So the development of the project itself is upon on the interconnection customer.

MEMBER HAMWAY: Thank you.

BY MS. SPINA:

Q. Mr. Spitzkoff, just to follow along in that vein, both the system impact study and the facility study reports are publicly available on APS's website,

is that correct?

A. BY MR. SPITZKOFF: That is correct.

Q. Thank you.

Okay. So turning back to the case at hand, has AES gone through this generator interconnection process that you have detailed?

A. BY MR. SPITZKOFF: They are still within the process. They are in the last phase.

Q. Can you give us an overview of where they are?

A. BY MR. SPITZKOFF: Yes. So this project has completed the system impact study. That was completed January 13th, 2020. As part of that study, it was determined this project is responsible for a portion of one identified network upgrade, and that is the rebuilding of a 69kV, a short, I think it is .4 mile 69kV line. And they are responsible for a portion of it because it was studied in that cluster. As the Chairman read, there were eight total projects in the cluster. And network upgrades are identified on a pro rata share. So this specific project contributes a certain amount to that overloaded facility, and that was identified.

The facility study was completed April 1st, 2021. All of those studies are coordinated and reviewed in the Western Area Transmission Study group, or WATS. That's a regional study group made up of, I think it is

on the order of 20 or so different utilities in the southwest who are parts of the co-owners of the Navajo facilities that I talked about earlier, the ANPP facilities, and a couple other joint owned facilities. The WATS group is the technical review group on behalf of those owners.

So the WATS group reviewed the study plans. They reviewed the study results. They made recommendations to the ownership committees of those facilities at Westwing. And the Navajo engineering and operating committee, which is the committee charged with coordinating and approving all of the activities at Westwing, reviewed the work and approved the interconnection, the study work, and the upcoming interconnect agreement. And so this project has completed all their studies and they are currently awaiting the final interconnection agreement itself.

Q. Thank you, Mr. Spitzkoff.

So the system impact study then has been completed. It has been tendered to AES and posted publicly on APS's OASIS site, is that correct?

A. BY MR. SPITZKOFF: Correct.

MS. SPINA: Okay. We have provided a copy of the system impact study as Exhibit APS-21. The version that has been provided to the court reporter and the

version that is on your iPads is the complete system impact study. However, if you are working out of the printed binder, the version that is included behind Tab 21 contains only the body of the study and not the appendices, because it is very voluminous. But I would like to mark that system impact study as Exhibit APS-21 at this point.

CHMN. CHENAL: That's fine.

One quick question, Mr. Spitzkoff. And I think you testified; I will ask you to repeat it. It says a portion of one network upgrade. What again is the network upgrade, please?

MR. SPITZKOFF: Certainly, Mr. Chairman. The network upgrade is rebuilding an existing 69kV line. It is a .4 mile 69kV line.

CHMN. CHENAL: All right. Thank you.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: I would like to sort of backtrack just a second to Committee Member Hamway's question about the public notification. The battery storage facility, given that this is obviously an integral part of the whole discussion in the first place, would any previous experience or public information, shouldn't it be made available to the

public?

MR. SPITZKOFF: The interconnection customer, in this case AES, as part of their development of the project, did do public outreach for the project, as Ms. Grabel stated in her opening statement and their witnesses will testify to.

MEMBER GRINNELL: Okay. But the discussion of previous experiences with the battery storage facility, was that made available to the public? Whether it was this company or another company is irrelevant. What previous experiences and issues concerning battery storage facilities, was that made available to the public?

MR. SPITZKOFF: If by previous experiences you are meaning previous experience with battery storage facilities?

MEMBER GRINNELL: Yes.

MR. SPITZKOFF: So the McMicken event, you know, was widely reported on. The results of the investigations are public. So there is publicly available information on that particular event and, you know, battery systems in general.

MEMBER GRINNELL: I guess my question then is obviously: This new opportunity here, were any issues that were applicable in the previous issue or battery

storage issue, have they been mitigated and do they satisfy a need, or do they satisfy the safety requirements that are going to be put forth here?

MR. SPITZKOFF: So we believe they have and that they do. And you will hear testimony on that matter.

MEMBER GRINNELL: Very well. Thank you.

Thank you, Mr. Chairman.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

Ms. Grabel, just piggybacking on this question, you said that you had to go through a rezoning process for the battery site, is that correct?

MS. GRABEL: That is correct, yes, Member Noland.

MEMBER NOLAND: So within that process there is a notification requirement for all properties within how many feet? 300 feet of the site?

MS. GRABEL: That is correct for the zoning process. And also, because we are having funding from WAPA, WAPA had to mail out to over a half mile vicinity of the site, so that reached 700 people.

MEMBER NOLAND: Okay. And I haven't seen it here, and I may just be missing it. You referenced a requirement by Maricopa County Board of Supervisors on the rezoning as far as safety and other mitigation

measures. Is that included in our package, by any chance?

MS. GRABEL: It is not yet, Member Noland. My witnesses will be on tomorrow, and we will be offering additional exhibits that are contained in the PowerPoint presentation.

But the condition I was referring to is that we are not authorized to construct the storage facility by the Maricopa County Board of Supervisors until we have been certified by the Arizona firefighters and medical association.

MEMBER NOLAND: Well, I would personally like to have the requirements, the safety requirements especially, that were required by Maricopa County Board of Supervisors, if you can supply that in addition to the testimony we are going to have.

MS. GRABEL: Certainly. I will see if I can do that.

MEMBER NOLAND: Thank you.

BY MS. SPINA:

Q. Okay. Mr. Spitzkoff, in both Staff's letter to the docket and the Committee and their opening statement in this proceeding this morning, or this afternoon, they noted potential concerns about safety and reliability to the grid. Have you evaluated those concerns within the

context of the study work around the Westwing battery project?

A. BY MR. SPITZKOFF: Yes, we have.

Q. And can you provide some insights and elaborate on both your evaluation process and your findings?

A. BY MR. SPITZKOFF: Yes. So all of the study work performed shows little to no safety implications to the reliability of the interconnected grid and the Westwing substation. The battery storage project will be connected via the single 230 line that we are seeking the CEC for in this case.

So there is -- at full buildout of the project it would be a 200 megawatt battery storage facility, or generator, if you will, connected to a substation via the 230 gen-tie. As part of the interconnection studies, those are designed to look at a number of different scenarios, including loss of the battery project either because of internal fault at the battery or loss of the line that would disconnect it from the Westwing substation. And those events are studied in the study work to see if there is any reliability impacts.

Also outages of other facilities are studied to determine if there are new impacts caused by the battery being there. And, you know, as I testified, those

results show really no impact to the reliability of the grid. There is the one overloaded 69kV line, but that's standard, you know, mitigations that you will find adding generation or load anywhere.

In terms of, you know, really what it comes down to is the loss of the 200 megawatt source or, you know, generation in your system at any time where it might be generating power. And 200 megawatts, while important, isn't critical a value when you consider the overall size of the system, the overall amount of generation that's on line. And, you know, APS and other utilities in Arizona and the southwest have existing facilities, individual generating facilities that are greater than 200 megawatts today that, you know, the system has to be protected for the loss of those.

So, you know, utilities carry what is called spinning reserves. And then there is also other reserves behind that. And those reserves are there to respond to any loss of generation. Actually they are also there for loss of load, too. But the system is designed to handle a 200 megawatt loss of resources at any time.

Q. So when you refer to spinning reserves, can you provide a little bit more of a definition? I think what you are referring to is resources that are on line and

available to be able to be ramped up in a very short period of time. But can you provide a little more detail?

A. BY MR. SPITZKOFF: I can provide about as much detail as you just explained. It is generation or -- yeah, generation that's on line, but not necessarily at their full output, or generation that can be started and at full output within, I believe it is, a 10-minute period, you know, that could be ramped up and make up for the loss of any single or any level of resource. And, you know, each utility has a spinning reserve requirement.

And then also, you know, there are reserve sharing groups throughout the west that also pool resources. So being an interconnected system, you know, that's one of the benefits of having an interconnected transmission system, is, you know, you have a larger body of resources to pull from.

Q. So you mentioned a moment ago, well, I guess two things, one, the interconnected nature of the grid, particularly at Westwing, which has a number of owners and a number of interconnected systems coming into that substation. But also you mentioned that the studies were reviewed and coordinated across the Western Area Transmission Study group, or WATS, and then the Navajo

E&O community as a whole.

So when you say there has been an evaluation as to impact on the grid -- I am sort of using air quotes here -- the grid as a result of the loss of the Westwing battery, you are speaking more broadly than just APS's system, but also all of the interconnected systems and the system as a whole in the southwest, is that correct?

A. BY MR. SPITZKOFF: That's correct.

CHMN. CHENAL: I am going to jump in here. I appreciate the testimony that the studies regarding interconnection were done and this is a 200 megawatt facility, and in the scheme of things, it is, if it goes down, it is not a problem, there is spinning reserves and other ways to come up, you know, to replicate that power.

But I just have to say, at this point I have just got to throw this out. I think it is a white elephant in the room. And my question before was not well phrased, but I think it is getting to this. There is this battery storage facility right underneath all these large transmission lines. And I read in the Staff letter words like catastrophic failure, cascading thermal runaway event, cell failure, internal cell failure. I see BESS hazard mitigation analysis, plume and deflagration studies.

I don't know what that is, but I would like to know. And I know the storage facility is not within our jurisdiction, but I just think the safety concerns that I think this Committee needs to hear about at some point is what happens if there is a thermal runaway event at that battery storage facility.

And I have no idea really what happened at that, the other, the catastrophic event that was two megawatts. This is 100 times that size. But I just would like to walk away from this hearing with a warm and fuzzy feeling that, if there was a catastrophic event, you know, that we are not putting in danger all these transmission lines.

I have to believe that somewhere APS did an analysis and determined that it was -- this is a safe project, or they wouldn't put it right underneath these huge transmission lines. That would be catastrophic, you know, given the significance of Westwing to the state's energy supply, as you have testified to, Mr. Spitzkoff.

I just hope that somewhere, we keep talking about studies, no offense, interconnection studies, that somewhere we are going to talk about the real important study that provides us with an idea that this is safe even in the event there is a catastrophic failure.

MR. SPITZKOFF: Certainly, Mr. Chairman. Mr. Clark is going to get to a lot of that information. Really what my testimony is providing for is, even in the event of a possible failure similar in nature to previous battery storage failures, the reliability of the grid is not going to be at risk from any electrical situations, impulse, anything like that.

CHMN. CHENAL: I think you made that case very well.

MR. SPITZKOFF: Okay. Yeah. The physical safety attributes of battery storage will be part of the next set of testimony.

CHMN. CHENAL: Okay. And I know it is not your role really at this point in time. I guess I am just making sure that we address it at some point.

MS. SPINA: It is certainly a good question. We understand that is actually a focus of the discussion here, and we will definitely -- Mr. Clark will have some testimony on that, and I am confident that AES's witnesses will have testimony on that as well. The questions for Mr. Spitzkoff were really intended to go to Staff's concerns about the grid reliability aspect of the battery.

CHMN. CHENAL: Right.

Mr. Gentles, Member Gentles has a question.

MEMBER HAMWAY: No, it was me.

CHMN. CHENAL: Oh, I am sorry, Member Hamway.

MEMBER HAMWAY: I am just a long way away.

CHMN. CHENAL: Member Gentles was in the way. I much prefer if he just step back and let me look down there.

MEMBER HAMWAY: So there is one line in this letter from the Corp. Com. Staff. It is in the third paragraph on page 3. It says: It is unclear to Staff if the proposed transmission line will be sufficient to handle other potential interconnection requests in the area.

So there were eight interconnection requests in this application, so that takes us down to 111 active internet requests. I am working off of that 119, subtracting 8. So is APS or -- number one, who makes the determination on the size of the line? I'm assuming that's APS. And, number two, what will it take for the Staff to feel comfortable that 230 is big enough to handle the 111 outstanding internet requests -- interconnection requests? Sorry.

MR. SPITZKOFF: Member Hamway, at Westwing, of the eight projects that were in this cluster study, two of them were connecting to Westwing --

MEMBER HAMWAY: Okay. So I made a mistake.

MR. SPITZKOFF: -- not all eight. All eight projects are within the overall Phoenix valley system, but they are not all connecting at Westwing.

This 230 line is going to the AES facility. It will be more than adequate to handle 200 megawatts of output. We are building the line with double circuit capable poles. So if there is future need for another line to come into the Westwing 230 yard, we will not have to replace those poles. We will be able to string that second circuit on those existing poles. So we won't have to go back, change those poles out to something new. We are providing a future entrance into the switchyard, sort of you want to do it right the first time. That's why we are going to be using double circuit capable poles.

MEMBER HAMWAY: Okay. One follow-up question. So if you have to put in another 230 on the poles that you have put up, does that trigger another line siting?

MR. SPITZKOFF: It probably will, yes.

BY MS. SPINA:

Q. Mr. Spitzkoff, just to provide a little bit more clarity on that, I think, if I am understanding correctly, the existing -- the currently proposed ESP is 100 megawatts for the course of four hours. So that's 400 megawatt hours. But there will at some point or

could at some point be a total of 200 megawatt output from the battery storage system.

So when we say, or when you say that you have studied the various analyses as well as additional projects to determine that there is sufficient capacity, are you looking -- did you look at both the currently planned phase, the subsequently planned potential phase, and any additional interconnection projects that may be relevant to Westwing?

A. BY MR. SPITZKOFF: We looked at the total development of the project. That would be the worst case scenario. So our interconnection studies evaluated a 200 megawatt project with a four-hour duration, so an 800 megawatt hour capacity but a 200 megawatt output. So when we run the reliability study, we look at that total output.

The initial phase is for 100 megawatts with a future 100 megawatt phase.

Q. And you are confident that we have studied and what is being proposed is sufficient to accommodate all of the projects of which we are currently aware and anticipating?

A. BY MR. SPITZKOFF: Yes.

Q. Thank you.

Okay. So turning back to the Westwing, or the

AES battery energy storage system in particular, have you evaluated the benefits of that project?

A. BY MR. SPITZKOFF: I am sorry. Can you repeat your question.

Q. Yes. Have you considered or evaluated the benefits that are likely to come from this particular battery storage facility? I think it is on your next slide.

A. BY MR. SPITZKOFF: Yes. Well, this slide is -- discusses the benefits of the tie line and --

Q. Yes. Thank you for the correction. For the project, not necessarily the battery piece. Thank you.

A. BY MR. SPITZKOFF: Yes. So the project, the generator tie line allows us to fulfill our OATT interconnection requirement -- that's the FERC generator interconnection requirements -- by enabling the interconnection of this Westwing BESS in -- via a route that's the most reliable and least impactful manner to the Westwing 230 bus and the Westwing substation overall.

From the perspective of the BESS project, APS does have a power purchase agreement for the first phase of that project, 100 megawatts with four-hour duration. You know, the project provides APS the ability to reliably serve the needs of our customers with clean

energy. It enables the capture of that renewable energy and that PV solar energy during the day for its storage and later use as the solar plants start coming off line as the sun sets and our system peak starts ramping up.

And in general, projects, battery projects, storage projects, do enhance the reliability and flexibility of generation within the southwestern grid overall. They are all what we call inverter based generation. That means their original source is a DC source. It goes through an inverter, converts it to AC power for interconnection to our grid. Inverter based generation is extremely responsive and flexible to system events when those facilities are on line. So inverter based generation does provide benefits, overall benefits to the grid as more and more of it is added.

CHMN. CHENAL: Real quick question. Mr. Spitzkoff, the slide that we are looking at, 59, says that the project benefits resource to capture renewable energy. Can you explain what that means.

MR. SPITZKOFF: Sure.

CHMN. CHENAL: Because I think you already testified the power for this battery storage to charge it is coming from the substation, and that's other -- that may include renewable energy but also includes nonrenewable energy.

MEMBER SPITZKOFF: Sure.

CHMN. CHENAL: Why don't you answer the question, then Member Haenichen will ask his question.

MR. SPITZKOFF: Certainly. So by its interconnection to the Westwing substation, it has access to, you know, a fairly large transmission hub there. AES has, as the owner of the battery, will have to charge the battery, or I am not familiar with how the PPA is written, whether APS is required to supply the energy. But if we assume AES, you know, charges the battery, they do have to procure that energy from somewhere. You know, they could, they can become a load of APS or any of the other utilities that are connected to that system. You know, they can procure wholesale power on the market.

So wherever they procure that from is really the energy that would be charging the battery. And typically, you know, the development of battery storage projects work by harnessing cheap, middle-of-the-day, off-peak solar power that's available that may even be overly abundant in its use at any given time, and use that solar power as their source and charge for later discharge.

CHMN. CHENAL: So AES has the ability to charge its battery storage facility using renewable power if it

so desires to do so.

MR. SPITZKOFF: Correct.

CHMN. CHENAL: Okay. Thank you.

Member Haenichen.

MEMBER HAENICHEN: Mr. Spitzkoff, have any of your studies considered the power quality implications of inverter produced electricity?

MR. SPITZKOFF: Yes.

MEMBER HAENICHEN: And what were your conclusions?

MR. SPITZKOFF: There are no concerns. As a matter of fact, in some aspects, it is a benefit to the system. But all projects, all generator interconnection projects are required to meet a minimum power factor requirement. And that's plus or minus .95 power factor, and that's basically the amount of VARs that the generator produces to help support the voltage of the system.

MEMBER HAENICHEN: I understand.

MEMBER SPITZKOFF: And this facility meets those requirements.

MEMBER HAENICHEN: Okay. Another consideration is looking at the effect of harmonics that are produced during inverter use from DC to AC, 120 cycles per second, 240 and so forth.

MR. SPITZKOFF: So we do look at harmonics when the situation calls for it. I actually can't tell you if an harmonics evaluation was done for this facility yet. But it is something that APS, and actually not just APS, but other utilities that do generator interconnections are aware of and perform studies to make sure there are no harmonic issues.

MEMBER HAENICHEN: What are ways you can correct for excessive harmonics.

MR. SPITZKOFF: Member Haenichen, you just went right past my level of expertise.

MEMBER HAENICHEN: Okay, thank you.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you, Mr. Chairman.

Mr. Spitzkoff, I want to be sure I understand this. Are you saying that the battery project will only be charged by renewable energy?

MR. SPITZKOFF: I am not saying that. That's -- I don't believe that's APS's purview, to charge the battery. That's AES's position to do that.

MEMBER NOLAND: Well, okay. The line is coming from Westwing towards the battery storage facility, varying kVs, 69, 230, whatever. How do you know what is charging the battery project that's coming off of your lines connecting into that? Do you have a certain time

that you know it is solar energy and can you switch to just that recharging the batteries?

MR. SPITZKOFF: So there is, there is a, I will call a parallel world out there in transmission operations that involves transmission service. And if AES is charging the battery from, you know, whatever resource they are procuring, they also have to procure transmission service from that point to their battery system. So that service is accounted for.

Now, that service, as you know, that service is on paper. It is a paper product. Electrons flow where electrons flow. But you can -- you know, that is the way to account for the resource that is charging the battery.

MEMBER NOLAND: You -- I still am confused. So you have nothing to do with that? APS has nothing to do with what level of recharge is coming through, be it solar, gas, nuclear, whatever?

MR. SPITZKOFF: We would be involved if they are procuring transmission service over our system, but we would only be providing capacity on the wires.

But there are multiple utilities that have connections at Westwing. So they could procure that capacity from any number of utilities to charge their battery. For instance, if they want to charge it with

Palo Verde generation, they could procure transmission service over the Palo Verde to Westwing 500kV lines and through the 230, 500/230 transformers and into their connection. Similarly, there are a number of gas plants, there are a number of solar plants that are connected to the Palo Verde hub that they could procure that power and then wheel that power over to this location.

MEMBER NOLAND: Okay. And I think we will probably get into this with other testimony. I think it would be safe to say at this point, from my understanding, that you can't just say it is from renewable energy that is solely charging this battery storage facility.

MR. SPITZKOFF: I cannot because I am not aware of those details. But generally that's what storage systems are set up to do.

MEMBER NOLAND: That's true. But normally we have those storage facilities in close proximity to a solar array or wind generated power. This is just completely different. And I am just trying to understand the transmission and all of that that goes into the facility. Thank you.

MR. SPITZKOFF: I could provide sort of a hypothetical example of how, you know, the system could

be set up. You know, if we are looking at a spring day where you are in the middle of the day, say noon, and the APS system load is approximately, you know, 2,000, 2500 megawatts, you know, SRP is similarly going to be low. Tucson will be low. Meanwhile you have 2,000 megawatts of solar on line, plus the base-load nuclear units. You know, you might have 500, a thousand megawatts of excess solar capacity at that time. That's when you are going to charge the battery system.

You are going to take that -- over the last couple years, I don't know if it is still the case, but I know a number of years ago there was so much renewable generation in California they were paying Arizona utilities to take their power so they didn't have to shut it down. So if -- you know, in those scenarios, a storage project can actually be paid to charge their facility and take that energy. So that's the benefits that storage projects provide. They are able to actually utilize that excess capacity that may otherwise be lost.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So if APS has a power purchase agreement for the first 100 megawatts for four hours, so

what happens to the second 100 megawatts? I mean, so I mean obviously no one is purchasing that. So will you fill the battery system up with that?

MR. SPITZKOFF: So --

MEMBER HAMWAY: I know that's a stupid question.

MEMBER NOLAND: I don't understand.

MR. SPITZKOFF: No. My understanding, and I believe this is in AES's presentation --

MEMBER HAMWAY: It can wait.

MR. SPITZKOFF: -- their development, I will provide what I have seen, their development is in two phases. The first phase they are going to build the first 100 megawatts of capacity, and APS has a PPA for that. The second 100 can be developed next year, the year after, you know, at any future date, per the commercial obligations or business development of AES.

The interconnection is set up to handle the full development. So electrically, reliability wise, we have studied the full 200 megawatts. APS may purchase that. It is just a process that will play out in the future when AES looks to develop that second phase.

MEMBER HAMWAY: Okay. Thank you.

BY MS. SPINA:

Q. Okay. Mr. Spitzkoff, just to circle back and conclude, I think, if I heard you correctly, the system

impact study and the other studies you have done around the interconnection itself have taken into consideration not only the addition of the 200 or 100 megawatts of battery, but also the potential loss of that battery, is that correct?

A. BY MR. SPITZKOFF: That is correct.

Q. Okay. And you have considered then what the loss of the battery, what the impact of the loss of that battery would be on the Westwing substation, correct?

A. BY MR. SPITZKOFF: Correct.

Q. And what is that impact?

A. BY MR. SPITZKOFF: There is no impact.

Q. Okay. And have you considered what the loss of the battery would be on the interconnected systems?

A. BY MR. SPITZKOFF: Yes.

Q. And what is the impact?

A. BY MR. SPITZKOFF: No impact.

Q. Okay. And have you considered what the loss of the battery, the impact of the loss of the battery would be on customer reliability?

A. BY MR. SPITZKOFF: No impact.

MS. SPINA: Thank you.

Mr. Chairman, I think that is all of Mr. Spitzkoff -- well, this portion, at least, of Mr. Spitzkoff's testimony. Having spoken with counsel

for Staff, I understand that they would like to hold their cross-examination until all of the panel is completed.

Is that fair, Maureen?

MS. SCOTT: Yes.

MS. SPINA: So would you like us then to move into our next witness?

CHMN. CHENAL: Please.

Ms. Grabel. I am sorry.

MS. GRABEL: That's quite all right. Just a couple follow-up questions on the discussion about who is responsible for charging and recharging.

CROSS-EXAMINATION

BY MS. GRABEL:

Q. Mr. Spitzkoff, it is true that you worked on the interconnection portion of APS, is that correct?

A. BY MR. SPITZKOFF: Correct.

Q. And AES has contracted for -- with their PPA from APS's procurement side, correct?

A. BY MR. SPITZKOFF: Correct.

Q. So is it possible that it actually might be APS's responsibility to charge and recharge the battery if that's in the terms of the agreement reached between the AES and APS procurement group?

A. BY MR. SPITZKOFF: I believe I stated at the beginning that I am unaware what the PPA specifically said. It may be possible it is APS's responsibility.

MS. GRABEL: Okay. And Chairman and Committee members, we might hear testimony tomorrow that differs slightly from what Mr. Spitzkoff represented.

CHMN. CHENAL: That's fine. That's fine.

Ms. Spina, who will be your next witness?

MS. SPINA: We are going to turn to Mr. Clark.

MR. CLARK: Mr. Chairman, if I may share my Exhibit APS-22 on the right slide here.

CHMN. CHENAL: Yes.

Member Haenichen has a question.

MEMBER HAENICHEN: No, I have a comment while we are waiting.

One of the interesting things is that the compatibility between solar generation and batteries, it just goes in directly without any manipulation and it is DC to DC. So in the long-range view of this whole system, I envision that there will be a lot more physical connection in terms of distance between solar generating facilities and battery storage facilities. This is one step you don't have to do over again.

MS. SPINA: Thank you, Mr. Clark. Let's just jump right in.

DIRECT EXAMINATION CONTINUED

BY MS. SPINA:

Q. So you have indicated that you have been with APS for approximately two years, is that correct?

A. BY MR. CLARK: Correct.

Q. And in that time, you have been involved with battery energy storage facilities, correct?

A. BY MR. CLARK: Correct.

Q. Okay. And then again just, I guess, to let the record reflect that the slide that you have showing on the right screen is what has been identified as APS-22, is that correct?

A. BY MR. CLARK: Correct.

Q. Okay. Thank you.

And that is essentially a picture depicting the various pieces of a BESS system, is that correct?

A. BY MR. CLARK: Yeah, the battery enclosure component.

Q. Okay. Thank you.

CHMN. CHENAL: Mr. Clark, yeah, would you bring the microphone closer.

MR. CLARK: Yes.

BY MS. SPINA:

Q. Well, let me ask. Is there a point in your slides where it makes sense to walk through this

picture, or would you like to set the stage with it now?

A. BY MR. CLARK: I would like to set the stage just briefly, because I will refer to these terms quite a bit as I go through my slides.

Q. Okay. Please do so.

A. BY MR. CLARK: Sure. So on the right side here you have the four basic components of a battery energy storage safety system, which I will be referring to as BESS. And I tried to scale them roughly, you know, proportionally to each other.

So on the left is -- sort of the building block of any BESS facility is the cell. And, you know, those cells can be a number of different sizes, energy capacities. Those are packaged together in what is called a module. There could be, again, a number of arrangements there. It could be 10, there could be 30 cells in a module.

And then those modules are essentially stacked on top of each other. Usually they can be. Again, it is up to the manufacturers in how they arrange these. The modules are stacked on top of each other into a rack or unit. And those are then placed inside enclosures. Some enclosures may have a few racks, some may have 20 racks. It just depends on the particular original equipment manufacturer, OEM. So I will be referring to

these as we talk about the safety, and so I just want to have them up there so people can refer to those.

Q. Thank you, Mr. Clark.

So as we have established, you have been involved with batteries for a number of years, but in particular during the last two years that you have been with APS, correct?

A. BY MR. CLARK: Correct.

Q. And so you are familiar with the battery installation located at the McMicken substation in Peoria, is that correct?

A. BY MR. CLARK: Yes, correct.

Q. Okay. And can you please describe that battery system for us and provide an overview of the event that took place there on April 19th of 2019.

A. BY MR. CLARK: Yes. So the McMicken BESS was located just south of the McMicken substation. It was a two megawatt, two megawatt hour lithium-ion battery system. It was a walk-in style enclosure where someone could enter.

And on April 19th, 2019, there was a cell failure. That cell failure cascaded throughout the modules. So that was a cascading thermal runaway or propagation. And that then continued from the module up to other modules within the rack level within that

enclosure.

The thermal runaway event and cascading thermal runaway released a buildup of flammable gas, which then ignited. And without a means of release on the enclosure, it led to an unexpected explosion, and resulted in injuries to four first responders.

Q. Mr. Clark, you have used some terms that are perhaps not intuitive to folks, certainly not ones that I have heard before, when we started this conversation. So could you take a moment and just explain thermal runaway and propagation, deflagration to the Committee?

A. BY MR. CLARK: Sure. So thermal runaway is the event where a cell basically becomes unstable, chemically unstable, and all the energy is released at once. There can be a number of causes for that, electrical abuse, imperfections in manufacturing that can cause the cell to go into a thermal runaway. And that essentially will release a lot of heat and a lot of gas from that. And that's typically what is considered a thermal runaway event.

I show the term propagation here, but I will continue to use cascading thermal runaway on my other slides. I think it is a better description.

And essentially what happens with a cascading thermal runaway is that one cell that failed, then the

release of the heat causes the cell next to it to go into its cell thermal runaway, and that the next one, the next, and that's the cascading effect. The cascading part is what releases -- it is an uncontrolled event in that it is releases a lot more energy than just one cell. And then when I say deflagration, it is essentially synonymous with an explosion.

Q. Thank you.

Did APS investigate battery safety following the McMicken event?

A. BY MR. CLARK: Yes. And basically as soon as this happened, we assembled a team of industry experts and other consultants to investigate the root cause of the McMicken event, as well as try to find out ways to improve safety of battery energy storage systems. And that study went on for almost a year. And at the conclusion of that study we filed it with the ACC, and then we posted that study also to the APS website where it is still publicly available for all to download.

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

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So this was all then started with a bad cell. So is there a percent within your industry of failing cells? I mean, like out of a

thousand cells produced, .001 fail? I mean, do you have any of those industry standards on failures of cells?

MR. CLARK: There is not an industry standard number right now. It depends on who manufactures it, the type of chemistry, the type of use case it is in. I have seen numbers anywhere from one in 100,000 to one in a million.

MEMBER HAMWAY: Okay.

MR. CLARK: So it can vary.

CHMN. CHENAL: Member Riggins.

MEMBER RIGGINS: Mr. Clark, I guess kind of in line with that question, how often do -- I mean, is it common or is it rare for these sorts of incidents to happen at these enclosures or these facilities? Like what is the rate nationally of these happening or the potential for these to occur?

MR. CLARK: The cell failure is, as I noted, fairly rare. The cascading portion of the thermal runaway is dependent, again, on the chemistry and the manufacturer's build of the module and the rack.

And so the event at McMicken was extremely rare. In fact, many of our models through this study that I just mentioned were unable to replicate this, the environment that happened. However, the risks are known now, and we have to address those. And so the

inflammable gas is something that will be addressed in our safety requirements, which I will have on another slide. So it can happen, but it has to now be considered and designed into from the start so that it fails in a safe way if it does fail.

MEMBER HAENICHEN: Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: I might point out that everybody in this room has a BESS in their pocket or in their purse, these things. And there are very well established failure rates for them, and they are very small. But when you have the possibility of cascading, it makes it a bigger deal. So perhaps the manufacturers will come up with a better way to package those cells to prevent the cascading.

CHMN. CHENAL: Yes, Member Noland.

MEMBER NOLAND: Thank you.

Mr. Clark, the rack units remind me of memory storage that we use in computer systems in racks. Now, we have to keep those rooms at a certain degree of heat and air conditioning and so on. So within the enclosure that these racks are in, is there air conditioning? Is there fire suppression within each of the enclosures?

MR. CLARK: For this particular project, and many of the products we have evaluated, there is air

conditioning. Now, I can't speak to all products, but to your point, it is very critical to keep the batteries within a certain range. And our safety requirements do address the thermal considerations, the cooling of units to make sure that they stay within a certain range.

MEMBER NOLAND: Because they do generate a lot of heat, correct?

MR. CLARK: Correct, correct.

MEMBER NOLAND: Thank you.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: Just to follow up on Committee Member Noland's question, would the halon suppression systems be appropriate to install in these facilities?

MR. CLARK: One of the outcomes of this study that we performed that we mentioned was that essentially no suppression can stop a cascading thermal runaway, because the energy is stored within the units themselves. And so most dry air clean agents like you mentioned would not be sufficient to stop a cascading event. The best use --

MEMBER GRINNELL: What about -- sorry.

MR. CLARK: My apologies.

MEMBER GRINNELL: Go ahead, please. I didn't mean to interrupt.

MR. CLARK: The current codes and standards do

call for water in some scenarios, not all scenarios, but that's essentially just to cool it.

MEMBER GRINNELL: Would, I guess, immediate containment of the area, in other words, shutting all oxygen available to these, would that be something that would be a suppression opportunity?

MR. CLARK: I can't speak to that particular suppression strategy.

CHMN. CHENAL: Member Hamway has a question.

MEMBER HAMWAY: So when one of these cells fails and there is a cascading event, does it affect every module within the enclosure, or can you keep it to a -- what was it? Is it called a module? What is it called? Or a rack or unit.

So yeah, so the cells in the module, so does it affect every module within the rack, within the enclosure, a cascading event, or can you stop it halfway through.

MR. CLARK: Yes. Thank you for that question. So the results of the, what is called large scale fire testing, there is a standard called the UL 9548 that is going to tell you how or if a cell thermal runaway will cascade.

And so the evaluation of this project was very favorable, in that we did not see any cascading and it

stayed within the cell. And so that severe -- you know, greatly limits the amount of energy that's released. So it really depends on the manufacturer, the chemistry, how they manufacture it. So our safety requirements start out with that testing, and that's the building block from there on how to build a safe system.

MEMBER HAMWAY: Okay. Thank you.

BY MS. SPINA:

Q. Okay, Mr. Clark, just returning to McMicken for just a moment, had you completed, had you discussed everything that you wanted to discuss on this slide that's currently on the screen?

A. BY MR. CLARK: I have, yes.

Q. Okay. You mentioned at the beginning of your discussion of the McMicken investigation that APS had retained some third-party experts. Can you provide a little more information about those experts.

A. BY MR. CLARK: Yes. One of the primary companies we worked with is DNV-GL. They are one of the leading battery energy storage safety consultants in the industry. They do a lot of testing results, the large scale fire testing I mentioned. In addition to them, we worked with a number of fire protection engineers. We worked with universities to review those standards.

Q. Thank you.

I would like to come back to the APS safety requirements for battery storage projects that you mentioned, but before we get there, were there any recommended actions that came out of the McMicken investigation?

A. BY MR. CLARK: There were. And we have touched on these a little bit already.

So one of our first recommendations was to update standards and codes that directly addressed cascading thermal runaway. Currently they are mostly hidden in the footnotes of those codes and standards. And so we believe they should be brought out and addressed at a more direct level on those.

And so I am, as I mentioned in my intro, I am on the NFPA 855 Committee. And we working to submit comments in there to get this worked into those. Of course, that's a process.

So the second one was to implement designs that slow or halt the cascading thermal runaway. As I mentioned, to stop it at a cell level greatly reduces the amount of energy that's released during a thermal runaway event and thus becomes a safer environment.

Third, we want to implement product and site protection systems to manage these known risks. Deflagration control, explosion control, is very

critical. As we find out through our testing results how gas is released, what type of gas it is, we can design systems around that failure mechanism to ensure that it fails in a safe way.

And then lastly, we need to continuously educate, train, and update our procedures for first responders as we learn more about BESS hazards, and continue that annually at a minimum.

Q. So you have, as we established earlier in your testimony, you have quite a bit of experience with battery energy storage systems, and in particular with the safety of those systems. Do you agree that those recommendations are appropriate to enhance battery energy storage safety?

A. BY MR. CLARK: I do.

Q. Okay. You mentioned that the McMicken event and the subsequent investigation led to the creation of APS safety requirements for battery energy storage systems. I believe a copy of those safety requirements has been included in the exhibit binder and the iPads and marked as Exhibit APS-20, is that correct?

A. BY MR. CLARK: That's correct.

Q. And can you provide an overview of APS's safety requirements for battery energy storage projects?

A. BY MR. CLARK: I will. So on the last page we

incorporated all the identified recommendations from the previous slide. We then went above and beyond not only those recommendations, but mandatory code and standards to include testing, modeling, a number of other engineering processes, documentation, very in-depth, detailed requirements to make sure that any APS owned or APS contracted battery follows these safety requirements. And that includes the AES ESP.

So, you know, putting these into the PPA was actually a pretty unique scenario. We don't -- we actually made sure that all our past eight have these as well. And so once we built those up, we are disseminating them to industry, first responders, in all kinds of various forums.

As you can see, we have it as an exhibit here. So you can take those home with you and read through them. So we are --

CHMN. CHENAL: I am not going to do that tonight.

May I ask, I am looking at Exhibit 20 now, since says it is Appendix W, what is it attached to as Appendix W?

MR. CLARK: Thank you for the question. Appendix W is a reference to a contract appendix. It just became the de facto appendix for our safety

standards for any contracted battery project.

CHMN. CHENAL: Which contract?

MR. CLARK: Any battery contract we have will have an Appendix W as part of that.

CHMN. CHENAL: So you have like a pro forma contract, and this is Exhibit W to the --

MR. CLARK: Correct.

CHMN. CHENAL: -- contract APS would enter into with any BESS operator?

MR. CLARK: Correct.

CHMN. CHENAL: Thank you.

MEMBER HAMWAY: Mr. Chairman, one quick question.

CHMN. CHENAL: Member Hamway.

MEMBER HAMWAY: So what is the largest megawatt BESS storage unit you have ever worked on, or what is the largest one? Like this one is going to be 200 and a four-hour. So is there a six-hour and an eight-hour out there?

MR. CLARK: Me personally, I have worked on 100 megawatt hour projects in California. You know, in addition to that, I have worked on a number of -- I would say, in totality, I have worked on 4- or 500 megawatt hours of battery projects.

MEMBER HAMWAY: I am talking about at one, you

know, one unit, one BESS. So I just want to know out there in the world, in the industry, what is the largest BESS out there.

MR. CLARK: I should probably know this. I think the largest BESS I am aware of is roughly 400 megawatt hours. But I can go get clarity on that.

MEMBER HAMWAY: 400 megawatt hours. So that's twice as big as this one.

MR. CLARK: It would be the same size.

MEMBER HAMWAY: Oh, same size.

MR. CLARK: But I will --

MEMBER HAMWAY: So this is one of the largest in the country, correct?

MR. CLARK: By the time it is built it probably won't be. I think the largest being built right now is, again, I don't want to speculate, but it is larger than this.

MEMBER HAMWAY: Okay. And so what are the issues when you are scaling up from a two megawatt to a 400 or 200 megawatt, whatever this one is? So are there issues with safety when you are scaling it up to this magnitude?

MR. CLARK: So --

MEMBER HAMWAY: Is it covered in all of this, I guess?

MR. CLARK: Yeah. I will call your attention to the right side. So this enclosure is sort of the modular unit that's going to be installed. That's .75 megawatt hours. And so everything that could happen with a cell would be contained within that one enclosure. And then there is just many of those enclosures spaced out next to each other within the project facility.

MEMBER HAMWAY: Right, okay.

MR. CLARK: So the safety, by containing the event within the one enclosure, it is not like you have 400 megawatt hours in one big area.

MEMBER HAMWAY: I see. And these enclosures are not necessarily connected to each other, so a thermal event can't jump enclosures?

MR. CLARK: They are electrically connected, but they will be isolated, the thermal, yes.

MEMBER HAMWAY: And so how big did you say the enclosure was?

MR. CLARK: I should say I believe it is .75 megawatt hours.

MEMBER HAMWAY: Okay. So is that the maximum amount that can go in an enclosure? Is that an industry standard or is that an APS decision?

MR. CLARK: It is decided by whoever builds the

battery enclosure. So it can go up from there, down from there, depending who is building it.

MEMBER HAMWAY: So it is a designed criteria more than a technical limitation?

MR. CLARK: Yes, a product development.

MEMBER HAMWAY: Okay.

CHMN. CHENAL: Member Gentles. And then Member Haenichen.

MEMBER GENTLES: Hopefully I don't ask questions that you plan to answer later, but a couple things I wanted to just clarify for myself. One is, so you just said this will basically be one of the largest BESS projects in the country.

MR. CLARK: By the time it is built it won't be, but...

MEMBER GENTLES: Today it is.

MR. CLARK: Well, if you look at development queues, this is a pretty small project. I would say across the country I was looking at what is in the ground today. I am comparing what is already built to what is in development.

MEMBER GENTLES: And then Member Hamway asked this question, but how many other BESS facilities are there in Arizona?

MR. CLARK: I can't speak for SRP or TEP. I

believe we have five APS owned, two under, currently under contract. And then we are -- APS is in construction of two more programs spanning across about 10 sites.

MEMBER GENTLES: So this BESS project is where in that line?

MR. CLARK: In terms of the timing or megawatt hours?

MEMBER GENTLES: Uh-huh.

MR. CLARK: We will have our APS owned facilities on line by Q2 of next year, our new facilities. This will be by Q4 of next year. So this will actually be after our other projects, which are unrelated to this.

MEMBER GENTLES: And then how far is this project from the McMicken project --

MR. CLARK: I don't --

MEMBER GENTLES: -- in terms of distance?

MR. CLARK: -- know the answer, exact answer.

MEMBER GENTLES: Can you venture a general guess how far the distance between?

MR. CLARK: Maybe 10 miles, roughly, between.

MEMBER GENTLES: So it is basically in the general community in which the McMicken event occurred, would you say?

MR. CLARK: I don't know if I would say that. The communities around it are separate, and 10 miles is a long ways for a project to be related. I mean that people in these communities right -- I can't speak to if they know or if I would say it is in the community. It depends on the definition of that.

MEMBER GENTLES: And Mr. Chairman, did, for the McMicken project -- am I pronouncing that right by the way? McMicken, is that what it is called? Okay.

So did that have to go through a CEC hearing as well at some point? Maybe Staff knows that.

MR. SPITZKOFF: Member Gentles.

MEMBER GENTLES: Yes, sir.

MR. SPITZKOFF: That did not. It was two megawatt, one hour battery connected at the 12kV level. So it was a small project on a lower voltage. There was no CEC for that gen-tie.

MEMBER GENTLES: All right. Thank you, Mr. Chairman.

CHMN. CHENAL: Member Haenichen.

MEMBER HAENICHEN: Oh, I think my question was answered. I was going to ask -- someone asked how big is the enclosure, and you did it in capacity. But how big physically is it?

MR. CLARK: AES could get you the exact specs,

but I believe it is roughly seven to eight feet tall, four or five feet wide and maybe about as deep.

MEMBER HAENICHEN: Okay.

MR. CLARK: But I can get you exact values.

MEMBER HAENICHEN: So if you have a plurality of these in a building, how far apart would they have to be to make them safe from any cascading event from one to the other?

MR. CLARK: So the results that we have seen and we evaluated as part of our PPA, was that it showed no propagation within the -- or cascading thermal runaway within the module. And so that would then mean it doesn't propagate throughout the rack or the enclosure from enclosure to enclosure. So it would just -- any failure would remain within one enclosure.

MEMBER HAENICHEN: Thank you.

CHMN. CHENAL: I have a question, just a follow-up question, probably for Mr. Spitzkoff.

This Exhibit W, can you tell me what contract that exhibit would be part of? Is it the interconnection agreement, the large interconnection agreement between APS and AES? Is that where it would be located?

MR. SPITZKOFF: No. I believe it would be part of any power purchase agreement.

CHMN. CHENAL: Okay. And these seem very comprehensive. I take comfort in just skimming this exhibit document, Exhibit W. It seems very comprehensive.

Will this Exhibit W be a part of the power purchase agreement between APS and AES?

MR. CLARK: It is effectively the exact appendix included in their contract.

CHMN. CHENAL: Okay. Is there a purchased power agreement now that has been executed between APS and AES?

MR. CLARK: For the 100 megawatts, yes.

CHMN. CHENAL: And this Exhibit W that's Exhibit 20 of -- APS-20 is part of that agreement, is that correct?

MR. CLARK: Correct.

CHMN. CHENAL: Thank you.

MEMBER NOLAND: Mr. Chairman.

CHMN. CHENAL: Member Noland.

MEMBER NOLAND: Thank you.

I just want to be sure I am clear on this, because this is the first time in the 12 years I have been doing this that we have had this situation. I remember early on we had the project down near Gila Bend that was solar, and had a type of -- I believe it was a

salt storage at that particular project.

But just to be clear in my mind, we don't have any authority over the BESS. We have authority over the transmission lines and the interconnections. I don't think the Corporation Commission has authority over the BESS, but I am not sure. I just want to get this straight in my mind. And I understand why we are asking these questions and getting the answers on the record, because everybody is concerned about it.

But I think the main authority over this is Maricopa County. Am I correct or incorrect?

CHMN. CHENAL: Well, Member Noland, I -- technically the Committee does not have jurisdiction. And I don't want to speak for the Commission. But the Committee would not have jurisdiction over the BESS.

But I would say that the Arizona courts have interpreted the Line Siting Committee statutes and rules and regulations and have determined that the Committee is within its jurisdictions to determine the need for any -- for a -- for what is before it in the application.

And I guess one could look at this project and, since it serves this particular BESS project, is there a need for that. And I think we can -- I think it is

certainly within our jurisdiction, it is certainly within the custom and practice for us to examine the projects.

I mean we are voting on a power line gen-tie line and not this project. But I don't think it is a stretch to say, you know, that as part of our need analysis, you know, that we can look at the project itself. And I think we have done that in the past, and I think it is something we should do. So...

MEMBER NOLAND: Mr. Chairman, I am not saying we shouldn't examine it. I'm just trying to figure out the actual lines of how far we go or where we go and how we discover the evidence or testimony that we can to help the Corporation Commission. I am just -- you know, we have been through this before with other projects, where we get into something way off of the scope of what we as a Committee are tasked with doing.

CHMN. CHENAL: And let me pull up one more document. Yes, it is the letter to me from the Staff. And one of the recommendations in the letter is Staff recommends the Committee allocates sufficient time during the hearing to study the safety aspects of the project, given the close proximity of residential developments, a church, and utility system appurtenances. Staff also recommends the Committee

study if proper notice was provided to the surrounding community, et cetera.

So I think there are two purposes for us that authorize us to get into this. One is our analysis of the need for the project, and the other is Staff has asked us to create a record for the Corporation Commission. And I think by getting into this, we are doing the Commission a service and something that we have traditionally done.

MEMBER GENTLES: Mr. Chairman, I will just say, even though we don't have jurisdiction over the BESS, the actual storage facility, it is incredibly important to have some context around what this line is going to and why. So although we are narrowly defined, and I would agree I think it is highly appropriate for us to review the usage or, you know, some of the issues that are surrounding this, because, look, as many of the mitigation issues that have been taken with the first, with the project we knew that exploded apparently, and although there are many mitigation efforts that have occurred, there is nothing to say nothing is failsafe. So it is really important at least to have it on the record so the public can have a real understanding of what they are getting in their community.

CHMN. CHENAL: One of the findings of fact and

conclusions of law is that the project aids the state in meeting the need for adequate economic and reliable supply of renewable electric power. Another is the project aids the state in preserving a safe and reliable electric transmission system. Another is if the conditions placed on the project effectively minimize the impact of the project on the environment and ecology of the state. And there are others.

I think it is within our jurisdiction to ask the questions. I mean when we vote, we will be voting on the line. But it is hard to separate the line from the BESS project. And, of course, we don't have jurisdiction over it, but it is hard to separate the one from the other. It is -- and I know there can be a difference of opinion on it. And I am not going to ask the applicants if they agree, because I suspect that they may not, and the intervenors, at least AES.

But I have always felt if we had a power -- if we had a project before us that was a high explosive munitions factory in a residential neighborhood and we were voting on a line to provide power to it, could we consider what we were approving, and I would say the answer to that question is absolutely we could, and we would be doing a disservice if we didn't.

So I think we can get into this. But I think we

will have a good record. I think we are going to get into maybe a little more in Exhibit W there. And I think we are going to come to the right decision when we vote on it. But I think it informs us and it helps us to make the right decision to hear the testimony that we are hearing, for example, from Mr. Clark and Mr. Spitzkoff in answering the questions we have been asking, and I think creating a good record. And I think we have the right to do that.

MEMBER NOLAND: Mr. Chairman, I agree with you as long as we don't think we have the right to put conditions on the project, not on the interconnection. And that's where it gets confusing sometimes. We have been through this before. I think you hit the nail on the head with us looking at the need.

And as I said, I know that the Corporation Commission Staff would like to see us flesh out some of the safety issues and so on. And that's why I asked also for the Maricopa County conditions that were put on the rezoning. Because I think that would help us tremendously, and maybe it would answer a lot of questions that we have right now that we are going through.

So that's all. I am not saying we shouldn't do it. It is just remembering what we really are charged

with doing, and not lose focus of that.

CHMN. CHENAL: That's a very good reminder for us.

MEMBER GRINNELL: Mr. Chairman.

CHMN. CHENAL: Member Grinnell.

MEMBER GRINNELL: I apologize if I interrupted.

Back to the McMicken project just real quick, during this catastrophe was there any interruption in service to either the other additional power sources or to any of the customers as a result of this issue, catastrophe or --

MR. SPITZKOFF: There were no interruptions to customers. Or the McMicken substation, which was located right next to the McMicken BESS, was not affected by that incident.

MEMBER GRINNELL: Thank you.

And may I have a copy of Exhibit W somehow? I was looking through my PDF files and I don't believe I have that. I do have the picture of the BESS components. Is that what you are referring --

CHMN. CHENAL: It is Exhibit APS-20.

MEMBER GRINNELL: All right. Thank you, sir.

MS. SPINA: Mr. Chairman, if I may, it is approximately 5:15. I think we are set for public comment at 5:30, and I understand they need a little bit

of time to turn the room.

We don't have that many more questions to go, or at least I don't have that many more questions to go. But understanding that the members of the Committee may, I am not sure that I can reliably get that wrapped up in the next five or so minutes. So I am not sure how you would like to proceed, but I want to make sure you aware of the time.

CHMN. CHENAL: I am certainly aware of it. And I think I am going -- if I could ask the Committee just to hold their questions for just a few minutes to see if you can finish with Mr. Clark, and we will see where we are. And we can always finish questions tomorrow. But, you know, it is 5:15.

Let me ask what the Committee would like to do. Should we hold it for this evening or finish with Mr. Clark for five more minutes?

MEMBER GENTLES: It is just getting good, but we can hold it until tomorrow.

CHMN. CHENAL: I think that's -- I think the cue is let's hold it for now and take our 15-minute break and finish with Mr. Clark in the morning and go from there.

So we will adjourn the hearing for this evening. We will resume tomorrow at 9:00 a.m. We will have our

public comment hearing or, you know, portion of the hearing at 5:30.

Are there any procedural matters we should discuss before we break for the evening, at least in terms of the hearing?

MS. SPINA: None from APS.

CHMN. CHENAL: Ms. Grabel.

MS. GRABEL: No, sir.

CHMN. CHENAL: Ms. Scott.

MS. SCOTT: No.

CHMN. CHENAL: Okay. Did someone ask the question?

MEMBER HAENICHEN: I was just wondering about leaving stuff here.

CHMN. CHENAL: Oh. The facilities will be locked this evening, so we can leave our materials here.

All right. If nothing further, then we will adjourn the hearing for now and we will resume the public comment at 5:30.

(The hearing recessed at 5:17 p.m.)

(The evening public comment session convened at 5:38 p.m. with all Committee members and parties in attendance.)

CHMN. CHENAL: All right. Good evening, everyone. This is the time set for the public comment. It was noticed in the Notice of Hearing and noticed in other ways. And it is an opportunity for us to hear from the public about this project and hear what they have to say.

Is there anyone in the room that is here to provide public comment?

(No response.)

CHMN. CHENAL: I don't see anybody.

Is there anyone that is appearing by phone or by Zoom to provide public comment this evening to the Committee on this project?

And I am being told that there is no one either on phone or by video.

So it is now approximately eight minutes past when the public comment session was noticed to begin. There is no one here. So we will adjourn the public comment for this evening and we will resume the hearing tomorrow morning at 9:00 a.m. Thank you, everyone.

(The public comment session concluded at 5:39 p.m.)

STATE OF ARIZONA)
COUNTY OF MARICOPA)

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