BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF SALT RIVER PROJECT AGRICULTURAL IMPROVEMENT AND POWER DISTRICT, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES, SECTIONS 40-360, et seq., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING THE EXPANSION OF THE COOLIDGE GENERATING STATION, ALL WITHIN THE CITY OF COOLIDGE, PINAL COUNTY, ARIZONA.	Docket No. L-00000B-21-0393-00197 LS CASE NO. 197

At: Casa Grande, Arizona

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REPORTER'S TRANSCRIPT OF PROCEEDINGS

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COASH & COASH, INC.
Court Reporting, Video & Videoconferencing
1802 North 7th Street, Phoenix, AZ 85006
602-258-1440 staff@coashandcoash.com

By: Carolyn T. Sullivan, RPR
Arizona CR No. 50528

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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 Radisson Hotel Casa Grande, 777 North Pinal Avenue, Casa Grande, Arizona, commencing at 9:06 a.m. on the 8th day of February, 2022.

BEFORE: PAUL A. KATZ, Chairman

ZACHARY BRANUM, Arizona Corporation Commission (via videoconference)
LEONARD DRAGO, Department of Environmental Quality
JOHN RIGGINS, Arizona Department of Water Resources
JAMES PALMER, Agriculture Interests
MARY HAMWAY, Incorporated Cities and Towns
RICK GRINNELL, Counties (via videoconference)
KARL GENTLES, General Public
MARGARET "TOBY" LITTLE, PE, General Public (via videoconference)

APPEARANCES:

For the Applicant:

JENNINGS, STROUSS & SALMON, P.L.C.
Mr. Albert Acken
One East Washington Street
Suite 1900
Phoenix, Arizona 85004

and

SALT RIVER PROJECT
Ms. Karilee Ramaley
Senior Principal Attorney
P.O. Box 52025
Legal Services PAB381
Phoenix, Arizona 85072-2025

APPEARANCES: (Cont.)

For the Sierra Club:

ROSE LAW GROUP PC
Mr. Court Rich
Mr. Eric Hill (via videoconference)
7144 East Stetson Drive
Suite 300
Scottsdale, Arizona 85251

For Western Resource Advocates:

WESTERN RESOURCE ADVOCATES
Mr. Adam Stafford
1429 North 1st Street
Suite 100
Phoenix, Arizona 85004

For the Randolph Residents:

Ms. Dianne Post
1826 East Willetta Street
Phoenix, Arizona 85006

and

Ms. Autumn T. Johnson, pro hac vice
autumn@tierrastrategy.com
(via videoconference)

For the Arizona Corporation Commission Staff:

Mr. Stephen J. Emedi
Ms. Kathryn Ust
Staff Attorneys
Legal Division
1200 West Washington Street
Phoenix, Arizona 85007

CHMN. KATZ: I think we're ready to begin, and we can pick up where we left off. The three witnesses have all been affirmed, and I think we're ready to go.

MR. ACKEN: Thank you, Mr. Chairman.

We are going to pick up where we left off yesterday with Mr. Mcclellan's testimony regarding providing an overview of the expansion project that is before you. We've made some technical improvements. "We" doesn't include me, but the AV team has. So we're hopeful that it will be easier to follow for those online.

ANGIE BOND-SIMPSON, WILLIAM MCCLELLAN,
AND GRANT SMEDLEY,
called as witnesses as a panel on behalf of Applicant, having been previously affirmed by the Chairman to speak the truth and nothing but the truth, were examined and testified as follows:

DIRECT EXAMINATION (Cont.)

BY MR. ACKEN:

Q. So with that, Mr. MccClellan, please just take another swing at describing the existing -- not the existing -- the Coolidge Expansion Project at a high level.

A. (Mr. MccClellan) Sure.

And I'll just start off by just going over the existing Coolidge Generating Station equipment just to kind of remind everybody what we talked about yesterday.

The Coolidge -- existing Coolidge Generating Station is located on the northern part of the project site. It consists of 12 simple-cycle combustion turbines, and the location of those existing combustion turbines are kind of in the middle of that northern part of the site. That combustion turbine equipment connects to an existing 230kV switchyard that's known as the Randolph Switchyard, and then that ties into SRP-owned 230kV transmission lines that are existing on the west side of the site.

In addition to the generating and switchyard equipment, there's some existing evaporation ponds that are located in the northwest corner of the site as well. There's also some various administration warehouse buildings, as well as water treatment equipment. That water treatment equipment is located to the east of the existing generators.

Now, pivoting to the proposed Coolidge Expansion Project equipment. On this slide on the right, that equipment is highlighted in yellow, and the bulk of that proposed equipment is on the 100-acre parcel that's to

the south of the existing generating station.

And the generating equipment, which is located in the southeast corner of that area, or of the project site, consists of 16 new simple-cycle combustion turbine generators, and those 16 new combustion turbine generators are about 820 megawatts of nameplate capacity.

I want to take just a minute to talk about how they're configured. They are configured into four blocks of four combustion turbines. You can see the line -- or those four blocks are located here in the southeast corner, and within each one of those blocks there are four combustion turbines. And they're in what's called a 2-on-1 configuration, meaning that there are two combustion turbines that are connected into a single generator step-up transformer, and that step-up transformer is used to take the generation from those combustion turbines from 13.8 kilovolts and step that up to 500 kilovolts before it is transferred over to the switchyard.

As I mentioned, the 2-on-1 configuration goes into the single generator step-up transformer. And then for each block, there are two transformers that then connect, and then there are some transmission -- some transmission infrastructure that goes over to the new 500kV switchyard which is located to the west of that new

generating equipment.

From the new -- the proposed 500kV switchyard, there is some additional transmission infrastructure that connects over to the SRP transmission line in the existing 500kV transmission line that runs along the west side of the site.

And pivoting back to the new combustion turbines, I just wanted to note that the plan is now to have eight of those combustion turbines come online in June of 2024, and the current plan is that would be these western combustion turbine blocks right here to the western side of the -- or west -- the eight west combustion turbines.

The second eight, which would be the eastern eight combustion turbines, would plan to come online in June of 2025.

In addition to the generating equipment and the switchyard, there's proposed two new evaporation ponds in the northeast corner of the site, as well as some upgrades to the water treatment equipment, some additional warehousing space, and then there's some additional auxiliary equipment associated with the generators as well.

MEMBER HAMWAY: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER HAMWAY: So the 12 existing turbines the gentleman yesterday spoke about -- Mr. Coggins spoke about converting these to hydrogen over time. So my questions is: Are the 12 existing turbines -- are they hydrogen -- are they able to be converted to hydrogen?

MR. MCCLELLAN: Yes, they are.

MEMBER HAMWAY: Would you talk a little bit about the new ones, and how that would happen.

MR. MCCLELLAN: Sure.

So the existing combustion turbines are very similar to the proposed new equipment, so they have a similar hydrogen capability. I believe in Mr. Coggins' testimony, he mentioned that about 35 percent -- they're able to run on 35 percent hydrogen blend today, and there's a lot of research by the manufacturer to be able to move to higher blends of hydrogen in the future.

And I think he also stated that one of the major upgrades that would have to be made -- not necessarily a major upgrade, but an upgrade to the combustors is what you would need to do to be able to increase those blends of hydrogen in the units.

Q. BY MR. ACKEN: Thank you. That's a good segue to describing the generation equipment in additional detail.

A. (Mr. MccClellan) So the generation equipment is

the GE LM6000 combustion turbine. And as I mentioned, the proposed new equipment is very similar to what's at the existing site.

And these are simple-cycle gas turbines. And what I mean by "simple cycle" is they're a little bit different than some other some other generating equipment in that they don't have a steam-cycle associated with them like a combined-cycle. This allows them to ramp up faster, start more quickly, and it also uses a lot less water than the combined-cycle as well. These combustion turbines are a little smaller than some of the other types we have in our fleet. There were some others that are aeroderivative combustion turbine, which means it was derived from the aviation industry. So these turbine engines are very similar to what you might see on the wing of a large aircraft. Almost identical. They're just modified to be used in the power industry.

CHMN. KATZ: Well, let me ask: Is the picture that we're looking at examples of the new generators, or are they the existing ones on the site?

MR. MCCLELLAN: So the picture on the right-hand slide, those are pictures of what's at the existing site. Again, they'll be very similar to the proposed new equipment.

The difference -- or one of the differences

would be is that the new equipment is tying into the 500kV system, so that generator step-up, the previous one is probably a little bit different. But this gives a good idea of what that configuration will look like.

Looking at the slide on the right and the picture in the top left, that shows two combustion turbine packages and then the exhaust duct associated with those as well. So this gray equipment is what we refer to as a combustion turbine package. And then the brown ductwork to the right is the exhaust duct, and then to the far right is the exhaust stack. And the existing stacks were about 85 feet tall. We would expect the new equipment to be about the same as well, about 85 feet tall.

This picture on the top left is a good example of that 2-on-1 configuration that I mentioned. So you can see towards the top of this picture in the top left is one of the combustion turbines, and then near the bottom is another one. Those two are connected by this cabling that's just to the left in the picture and then runs over to the left of the generator step-up transformer connecting those two combustion turbines to that transformer.

Looking down also on the slide to the right, in the picture on the bottom right, this is kind of a

close-up of one of those combustion turbine packages. Again, the gray equipment to the left is the combustion turbine package. On the right of this gray equipment is the location for the next little turbine engine. And then to the left in this picture would be where the actual generator is located, which actually converts the mechanical energy to the electrical energy. And then again to the left is where we go out to the step-up transformer.

Up above is --

MEMBER PALMER: Mr. Chairman.

CHMN. KATZ: Yes, Member Palmer.

MEMBER PALMER: Just to satisfy my own curiosity, since there's not a steam cycle in these, what role does the water play in the generation process?

MR. MCCLELLAN: Absolutely. So the water is really used for three purposes on these units. One is for control of nitrogen oxide emissions. There's water injection into the combustion process.

The second is a power augmentation process called -- it's a GE equipment called SPRINT that gives you a little bit more power from the combustion turbine. And then we also have equipment evaporative cooling, very similar to a swamp cooler that you might see on a home to cool your home. That actually allows us to regain some

efficiency in the summer when the temperatures are hot, and so that uses a little bit of water as well.

And then just to finish up on this slide, the picture on the bottom right, I mentioned the exhaust duct. It's on the right on this picture, the kind of a brown color. This is where the exhaust from the combustion process, it goes out, and this is also the location where the -- some of the emission control equipment is located. And then, of course, the exhaust stack on the right side of the combustion turbine package.

Q. BY MR. ACKEN: Why did SRP select this specific turbine technology?

A. (Mr. MccClellan) So SRP selected the GE LM6000 based on three main criteria: Flexibility, reliability, and operational experience.

So these combustion turbines are a highly flexible resource. They can start in less than ten minutes, and they're quick-ramping as well. So one of the things they can do is they can respond to system needs. So as an example, if there's load reduction from a variation of renewable resource, these units can come online and fill that need.

In addition, they're a smaller unit. They're only about 15 megawatts per unit, so that allows us to be

able operate them a little bit more efficiently. We can bring on the number of units that we need to meet the load that's required. In addition, just being a little bit smaller, they're a little bit easier to maintain and operate as well.

The picture on the right, this is actually some crews removing the turbine engine -- that's what I pointed to as being towards the right on that combustion turbine package -- for some maintenance. So it's a little bit easier, a little bit faster, to be able to do maintenance in the event that we need to do that.

In addition, they're a very reliable, proven technology as well. They've got over 40 million operating hours and above a 99 percent reliability rating.

And then operational experience is key. As we mentioned, they're very similar to what's at the existing Coolidge Generating Station. So our operators have familiarity with the units, so they can operate them more reliably and/or safely as well.

Another benefit of the experience is we're able to leverage consistent spare parts. So that helps minimize overall cost for SRP customers.

Q. During the public comment session last night, and also this was raised by some of the intervenors in

their opening statements, were concerns regarding air quality emissions.

What emission controls will the turbines have?

A. (Mr. MccClellan) So the existing -- or excuse me -- the Coolidge Expansion Project will be outfitted with state-of-the-art emission controls. That'll include, as we mentioned earlier, water injection for reduction of nitrogen oxides. This is a combustion control that's actually part of the combustion process.

In addition to the water injection, also for nitrogen oxide controls, is selective catalytic reduction.

And if you look at this picture on the right, in the middle of the exhaust ductwork that's in the brown, this is the piping that's associated with the selective catalytic reduction, and that's actually a system that injects ammonia into that exhaust, and then a reaction occurs that reduces the nitrogen oxides that are actually emitted from the unit.

In addition, also fairly close in this exhaust ductwork to the SCR, there's oxidation catalysts as well. This is for reduction of carbon monoxide emissions during the generating process.

And then one other thing I'll mention, if you look on the picture on the right, there's a little

shelter that's on the left in the picture. This is our continuous emissions monitoring system. This is something that's required for us to utilize on our Coolidge generating facility so that we're monitoring the emissions that were emitted during operation. It actually pulls a sample out of the exhaust, checks for the amount of the emissions that are in that exhaust, and then records it. It's also part of some of the things that we're required to do for our air permit too.

Q. Does SRP have to obtain an air quality permit for this project?

A. Yes, SRP will be required to have an air permit, and that will be a revision of the permit for the existing Coolidge Generating Station. We did submit that air permit application in August of 2021, and that was submitted to the Pinal County Air Quality Control District as they're the permitting authority for the Coolidge Generating Station.

In that air permit, we expect there will be emission limitations in tons per year in what the facility will be able emit. There will also be provisions for monitoring and recordkeeping as well.

And the last thing I'd like to note on the air permit is that we do have the permit application as well as the air quality modeling that we conducted as part of

that application and have it posted on our project website, and we have for some time now.

Q. In addition to the air quality --

MR. ACKEN: Oh, is there a question?

MEMBER HAMWAY: Well I just wanted to know, can you move forward without this permit?

MR. MCCLELLAN: No, we cannot.

CHMN. KATZ: And that was Member Hamway.

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

CHMN. KATZ: Yes.

MEMBER GENTLES: So going back to the public's comment last night and their health concerns, what in these emissions would cause their health concerns?

MR. MCCLELLAN: And so for the Coolidge Generating Station, we do have state-of-the-art controls, and the emissions will be low. The idea -- or the discussion around -- more detailed discussion around the air permit and those impacts will be covered in our next panel, Panel 3.

MEMBER GENTLES: So that means you'll answer the question then?

MR. MCCLELLAN: Yes.

CHMN. KATZ: Okay.

MEMBER GENTLES: Mr. Chairman.

CHMN. KATZ: Oh, I'm sorry.

MEMBER GENTLES: Yeah. And then one other question: So the plant has been in existence for how -- since 2009, I guess?

MR. MCCLELLAN: I believe it went online in 2011.

MEMBER GENTLES: 2011. Okay.

So have there been any air quality violations issued by ADEQ or anybody else in a government body during the lifetime of the project so far?

MR. MCCLELLAN: No, not to my knowledge.

MEMBER GENTLES: Okay.

MEMBER GRINNELL: Mr. Chairman.

CHMN. KATZ: Yes, Member Grinnell.

MEMBER GRINNELL: With respect to all of the different operational experiences that's going to occur throughout this whole process with the project, what kind of insurance or bonding is going to be in place to address potential air quality problems, leakage, all the other problems that may or could occur to protect the citizens of this area, as well as any other issues?

MR. MCCLELLAN: I'm not sure about the bonding. But what I can say is that we are governed by the air permit, and that's through the Pinal County Air Quality Control District. And we are required to report to them

on a fairly frequent basis what our emissions are and other various requirements in the air permit.

MEMBER GENTLES: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER GENTLES: Just a quick follow-up on my questions previously.

Have there been instances where the levels of emissions have been higher than the -- higher than the regulated amount?

MR. MCCLELLAN: No, not to my knowledge.

MEMBER RIGGINS: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER RIGGINS: Actually, I have a few questions.

So last night during the public comments, we heard from a representative of the American Lung Association who said that at one point Pinal County received a grade of F for air quality and then expressed concern about this expansion compounding that grade. Can you speak a little bit to what that grade may be as far as air quality?

MR. MCCLELLAN: I'm not familiar with the American Lung Association report. What I can say is that the emissions from the Coolidge Generating Station will be low, and we do have state-of-the-art controls. We've

also done air quality modeling to show potential impacts of the facility, and we'll talk about that a little bit more in the following panel as well.

MEMBER RIGGINS: Okay. And also, along with that, yesterday during public comment, there was a representative from -- one of the students, grad students from NAU, speaking about the IPCC, its assessment report, as it relates to the emissions. Will that -- is that something this panel will cover as far as the actual emissions amounts or is that the next panel?

MR. MCCLELLAN: If we're talking about CO2 emissions, this panel will cover a portion of that in Mr. Smedley's testimony.

MEMBER RIGGINS: One more question as far as water. So what does the existing -- as far as water use goes, I know they're going to be receiving water from the Central Arizona Project exclusively?

MR. MCCLELLAN: Yes. We will be using long-term storage credits, which are Central Arizona Project surpluses.

MEMBER RIGGINS: Is the current plant using groundwater in its capacity, or is that also using Central Arizona Project water?

MR. MCCLELLAN: The existing facility is using groundwater. And after the expansion, we'll move over to

using the long-term storage credits.

MEMBER RIGGINS: So the entire plant exclusively will be all groundwater in the Central Arizona project?

MR. MCCLELLAN: Yes.

MEMBER HAMWAY: Mr. Mcclellan, how many -- how long will those credits last?

MR. MCCLELLAN: So we anticipate that the facility, after expansion, would use approximately 450-acre-feet of water per year, and SRP has currently about 30,000-acre-feet of long-term storage credits in the Pinal Active Management Area. So whatever that math works out to, 50 or 60 years, a very long time. So we're confident in our ability to operate the plant with the long-term storage credits that we have.

MEMBER RIGGINS: Thank you.

Yeah, I have many more questions, but I think I will save that for later on in the panel.

CHMN. KATZ: And just for the record, we had John Riggins asking questions, followed by Mary Hamway. And Member Riggins made another comment.

Please proceed.

MR. ACKEN: Thank you, Mr. Chairman.

And just to make clear, we will have our third panel. Kristin Watt will address air quality in much greater detail and be able to answer the questions that

the Committee Members raised now.

Mr. Mcclellan has some additional testimony on water in his presentation, so I'm hopeful that we will cover that as we go through and address your questions.

Q. BY MR. ACKEN: Mr. Mcclellan, I'd like you to talk about other environmental regulatory permits that the project will require in addition to the air quality permit mentioned. And when you do so, I believe it was Mr. Grinnell asked about bonding. So I'd like you to speak to financial assurance as it relates to the Aquifer Protection Permit.

A. (Mr. Mcclellan) Sure.

So the other permit that we are required to get a revision for is our Aquifer Protection Permit.

And this is really associated with the proposed new evaporation ponds that I talked about earlier. And that Aquifer Protection Permit provides the design and operational requirements for those operation -- or for those evaporation ponds and really how we handle our plant wastewater and stormwater as well.

The evaporation ponds, the reason the Coolidge Station has those is to receive plant wastewater, and that's because Coolidge is a zero liquid discharge facility, meaning that none of our wastewater actually leaves the facility. It's all captured in those

evaporation ponds.

And the Aquifer Protection Permit spells out the provisions for those evaporation ponds. And that includes what we call best available demonstrated control technology or BADCT. And in the case of Coolidge, that is a double-lined -- or a system with a double liner and leak collection system as well.

And the way that works is -- you can see on the picture on the right, that's a picture of one of the existing Coolidge evaporation ponds. And in that picture, the white color is the -- what's called the primary liner. Underneath that is a geonet fabric, and then below that fabric is a secondary liner. And then that liner -- if there is a leak in that primary liner, it goes down to the secondary liner, flows into a leak collection system that then flows into a well that's adjacent to those evaporation ponds.

Plant operations monitors monitor those wells daily. And if they start to see water show up in those wells, we know have a leak. Then the Aquifer Protection Permit spells out the procedures and processes for us to then take those ponds out of service, fix that leak, and then return them into service as well.

Also, as part of the Aquifer Protection Permit, we're required to include proof in the permit application

that we have the funds available to close those ponds when the facility goes out of service as well. And I believe there's a closure plan included with that.

Q. And the funds you're referring to, is that the financial assurance mechanism?

A. (Mr. Mcclellan) Yes, that would be the financial assurance mechanism to actually close those facilities.

MEMBER GRINNELL: Mr. Chairman.

CHMN. KATZ: Yes, Mr. Grinnell.

MEMBER GRINNELL: To that end, how are the residents of that area protected under your -- and maybe counsel needs to answer this, but how is the residents protected by your assurance bonds? In other words, if they have to be displaced, if they have to be compensated somehow for their inconvenience due to a spill or whatever the case may be, how are the residents being protected under this?

MR. ACKEN: Yeah, I'll take a swing at that from the legal standpoint, Member Grinnell.

The APP will have a number of monitoring, recordkeeping, reporting requirements. Certainly, if there was a spill that went through both liners into the aquifer, ADEQ will find out about it and will investigate and determine the best course of action. And worst case, if that did cause some impacts to surrounding properties,

that would be addressed through the APP process through ADEQ as the permitting jurisdiction for the Aquifer Protection Permit.

Q. BY MR. ACKEN: Mr. Mcclellan, feel free to add on or elaborate from your expertise and knowledge as it relates the APP permit for this facility as well.

A. (Mr. Mcclellan) I have nothing further to add, Mr. Acken.

MEMBER GRINNELL: Well, we're being asked to do something on behalf of the SRP here, and I think it would be important for the residents to understand how they're going to be protected by this whole process. And I realize it's a separate jurisdiction and everything else. But I think for my sake, I think the overall picture would be appropriate to be presented to us and allow for us to make a totally holistic approach to dealing with this.

MR. ACKEN: Understood, Member Grinnell. Maybe on a break, we'll sharpen our pencils and see if we can provide some additional information that's responsive to your request.

MEMBER GRINNELL: Yeah, I think that's as important to the residents as it is to us, so -- and like I said, I think it's important that we understand all the mitigating circumstances and the situation as a whole

rather than piecemeal this from one agency to another, ACC or ADE or whomever. So appreciate that. Thank you.

MR. ACKEN: Thank you.

Q. BY MR. ACKEN: Next, Mr. Mcclellan, I want to ask you about federal permitting.

Is this project subject to NEPA?

A. (Mr. Mcclellan) So the Coolidge Expansion Project is -- does not trigger any NEPA requirements, and that's because there's no federal approval, no federal funding, and no federal lands involved, so there's no federal nexus that would trigger those NEPA requirements.

Looking over at this map on the right-hand slide, I'll first point out in the middle in this red box, that's the location of the existing Coolidge Generating Station. Just below that in the yellow outline is the parcel for the proposed Coolidge Expansion Project. And you can see that it is located in the city of Coolidge that's outlined by this green dotted line that runs on the west side of the Coolidge site. There's also shaded in blue some State lands to the south of the project, and then to the west is unincorporated Pinal County.

There is a very small sliver of federal land that's to the north and a little bit to the west of the project study area. I apologize, I forgot to mention

that this dotted black circle that surrounds the project, that is the project study area. So that's approximately a 2-mile radius around the project, and you can see this federal land is nearly 2 miles away from the project.

Q. Following up on the questions from the Committee regarding water use, how much water will this project use?

A. (Mr. Mcclellan) So the Coolidge Expansion Project and after expansion, the entire facility, we would expect to use approximately 450-acre-feet of water per year.

I mentioned that it is a simple-cycle technology, so that uses less water than other types of generation mainly because it doesn't have the steam cycle, so there's not a cooling tower associated with this technology.

And just to put that 450 acre feet into a little bit of a context, if you look at the slide on the right in this circle pie chart, that represents the amount of water use in the state of Arizona in 2017, and that's about 7 million acre-feet. And within that pie chart, the little yellow sliver, that's the amount of water that was used in the state for utilities. That's about .1 million acre-feet or 2.5 or 2.6 percent of that overall statewide use.

And to break that down a little bit further, if you look at the bar to the right and in the orange portion of that bar, that's the amount of water used by SRP for our utilities for our power generation use. That's about .05 million acre-feet or .71 percent of that little sliver from the larger pie chart.

So if you think about what Coolidge uses, that 450-acre-feet per year, that's about 1 percent of this orange bar right here. So it's a very, very small amount when you put it in context with the statewide water use.

In addition to using a very small amount of water, after the expansion, the Coolidge Project will use only Central Arizona Project storage surface water. And as we mentioned, we've got about 30,000 acre-feet of that -- of those long-term storage credits stored in the Pinal Active Management Area, so that will last operation of Coolidge for many years.

MEMBER HAMWAY: 66.

MR. MCCLELLAN: 66 years. Thank you, Member Hamway.

And then I think I already mentioned this, but just to go over it again quickly, the two primary water uses are for water injection for emissions controls, the evaporative cooling system that helps improve the turbine performance mainly in those hot summer months, and then

the SPRINT system for power augmentation to get additional power out of those combustion turbines.

MR. ACKEN: There's a question?

MEMBER PALMER: Just another -- I think to put that in perspective. Since I am the ag representative on this Committee, this generation facility sits on approximately 100 acres, and that would be the equivalent of about -- farming about 75 acres in land, so that gives you another perspective.

CHMN. KATZ: Thank you, Mr. Palmer.

MR. ACKEN: Thank you.

Q. BY MR. ACKEN: Next we're going to shift gears and talk about the transmission infrastructure that's associated with this CEC application.

Mr. Mcclellan, describe that infrastructure.

A. (Mr. Mcclellan) So, first off, I'll start out by saying that all the proposed transmission infrastructure will be located on the project site, and it really consists of -- we've got it divided into two different components.

If you look at the slide on the right, the first component we've labeled here the eastern component, and this is really the connection of the generating equipment over to the proposed new 500kV switchyard.

As I mentioned, with the 2-on-1 configuration,

every two generator step-up transformers has a circuit that then connects to the proposed new switchyard. Highlighted in the yellow sort of in the center to the left of the generating equipment, that is the new proposed 500kV switchyard. And I'll go into a little bit more detail about the switchyard in some of the following testimony.

And then to the west of the switchyard, to connect that switchyard over to the SRP existing 500kV transmission lines that run along the left side of the site, that's highlighted in the green section. So that would be a couple of circuits just to make the connection into the 500kV transmission system.

Q. Next describe the new switchyard.

A. (Mr. Mcclellan) So the new 500kV switchyard is located to the west of the proposed new generating equipment. And I'll start kind of on the east side and work to the west talking about some of the equipment associated with the switchyard.

As I mentioned, with the configuration of the two transformers creating a circuit, that creates four circuits that tie into the eastern side of the switchyard. And you can see those coming in here on the right side of the slide on the right, and those would terminate in dead-end structures toward the east side of

the switchyard. And then around those terminations, there would be some breakers and some switching equipment as well.

Looking to the north of the switchyard, there is a proposed control building that's located just to the north of the switchyard and a little bit off center to the west. This building would contain various relay and communication equipment for the operation of the switchyard.

And then moving over to the west, I mentioned that there would be two circuits associated with tying the 500kV switchyard into the existing 500kV transmission line, and that's located here more on the western side of the switchyard. And you can see those two circuits tying into a couple of dead-end structures located right here.

One thing I did forget to mention is the proposed switchyard is four cross bays, and you can see one, two, three, four, and those cross bays tie the eastern bus to the western bus for the proposed new switchyard.

CHMN. KATZ: And the power is stepped up to 500kV after it leaves the generators, and then stays at that kilovolt level for distribution?

MR. MCCLELLAN: Well, it would be for transportation --

CHMN. KATZ: Right.

MR. MCCLELLAN: -- 500kV, yeah. And then -- yes.

In addition, I want to note that the proposed 500kV switchyard is currently located more to the eastern -- well, it's more in the middle of the site, but it's located away from the property boundary. This is to allow for the potential to change the switchyard over to a substation in the future, which would be really connecting the existing 230kV Randolph Switchyard to the new 500 -- proposed 500kV switchyard. And that's -- we've asked for that authority to be able to do that in the future as part of this CEC application.

Some of the kind of conceptual design equipment that would be required to do that is you would need some additional transformation that would be located to the west of the proposed new switchyard. That would be transformation to go from 500 down to 230kV, and then you would connect with some additional cross bays to the south of the existing Randolph 230kV switchyard to then connect the 500 into the existing Randolph Switchyard.

Q. BY MR. ACKEN: Let's talk a little more about the western component of the transmission infrastructure and, in particular, the interconnection to SRP's 500kV system.

A. (Mr. Mcclellan) So on this one -- I don't have the pointer for the left slide, so I'll try to talk through this as best I can.

If you look at the left slide and really focusing on the portion west of the proposed new 500kV switchyard, this is an option for us to be able to tie that switchyard into the existing 500kV transmission line on the left side of the site.

This option shows using a single series of poles to make that connection. So if you look on the west side of the site, so kind of in this location, that would be the location of a new transmission structure that would be utilized to turn the existing 500kV circuits to the east and connect into the new 500kV switchyard.

The circuit from the existing Pinal Central Switchyard would come from the south. And then the circuit from the north would be from the existing Browning Switchyard, and they would turn to the east. We anticipate that there would need to be an intermediate structure located nearly midway between the switchyard and the existing transmission lines, and then also an additional structure that's closer to the existing -- or to the proposed 500kV switchyard that's known as a drop pole that would then turn those transmission lines down in to be terminated into the new 500kV switchyard.

MEMBER HAMWAY: Mr. Chairman.

How tall are those turning structures?

MR. MCCLELLAN: So we -- we're still working through the design on those structures. We do know that they won't be any taller than 199 feet. That would be the maximum height for the infrastructures.

MEMBER HAMWAY: So yesterday, we saw a simulated photo of the existing and proposed. So the structures that we saw in the background, are these those turning structures that you're mentioning now?

MR. MCCLELLAN: Yeah. It would be part of those structures as well as the equipment that's in the switchyard as well, the line dead-end structures and things like that.

And then moving to the slide on the right, this is the -- an additional option that we're looking at to connect the 500kV switchyard into the 500kV transmission system. And this option is really our preferred option at this point as we've continued to look at the design. And, really, the difference is this utilizes two sets of poles to make that connection. So you can see this pole on the far west side is an existing pole. We would propose to put a new pole just to the south and east of that existing pole. This would be a structure that turns that circuit that's coming from Pinal Central to the east

and then heads over to a new drop pole that would then turn the circuit in to be terminated in the 500kV switchyard.

Very similar situation to the north of that existing pole. There would be a new pole that's set to the north and to the east. This would also turn the circuit that's coming from the Browning Switchyard to the east, and then it would travel to the east to this new drop pole to the west of the proposed switchyard to then turn it into the switchyard to terminate at these line dead-end structures on the west side of the 500kV switchyard.

Q. BY MR. ACKEN: Spend a little more time and describe the potential tower structures that you will be using for this project.

A. (Mr. Mcclellan) Sure.

So these two slides show some examples of the potential structures that we would use. These two slides show tubular steel structures. And as we previously mentioned, they would be a maximum of 199 feet tall.

Looking on the left-hand slide and the structure on the right, that's a structure that would look a lot like the intermediate pole that I pointed out on the first option on the previous slide that was on the left.

And looking to the slide on the right, if you

look at the structure that's shown on the right of that slide, that's a similar structure that -- or that would be similar to a structure that would look like the turning structures that I mentioned in the Option 2 on the previous slide. So you can see a circuit would come in on this side and then turn the required amount and then head out to wherever it needs to go, over to the switchyard or to the north or south on the 500kV transmission line.

In addition to these structures, there are some additional examples of structures that could be used that are located in Exhibit G in our application.

Q. And, Mr. Mcclellan, just to clarify, is SRP requesting the transmission facilities to interconnect the project just on the project site and to the existing 500kV transmission line in that location?

A. (Mr. Mcclellan) Yes.

Q. SRP is not requesting approval for another 230kV or 500kV transmission line offsite or further along this area.

A. (Mr. Mcclellan) That's correct. All of the transmission infrastructure would be located on the project site.

Q. And speaking of the project site, does SRP own the land on which the project will be built?

A. (Mr. Mcclellan) Yes, SRP does own the land. Looking again, just to remind everybody, to the slide on the right, this is a map of the project study area. And this red box is where the existing Coolidge Generating Station is located. Just to the south of that in the yellow box is the approximately 100-acre parcel where the Coolidge Expansion -- the proposed Coolidge Expansion Project would be located. SRP does own that land, and that is land that came with the purchase of the existing Coolidge Generating Station in 2019.

In addition, I'll also note that the proposed project is located in the city of Coolidge. Again, looking to the map on the right, the city of Coolidge is denoted by the green dotted line that runs on the west side of the proposed project site. And it's also located in an area that was previously zoned as industrial.

MEMBER GENTLES: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER GENTLES: Just some clarification. Maybe I didn't hear you. The box -- I don't have a pointer, but the light blue box right there, what is that?

MR. MCCLELLAN: That's State-owned land.

MEMBER GENTLES: That's State-owned land, okay.

So you're going to let me do this?

CHMN. KATZ: Yeah, I guess.

MEMBER GENTLES: Great.

CHMN. KATZ: If you can figure it out.

MEMBER GENTLES: Okay. There we go.

Okay. So this is -- this is Kleck Road right here? Right here?

MR. MCCLELLAN: Yes.

MEMBER GENTLES: We had a couple of citizens last night that talked about their home being along Kleck Road.

Where -- where would you -- well, where are those homes located generally?

MR. MCCLELLAN: Approximately right there. And we'll have a little better view of that in the virtual tour later.

MEMBER GENTLES: Oh, okay. Okay, good.

MR. MCCLELLAN: But it's at approximately the intersection of East Kleck Road and that -- the railroad and transmission line corridor.

MEMBER GENTLES: Okay.

MR. MCCLELLAN: But on the left side.

MEMBER GENTLES: Okay. So you'll be able to show us where all of the housing --

MR. MCCLELLAN: Yeah, absolutely.

(Simultaneous speakers.)

MEMBER GENTLES: I'll reserve.

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

So has the zoning been industrial for how long?

MR. MCCLELLAN: I'm not sure if I can answer that. I believe Mr. Petry would be able to answer that in our next panel as to when it actually became zoned industrial.

MEMBER HAMWAY: Okay.

MR. ACKEN: Thank you.

Q. BY MR. ACKEN: Next describe the project's schedule and cost.

A. (Mr. Mcclellan) So the cost of the project is about $830 million, and that would be the planned capital expenditures over the next four years of the project.

And to go over some of the high-level milestones for the schedule -- and I apologize -- it looks like my timeline is a little off here, but I can still walk through these milestones.

As we've talked a little bit about already, we did receive board approval in September of 2021. SRP currently estimates the construction start would be in the summer of this year. We show July of 2022 here.

And then, as I mentioned earlier, the current plan is to have the first eight units online in June of 2024, and then the second eight units would come online

in June of 2025.

Q. And what is driving this construction schedule?

A. (Mr. Mcclellan) So, really, the major driver is that SRP has that significant near-term need that we have almost 700 megawatts by 2024 and additional 300, for a total of 1,000, by 2025. So SRP really needs to have the Coolidge Expansion Project online to be able to meet those near-term capacity needs in 2024 especially.

Q. Thank you.

MR. ACKEN: Next we're going to turn to the virtual tour that Mr. Mcclellan mentioned. So I'm not sure if we need a second or two to get the video loaded.

Q. BY MR. ACKEN: When that is ready, Mr. Mcclellan, please feel free to present the tour to the Committee. And if you have any initial context that you want to provide, please do so.

A. (Mr. Mcclellan) Okay. I've got it paused.

Yeah, so we -- before we get started, I'll mention that I'll point out some of the elements on the virtual tour as well as the surrounding structures and things that are around the site.

I just want to note that as we're looking at the project elements, these are, you know, elements that are modeled and they're conceptual at this point, so it's really just to give the Committee a good idea of what the

potential design, what the potential layout, for the site might look like.

So I'll go ahead and stay paused right here just to orient the Committee to what we're looking at.

I'll point out first, just to the south of the project site, this is East Kleck Road. And then over to the east is North Vail Road, and then this is Highway 287. So this is west of the project site and then west of Stinger Bridge & Iron and the Randolph community as well. I did mention earlier, that the project was located near the intersection of East Randolph Road and Highway 287 or Arizona Boulevard, which is approximately in this location.

On this tour, the elements for the proposed Coolidge Expansion Project are highlighted in yellow, and then in this orange color is the existing Coolidge Generating Station elements. So this is the approximately 100-acre parcel to the north, which is the existing Coolidge Generating Station, and then to the south is the proposed Coolidge Expansion Project. And that's that approximately 100-acre parcel located there.

Q. And could you describe the other colors shown on this map and what they represent.

A. Uh-huh, sure. I'll go ahead and do that.

So looking to the north of the project site in

this purple color, that is Western Emulsions. That's basically a company that manufactures components for asphalt.

To the left in the red color is Stinger Bridge & Iron. That's a steel fabrication company.

South of that in the green outline is the Randolph community.

And then in this blue color that's southwest of the project is the Arizona Training Program, and that's a facility for disabled adults, a care facility for disabled adults.

I think also while I'm in this view, I'll also talk a little bit about the site tour that we have planned for tomorrow and just point out some of the stops for that tour.

So the plan would be to come in from the south on Arizona Boulevard. So we would drive past the Arizona Training Facility, turn east on East Kleck Road. The first stop would be approximately in this location, which would be kind of in the middle of the site, just to the south.

The tour would then continue on. We would head north on North Vail Road, continue up to East Randolph Road, and then head west over to the -- this is the access road for the Coolidge Generating Station. We

would then head south down that road, then west along the project, the existing Coolidge Generating Station perimeter, with the second stop located approximately in this area, which would be just to the north of the existing evaporation ponds.

MEMBER GENTLES: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER GENTLES: Mr. Mcclellan, could you tell me how many acres comprises the Randolph community?

MR. MCCLELLAN: I'm not sure of how many acres that is.

MEMBER GENTLES: Can you give me an estimate?

MR. MCCLELLAN: You know, just trying to compare the parcels of the project, I would say it's somewhere between 100 and 200 acres.

MEMBER GENTLES: And what's the acreage of the SRP facility?

MR. MCCLELLAN: The entire facility would be a little under 200 acres.

MEMBER GENTLES: Okay. Thanks.

MR. MCCLELLAN: So the second stop would be located here just north of the evaporation ponds. It would continue down to -- I also forgot to mention that in this blue color is the transmission lines. That's the transmission corridor that's to the west of the project

site.

And then you can kind of see in a purple color, and we'll be able to see that a little better when we get closer, the railroad corridor also runs there on the west side of the site.

So the tour would continue to the west side of the site, and we would travel along the west perimeter fence down to the south side of the existing Coolidge Generating Station.

Then we would head east, and we would have a stop, Stop No. 3, located just to the south of the existing generating station, where we would be able to view the existing Coolidge Generating Station and the location for the proposed expansion project.

We would then continue east back out to North Vail Road, have a stop at North Vail Road so we could view the existing project and the expansion from the east, and then head north again on North Vail Road. Then turning west on East Randolph Road all the way over to Arizona Boulevard, head south.

It's a little hard to see here, but the plan would be to head back to the east on Malcolm X Road at the intersection of Malcolm X and Kennedy and then have the final stop here in the Randolph community.

So now I'll go ahead and continue on with the

tour. So we'll zoom into the project, ultimately getting down to kind of a ground-level view, and then we'll kind of rotate and get some different angles, different views, of the project.

So, again, the existing generating station is highlighted in orange, and then the proposed Coolidge Expansion Project is just to the south in the yellow. Also elements that are in the existing Coolidge project area that are associated with the proposed expansion, those are outlined in the yellow color.

So now we're on the south side of the project looking north, and we'll rotate over to this side of the project.

So now we're moving over to the east side of the project looking to the west. Again, the blue color is the Arizona Training Program. Green is the community of Randolph, Stinger Bridge & Iron is red, and then Western Emulsions is in the purple color to the north.

Now rotating to the north side of the project. Again in the yellow is the proposed Coolidge Expansion -- proposed Coolidge Expansion. These are the -- this is the location of the 16 new combustion turbine generators, and the proposed new 500kV switchyard is located here.

Now rotating to the west side of the project looking east, and then we'll rotate down to the southwest

corner and start to zoom in. And I'll stop along the way to point out a few different project elements as we work our way back around.

MR. ACKEN: So to Committee Member Gentles' question regarding houses along Kleck Road, can you point those out?

MR. MCCLELLAN: Yes. So right here in the foreground, this is Kleck Road running along right here. You can see these structures located in this area. Those are the homes that -- or the residences that were referred to that are located on Kleck Road.

The approximate distance from this residence over to the new generating equipment located here in the background is just under about 3,000 feet.

MEMBER GENTLES: Mr. Chairman.

This map isn't representative of all the homes in that community, correct? We have some structures there, but that's doesn't -- does that represent all the homes in that community, or those are just representative structures for illustration purposes?

MR. ACKEN: Mr. Chairman, Mr. Gentles, the answer is yes. Mr. Mcclellan didn't actually put together this for Mr. Petry on behalf of SWCA, develop the tour, but he's saying yes, that this does reflect all of the homes in the Randolph community.

You'll note that -- and Mr. Petry will be on the next panel and can describe this on the record and under oath, but the homes along Kleck Road I believe are larger parcels. I think you heard one of the public commenters mention he had a 2-acre parcel. So that's why you see fewer homes along Kleck Road. More of the houses and density is further to the north.

MEMBER GENTLES: And just -- what's that -- what's the road to the -- the west there?

MR. MCCLELLAN: This one?

MEMBER GENTLES: I'm sorry, to the east.

MR. MCCLELLAN: This is the transmission line and railroad corridor.

MEMBER GENTLES: Oh, it's the railroad. Okay. Thank you. Great.

MR. MCCLELLAN: So this is zooming in. Now we're looking pretty much kind of to the northeast. I did want to point out that this is the location where the proposed tie into the 500kV transmission system would be, this is the existing pole that would remain in place, and then these poles would be the proposed two new poles that would be the turning structures to turn the 500kV lines over to the east to go into the proposed new 500kV switchyard.

You can kind of see these -- these are the drop

poles that I mentioned. These would be new poles that would then actually turn those two circuits down into the 500kV switchyard to be terminated.

Now we're on the west side of the site looking to the east. You can see the background, this would be the proposed new 500kV switchyard. You can see the proposed new 16 combustion turbine generators in the background.

I'll pause here for a moment just to point out this is the existing 230kV Randolph Switchyard that's located on the left side of the site just south of the existing evaporation ponds that you can see over to the left.

This pole, I'll just note that this is where the existing 230kV switchyard is tied into the 230kV transmission line. It's a little bit shorter because the 230kV system is on the west side. The 500kV system is on the east side. So this design actually runs those 230kV lines underneath the 500kV tie into the Randolph Switchyard.

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

CHMN. KATZ: Yes, Member Little.

MEMBER LITTLE: Oh, the picture went away.

In this view looking towards the project, the empty space that is shown there, if you put in the

substation that would be 230 to 500, you would have more poles and more structures than would be visible on that last view we were looking at, right?

MR. MCCLELLAN: Yes, that's correct.

And I'll kind of highlight that area. So this would be --

MEMBER LITTLE: Yeah, right in there.

MR. MCCLELLAN: -- the location for the additional transformation, and then you would have some additional bays expand to the south of the existing Randolph Switchyard to make that connection.

MEMBER LITTLE: Okay. Thank you.

MR. MCCLELLAN: So, again, on the west side looking to the east, this is the northwest corner in the location of the existing evaporation ponds. And then we'll, here in a moment, rotate to be on the north side of the project looking to the south.

Here in the foreground, you can see this kind of purple highlighted area. That is the railroad corridor just to the west side of the existing transmission corridor.

MEMBER GENTLES: Is that SRP land that we're looking at, looking over, right now?

MR. MCCLELLAN: This area is not SRP land. The property boundary is here on the north side of the

east --

MEMBER GENTLES: Who owns that land?

MR. MCCLELLAN: I'm not sure who owns that land. Mr. Petry I believe can answer that question in the next panel.

MR. ACKEN: And, for the record, as you go through this, Mr. Mcclellan, please orient the direction that we're looking in the foreground.

I know the question was the land -- who owns the land immediately north of the existing facility, and so that's the question, and we will get that answer.

MEMBER GENTLES: Thank you.

MR. MCCLELLAN: So as we continue, we're on the north side of the existing generating station looking to the south. I'll pause here just to point out some of that existing generating equipment.

So here, kind of in the middle of the screen, this would be on the north parcel of the land -- or the -- yeah, north 100 acres kind of in the middle, that's the location of those existing 12 combustion turbine generators. To the north of those generators is some admin building and warehousing.

In addition, to the right -- now, this would be just to the east of the existing evaporation ponds -- this equipment located in that area is the fuel gas

receiving yards where we have connections to two different natural gas suppliers, TransWestern and El Paso.

To the east of the existing combustion turbine equipment is the water treatment area, so there's some different tanks associated with that area as well as a water treatment building as well. And we'll be able to see that a little bit better when we rotate to the east side and from the south as well.

As we continue to move to the east, we'll be rotating back to the east side of the project and then looking to the west. You can see here in the northeast corner of the project site, this is the proposed location for the two new evaporation ponds.

Also to the east of the site, this is Vail Road.

So then rotating to the east side of the Coolidge site and looking to the west -- I'll pause here for just a moment -- looking to the east of those existing combustion turbine generators, this is the water treatment area. So you can get a little better view of the tanks associated with that as well as the water treatment building. It's located, again, to the east of those combustion turbine generators.

The view is now moving to the south of the project. We would be on the east side looking to the

west with North Vail Road in the foreground that runs along the east side of the project site.

I'll pause here for a moment just to point out the 16 new combustion turbine generators. You'll notice these are oriented a little bit differently than the existing combustion turbines. The exhaust stacks are actually oriented to the middle of the four blocks; whereas, in the existing, they're actually rotated, so the exhaust stacks are on the outside.

You can see the 2-on-1 configuration here connecting to the generator step-up transformers that then connect into these structures that run along the south and the north side of the generation area, and then those would run over to the west to the proposed new 500kV switchyard.

Again, moving to the south, and then we'll rotate again to the south side of the project and be looking to the north.

And I will pause just a moment here to point out there's also a residence located here to the southeast of the project along North Vail Road. The distance from this residence over to the generating equipment is roughly 1,000 feet.

Q. BY MR. ACKEN: And can you put that in context with respect to other facilities?

A. (Mr. Mcclellan) Sure.

So to put it in a little bit of context, our Santan Generating Station that's located in Gilbert, Arizona, the nearest residence to generating equipment at that facility is about 500 feet.

MEMBER HAMWAY: Mr. Chairman.

There was a gentleman last night that said he was 400 feet, so was he just probably talking about the property boundary?

MR. MCCLELLAN: That's the potential from the location in Randolph to the property boundary. It's about 400 feet.

Now the view is scanning to the west. I'll stop here just a moment and again point out the -- this is the location here on the east side of the site or the southeast portion of the site, the location for the 16 new combustion turbine generators. I'll also note that to the west side of those generators is some additional auxiliary equipment associated with the combustion turbine equipment.

MEMBER GENTLES: Mr. Mcclellan, just going back to that housing that we were just looking at that's 1,000 feet from -- that's a private residence?

MR. MCCLELLAN: Yes.

MEMBER GENTLES: Okay.

And, Mr. Chairman, do we know if we've heard from that individual owner?

CHMN. KATZ: I don't recall.

MR. ACKEN: Chairman Katz, Member Gentles, I believe Mr. Mcclellan can speak to the ownership of that parcel. And my understanding based on the ownership is no, you have not. But Mr. Mcclellan can provide testimony of that.

MR. MCCLELLAN: Yeah, the ownership of that parcel is Pinal Land Holdings, and there is a home that's located on that parcel. And I do agree with Mr. Acken that I don't believe we've heard from that individual.

So, again, moving to the west in the viewing angle, I'll just pause here for a moment to point out some elements in the proposed new 500kV switchyard.

In previous testimony, I've mentioned that the -- there's four circuits that will be connecting the generation equipment to the new 500 -- to the proposed new 500kV switchyard.

And you can see those structures are located here on the south side of the generating equipment and to the north side, and then they run over on structures to the west and then ultimately terminate at these -- they're a little hard to see, but there's some line dead-end structures here where those circuits terminate.

And then also to the west, you could kind of see that on an earlier angle. But the circuits that come from the existing 500kV transmission line terminate at line dead-end structures on the west side of the switchyard.

In addition, you can see the control house to the north of the proposed 500kV switchyard, and then there's additionally some breakers and switching equipment located in that switchyard as well.

So now we're again on the south side of the project looking to the north, and we'll zoom back out. And from this view, I'll also note that this is -- located right here is Fifth Avenue, which is kind of the eastern road in the Randolph community. If you look at the distance from Fifth Avenue over to the existing combustion turbine equipment, that's roughly 2,000 feet. And then from that same road in Randolph over to the new generating equipment, that's roughly 2,800 feet or so.

Again, you can see a little better in this view. This is the -- those are residences that are along Kleck Road. And, again, you can see the distance from that residence over to the proposed new generation equipment over here in the southeast corner of the proposed Coolidge Expansion Project site.

Q. BY MR. ACKEN: And your testimony was that was

approximately 3,000 feet?

A. (Mr. Mcclellan) That's correct.

And then again, just to orient quickly, as we zoom out, East Kleck Road is here to the south of the project. Vail Road on the east. The transmission and railroad corridor is along the west side of the site -- sorry about that -- with East Randolph Road to the north of the site, and then Arizona Boulevard along the west side.

Again, Stinger Bridge & Iron is highlighted in the red color, Randolph community is in green to the left side of the site, and then Western Emulsions is purple.

And then with that, that concludes the virtual tour.

Q. Thank you, Mr. Mcclellan.

MR. ACKEN: This may be a good time to take a break if the court reporter wants or the Committee has further questions about the tour because we're going to shift to a new phase of testimony after this.

CHMN. KATZ: I'll just ask if any of the Committee Members have questions about anything we've seen so far during Mr. MccClellan's testimony. If not, we can take our morning recess for about 15 minutes right now and then go for another about 90 minutes or so after that.

Hearing silence, let me just see what time it is. I'm showing 10:21. About 10:35, plan on picking things back up. Okay?

(A recess was taken from 10:21 a.m. to 10:39 a.m.)

CHMN. KATZ: We can go back on the record right now. There are one or two Members that aren't quite with us yet. I think we're just missing one, but we still have a quorum to move forward. So we'll go back on the record.

MR. ACKEN: Thank you, Mr. Chairman.

Before we switch to the next topic for this Panel, which is the need for this project, that Mr. Smedley will kick off, I wanted to see if we could take another swing at the questions that Member Grinnell had regarding the APP permit, and he had some questions about financial assurance and other concerns.

And so I thought it would be helpful to start, if Member Grinnell agrees, to have Mr. Mcclellan provide just a little more background about what the APP permit is and what the evaporation ponds do.

MR. MCCLELLAN: Sure.

So the evaporation ponds, as I mentioned, were -- are there to collect the plant wastewater, and that water that goes into those ponds is mostly water

that's from the water treatment process. So there are really no chemicals or anything that's added to that water during the process that we use it for at the facility.

The constituents that are in there are really the same constituents that are there when it comes to the plant. They're just concentrated up from that water treatment process. We do use some anticorrosion/ antiscalant additives during that process, but those are really nontoxic. That double liner that leads into the collection system is really the process that the APP permit uses to protect the public. It's highly unlikely that you would ever get a breach through both liners, and that leak protection system allows us to repair the liner in case there is a breach of that primary liner.

Just to address the potential for any spills, those evaporation ponds by the APP permit are required to have 2 feet of freeboard. And when I say "freeboard," that really just refers to the distance from the water level to the top of that evaporation pond. So if there's high winds or anything like that, that would prevent any water from being able to get out past that liner on the pond.

In addition, these evaporation ponds are actually incised into the ground, so there isn't a dam or

a dike that can fail causing a large spill into the plant site or into the nearby communities.

MEMBER PALMER: Mr. Chairman.

CHMN. KATZ: Yes, Mr. Palmer.

MEMBER PALMER: Is it because of that concentration that happens during the process that the water can't be reused?

MR. MCCLELLAN: That's correct.

So during that water treatment process, which uses reverse osmosis -- we call it RO reject water -- it typically has a pretty high level of total dissolved solids, so that really prevents us from being able to reuse that water to do anything else with it, unless you were able to treat it again, which is not really economically feasible.

MEMBER PALMER: Thank you.

MR. ACKEN: Okay. Thank you.

Q. BY MR. ACKEN: So next, we are going to turn to the needs and benefits portion of our testimony, and Mr. Smedley will kick us off.

Please provide an overview of the needs and benefits associated with this project, starting with the needs.

A. (Mr. Smedley) Sure.

So the overarching driver for the Coolidge

Expansion Project, I can sum it up in one word: Reliability. The CEP is really critical for our ability to maintain reliable electric service to our customers beginning in 2024.

I can't overstate the importance of reliability to SRP and our customers. It's really one of the most important components of our mission, and it's also going to be one of our greatest challenges here in the years to come. There's really two main reasons for that, and those are the reasons that are really driving the need for this project.

The first is that we are experiencing significant and unprecedented growth in our service territory, and that growth is translating to a near-term need for additional power generation capacity, especially in the year 2024 and 2025, and I'll talk some more about that in my testimony today.

But this project will provide a reliable, dependable source of capacity that we can build in the time frame needed to meet that near-term need.

The second factor that's really going to challenge reliability in the coming years is SRP's efforts to integrate more renewable energy into our portfolio. We've made a lot of progress on that front, and I'll highlight some of that in my comments today.

And those resources are really important to our portfolio because they're going to help us transition to a lower carbon future, but they are variable in nature and limited in duration, and they do create reliability challenges for us because of that. And I'll explain that in more detail in my comments today.

The Coolidge Project will provide a firm and flexible source of generation that will help us to back up those renewable sources and to help us maintain the reliability of our power system as we transition to a lower carbon future.

Q. Thank you.

Next, I'd like you to highlight the additional benefits associated with this project.

A. (Mr. Smedley) Sure.

So we see three significant benefits associated with this project:

The first is that it will complement the battery storage that SRP is adding into its portfolio. And what it will -- the way it will do that is it will provide us with a source of reliable capacity to meet that near-term need. And that will alleviate our need to rely on battery storage as significantly as we otherwise would, and it will give us time to adopt battery storage at a more measured pace and give us the time to get operating

experience with that technology before making a significantly larger investment.

The second benefit that we see is that it supports our transmission system. Today, most of the generation in our portfolio is on the west side of our service territory, and this would locate additional generation on the east side. Mr. Mcclellan will go through that part and explain some of the benefits that that provides from a transmission perspective.

And then the third benefit that we see is it leverages the existing infrastructure at the site. The site has existing land available, it has existing water supply from storage surface water, it has a natural gas supply from two different pipelines from two different natural gas basins, and it has access to existing transmission at two different voltages. So it's a very unique site, and that will allow us to really leverage that infrastructure to accomplish this project.

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

CHMN. KATZ: Yes.

MEMBER HAMWAY: So when did this project, the CEP project, first get identified in your biennial transmission report? I'm probably having that name wrong, but where utilities file for future projects and

what they plan to do. Has this project been a part of that report?

MR. SMEDLEY: I believe it was in the latest one, Member Hamway, but I don't -- and, Mr. Mcclellan, do you know if it was in the prior ones?

MR. MCCLELLAN: I don't believe it was in the prior reports. It was in this latest one.

MEMBER HAMWAY: And when was the latest one?

MR. MCCLELLAN: I believe we actually did an amendment to our latest one. That was earlier in 2021.

MEMBER HAMWAY: And the amendment included this project?

MR. MCCLELLAN: It did identify this project.

MEMBER HAMWAY: So that kind of supports this notion that this was being kind of fast-tracked; would you say that?

MR. ACKEN: Member Hamway, if I could clarify. Generation projects, you don't submit a ten-year plan. If that's what you're referring to, the biennial transmission report. You file a 90-day plan for the generation resource, and so you only file it 90 days before the expected filing of the application. And so -- and that was done, and that's a prerequisite to filing the application. So generation projects have a different timeline with respect to when you have to file and what

you file for transmission lines.

MEMBER HAMWAY: Thank you for that clarification.

Q. BY MR. ACKEN: Mr. Smedley, let's start off with the first need you had identified on that slide, the capacity needs, and describe the road to SRP service territory. The Committee saw these two slides in my opening. I'd like you to walk through them for the Committee and explain that capacity need.

A. (Mr. Smedley) Certainly.

So we are experiencing really significant and unprecedented growth right now in our service territory, and the slide on the left has some statistics. It'll kind of underscore it and explain the growth that we're seeing, so I'll just walk through each of those.

Maricopa County is the fastest growing county right now in the United States. The Phoenix area in particular is experiencing population growth at three times the national average. Phoenix is also one of only three major cities to have recovered 100 percent of the jobs lost during the pandemic, so the recovery has been really, really strong here in Phoenix.

In terms of our different customer segments, one of the things that makes this growth particularly unique is that it's happening across all of our customer

segments; whereas, in our last growth cycle in the early 2000s, it was primarily residential growth that was driving everything. And the industrial customer growth is really a big part of that.

So we talked yesterday about Intel's announcement of their Chandler facility, but that's not the only one. There's other high-tech companies interested in expanding existing operations and also moving into the Valley. It's really becoming kind of a manufacturing hub for the Southwest, and so we're seeing datacenters, high-tech manufacturing semiconductor industry, electric vehicles. Lots of different types of industries looking to locate here. And those companies moving here also create -- alters indirect growth drivers as well in terms of other jobs that are created when people that move here or that work here go to restaurants and use other services in those area. So lots of industrial customer growth is occurring.

And then on the residential side, we're seeing the housing permits reaching the highest levels that they have since the mid-2000s, and so that's really when we had the last housing boom here.

So bottom line is we're seeing significant growth really across all of our different customer segments.

Q. And how is that growth impacting demand for electricity?

A. (Mr. Smedley) And so that growth is creating a really significant increase in demand for electricity, and that's illustrated on the slide on the right. And what you can see in that slide is the demand for electricity at our summer peak, so that's the highest demand that we see generally throughout the year.

And just as context, that's usually on a hot summer afternoon, generally, when people are coming home from work, turning up their air conditioning, cooking dinner. That's usually about the time it occurs.

And just to put some numbers -- and put those numbers in context on those lines in the slide, that represents the latest forecast. The red line there represents about a 30 percent increase in peak demand in electricity over the next decade or so. It's about 3 to 4 percent growth per year in that earlier part of the decade. And, again, that's about -- compared to about 1 to 1 1/2 percent that we've seen over the last ten years, so it's significantly higher. It's about 3- to 400 megawatts per year of growth. And today, our peak demand is about 7,500 megawatts. So just to put those numbers a little bit more in context.

And then we're also seeing, as you can see from

comparing the blue and the red line, that growth accelerating, and we've been actually updating our load forecast now on a quarterly basis just in recognition of the pace of growth that's going on.

Q. How did the pandemic affect your load forecast? And compare it to load forecasts that you had at the start of the pandemic.

A. (Mr. Smedley) So when the pandemic began in March of 2020, we were getting a lot of different perspectives from economists and forecasters on what the future might look like. And, you know, some economists were projecting a deep, kind of long recession just like we had in 2009. Others were projecting a quicker recovery. But the bottom line is there was really a lot of uncertainty over what the future might look like.

And so what we decided to do is to take a conservative approach and plan for a flatter -- kind of a flatter forecast at that time. And then we also put a pause on the work to kind of develop and acquire new power generation in light of that more conservative approach. And again, the idea being, from a customer perspective, we thought it was more prudent to pause development of those type of activities and not spend money on developing generation when there was so much uncertainty around what the future might look like.

As the year progressed, and particularly coming out of the summer of 2020, when we saw not only the significant need for electricity but also the growth that seemed to be taking place, we revised our load forecast to the one that you see in the blue there and resumed all of our activities on new generation development.

Q. So you mentioned residential growth, significant industrial growth. How is SRP preparing for that growth in your latest forecast?

A. (Mr. Smedley) So the way that we're preparing for this is we are implementing what we're calling the "and" strategy, and we touched on that yesterday in testimony. But what we are doing with that strategy, as the name implies, is we are looking at all different types of generation and really having as much as we can of everything, recognizing the balance of reliability, affordability, and sustainability that we have to strike.

And so in terms of what we're adding -- and this is over just the next three years -- 2,025 megawatts of solar by 2025.

We currently have about 400 megawatts of utility-scale solar in our system. We're adding 450 megawatts of battery storage by the summer of 2023, and we currently have about 50 megawatts today.

We're adding some flexible natural gas units at

two of our sites, Desert Basin and Agua Fria.

We've acquired an additional share of the Palo Verde Nuclear Generating Station.

We're maximizing customer programs, so we're -- we've essentially doubled our demand response program over the last two years, and we expect that to provide 150 megawatts of potential peak load reduction this coming summer.

We've recently announced a new wind project in Northern Arizona. It will be 160 megawatts to add to what we have today, which is about 127 megawatts.

And then we're looking at all of our different natural gas facilities to identify opportunities to implement projects to increase efficiency and recover the output that we typically lose in the summertime due to higher ambient temperatures.

So those are all of the different resource activities that we have to try to meet this near-term need in the coming few years. And, again, just to sort of add it all up and put it in perspective, that's about 3,000 megawatts of nameplate capacity additions that we'll be making to an 8,000-megawatt portfolio. So it's really transformational change.

Q. In your role as director of resource planning, what guides SRP in evaluating and making the resource

choices?

A. (Mr. Smedley) So the guiding principles that really define those choices are in our Integrated Resource Plan, and we develop an IRP every several years. The last one was approved by our board in early 2018, and it contains the overall strategic direction that you see on the slide on the right. And so those are the guiding principles by which we add resources.

And I won't read each of those individually, but you can see from looking at them that all of the resources we're adding as part of the "and" strategy are really consistent with those strategic directions.

We're also engaged in the number of activities on market -- regional markets, which is shown there, and, of course, research and development for new technology options, which I'll touch on a little bit later in my testimony.

MEMBER HAMWAY: Just a point of clarification.

Are the regional transmission markets -- is that what you're talking about, the EIM and the balance?

MR. SMEDLEY: Yes. Yes, that's correct.

Q. BY MR. ACKEN: Will the additions that are shown on Slide 51 on the left-hand screen provide the power that SRP needs to meet the significantly increasing demand that you're seeing?

A. (Mr. Smedley) No. So even with all of those additions, we will still have a need for over 700 megawatts in 2024, an additional 300 megawatts, for a total of 1,000 in 2025.

And I wanted to just explain that a little bit further using the slide on the left. So if you look at the -- starting on the right, the purple bar represents the additional generation capacity that we need at our summer peak beyond what we have today on our system.

And there's three components to that: There's the additional load that we're going to have to serve from increased demand, there's a reserved margin that we have to carry, and then there's the contracts that are expiring over that period of time. So that represents our total need.

The blue bars, if you go over to the left, show the contribution that the additions that I showed as part of the "and" strategy make to that -- to that near -- to our peak demand, essentially, to our -- to that peak demand need.

And what you can see is they do make significant progress towards it, but we still have that remaining need shown in the green of 700 megawatts in 2024 and the additional 300 for a total of 1,000 in 2025.

Q. So where does this project fit in? How does it

help SRP meet the need?

A. So the Coolidge Expansion Project will provide a reliable source of capacity to help to fill that need.

So as Mr. Mcclellan described, the Coolidge Expansion Project would consist of eight additional aeroderivative turbines in 2024 and eight in 2025 for a total of 820 megawatts of nameplate capacity, and that will contribute about 670 megawatts at summer peak. So that's going to get us a long ways towards meeting that near-term gap.

You'll recognize that that doesn't get us all the way there, so we are actually out in the market right now with what we call an all-source request for proposals, all-source RFP, to identify an additional 400 megawatts that we would need for 2024 to be able to completely fill that near-term capacity need.

Q. Why is SRP recommending locating the natural gas turbines at the Coolidge site instead of a different location?

A. (Mr. Smedley) Yeah. So the Coolidge site is really unique. It has access to sufficient land for the expansion. We have a source of water supply that is storage surface water so the plant wouldn't need to depend on groundwater. We have a natural gas supply that's sufficient for the plant coming from two

independent pipelines from two suppliers that come from two different basins, and then we also have access to existing transmission at the two different voltages that Mr. Mcclellan described.

So the site really represents a unique opportunity to accommodate this kind of an expansion because we wouldn't have to build any new infrastructure to be able to accommodate this project.

And Mr. Petry and Ms. Pollio will testify in a little more detail on -- we, of course, have performed an environmental compatibility assessment of that site, and they will describe that in the next panel.

Q. Are there any other ways that SRP can meet this critical near-term capacity need, such as obtaining power through the market?

A. (Mr. Smedley) No. So it would not be prudent for us to obtain the amount of additional capacity and -- that we need from -- from the market. And I'll just explain a little bit more in detail how SRP engages in the market to purchase power.

There's really two ways we do that:

One way to do it is to enter into contracts with existing generators that are out there that aren't fully contractually subscribed. We call those forward-market purchases. And at the moment, we're not aware of any

generators that are out there that have the capacity and the flexibility and the long duration that we're looking for for this particular project.

The other way that we can rely on the market is the short-term or day-ahead market. So we do go out and make purchases on a day-ahead basis. Purchases of the magnitude that we're talking about for this project would be a really significant risk for our customers. Those markets are more volatile in terms of both whether the power is there as well as the cost than they really ever have been in the past.

So it would -- bottom line is it would not be prudent for us to rely on the market for this -- this kind of additional need for this, and that's why we're proposing this project.

Q. Thank you.

Let's turn to the second need you identified, integrated renewable energy. And you heard a lot of public comment yesterday regarding desire for more renewable energy. Several of the intervenors sitting to my left are advocating for more renewable energy.

Let's start off by describing how and why SRP is increasing the amount of renewable generation in its resource portfolio today.

A. (Mr. Smedley) Sure.

So SRP has established a series of sustainability goals, and one of those goals is our board-approved carbon reduction goals. And those goals are to reduce the carbon intensity of our portfolio, and we have a goal to reduce that intensity by 65 percent by 2035 and by 90 percent by 2050 from 2005 levels.

Those are very ambitious goals, and they're going to require two very, very significant changes to our power generation portfolio. One of those is the retirement of our coal generation, and we've made a lot of progress on that front. We've retired 1,300 megawatts of coal so far between Navajo and Mohave Generating Station, and we've committed to retiring another 1,300 megawatts by 2032. So lots of progress on that front.

The other major change that this is going to require is the addition of renewable energy into our portfolio, and we're very excited about that. And the slide on the right shows all of the different renewable and energy storage projects that we'll be bringing online in just the next three years. So this shows between 2020 and 2025.

And I won't read each of these off to you, but I just wanted to kind of highlight. If you'll look at between today and the summer of 2024 when we -- when we're proposing to bring the first eight units of

Coolidge online, we'll be bringing online nine individual renewable energy projects at about 1,700 megawatts of nameplate capacity. So SRP is significantly invested and committed into deploying additional renewable energy.

Q. Do you have any concerns with respect to reliability bringing on that amount of renewables in this time frame?

A. (Mr. Smedley) We do, and I wanted to speak a little bit about those reliability challenges. And I'll also explain how the Coolidge Expansion Project will help us to address those challenges, and I wanted to do that using solar primarily as the example because that's the bulk of the additions that we'll be making here in the coming years.

And so if you look at the slide on the left, that's just an illustrative example. And what it shows is some of the points in time during a given day where solar would need support from other types of generation and what -- I'll just kind of walk through each of these labels and talk about some of those -- those points.

And this is a representative day in the spring on our system, and what it shows is customer demand throughout that day. And if I start with that first label, you can imagine on a spring day, if you have high cloud cover, scattered clouds kind of moving around,

those are shading different solar panels at different times. That can result in that type of variability that you see in that first label. And so that requires a really quick-start generating resource to be able to turn on and to be able to provide backup for those renewable resources on a day like that.

We also have everyday what we call ramping needs, and so those happen at sunrise and sunset. So when the sun comes up, what we need to do is to basically decrease all other generation that we have online to accommodate the solar that's coming online at that time. And then in the evening, kind of the opposite happens. And that ramp can be much steeper, particularly as you get into the summer months. And so what we need to be able to do that is generation that can really change load very quickly, fast-ramping kind of resources, like these units proposed for Coolidge that are derived from kind of the aircraft engine technology and they're designed to really run that way.

The third label shows the peak demand. And on a spring day, we typically don't get much contribution from solar to our peak. In the summertime it gets a little bit more, but we still need a lot of support from other resources to be able to meet peak demand, especially in the summertime when it's as high as it is, and so that's

another piece that we need to think about as we integrate more solar.

And then the last part is we call the "what-ifs." So that could be an unexpected outage that comes up on our system if a generator trips offline or we have a storm and there's a transmission line somewhere in our system that fails. If that happens and it happens to extend into the evening hours or the nighttime, we need another resource to be able to come online and be able to provide power to be able to support the system and the reliability.

So those are really the examples of some of the challenges that we can have and the need for flexible generation to be able to support those challenges.

Q. So that addresses the challenges and the need.

How does this project address that need?

A. (Mr. Smedley) Sure.

And I touched on that a little bit as I went through that slide, but these units that we're proposing for Coolidge use aeroderivative turbines. They have a number of characteristics that can help us with those challenges.

One is that they are firm and dispatchable. So what I mean by that is they're available 24/7, when we need them, in any and all of the situations that we just

highlighted on that other slide.

The other is that they can start quickly, so they can get online within ten minutes to full load and be able to address variability use that we might have on the system.

And then the last part is the flexibility and the fast-ramping, and I mentioned that. That's going to become increasingly important as we add more and more solar to our system.

Q. Next I'd like you to share some specific examples for the Committee of how the CEP units will operate to support renewable resources.

A. (Mr. Smedley) Sure.

So I thought what we would do is show a few days that actually occurred on our system and illustrate on those days how the existing units at Coolidge operated, because I think it's very representative of how the proposed units that we're proposing as part of this project will operate.

So the first example I have is a summer day in August of last year. And just to orient you to the chart, the blue line is all of the combined output of all the solar facilities, the utility-scale solar facilities on our system, and the black line is the Coolidge -- existing units at Coolidge.

And what you can see in that chart is that in the late afternoon, the Coolidge units ramped up to help to meet that peak demand as the solar came offline. And then you can also see that the Coolidge units continued to run well into the late evening hours. And, you know, for everybody that lives here, you know that in August, it's pretty hot late into the night, and so that kind of generation being able to run beyond -- well beyond our peak into the night is very important. So that's a summer day example.

A winter day example, we actually have a dual peak on these types of days. And so on this day, we have a peak in the morning because that's around the time the sun comes is when people are up and getting ready. And you can see the Coolidge units came online in the morning there. And then we also have kind of an evening peak. And, again, the Coolidge units ramped up as the sun was coming down there to help to meet that need into the evening hours.

And then my last example is one that shows variability and intermittency. And so this is a day that was actually in June where -- and for this chart, we've broken up the solar into the individual facilities so you can just see the variability that each one had. And the Coolidge is shown in the green. And so you can see that

in the middle part of the day where there was a lot of cloud cover and there was variability in the solar facilities, the Coolidge units came online to help to support that.

The other thing I wanted to just highlight on this chart is these are each 100-megawatt solar facilities, and you can see that the depth of the variability really took their output from full to about half in just a matter of minutes. And so, again, when you think about that and you scale that up to when we're going to have 2,000 megawatts of solar and even more on our system in the future, we absolutely need flexible resources to help to really integrate more renewables and maintain the reliability of our system.

Q. So you've described in these past slides how you intend to operate the project to integrate more renewable resources, but why is this necessary to integrate renewables?

A. (Mr. Smedley) Yeah. So to help me explain that a little bit further, I thought I would use a slide that we presented to -- a stakeholder series that we did this past summer where we convened customers and other folks in the community to talk about these near-term power generation needs that we have.

And so we used the slide on the left here to

kind of explain this, and what we explained to the group is that we're going to be adding two different types of generation on our system here in the coming years. We're going to be adding firm generation units like these Coolidge Expansion Project units, and then we're going to be adding intermittent and limited-duration resources like solar batteries and wind, and they each are going to play an important role. And it's a matter of -- you know, kind of like the analogy of using the right tool for the job.

So the firm resources are going to help us by providing what we call the reliability backbone. So these are resources we're going to implement. They're going to provide reliable capacity when we need it, but we're not going to run them very much. We're going to run them when we need to to maintain reliability.

The intermittent and limited-duration resources are the carbon workhorses, I'll call them. These are the units that are going to deliver most of the energy that we're going to provide to customers during the day, and they're going to be the ones that are going to help us to meet our carbon goals.

But we really need both of these types of resources to be able to transition to that lower carbon future while still maintaining the reliability of our

system.

Q. Next I'd like you to put this project in the context of the transformative change that Mr. Coggins identified. From your resource planning perspective, how is SRP evolving its planning to prepare for the future?

A. (Mr. Smedley) You know, it really is transformative change. And, you know, when you think about the coming years, retiring a lot of our traditional firm resources, bringing on these new variable, intermittent renewables, it's going to really require us to fundamentally change the way we plan and operate the system.

And from a planning perspective, you're probably familiar with some of the terminology you can see there on the right on the left-hand side. Baseload, intermediate, peaking, those are terms that we typically use when we thought about new generation additions to add to our system. The new framework is really -- classifies these into different categories between firm, intermittent, and limited-duration resources. These are the kinds we're going to be adding to our system going forward.

And the reason that that's important is because from a planning perspective, we now need to think about not just planning for the peak. We need to think about

all of the hours of the year when we do our resource plan, and that's the direction that resource planning is headed. And it's still -- the peak may still be driving new capacity additions, but we have to be able to provide enough resources to provide reliability across every hour of the year.

MEMBER GRINNELL: Mr. Chairman.

CHMN. KATZ: Yes, Mr. Grinnell, go ahead.

MEMBER GRINNELL: Mr. Smedley, what is the life expectancy of a solar panel? And also, what kind of issues are related to the inverters' intermittent problems?

MR. SMEDLEY: Sure. So great question.

The life expectancy I would say for solar, most of the power purchase agreements we're signing today are about 20 years. So we expect that the panels will be able to last that duration.

With respect to the inverters -- and I'll talk about this a little bit more later in our testimony -- but the inverters are -- and Mr. Coggins said it well yesterday. They're basically a computer. They're microelectronics, and they have a lot of capability. They can provide grid support functions.

And, again, just to back up a step further, the solar and those type of resources generate power in the

form of direct current, and the inverter is the device that converts that direct current into the alternating current that's used in the grid. And so that inverter, again, has some capabilities that we really see as very promising. But we don't have a lot of experience using those capabilities, and that's one of the things that we're going to be trying to learn as we implement more of these types of projects and to make sure that they can respond when we need them to.

So I'll just highlight one challenge that we see with them, and that's communication and controls. In order to make sure that we're able to call on this generation, we have to be able to communicate with it. And each of these systems has their own sort of proprietary communication approaches. And so when we're integrating all of these new resources into our power system, we have to make sure that there's interoperability with all these control systems and that they can respond quickly enough to be able to serve our reliability needs.

So that's one of the challenges.

CHMN. KATZ: Let me just ask: With respect to solar panels, I personally, not on behalf of the Committee, am a strong advocate of eventually becoming carbon-free. But where are most of the solar panels

currently manufactured, if you know?

MR. SMEDLEY: I actually don't, but I can follow up and find out.

CHMN. KATZ: Okay. Because I'm just wondering if they're being made in China. They're primarily using coal to manufacture -- to get the electricity they need to manufacture. So I'm just not sure ultimately what we're going to do to address that issue.

MR. SMEDLEY: Yeah, that's a great point.

I do know many of them are made in China, but I could provide a little more on that.

CHMN. KATZ: I'd appreciate if you could. Thank you.

MEMBER GRINNELL: Mr. Smedley, to the communication discussion, and maybe I'm previewing a future discussion, but isn't part of that controlled by the internet, that communication and WiFi and area networking?

MR. SMEDLEY: Yes, absolutely.

So that's -- you know, that's a lot of what our operation center would depend on. And we, you know, of course, have backup systems and things in place there. But you're right, that is a part of it.

MEMBER HAMWAY: Real quick, Mr. Chairman.

What is the life expectancy of the CEP for -- I

mean, you know, for determining how much, you know, to put in the rate base and all of that?

MR. SMEDLEY: Yeah. Our default depreciation schedule is 30 years. Ms. Bond-Simpson will provide a little bit more information on when we see kind of the value that we would get back from that project compared to alternatives, so that will provide a little more information, I think, in response to your question.

MEMBER GENTLES: May I ask a question to that point?

CHMN. KATZ: Please.

MEMBER GENTLES: So what happens in 30 years to this plant?

MR. SMEDLEY: Well, so that's really for depreciation purposes, but we do see, you know, as was explained earlier, that the opportunity to convert these units to hydrogen really gives us a chance to potentially use them for that purpose as that technology becomes available.

But I think in direct response to your question, since they're -- and as Ms. Bond-Simpson will explain in her testimony, since they would break even against alternatives in the 2030s, as long as we can run them past that point, we believe they provide good value to our customers and that it's the best economic decision

for our customers.

Is that helpful?

MEMBER GENTLES: For now.

MR. SMEDLEY: Okay.

MEMBER BRANUM: Mr. Chairman.

CHMN. KATZ: Yes, please.

MEMBER BRANUM: So yesterday during public comment, we heard from a board member with SRP who had talked about the -- that the increases -- increase on the baseload customers, that this doesn't -- that the need for a limited duration or peaking plan or expansion doesn't necessarily address that. And then I don't know if it was from that comment or another comment about there's nothing that precludes this expansion from being something that is not just peak or limited duration but firm use all the time, running 24 hours a day.

Is there -- is that something that this isn't capable of doing, like the machinery and the hardware? Would it not be able to be turned into something that would be every-day-all-day use power plants or expansions?

MR. SMEDLEY: So a couple of points there. One, it's not designed to run that way, so that wouldn't be optimal.

I did want to go back to the original point. We

do have headroom in our existing power generation portfolio over the course of the off-peak hours to accommodate some of that growth that we're seeing.

So in Director Miller's comments, he's right that we are seeing load added that's 24/7, but we have headroom to be able to accommodate that and still use these kind of resources to serve the peak and to serve these other times to back up renewable energy and other types of generation on our system.

And then the only other point I would add is that the air permit will not allow us to run these units for 24/7 kind of operation. There would be limits that would preclude us from running at those kind of levels.

MEMBER RIGGINS: So there are -- there are limitations within the air quality permit?

MR. SMEDLEY: Yes.

MEMBER BRANUM: Thank you.

MR. ACKEN: Thank you.

Q. BY MR. ACKEN: This is a perfect segue for -- to discuss these power reduction goals and how this project affects them.

A. (Mr. Smedley) Right.

So because this project will only run a few hundred hours per year in the operating modes that I mentioned earlier, most of the energy that we're going to

be delivering in the coming years is going to be coming from carbon-free resources as we progress into the future. And I wanted to prepare and show these pie charts on the left to kind of illustrate that point.

So what this shows is the total annual energy delivered by SRP to our customers and the percentage that comes from each different type of resource that we have. And so you can see on the left today and then you see on the right what we expect that will look like in 2025 with the Coolidge Expansion Project included.

And so there's two points I want to make on this -- on these charts:

The first is that the percentage of energy that you'll see there from carbon-free resources, which is outlined in the black dotted line, is going to increase from about 30 percent today to about 45 percent. Nearly half of the energy that we'll delivery in 2025 will come from carbon-free resources.

The other point I want to make is the natural gas component is going down. So in between today at about 45 percent, it will go down to about 33 percent in 2025, and that's with the Coolidge Expansion Project included. And the Coolidge Project accounts for probably 1 to 2 percent of that pie.

So the bottom line here is Coolidge is not going

to impede our ability to meet these carbon goals. It's going to actually enable us to do that by providing a reliability backbone for our system as we transition to more carbon-free resources.

Q. And how will the project affect CO2 emissions from SRP's power system overall?

A. Yeah. So we put the chart on the right together to put the CO2 emission from the expansion project in context to gain some of the other reductions that we've achieved or will be achieving in the coming years. And so to walk through that -- and, again, just to put this in context, the retirement of the Navajo Generating Station, the addition of the -- the additional share of the Palo Verde Nuclear Generating Station, and the addition of 2,025 megawatts of solar are going to reduce the O2 emissions by about 6.5 million metric tons per year. The Coolidge Expansion Project would result -- we project would emit about .5 million metric tons per year, so -- and I think even more importantly, that .5 million metric tons per year is going to be more than offset by future renewable energy additions that we're going to make in our system because those will displace higher carbon resources as we continue to add more renewables into the future.

So Coolidge, again, isn't going to impede our

ability to meet these carbon reduction goals. It's really going to enable it by giving us that reliability backbone as we transition to a lower carbon future.

MEMBER DRAGO: Mr. Chairman.

CHMN. KATZ: Please.

MEMBER DRAGO: Mr. Smedley, I was wondering if you could explain what it would take to transition from that 20 percent coal down to, you know, renewable or natural gas.

MR. SMEDLEY: Sure.

So we are looking at retiring -- most of that 20 percent we've committed to retire by 2032. So we're going to be retiring another 1,300 megawatts of our coal between today and 2032, and that will leave just 400 megawatts remaining in our portfolio.

And, again, those are going to be challenges for us. We're going to have to replace that coal with other types of resources, which, today, the choices are really things like solar, battery storage. And if we -- and so those are -- those are the kinds of decisions that we're going to have to make in the coming years to be able to get to that higher level of carbon reduction.

And, again, we will get there because our 2035 goal is to reduce carbon intensity by 65 percent, and that's going to require us to retire most of that coal.

MEMBER DRAGO: So just to follow up, to go to the natural gas, is it because it's not available at those plants?

MR. SMEDLEY: Oh, to convert them to natural gas?

MEMBER DRAGO: And then to renewables.

MR. SMEDLEY: Right. So that's correct. We actually don't have a natural gas supply at our coal plants that are still operating.

MEMBER DRAGO: Thank you.

MEMBER GENTLES: Your long-term goals for becoming carbon-free, can you restate that again for me?

MR. SMEDLEY: Sure.

So we have carbon intensity goals to reduce the intensity by 65 percent by 2035 and then by 90 percent by 2050.

MEMBER GENTLES: Okay. So in those two years, 2035 and 2050, what percentage of that will be driven by this plant? Will that be in the 10 percent that's not carbon-free in 20- -- in the out year?

MR. SMEDLEY: Yeah. If it's still running in 2050, then it would be buried in that 10 percent.

But, again, it's not going to be a large contribution because if you look at that pie chart on the right, in 2025, Coolidge only accounts for maybe 1 to

2 percent of our total energy that we deliver. So the associated carbon emissions would be relatively small.

Q. BY MR. ACKEN: Okay. Thank you.

Next we're going to turn to --

MEMBER BRANUM: Mr. Chairman.

CHMN. KATZ: Yes.

MEMBER BRANUM: I have a quick question.

Well, actually, this might be going down the rabbit hole a bit, but I was wondering if we could go back to Slide 62. And I think I know the answer, but I think it would be helpful to walk through it in a little bit more detail.

So if we can get back to Slide 62, I'll start with a couple of my questions.

CHMN. KATZ: And this is Member Branum.

So go ahead.

MEMBER BRANUM: Okay. There we go. Thank you very much.

So listening to the testimony here today and yesterday but also skipping ahead a few slides myself on my end, I want to make sure my understanding is correct that Coolidge essentially is going to, among other things, but solve a unique dispatch problem. And the way I understand it is when we have this solar dropoff at hour 15, 16, 17, 18, this creates the ramp that I think

you had mentioned you might be getting to, Mr. Smedley, but this utility ramp I think, when you address it by implementing the natural gas, which is quick- and fast-responding, what it also allows you to do, and you said this, but I don't know if it's been as directly stated, that solar curve at the top between 8 and 15 -- hours 8 and 15, you can actually make that quite larger.

And I think that's what you're saying when you mean accommodate more renewables, integrate more renewables. Because, as I understand your curve here, your demand curves, the output from the units, the higher that solar curve is in the middle of the day, the bigger the ramp is going to be for SRP when the solar drops off. So having 720 megawatts in effect will allow you to increase the solar curve before the ramp and then also quickly respond to the large ramp requirement within an hour or two-hour period; is that correct?

MR. SMEDLEY: Yes, Member Branum. You said it very well, much better than I did. That's exactly correct.

MEMBER BRANUM: Thank you very much.

And I think you may be getting to this point as well, and I'm sorry if we're talking about it a little earlier than you had planned, but listening to comments made by the intervenors and your own expert witnesses,

something that I was hoping could be fleshed out or discussed quite clearly is that solving that ramp problem when you're having the dropoff in the renewable production by a 1-to-1 replacement with capacity of a gas plant or battery, it becomes quite complicated from the economic standpoint.

So I think when you get into our alternative discussion, you might be touching on this. But my understanding of reading your testimony is that batteries are kind of out of the money in this couple-hour period because it would require so much additional battery storage capacity that's at much greater cost than the natural gas itself; is that correct?

MR. SMEDLEY: That's correct. It would require -- and Ms. Bond-Simpson will talk about this in more detail and explain her knowledge of this, but we would -- when we look at all the hours of the year and we modeled from a planning perspective further out in time, we found that it would require three to four times the amount of battery storage to achieve a similar reliability as Coolidge.

And there's a number of factors that are involved in that finding, and you correctly identified one of them, but there is -- there are some others that Ms. Bond-Simpson will touch on.

MEMBER BRANUM: Okay. Thank you very much.

And just, if you could, as we move through that -- and I was trying to anticipate when this is coming up in the slide deck, but when you feel it's most appropriate, I think it would be very helpful to kind of flesh out that challenge in that couple-hour period and how that weighed with the evaluation or assessment of the alternatives.

Thank you.

MR. SMEDLEY: Certainly.

MR. ACKEN: Thank you.

And that is another excellent segue to the next discussion, which is the alternatives analysis. And for this, Ms. Bond-Simpson will be providing testimony.

I want to set the stage by again explaining SRP's perspective that an alternatives analysis is not part of the Committee's purview under A.R.S. 40-360.06. With that said, SRP certainly understands and recognizes the public interest, the Committee's interest, and the Commission's interest in understanding SRP's thought process. And taking comfort that SRP did consider this, fairly evaluated it --

MR. RICH: Mr. Chairman.

CHMN. KATZ: Yes.

MR. RICH: I've got to object. We've got an

attorney that's giving a speech here and offering evidence. I mean, he can get this in through his witness if he wants to make these points.

MR. ACKEN: I'm not providing evidence. I'm providing our perspective on why we're providing testimonies. It's legal argument, I mean, if you want to object on the grounds that it's legal argument. But I think it's providing context as to why we are presenting this testimony at all.

CHMN. KATZ: Well, what I'd like to do is maybe have you get into the testimony and reserve your argument for closing.

MR. ACKEN: Okay. Thank you.

Q. BY MR. ACKEN: Ms. Bond-Simpson, let's talk about resource alternatives that SRP considered to meet the needs that Mr. Smedley identified.

What options did SRP consider?

A. (Ms. Bond-Simpson) I believe our slide deck is now out of sync. I've got Slide 71 and Slide 68 on the right.

Is this something that we can correct, or I can continue on?

MR. ACKEN: Yeah. Hang tight until we can get the technology squared away.

MS. BOND-SIMPSON: I'd be looking for slide on

the right side, 69 and 70.

Can we do 69 on the left side, please?

Thank you.

MR. ACKEN: All right. Are we set now, Ms. Bond-Simpson?

MS. BOND-SIMPSON: I think so.

Q. BY MR. ACKEN: All right. Let me ask the question again.

Discuss the resource alternatives that SRP considered to meet the needs Mr. Smedley identified.

A. (Ms. Bond-Simpson) Yeah. So on Slide 70, you can see the diversity of the efforts that SRP was undertaking to meet customer need. So all of those efforts included need for sustainability and affordability.

So when we talk about the reliability need, what we have to consider is meeting firm generation. So generation that can be dispatched on demand and sustain output. Flexible generation to integrate renewables. And it needed to be in service in the time needed to serve that load.

And, really, there was only one proven option that could meet all of those conditions that would be consistent with our IRP and our 2035 goals, and that was flexible natural gas. The other options didn't meet that

criteria. But what we did do is identify batteries paired with solar to be able to configure that in a way to try to identify alternatives.

Solar, by itself, and wind, while very good tools for decarbonization, don't provide a lot of capacity or reliability value when we need it. Demand response and energy efficiency, very valuable customer programs to SRP customers. And also utilize to -- and recognize that SRP has industry leadership in these cases, we're able to accelerate some of this to meet early demand, but they're not practically scalable to the magnitude that we needed by 2024 and 2025.

Geothermal, biomass, and pump storage are future technologies that we might consider, but they're not actionable under the time frames that we're considering.

So we did focus our full alternatives analysis, again, on four-hour battery storage with different configurations of solar.

Q. Describe how you evaluated battery as a potential alternative.

A. (Ms. Bond-Simpson) So we use batteries today, and, as Mr. Smedley testified, we see these as valuable tools for the future. How we use these today is a little bit differently.

And so for this exercise, we led an alternatives

analysis that started in early 2021 and took six months to complete. And, really, our main objective was to identify to what extent can we count on a variable technology like solar and a limited-duration resource like four-hour lithium-ion battery to ensure grid reliability.

And while I'll boil down that activity in four bullet points, again, this was a very thoughtful exercise.

We took a holistic approach, and it began with an established resource plan that was consistent with our Integrated Resource Plan. And what we did was we then pulled the Coolidge Expansion Project out of that plan and then developed a reliably equivalent portfolio by accelerating solar and storage to replace the CEP.

By doing that portfolio approach, we can consider holistic system costs, and we can compare those portfolios in terms of risks/benefits. And because we don't predict the future, we have to understand how they perform in uncertainties. So we also included sensitivity analysis within this alternatives analysis to explore what would happen if the future changed.

MEMBER HAMWAY: Just a real quick point of clarification.

So when you said you took the CEP out of your

analysis and then built, you know, your solar alternative, was the whole CEP taken out or just the new part?

MS. BOND-SIMPSON: Just the Coolidge Expansion Project, so only the new part.

MEMBER HAMWAY: Okay.

MR. ACKEN: And we should be clear for the record. When you hear us refer to CEP, that's the Coolidge Expansion Project.

MEMBER HAMWAY: Okay.

Q. BY MR. ACKEN: So discuss why you look at portfolios instead of just comparing projects to projects.

A. (Ms. Bond-Simpson) So this is a really important part of integrated resource planning and making sure that we have the full system view.

So for SRP, when we're serving our customer demand, it isn't our entire portfolio that has to meet that demand, and that means that that dispatch -- that portfolio dispatches when customer demand changes.

And so because we are entering two different types of tools, two different types of generators with different characteristics but we need them to serve reliability, the only way to compare them apples to apples is to do a portfolio comparison. When you

introduce generators with different characteristics, the entire portfolio will respond differently.

And in this holistic approach, you can identify fuel, O&M, and capital costs from a system perspective.

Q. What are the characteristics that you're looking at when you're comparing resources?

A. (Ms. Bond-Simpson) Yeah. So I'll bring your eyes to Slide 73 first, and this is a little bit more specific from what Mr. Smedley's testimony was talking to.

Primarily, these tools have different -- these are two different tools for a different job, and we're looking at the need for reliability in this case. And so we have a proven use case of aeroderivative technologies like the Coolidge Expansion Project. And, again, we know this because these have been operating in our portfolio for over a decade. We have the performance data to know that this dispatch is on demand for reliability. When it's not on, it sits in near constant contingency reserve. And that in emergencies, it can sustain output for hours to days. So the reliability use case for this is mature.

As Mr. Smedley testified, the battery storage paired with solar today is a great tool for us to decarbonize, and the way that we do this is by maximizing

the daily production. So when the solar -- when the sun is up, we want all of those hours of carbon-free generation so we can offset other carbon-emitting resources. And then if we pair this with storage, we're actually able to take some overgeneration from the solar and shift it to hours when the sun has set.

Now, the key difference here in reliability is that these two types of technologies are limited. Variable generation is limited by the weather. So when the sun sets, the solar output goes to zero.

Storage is limited in its duration. Currently, we have four hours to play with. But once that state of charge is depleted, it has to be charged again. And so it inherently has some limitations on when it's available for reliability event.

Now, we understand that it is technically feasible to build multiple projects with solar and storage in order to meet the full spectrum of needs. And so we would say this was technically feasible and this is what wanted to explore: Are we ready for this type of technology to carry the lion's share of our reliability needs for our customers.

Because today, as was mentioned, we integrate those two tools together. It's just like having a toolbox full of many different types of tools. You can

meet a wide array and variety of needs if you have different resources.

So the example that I would like to point out for all of the context I laid in the first slide, 73, is shown in Slide 74, and I'll walk you through that here in a bit.

So this is an example of a week in December, and this is output from two different types of projects. These are the existing Coolidge units shown in blue.

And so the first thing that I would like to point out is you see these dispatch for a short period of time in the morning when it's cold and after the sun has set in the evening. And this pattern was repeated on Monday and Tuesday of this week. On Wednesday, there was only a little bit of production in the evening from this Coolidge facility. And then Thursday, Friday, and Saturday, they didn't dispatch, but they were sitting in reserve should an emergency have occurred. And then Sunday, you see they dispatch again in the evening.

I've got to get used to this mouse. I'm sorry.

Now, on the other hand, I want to point your eye to the solar and storage hybrid facility we have, and the first thing that I'll point out is -- it's a little bit harder to see, but this is the facility we have online today. It's a pilot project. 20 megawatts of solar that

you can see here in the black line. And what you see is when the sun is -- when the sun comes up, you see a nice plateau shape. And, again, we want all of that solar. That is how we can decarbonize.

Now, you see Monday, Tuesday, Wednesday, and Thursday, we had a fairly nice plateau shape. But on Friday, it looks like we had a little bit of variability. And then on Saturday, the same as well.

And this matters because when we look at how the battery performed -- this is shown in green, and, again, this is a 10-megawatt battery -- anything below the zero line is when the battery is charging, and you can see the battery is charged from the solar. And then, again, we have four hours to use that storage for customer demand.

And on Monday, we have early morning before the sun rises and in the evening when the sun sets, and that pattern, again, is repeated. I'll point out on Friday, there was enough charge for the evening. But on Saturday, you did not have a discharge because that battery was not able to fully charge.

Again, the same thing repeated on Saturday. And then on Sunday, I would assume that that battery would be available for the next morning.

But, again, this demonstrates we have two different use cases. One, dispatch is on demand when

it's needed, and the other is to maximize the daily production.

And so, again, what we're looking for is understanding, can we take the data that we have from this pilot project and other pilots and identify the resource adequacy contributions of that type of resource.

Q. What do you mean by the phrase "resource adequacy"?

A. (Ms. Bond-Simpson) So resource adequacy is really the heart of planning for future reliability. And in its most basic sense, it means that you have ample and adequate supply to meet your customer demand. And so here we have to think, again, the grid is governed by physics, and so you need that supply to match instantaneously at all times of the year.

And so in planning for resource adequacy, we have to consider for a future we can't predict. We have to consider for planned maintenance; unplanned events, things like transmission lines going out of service because of wildfires, generator trips, low solar production days; and then the extremes.

A good example of that is a Westernwide heatwave that occurred in August of 2020 where the entire West experienced high demand and low supply. And so we look at this, we look at resource adequacy in terms of the

power system transforming. We have these conventional technologies that are retiring and then in its place a lot of technology that's being built in solar and battery and variable generation like wind.

And so we need new tools and methodologies. And we're seeing this out of reports from our reliability organizations. I have two listed here: The North American Electric Reliability Corporation, what I'll refer to as NERC; and the Western Electricity Coordinating Council that I'll refer to as WECC.

So SRP participates in both of those forums, reads those reports, and has understanding that they are recommending some of the solutions that we -- and methodologies that we employ, such as probabilistic loss of load modeling, and this occurs over all 8,760 hours of the year, not just planning for peak.

We also participate in industry working groups, reserve sharing groups, to really try to understand some of the problems and the challenges that we're facing today with resource adequacy calculations, and what we see is the need for firm resources with sustained output because they have the highest reliability value.

And we're seeing this in the future with the evolution of hydrogen. We're seeing this with neighboring utilities. APS brought forth the Ocotillo

project, TEP brought forth the Sundt project. And these are really those firm, flexible generators. We are also seeing California emergency orders where they are adding new natural gas generation for this very purpose.

And this is important because timing matters. When we're talking about resource adequacy, it's incredibly important to make sure that the output of a project, of a generator, is matched with when demand occurs.

And I'll give you an example of this on Slide 76. So this is an example of a project on our peak day, and what this is indicating is that nameplate value can be very different than what the capacity value is. And the reason being is because of this timing portion.

So when we're looking at nameplate of a unit that's like an aeroderivative or a firm resource, this can be very close -- the capacity value can be very close to nameplate.

Quick drink here.

When we have capacity value contributions for a conventional technology, what we find is that they are rated to their ambient conditions, so humidity and temperature. And then we use historical data to look at things like forced outage rates. And so this capacity value, again, can be very close to nameplate.

For resources that are variable, like solar, the timing is important. So here we have two 100-megawatt nameplate projects and have their performance on their peak day on June 18, 2021. And one of the first things that you can see is these are both the exact same nameplate, two projects, but they don't overlap. And so there's some variation from project to project.

The second thing I'd like to point out is that these projects only reached their output when the sun was high in the sky around 10 a.m. They didn't stay there long. So at this point in time at 10 a.m., this project had a 100-megawatt nameplate and a 100-megawatt capacity value. But there was some variability over the day. And if we look at when peak occurred on our system, so this is when customer demand was at its highest for that year, we see 7,571 megawatts of peak demand occurring in hour ending 18 or 6:00. And the output from those projects is actually at 60 megawatts or 49 megawatts, about half their capacity value.

And you could say, well, that's a great equation. This is how historical planning reserve margins have been calculated for those reliability coordinators. But what we're seeing is the shift to other periods of stress. How do we calculate this not just at peak demand but at times when our system needs

more capacity.

An example I'll give you is on the same day. So same day, one hour later, we have 7,300 megawatts of demand at 7:00, and those facilities are actually only producing about 10 percent of their nameplate or a 10 percent capacity value at this point in time. And only 30 minutes later, they're producing zero. And as we know, the hot Phoenix summers are still pretty hot at night, we're still running our air conditioners, and so we need that output from some type of plant.

And so this gives you an example of how dynamic and challenging it can be to try to match resource adequacy and variable technology and that the timing matters. But it's even more complex for something like a limited duration battery that is both a load and must charge and a resource that can only discharge for a fixed amount of time.

Q. You mentioned batteries and some of the challenges, but isn't the industry relying heavily on batteries for resource adequacy today?

A. Yes. So batteries have tremendous potential, and Mr. Smedley is going to testify on some of SRP's industry-leading efforts. They can do a lot of things, and there's a lot of technical feasibility.

But the reality is we're in a very tricky window

with battery adoption . And if you look at Slide 80, you can see this. So Slide 80 represents the capacity additions of battery storage nationally, and the green bars are indicative of the capacity additions per year.

But what I'd like to draw your eye to is the blue lines are cumulative capacity additions. And so by 2021, nationally, there were 3,200 megawatts of batteries installed, and those were installed mostly within the last year. And before that, those were installed mostly within the year before. 3,200 megawatts represents less than a half percent of installed capacity nationally.

This is a very scant dataset for us to inform probabilistic modeling for future forecasting. Performance data is so incredibly important to the utility for planning because this helps us understand reliability, helps us understand how these resources degrade over time, what kind of situational awareness our operators need to deploy these tools.

And so this causes us pause to understand how to put these modeling inputs in. And because we don't know the answer to some of these questions, we have to assume the risk away to model. And that's what we do here. We assume perfect -- in our modeling and in our alternatives analysis, perfect performance from our batteries . And we know with a project -- the pilots we have online, that

those projects don't perform perfectly. And so we have a little bit of a gap already in our question of are we able to rely on these for the lion's share of resource adequacy.

MR. ACKEN: Thank you.

Mr. Chairman, we're going to continue into a long discussion of battery technologies and some of the challenges and lessons learned. I'm wondering if this is a good time to take the lunch break before we dive into that.

CHMN. KATZ: We could do that, or we could go we go probably -- it's now almost noon. We didn't start until about 20 minutes to 11:00. We could go another 10 or 15 minutes, or we could break now if it's a logical place for you to break in this section.

And, Carolyn, what would you prefer?

I think we could go another 10 or 15 minutes. Then we would want to break by 12:10 or 12:15.

MR. ACKEN: Okay. Thank you.

Q. BY MR. ACKEN: So next describe the operational performance experience SRP is developing with batteries to date.

A. (Ms. Bond-Simpson) So SRP has been a part of those earlier green bars.

So in 2018 we installed a pilot project, and we

followed up with a 2019 pilot project as well. And so those are invaluable to us in terms of collecting data. And by and large, we've been fairly happy with their performance year-round.

But we have two areas that have caused us a little pause. One is that one of those projects in the three years of their operation has operated at a reduced capacity over two of the summers. In 2019, that project was taken offline the entirety of the summer. In 2021, the project had two weeks of reduced capacity in June, which I'll point out was when our peak occurred that year, and then it did not regain its full capacity until after summer.

The other pilot project has had several days where the battery was unable to discharge over peak during the summer. And while we're investigating that, they happened to -- it appears that it coincides with days when the mornings have heavy cloud cover.

And so, again, this is two fundamental areas where we want to research more. But I'll point out that the summer is our critical need, right? At 10 megawatts, a pilot project not producing or producing at half output isn't a critical issue. But when you have thousands of megawatts on our system, that's 500 megawatts we wouldn't be able to count on in summer.

And so, again, this performance data helps us identify the questions and challenges we need to answer in order to provide resource adequacy with these technologies.

Q. Walk the Committee through the questions that you mentioned as it relates to batteries for resource adequacy.

A. (Ms. Bond-Simpson) Yeah. So I'm going to walk through a couple of examples of actual days.

So on Slide 82, what I want to demonstrate here is actually something that -- I don't have the name, but it was brought up by a Committee Member before on what happens if you have multiple reliability needs in the same day. So you have a limited duration battery, limited discharge. And our question was: If we have ramping needs and more than a four-hour peak in the same day, how to we deploy the battery for the best need?

So we can point to graph 82 as showcasing July in 2020 when we had ramping needs and a five-hour peak on that day. So the question is: What four hours did we use the battery?

And you can see this in the blue line here is where we actually dispatched the battery. This makes a lot of sense. We're taking that solar energy and we're transferring it to a time when the sun isn't up, and it's

a part of our peak. So we didn't use it for the ramping support. And it was okay during this time.

So in 2020, we had about 200 megawatts of solar on our system. But in the next three years, we're going to have 2,500 megawatts on our system. So this ramp is going to go very steep. The one-hour ramping needs are going to quadruple, and the three-hour ramping needs are going to triple. So that means the slope is now going to look like this, and there's going to be multiple reliability and points of stress during that time.

So not only is our customer demand increasing during that time, but the supply that we have with solar is decreasing. So we need to have resources to be able to serve that ramp, and we need resources in reserve should something happen during that ramp. And our concern with batteries at this point and that we need a methodology to understand is if we dispatch the battery during the ramp, is it still going to be able to serve peak. And if so, how many hours of that peak and how do we time that to where we're keeping reliability top of mind.

The next example I'll give is will the battery be charged. Now, this is a slide that I showed in the Summer Stakeholder series, and what I'm showing here is a week in October of 2018. And this is indicative of the

solar output during that month.

Now, we live in the Valley of the Sun here in Phoenix, and there are times of cloud cover. This occurs a lot in the winter and shoulder months. And so October, while we might have lower demand, is a critical time that we're taking plants down to perform preventive maintenance. So they've been running at full tilt all summer, and now they need to be doing routine maintenance on them so they're available and reliable for coldsnaps in the winter and for the next summer. So this is a critical time when we need to make sure that we have resources available to serve our needs.

And so the question here is if we have days -- multiple days in a row where solar output is low, will the battery be charged and will we even be able to use that resource. And should this have occurred for longer stretches, how long will that battery be out.

So these are, again, some of the questions that we're looking for methodologies to help us have a capacity value calculation that captures some of these dynamic changes and questions.

MEMBER HAMWAY: I just have a quick question.

So if the sun isn't shining in Arizona to charge those batteries, how about the EIM, where you buy -- California has created so much that they're giving it

away for free. So how often are we charging the batteries from the EIM?

MS. BOND-SIMPSON: Good question.

So there's a little bit more complexity to that question. When batteries are paired together in a hybrid system, they count as -- with the solar facility, those are counted as renewable. When batteries are charged from the grid, that is a mix of energy that is not renewable. So there's some coal in there, there's some gas in there, and that's actually calculated at an e-grid rate.

So our preference for sustainability is to use those batteries to charge solar. While they can be charged with EIM, we don't get both sustainability benefits. And EIM is not a firm resource, so we can't always count on it.

Q. BY MR. ACKEN: How do you determine how much capacity resources like solar and batteries can contribute to reliability?

A. (Ms. Bond-Simpson) So we use a methodology that goes back to our fundamental question: To what extent can we count on limited duration resources to ensure reliability.

And the methodology that we employ is called effective load carrying capability. And what this

methodology really tries to draw on is how likely is a generator useful to prevent a grid shortage. And so we have to think of reliability here. And what we do is we add the load to our system, and then we add a resource to cover. So the reliability of the system hasn't changed.

And this effective load carrying capability calculation is dependent upon two factors. So when a resource generates electricity, and what else is on your system when shortages are most likely to occur. So this includes what else is in your power portfolio and when customer demand is likely to change.

And so by taking these key considerations and varying a number of variabilities that you see on Slide 86, we can do calculations of a limited duration or variable resource's effective load carrying capability.

Q. And how do you calculate a given resource's ELCC?

A. (Ms. Bond-Simpson) So the way we do this is through thousands of statistical simulations. And so this is a very sophisticated and complex methodology. We've been employing this since around 2019 and looking at different consultants, different utilities, different industry groups to help us evolve and continuously improve this process.

But it showcases on Slide 86 the number of

variables that we toggle around to try to indicate reliability. So, again, recall that we have to plan for the unplanned. We don't know when outages are going to occur. We don't always know when a transmission line will go down because of a wildfire or when a generator trips. And so we have to plan again for the unplanned.

And so we take these statistical simulations, and then we put them into a loss-of-load probability model in order to develop their effective load carrying capability.

Q. If it's possible to simplify it, what does ELCC represent to the layperson?

A. (Ms. Bond-Simpson) So the way that I think of this is like a balance sheet. On one side of the balance sheet, you have your customer demand. And then we need to understand the other resources that we have to serve that customer demand.

And so we can put our existing resources into that balance sheet, but we want to understand how much nameplate would we have to add to make our system reliable with variable or limited duration resources. And this is what ELCC provides, that level of nameplate of variable and limited-duration resources to reliably meet customer demand.

Q. So how did you use ELCC to inform your

alternatives analysis?

A. (Ms. Bond-Simpson) So I'm going to walk through a couple of examples here on the loss-of-load probability modeling to give you a picture of a very complicated graph I'm going to show here in a bit.

So on Slide 88, what we're trying to do is identify the "what-ifs." What are those unplanned conditions that we might have to mitigate risk to our customers and how do we make sure we're maintaining our reliability standards for our customers.

So one of these thousands of simulations is shown as an illustration on Slide 88, and what we can see -- this is a reliability simulation for summer of 2024. We have the available capacity on our system and the system requirements to meet the -- the system requirements to meet for that day.

And in this simulation, the generator has tripped offline and is unavailable for about a nine-hour outage. And what we see here is the shaded red area is the unmet need. So our customer demand was much higher than the supply resources we had. And to be very clear, this means rotating outages. This means blackouts. This means customers not being served with energy and electricity when they need it the most.

And so what we do as planners is identify

options for how we can fulfill that need. And so this loss-of-load probability modeling, an EL -- ultimately ELCC, gives us an indication of how well a resource performs to meet that condition.

So in this example, the green shape is a four-hour 800-megawatt battery. And we can see while this battery dispatches to meet a little bit of that outage, almost half, there's still four, four and a half hours of unmet need. And even that exceeds our reliability standards. So this tells us we would have to add more batteries or more limited duration to cover this need.

And we've calculated all of those conditions for solar, four-hour battery, and for solar paired with battery that's shown on Slide 92.

Q. So I'd like you to take a moment and walk the Committee through what they see on Slide 92. What do the various lines represent? And, again, maybe simplify it for us as to what it means when you're looking at reliability, contributions, and capacity values.

A. (Ms. Bond-Simpson) Sure.

So on Slide 92, I'll point out that there are three different curves.

The curve in yellow is a standalone solar project. The curve in blue is four-hour battery. And

the curve in orange is a solar and storage hybrid configuration at a 1-to-1 ratio. So example, 100 megawatts of solar, 100 megawatts of storage. On the X axis is the cumulative capacity installed on the system, and on the Y axis is marginal ELCC or the capacity value.

So the first thing that I'm going to point out -- and I'll walk through these curves in a little bit more detail. The first thing that I'll point out is that all of these curves are declining. And this is very important because it means you can't just add one project. That in order to meet your need, you have to add much more variable and limited-duration technology to meet the same reliability need. And that the more you have on your system, the less the next project will provide reliability.

So let me walk through this a little bit more. The first thing that I'll point out is that your first deployments of these technologies will have the highest capacity value. And this is very important. This means that you can get a lot of bang for your buck in terms of reliability in those first deployments. And, in fact, for the solar and battery in the first deployments of battery, you see 100 percent capacity value.

Now, what I'll point out here is just what I mentioned before, that we don't have performance data to

validate, and so we are actually being a little bit biased toward these projects by assuming 100 percent capacity value.

Now, over time, as you add more of these projects to the system, you need more and more capacity to serve a reliability need.

So let me walk you through this example. Let's say you have 500 megawatts of four-hour battery on your system today. And we see this with SRP's plans for battery storage by 2024 -- or 2023, I'm sorry. So at 500 megawatts, we go up to the blue line, and we'll assume that the need is 100 megawatts of reliable capacity to serve customer demand. And this curve is no longer at 100 percent, it's about 75 percent.

So in order for four-hour battery to serve that 100 megawatts of reliable customer demand, we need 125 megawatts of storage. And even more on the system -- so you have 2,000 megawatts of storage, and you have that same 100-megawatt need for customer demand. You actually have to add 333 megawatts of battery storage to reliably meet 100 megawatts.

And this is really important, again, because we're trying to do apples to apples by removing a project like Coolidge Expansion from a portfolio and trying to replace it with equivalent reliability.

And so what happens in those early projects, if you think of our customer demand, we have a very peaky customer demand. So those early projects are actually able to help mitigate and shave the peak. But over time, the more those projects add, the more that peak is taken care of and your overall reliability need then becomes the full hours of the day. And so that is much harder to predict when you need that reliability. Right? That is when you need something dispatchable to help cover all of those hours, not just those that are limited in duration like the peak.

CHMN. KATZ: Counsel, I don't know -- it's about 12:15 -- if this is a good time. Unless you have one or two more questions, we can break.

MR. ACKEN: Thank you, Mr. Chairman. I may have one or two more questions, but the answers may take a little more time. So let's -- this is a perfect time.

CHMN. KATZ: It's about 12:15. We'll resume about 1:15. I'll ask everybody to try to be back on time so we get started promptly and not end up having to go into a third week, which we don't have available.

We do stand in recess, and I thank everybody for your cooperation.

(A recess was taken from 12:15 p.m. to 1:16 p.m.)

CHMN. KATZ: I think the rest of the Committee is here and ready to go, and we can continue with the current testimony if you're ready.

MR. ACKEN: Thank you, Mr. Chairman.

We're going to get the slides advanced to where we left off. I believe that was Slides 95 and 96 of Exhibit SRP-2.

MS. BOND-SIMPSON: Am I doing that or is ...

MR. ACKEN: Okay. Thank you. Ready to proceed?

CHMN. KATZ: Yes, any time, if you guys are ready.

Q. BY MR. ACKEN: Ms. Bond-Simpson, when we left off before the lunch break, you were discussing the graphic on Slide 96. Before I move forward -- anything else to say on that one before I move into the next question?

A. (Ms. Bond-Simpson) Yeah. I do want to make clear that we use this information to help us construct the alternative portfolio to identify the levels of reliability needed to replace the Coolidge Expansion Project. And so this foundation is important to go through the effort and the thought that we put through, making sure that we were maintaining reliability while accelerating limited duration and variable energy projects.

Q. So this morning you described the analysis, the thought process that went into it, all the considerations and questions that you wanted to address.

Bottom line for us, in your analysis, what was the effect of not constructing this project?

A. (Ms. Bond-Simpson) So not constructing the Coolidge Expansion Project accelerated 3 to 4 times the amount of capacity needed to provide similar reliability. And I say "similar." Again, we -- just as a reminder, we don't have the performance data that validates some of the assumptions that we made on the battery side. And what happened is the entire portfolio shifted around.

And I'm going to explain this in Slide No. 98. On the orange side of the slide are the things that were removed from the portfolio. Now, the CEP, or the Coolidge Expansion Project, as I said before, came out of the portfolio, but we also saw solar coming out of the portfolio. And this is because we needed capacity resources.

And so, as said before, solar doesn't provide a lot of capacity value by itself, so pairing it with storage is important for capacity value. And so what we saw was a 1-to-1 substitution. So instead of standalone solar, we have the solar plus battery replacing it. And that was important because that's how we make sure we're

maintaining our trajectory for sustainability.

But that wasn't enough. We also needed to add 1,900 megawatts of standalone battery storage. And, again, this is to help shave the peak, and this is to help provide reliability during those peak times.

But it wasn't enough. And then we even had to accelerate a CT, or a combustion turbine. And this is really just to get at that reliability when our reliability needs are throughout all of the hours of the day and through the year.

And what we assumed in our original portfolio was a renewably fueled combustion turbine would be available by 2035. As previous testimony talked about, hydrogen technology in a commercially viable fuel supply is about a decade out. And what we saw when we took Coolidge out of the portfolio is a technology like that was still needed. And so what we ended up doing was accelerating that to 2033, which gave us a little bit of discomfort, seeing we believe that it's technically viable years later.

And so what we saw during this is there's inherently more risk in a portfolio without Coolidge -- without the Coolidge Expansion Project. Excuse me. And that the earlier timing of needing battery resource coincides with risk. And, again, this is operational

risk and not having pure data or performance data in order to provide that operational viability.

The earlier batteries also come at a cost risk. So costs are projected to decline. But when we're installing batteries earlier, we're doing it, we're adding cost. And we expect every year that we delay, that that cost will go down.

And so, again, while this might be a technically feasible portfolio, we didn't identify it as a prudent portfolio to plan for our customers.

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

CHMN. KATZ: Go ahead.

MEMBER HAMWAY: So when you're looking at data, the battery storage data that you were saying you didn't have enough to do proper analysis, is that data kind of like an open source out on the market for other people who are doing this, or is this exclusively SRP data?

MS. BOND-SIMPSON: So we would be interested in both pure utility data and the data that's on our own system. And so, again, as a reminder, only 3,200 megawatts are installed as of the end of last year. And many of this isn't uniform. Not all batteries are created equal. Some of them are one-hour duration, some of them are seconds. And so the data that's collected is

not always readily available for us to use. We would look for industry partnerships. But even if we aggregated the entire U.S. dataset, it's still not a lot of long-term performance data, particularly as it concerns us for the Desert Southwest and performance year over year. That helps us identify how long they last in the Desert Southwest extreme heat conditions.

MEMBER HAMWAY: One other quick question. In a previous testimony in a previous case -- I have no idea when it was -- but they were talking about the battery that it could go for eight hours at a lower capacity but could go two hours at a higher capacity. But you've done everything for four hours at X capacity. So do you ever vary that, and does your battery support that kind of use?

MS. BOND-SIMPSON: So today, when we contract for batteries -- and Mr. Smedley might want to jump in here a little bit too. But when we look for batteries, we look at them for power purchase agreements. And these usually have a fixed charge and discharging schedule. Having that ability to operate a little more flexibly and be able to have different durations and different states of charge, that would be something that we would be looking for for a battery that we owned and operated ourselves. We have one of those projects. It's about 25

megawatts. And we're, again, looking forward to all the information it can provide. But today, what we know and what we would assume is a fixed PPA at the four-hour duration.

MEMBER HAMWAY: One other quick question. You said there were 3,000 megawatts of battery storage? Something around that?

MS. BOND-SIMPSON: Yeah, 3,200.

MEMBER HAMWAY: Okay. So how much of that is in Arizona? Do you know? From my perspective, sitting through these things, I see Arizona as a leader in battery storage. So I was just curious, of that 3,200, how much is in Arizona?

MS. BOND-SIMPSON: I don't know that figure off the top of my head, and that has changed over the last year. I'll ask Mr. Smedley.

Are you aware of how much?

MR. SMEDLEY: I don't know the number either. Sorry.

MS. BOND-SIMPSON: That's something we can look up.

MEMBER HAMWAY: I'm curious about that. And I'd like to know what other states have it. California, probably? I don't know.

MS. BOND-SIMPSON: Correct. California does

have a lot of the battery.

MEMBER HAMWAY: Okay.

MR. SMEDLEY: I think most of what's online today is smaller pilot projects like our 50 megawatts of total projects. So I suspect most of that is in California.

Q. BY MR. ACKEN: Next I want to ask you about an economic comparison. You looked at this alternative portfolio shown on the screen on Slide 98. Did you also look at economics, the difference in cost associated with the two different portfolios?

A. (Ms. Bond-Simpson) Yes. So going forward with the recommendation to the Coolidge Expansion Project, we wanted to make sure that we had an economic comparison as well. And so we did compare both portfolios in terms of an hourly production cost model simulation, and we ran that for 30 years.

And that helps us determine not only the up-front capital cost but how those resources perform and are dispatched economically in the portfolio. And so we did do that analysis. And I can show that on the next slide.

Q. So what was the conclusion of the analysis?

A. (Ms. Bond-Simpson) So using inputs that were derived from subject matter experts both internal to SRP

and those that operate the plant and third-party information for things like forward fundamental forecasts for things like fuel, we saw that -- using the best available information that the Coolidge portfolio, the Coolidge Expansion Project portfolio, was also the economic portfolio when compared to the alternative portfolio. And that was to the tune of $637 million on an NPV basis.

Q. Did you consider what happens if natural gas prices are different than what you assumed in your analysis?

A. (Ms. Bond-Simpson) Yes. We did look at natural gas prices in terms of volatility, and we looked at both a low forecast and a high forecast. And we saw that the low natural gas prices increased the value of Coolidge respective to the alternative portfolio by about $250 million. And the high gas prices reduced the portfolio with Coolidge in it, but it was still positive by $407 million compared to the alternative portfolio.

Q. And did your analysis assume that battery costs would decline over time?

A. (Ms. Bond-Simpson) Yeah. So this is one of the variables that we wanted to understand better. We do recognize that batteries will come down in price. When we looked at the battery cost assumptions, we gathered

input from a third-party vendor. And this, again, was a way to identify a fundamental forecast that included things like supply, demand, regulations, maturity. What they did not provide was a sensitivity to declining prices.

So what we really wanted to do was stress test. And so we took the fundamental forecast that created a floor, a bottom forecast over 30 years, and we got to that same level in six years. So, again, we really tried to push the limits on how much -- how quickly those costs could come down. And even in that scenario, we saw an NPV positive benefit by $342 million of the Coolidge Expansion portfolio over the alternative.

Q. And just to clarify -- I don't think my question was particularly clear. Your portfolio analysis assumed battery prices would decline? Your base case assumes battery prices will decline, correct?

A. (Ms. Bond-Simpson) That is correct.

Q. And then this low battery cost is what you're referring to at accelerated battery cost reduction?

A. (Ms. Bond-Simpson) That is correct.

Q. Did you look at the possibility of leaving SRP customers with stranded cost s? There's been questions about the life of this asset, for example.

A. (Ms. Bond-Simpson) Yes. And we saw that the

risk of a stranded asset for the Coolidge Expansion Project is very low.

And we can look at this in two different ways :

First is a quantitative lens, and this is a direct output of the NPV analysis. What we look for is the time that the value of the Coolidge Expansion Project pays for the up-front capital cost. And at this point in time, the NPV is zero. We call that the break-even year. Everything before that, the Coolidge Expansion Project would still have a cost. And everything after that, it would gain in value. And we saw this break-even year, in all scenarios, to occur in the mid 2030s. And this would tell us that this asset would pay for itself in about half of its useful life.

The other way that we look at this is in terms of versatility and the types of value that the Coolidge Expansion Project provides. And we see this as a very versatile resource. For one, it can meet peak needs. It can sustain output in emergencies. It can provide ramping. And it can also provide reserves. And it creates a special kind of reserve -- not creates. It qualifies as a special kind of reserve called contingency nonspend. And this type of reserve, because of it's quick-start capability and in this manner, it's not burning fuel while it's providing reserve. And so we see

it being a very, again, versatile resource for long-term customer value for decades to come.

And if, in the event hydrogen fuel became commercially viable, that we could convert the units to hydrogen to keep that extended life with the plant. So in terms of the right tool for the job, we see Coolidge as a Swiss Army knife. It's very versatile, and it's a very low risk of being a stranded asset because of its versatility.

Q. In addition to the sensitivity analyses shown on Slide 104, did you seek third-party perspectives regarding, for example, greater capacity value for renewables and storage that might affect the analysis?

A. (Ms. Bond-Simpson) We did. As I mentioned before, SRP has been doing effective load carrying capability methodologies and analyses since 2019, though we are following industry trends and we welcome input into different types of that methodology.

So we've had three different consultants that we've partnered with over the last several years for that. The latest was a technology firm called E3. In late 2020, we were undergoing an analysis of their tool called RESOLVE. And we had asked them to model the ELCC of our system using a methodology that had some diversity benefits in it.

At the time when we were starting to put the alternatives analysis together, we had asked them to do an addendum to that work that delivered an independently derived alternative portfolio for the Coolidge Expansion Project using their model, and they delivered that in May. And we modeled that through SRP's economic analysis. And we saw that that portfolio also was NPV positive by $305 million.

And so with this information, we had a full body of work that indicated that not only was the Coolidge Expansion Portfolio the reliable portfolio for SRP customers, but it was also the most economic portfolio as well.

Q. So we discussed -- go ahead.

MEMBER GENTLES: Is this NPV value, is this comparing to the projected cost of the facility?

MS. BOND-SIMPSON: So what the NPV does is we take both portfolios and do that production cost simulation. We aggregate all of the system costs, O&M, fuel, capital, for the entire portfolio. And then we take those against each other, and then we look at the 30-year horizon net present value. So it's an all-in system cost.

MEMBER GENTLES: Thank you. I was missing the 30 years. Thank you.

Q. BY MR. ACKEN: So you've discussed reliability, affordability, and now let's look at the alternative analysis in terms of sustainability.

What were the impacts of this project versus an alternative, such as batteries and solar, on SRP's sustainability goals?

A. (Ms. Bond-Simpson) There was no impact on SRP's ability to meet our sustainability goals. And these goals were board established, and they were collaboratively developed with stakeholders. So the 2030 carbon target, not only did both portfolios have the ability to meet that, they had the ability to exceed that, even with Coolidge Expansion in the portfolio.

A more aggressive target would be to look in terms of total mass emissions on the system as well. And so not only were we able to meet our established 2035 goals, we were also able to meet mass carbon reductions or a more aggressive standard.

And that's what I'm showing on Slide 110. The gray bar is our 2021 system carbon emissions. And in 2035, you can see the Coolidge Expansion Portfolio in blue and the portfolio removing the Coolidge Expansion in yellow. And the same for 2050.

And what we really see is because Coolidge is a balancing resource, because it is there for reliability,

it does not operate a lot. It does not emit a lot of emissions. And so we really see the ability for this, again, not only to meet our sustainability goals but to help us transform our system reliably.

Q. So I'd like you to -- at this point you discussed the analysis and all of the factors that went into it. Please summarize your reasons for recommending the flexible natural gas project, this project, instead of adding battery storage.

A. (Ms. Bond-Simpson) So at this point in time, up until this point, we've been talking about an "or." So the Coolidge Expansion Project or batteries and solar. And we'd really like to shift that perspective to say "and." It's a matter of timing. If we can do the Coolidge Expansion Project first, then we're able, through that tool, to meet our reliability needs while we're also integrating batteries and integrating solar. And that's serving those carbon emission reduction needs. And we're pairing those or integrating those two tools together to have the overarching value in terms of affordability, reliability, and sustainability for SRP customers.

And not only are we able to do that, but we're able to collect the data from those early projects, 500 megawatts by 2023, and help understand how that -- we can

apply that data to when we are ready for batteries and solar to have the lion's share of resource adequacy for our future system. So it allows us to meet a number of goals, and we believe it is the best and most prudent path forward. That is why we recommended it to our board; and, ultimately, that is why our board passed that recommendation.

Q. Has the increasing demand for electricity that Mr. Smedley discussed today affected your conclusions in any way?

A. (Ms. Bond-Simpson) They have not. Two major changes occurred between the finalization of the analysis and today. And, really, one of those was the load forecast increased. And the other was it became clearer that we were not able to rely on the market, that entities in the West were depending too much on surplus to meet their resource adequacy needs.

And so we were able to accelerate the project from this analysis. So from this analysis, we had Coolidge units built out in 2025 and 2026. And with those two changes, we recommended with urgency that we were able to accelerate the project. But it does not change the outcome or conclusions of the analysis, just increased the urgency.

Q. Thank you, Ms. Bond-Simpson.

Mr. Smedley, let's come back to you to wrap up this section addressing the need for the project.

Summarize the needs provided by the Coolidge Expansion Project.

A. (Mr. Smedley) Certainly.

So the Coolidge Expansion Project is really critical to our ability to reliably serve the near-term needs that we discussed today. It's also very important, as we integrate more renewable energy into our portfolio, to be able to maintain a reliable electric system as we transition into a lower-carbon future. And it's also the most affordable option, as Ms. Bond-Simpson explained, that really provides the greatest value to our customers.

Q. In your testimony, you addressed the importance of reliability and the role that natural gas plays as -- I think the term was the reliability backbone in SRP's system.

What do independent reliability organizations say about the reliability of natural gas?

A. (Mr. Smedley) So each year the North American Electric Reliability Corporation releases a long-term reliability assessment, and it's a ten-year look at the electric system and what they call the bulk electric system nationwide and some of the reliability challenges that are facing that system.

And I wanted to just read an excerpt from that -- this year's report, which was published in December of 2021, because I think it really exemplifies the importance of natural gas in transitioning to this cleaner energy future.

And so it says: Until storage technology is fully developed and deployed at scale, which cannot be presumed to occur within the time horizon of the LTRA -- and that's ten years -- natural gas-fired generation will remain a necessary balancing resource to provide increasing flexibility needs, and resource planning and policy decisions must ensure that sufficient balancing resources are both developed and maintained for reliability.

That's exactly what we're trying to accomplish with this project, to really add that reliability backbone that can help us to transition to a cleaner energy future while maintaining the reliability of our system.

Q. So here's the big question: If the Commission and this Committee do not approve this project, how will SRP meet the needs you have identified?

A. (Mr. Smedley) This is a really important question, and we wanted to address that directly with the Committee today. We have taken a serious look at

alternatives, and our conclusion is that there are no other viable options to meet this significant near-term need that we have that would not introduce significantly higher reliability risk for our customers.

And to elaborate on that a little bit more, because of our concerns about obtaining as much battery storage as would be needed to achieve similar reliability to the Coolidge Expansion Project, if this project is not approved, we would have to basically go out to the market to try to seek that additional capacity.

And I spoke about that earlier. We strongly believe that it would not be prudent for our customers to be able to rely on the market for that much capacity and flexibility that they need in the coming years. So that's why we're here before this Committee proposing this project.

Q. And do you anticipate any challenges in acquiring resources from the market in the coming years?

A. (Mr. Smedley) Oh, absolutely. I think by all accounts, we see the market really tightening in terms of available capacity because of some of the factors that we discussed between retirements of coal resources, natural gas resources, and then also just changes in general in how people use energy.

So another one is in the Pacific Northwest, they

used to be a system that peaked in the wintertime. But now they're transitioning to being a system that peaks summertime. So where we previously had some ability to rely on the Pacific Northwest to support power, I think that's going to be diminished over the coming years.

Q. Thank you.

We're now going to shift gears from the two needs discussed by this panel regarding near-term capacity and integrating renewables as well as SRP's analysis of resource alternatives and turn to the benefits provided by this project. And you see the three benefits highlighted on the screen, Slide 114.

Mr. Smedley, let's start with complementing battery storage. You've testified that SRP is adding significant battery storage to its resource portfolio. How much battery storage is SRP adding?

A. (Mr. Smedley) So we're really proud of our commitment to battery storage. We're going to be adding 450 megawatts for a total of -- so we'll have 500 megawatts total online by next summer, summer of 2023.

And I just wanted to show the Committee the slide on the left, which is a map that shows the location of those different projects that we'll have online by that date, and there's a couple different things I'll point out on this map.

First is we've designed these deployments to be different in terms of configuration, in terms of size and capacity, so that we can really maximize our learning from them. So the one at the top, this Bolster project -- the one at the north, Bolster, is actually owned by SRP. All the other projects are owned by power -- through power purchase agreements with developers.

But that Bolster project will give us an opportunity to really test batteries out in different operating modes because we wouldn't have any contractual restrictions through a PPA. So we already have a plan for testing that battery system out and some of the capabilities that could be delivered through the grid in the coming year. So we're putting that plan together right now.

The Dorman project in the center of the map is a grid charge storage project. And Bolster is as well. So it's not connected to a solar system. It's actually charged directly from the grid, and then it discharges back to the grid when we need the power.

The ones on the bottom, the other four, are all connected to solar systems. So the solar charges the battery, and then we use the battery to be able to support the grid when we need the power, typically to

serve the peak.

So those are some of the different things that we're hoping to learn. And, again, very excited to have these projects online as soon as the summer of 2023 to start getting some operating experience from them.

MEMBER GRINNELL: Mr. Chairman.

CHMN. KATZ: Yes, Mr. Grinnell, go ahead.

MEMBER GRINNELL: Just a point of education here for me. The battery storage, I believe somebody said they could last up to five hours; is that correct?

MR. SMEDLEY: The current most economic storage sort of interval is four hours, actually. Most of the batteries you can purchase now are four hours, and that's the most economic option right now.

MEMBER GRINNELL: So is that an indefinite storage until you draw down on that power, or does that have to be continuously recharged every four hours or so?

MR. SMEDLEY: It depends on how you operate it. And that's one of the challenges, is how you manage that four hours. Right now, what we would typically do is we would charge it using solar, because we would typically -- in some points of the year, we have excess solar to be able to charge the battery. And then we would discharge the battery in the afternoon to help us serve the peak.

And so that's generally how we would operate them. We may operate them differently in the future depending on what our system needs are.

MEMBER GRINNELL: So that battery storage, how long can a battery store power? Is it an indefinite amount of time, or is it a cyclical process, storage, utilization, storage, utilization?

MR. SMEDLEY: Right. So I think, in theory, you could store it for a long time. In practice, we typically would do it once a day. And it's governed by whatever the contractural arrangement is that we have with the counterparty or the developer. They usually have set schedules for when the battery would charge and discharge based on the economics of the contracts that we have set up.

I don't know if you could just hold the energy indefinitely. I'm not sure about the answer to that part the question. But, generally, we wouldn't want to use the battery that way. We would want to use it more actively to support our needs. Does that help?

MEMBER GRINNELL: Thank you.

Q. BY MR. ACKEN: Mr. Smedley, you and Ms. Bond-Simpson both talked about the need to gain additional operating experience. What is SRP doing to get ready for more battery storage?

A. (Mr. Smedley) So we have a number of different initiatives going on within SRP right now to be ready to operate a system with higher levels of both battery storage and solar. And I wanted to just touch on a couple of those just to explain them a little bit to the Committee.

The first one is the Operational -- we call it the Operational Readiness Initiative. And it involves more than 20 different departments across SRP, operations, planning, other departments, as well as some of the partners that you see on the right side of that slide. And I'll just talk about a couple of different areas that we're focusing on as part of that.

One of them is advanced forecasting tools. So you can imagine, in the future when we have a lot more of these systems online, particularly solar, as it's spread thought our service area and throughout the state, the importance of being able to forecast things like solar radiance, cloud cover becomes much, much more important in terms of how we operate the systems.

And there are some advanced tools out there available to be able to do that, so we're piloting some of those tools, and we're looking into incorporating them into our operations.

We talked about inverters earlier. I won't

belabor that point, but we still have a lot to learn, I think, about what inverters can do and what their capabilities are and really demonstrating those.

And then the third one I'll touch on are reserves. So we have to carry a certain amount of reserves, as required by NERC, to prepare for unexpected events on our system. And as you can imagine, with more and more variable resources and limited-duration resources, we need to determine, what are the reserve needs that we would have, depending on those kind of resources, in the future. So that's another area that we're looking to investigate as part of this Operational Readiness Initiative. So that's just an example. I wanted to give you a feel for what we're exploring as part of that.

MEMBER GENTLES: Mr. Chair.

CHMN. KATZ: Yes.

MEMBER GENTLES: So going back to the battery storage and the amount that you would need to add in to potentially replace the need for Coolidge, how long would that take to ramp up and develop?

MR. SMEDLEY: So we estimate that we would get to that three to four times over a period of -- and Ms. Bond-Simpson can help me answer the exact question on the years, but over the course of the 30-year resource

planning horizon that we looked at, we would need to get to that three to four times by I think the 2030s before we would -- in order to get the same reliability as the Coolidge portfolio.

MEMBER GENTLES: And even if you were to add in additional battery storage and connect into effectively this network we see up here on page 115, you're saying that you still need the Coolidge plant even if you were to add in the additional battery storage?

MR. SMEDLEY: So what we're saying is the Coolidge Expansion Project would reduce our need to depend on battery storage as soon as we would otherwise need to to meet our near-term needs. So in order to really meet our goals for reliability in the coming years, we would, again, have to install a lot of more battery storage than we would if we had the Coolidge Expansion Project in place.

CHMN. KATZ: One question that I had. We had discussion about how the cost of batteries over time might very well go down. But we're now using almost exclusively lithium-ion batteries; is that not correct?

MR. SMEDLEY: Yes, that's correct.

CHMN. KATZ: And there is a worldwide difficulty in mining the lithium that's needed now and might be needed in the future. And those mining activities might

involve the use of diesel- or gasoline-powered equipment or electrical-powered equipment that is dependent upon electricity generated from carbon-emitting sources.

Has that gone into any calculation in terms of the future availability of this technology?

MR. SMEDLEY: No. It's a great point, Chairman Katz. We have not explicitly factored in the electricity use from the upstream production of the lithium that is used in the battery storage. But you're correct, that would be something that would be a consequence of more lithium development.

CHMN. KATZ: And have you been in touch with any of the folks that are working on battery technology to determine whether they are exploring other types of batteries for the use in solar or other storage?

MR. SMEDLEY: So as part of the other set of initiatives I was going to mention, the R&D initiatives, we are looking at all different types of storage technology. So beyond lithium-ion batteries, there's technology called flow batteries. And then there's other kinds of long-duration storage involving compressed air, thermal storage.

There's lots of opportunity, and I think that's a really important point because, again, by allowing some time for that to develop, we'll reduce our dependence on

one type of storage technology and be able to provide opportunities for those other ones to develop to be able to have a more diverse portfolio.

CHMN. KATZ: Thank you.

Q. BY MR. ACKEN: Okay. Thank you.

And if you would, let's continue with the discussion on Slide 116 and describe those R&D efforts that you're pursuing.

A. (Mr. Smedley) Sure. So I mentioned the different types of technologies that we're looking at and participating in, mostly through the Electric Power Research Institute and observing other utilities that are doing demonstration projects using these technologies, smaller-scale projects. So very interested in seeing how that's going to pan out.

We're also working on a few other areas. We touched on communications and control quite a bit earlier. I won't belabor that, just to say that we do need to make sure that the speed of communications and the interoperability of the systems is adequate for our needs.

We're also working a lot on safety. So there's been safety incidents with these systems, and we are collaborating with the National Fire Protection Association on the development of codes and standards to

make sure that we're employing the best safety practices with the deployment of these systems.

And then the last thing I'll mention is the environmental life cycle. So, Chairman Katz, you asked about the upfront. We are also thinking about how are we going to dispose of these lithiums safely in order to ensure that we meet environmental requirements.

So, again, just a few examples of some of the efforts that we're doing on the R&D front. And the point of this was really just to emphasize that SRP is really committed to the deployment of battery storage and energy storage as a really important resource for us in the future.

Q. So given the efforts you are engaged in to acquire battery resources and understand them, how will this project complement your battery storage portfolio?

A. (Mr. Smedley) Yeah. So the Coolidge Expansion Project would give us a source of reliable and dependable capacity in the time frame we need it. And what that would do is alleviate our need to depend on battery storage as soon as we would otherwise need to, and it would give us time to adopt battery storage at a more measured pace, which gives us a chance to get some of the operational experience that we feel we need. And that it also gives us a time for costs to come down over time for

that technology before we make a significant investment.

Q. Thank you, Mr. Smedley.

MR. ACKEN: Next we're going to turn to another benefit Mr. Smedley identified regarding the project, transmission support. And for that, we're going to go back to Mr. Mcclellan.

Q. BY MR. ACKEN: Let's start off, Mr. Mcclellan, where are most generation resources located in the region?

A. (Mr. Mcclellan) So a large portion of the generating resources in the Valley area are located in the West Valley. And just to give you an idea and illustrate where those resources are distributed across the Valley, if we take a look at the slide on the right, there's the three circles which really highlight the different regions.

And I'll start in the West Valley with the circle labeled the PV Hub. And in that circle which is kind of a yellow or an orange color, on the West Valley, there's around 12,300 megawatts located in that area.

If you look more to the middle of the slide, and we've got that labeled the Phoenix area. And that's in a light blue oval. In this region, there's about 4,800 megawatts of nameplate generation located in that region.

And looking to the right on that slide in the

red circle, this is the region that we're calling the Southeast Valley, the location of the proposed Coolidge Expansion Project. There's about 2,100 megawatts of nameplate generation in that region.

And just to illustrate a little bit further, if you look to the side on the left to that bar chart, this really shows the same information that's on the slide on the right. Just gives a little comparison between the different regions.

So on the left, on the Y axis on that bar chart, that's the nameplate capacity in each region. And then the different bars which are highlighted in the same colors, that's the slide on the right, that gives the amount of nameplate capacity in that region.

So starting on the left, the yellow or the gold bar, again, that's over 12,000 megawatts in the PV Hub region. The Phoenix region, which is the blue bar, is around 4,800 megawatts. And then, again, as we get the Southeast Valley, which is the location of the proposed Coolidge Expansion Project, this is around 2,100 megawatts of nameplate generation capacity.

Q. Explain to the Committee why generation location matters.

A. (Mr. Mcclellan) So when you generate electricity, you also have to be able to get that

generation to where you need it. So, basically, to where your load centers are at or where your customers are located.

And when we look at where most of SRP's customers are, they're more in the East Valley or the east part of Phoenix. So if you have generation that's located in the West Valley where there's already a lot of generation, you have to be able to get that generation over to the east to where SRP needs it, to where those loads are at. And that's really done by utilizing transmission lines. So you have to have a pathway to get that electric generation to our customers.

When looking at generating electricity in the West Valley or in that PV Hub area, since there's a lot of generation over there, a lot of the pathway to get that generation to the east is already nearly 100 percent utilized. So in order to get any generation in that PV Hub area or even in some of the Phoenix areas, you would have to either build new transmission lines to get that generation to SRP's customers, or you would have to find some additional transfer capability, meaning that you likely would have to purchase that transfer capability from somebody else.

If you're able to purchase that additional transfer capability, that would result in some additional

costs for SRP customers. And then the alternative, which would be to build new transmission lines, of course, that would result in additional cost for SRP customers.

The other thing is that it would also potentially jeopardize the schedule for the project. So if we had to build a large, long transmission line, there may be a risk that we wouldn't be able to have the capacity online we need it in 2024.

And then, also, by not having to build additional transmission lines, we're also able to reduce any additional risks to the project.

By locating the Coolidge Expansion Project in the Southeast Valley -- again, that's the red circle -- we're able to take advantage of the available transfer capability and that available transmission in that area to be able to get the generation to SRP's customers and where SRP's loads are at, more in the eastern part of the Valley.

Q. And will this project improve the flexibility of SRP's transmission system?

A. (Mr. Mcclellan) Yes. So again, by being able to locate that generation closer to the load, that allows SRP to utilize additional pathways to be able to get the generation from the Coolidge Expansion Project, again, to our customers and where we need it.

In addition, at the site, we've talked about having access to both the 230kV transmission system and the 500kV transmission system. So that gives us the ability to put -- or move that generation and have that transfer capability on both systems, which allows a little bit of flexibility.

Also, we talked about the potential ability to convert the 500kV switchyard over to a substation sometime in the future. So the ability to be able to do that would provide SRP with some additional flexibility as well as additional reliability for the system.

Q. Let's next turn to the last benefit that Mr. Smedley summarized, utilizing existing infrastructure.

Describe how this project will be able to rely on existing infrastructure.

A. (Mr. Mcclellan) So, first off, I'll just mention that we do have available adequate space to be able to add the Coolidge Expansion Project. We had talked about the 100-acre parcel of land that's just south of the existing Coolidge Generating Station. So this provides us with the adequate amount of space to be able to add additional capacity to help us meet that near-term need that we're talking about today.

In addition to the available adequate land that

we're talking about, we also have access to transmission, fuel, and water.

For the transmission lines, we've talked about having access to both the 230kV system and the 500kV system. By being able to access those existing transmission lines, we can reduce overall costs for our customers since we don't have to build new transmission lines. Also, we're able to have a little more confidence that we're able to meet the project schedule to have this capacity online and available when we need it.

Very similar benefits for the fuel supply at the Coolidge site. We have access to two different independent natural gas pipelines, the TransWestern pipeline and the El Paso pipeline. So by being able to utilize those two existing pipelines, we're able to reduce overall costs for our customers. Also, we don't have to install any new natural gas pipelines. So, again, this helps us with reducing that project development risk and making sure we can meet that schedule.

Also, we've talked about having access to water and the ability to use those long-term storage credits and not having to depend upon groundwater.

Also, when you think about leveraging those existing infrastructure at the Coolidge generating site,

that also allows us to reduce our overall impact on the environment as well. And we'll talk about that in more detail in the next panel when we talk more about the environmental compatibility of the project.

Q. Mr. Mcclellan, was the CEC application prepared under your direction and supervision?

A. (Mr. Mcclellan) Yes.

Q. Do you have any corrections or changes at this time?

A. (Mr. Mcclellan) The only thing that I would like to highlight at this time is when we talked about the two different options for what we called the western portion of the transmission infrastructure. And if you remember, that was the connection from the 500kV switchyard to the existing 500kV transmission lines. I just wanted to highlight the discussion around the section option that we are now considering really our preferred option to make the connection from the switchyard to the 500kV transmission line.

Q. And with that supplement, is the CEC application true and accurate?

A. (Mr. Mcclellan) Yes.

Q. I'm going to throw this to the entire panel. Do you have any final comments for this committee?

A. (Mr. Mcclellan) Sure. I'll add a few final

comments.

And really, just in summary, SRP is seeing an unprecedented amount of growth in our service territory. And we talked about all the different resources that we're adding to try and meet that unprecedented amount of growth, calling that the "and" strategy. Even with utilizing that "and" strategy and having all of those resources, we still have 700 megawatts of additional capacity that's required by 2024, an additional 300 megawatts, for a total of 1,000 megawatts, by 2025.

The Coolidge Expansion Project is a very critical resource to allow us to be able to meet that near-term need that we have in capacity. And it also allows us to do that while maintaining a high level of reliability.

In addition to maintaining that reliability, it supports the ability for SRP to meet our 2035 sustainability goals, really by allowing to integrate additional reliable resources onto our system.

In addition, we talked about how it supports the transmission system and allows us to leverage existing infrastructure, including transmission, fuel supply, and water supply as well, which reduces overall cost to our customers and allows us to reduce our overall impact on the environment as well.

Q. Thank you.

MR. ACKEN: Mr. Chairman, this panel is available for further questions from the Committee and cross-examination.

CHMN. KATZ: What I'll do is I may just have -- unless there's an immediate question, have cross-examination go forward, and then the Committee can address these witnesses after we've heard everything.

Unless -- anybody have immediate questions on the Committee that you'd like to ask of these three before we go to cross-examination?

(No response.)

CHMN. KATZ: Hearing silence, we will then go ahead with the cross-examination of this panel.

MR. RICH: Thank you, Mr. Chairman.

Witnesses, good to see you.

A quick note for the Committee. I'm simultaneously -- there's a hearing going on at the Corporation Commission, an open meeting, and I have an agenda item on that. I have someone monitoring it for me. I've talked to the other folks on the panel right now. I think I can get through my cross before it happens. But if I have to drop out, I apologize, I'm not trying to be rude, and I would like to reserve the opportunity to pick up my cross-examination when I return

as I pass it along.

CHMN. KATZ: And Mr. Rich advised me of this situation this morning. And we, unfortunately, have the open meeting of the Corporation Commission scheduled during the course of this hearing. So just let us know if and when you have to leave.

MR. RICH: Thank you. I appreciate that. And sorry for the oddity of that, but it doesn't make my life easy either.

CROSS-EXAMINATION

BY MR. RICH:

Q. Thank you all. I'm going to try to be organized here, and it's a little unusual to have to cross-examine three folks at one time. So if I direct a question potentially in the wrong direction, let me know.

So let's start with the discussion of ELCC. I think, Ms. Bond-Simpson, you're probably the right person to ask these questions to.

So the ELCC, correct me if I'm wrong, is a way that you can compare, you know, the Coolidge Expansion Project to some other alternative portfolio; is that correct?

A. (Ms. Bond-Simpson) ELCC helps us aid into how much we have to add to maintain reliability. So, yes, in

a sense, some of your question was right. It's not only limited -- it's a technology diagnostic methodology. It's not only limited to one or the other.

Q. Okay. That's helpful. So is there, for example, an ELCC for the Coolidge plant? I'm sorry, the proposed Coolidge Expansion Project, did you assign an ELCC number to that?

A. (Ms. Bond-Simpson) So E3 did calculate ELCC for the Coolidge Expansion Project. The way that we calculated the reliability of benefits of Coolidge was captured in the -- in our loss of load probability method for planning reserve margin and taking into account forced outage rates. So two different methodologies that were used in the alternatives analysis.

Q. Okay. So the answer is yes, you did assign or come up with an ELCC for the Coolidge Expansion Project; is that correct?

A. E3 came up with an ELCC methodology for the Coolidge Expansion Project, yes.

Q. Okay. And do you know what that ELCC was, what that number looked like for the Coolidge Expansion Project?

A. I believe it was 658 megawatts out of the 820 nameplate. So it's around 80-something percent.

Q. Okay. And I asked -- I talked with the folks

that are running the system here earlier. There is an item that we got in the disclosure from SRP. I think we've premarked it as SC-33. If we could get that pulled up onto the projector.

MR. RICH: And, Mr. Chairman, this was an item that was originally disclosed as confidential. We had a discussion here today, and they've allowed me to use it. I'll get everyone a copy of that later, but in light of --

CHMN. KATZ: That's fine. And as long as we end up having it available on the pads.

MR. RICH: Thank you. And, yeah, I believe they're going to load those onto your pads when the opportunity arises.

Q. BY MR. RICH: So I have on the screen what we're calling SC-33. And can you identify that this is a report that the company E3 did -- or the slide depicting the results of some inquiry that E3 did for SRP?

A. (Ms. Bond-Simpson) This is a slide presentation that was given by a Zoom meeting to present draft results of the deliverable of an alternative portfolio.

Q. Okay. And this is -- you refer to in your testimony working with E3 to -- I'm not sure that I needed the slide moved yet, but -- that you worked with

E3 on getting information from them. This is what you all paid E3 to produce, the result of this sideshow; is that correct?

A. (Ms. Bond-Simpson) Correct.

Q. Okay. So if we could go ahead and skip forward on that to I believe the -- I'll tell you which slide. It will be Slide No. -- well, if you just flip forward for me. Sorry.

This one here. Thank you. If you could scroll to the bottom for the page number so I can identify it for the record.

Okay. So I have, on the projector in front of the Committee, page 6 of this report.

Are you familiar with this report, Ms. Bond-Simpson?

A. (Ms. Bond-Simpson) I am familiar with the slide deck.

Q. Slide deck. Thank you.

And on this slide on page 6, it looks like there's a red dotted line, and that is the 658 megawatts. Is that what you just referred to as the ELCC that was calculated for the Coolidge Expansion Project?

A. (Ms. Bond-Simpson) Correct.

Q. And what's the nameplate capacity of the Coolidge Expansion Project?

A. (Ms. Bond-Simpson) 820 megawatts.
Q. Okay. And so when E3 did their analysis for the purposes of calculating the ELCC of the Coolidge Expansion Project, they lowered that nameplate down to get to the 658 for the ELCC, correct?
A. (Ms. Bond-Simpson) Correct.
Q. Okay. And on this same page, there's a blue dotted line. Do you see that?
A. (Ms. Bond-Simpson) I do.
Q. Okay. And that represents the ELCC of a storage-only portfolio example in the year 2026. Is that what that is designed to depict?
A. (Ms. Bond-Simpson) I would make one correction to that statement. That represents the storage capacity in the year 2026. That is not the portfolio.
Q. That's -- that's what I asked you. Does that represent -- it says on there: 2026 Storage Only Portfolio Example.
Is that what that is?
A. (Ms. Bond-Simpson) For 2026, yes.
Q. Okay. And so does that mean that in 2026, 731 megawatts of standalone storage has the same ELCC as the 820 megawatts of the Coolidge Expansion Project? Yes or no?
A. (Ms. Bond-Simpson) It is true that in this

depiction, that is equal. It is also true that we assume 100 percent performance of batteries in this.

Q. Okay. And the ELCC, you talked about that that was a process by which you incorporate and consider risks and variabilities and inconsistencies and other items, correct?

A. (Ms. Bond-Simpson) Correct.

Q. Okay. So E3 determined for SRP that 731 megawatts of batteries in 2026 could provide the same value to the company as 658 -- I'm sorry, as the 820 megawatts of the Coolidge Expansion Project, correct?

A. (Ms. Bond-Simpson) Correct.

MR. RICH: You can take that down. Thank you.

I guess I'll just move for the admission of that exhibit at this time, Your Honor, just so I don't forget.

CHMN. KATZ: SC-33? It will be admitted.

MR. ACKEN: Mr. Chairman, I don't think he's actually asked questions about every slide in there, so --

CHMN. KATZ: Well, wouldn't that be Slide --

MR. ACKEN: Slide 6.

Q. BY MR. RICH: Bond-Simpson, have you had a chance to look at this? You've seen this before, correct?

A. (Ms. Bond-Simpson) Can you clarify what "this"

means?

Q. I apologize. This slide show. You testified earlier that you've seen it before, correct?

A. (Ms. Bond-Simpson) I have see the individual slides that you have requested. I have not seen all four of them together.

Q. Okay.

MR. RICH: I mean, Your Honor, typically, if you introduce --

CHMN. KATZ: That was in my former life.

MR. RICH: Mr. Chairman, certainly, whenever a large bundle of evidence is introduced, you don't have to just talk about every single page. We can do that if we want to take the time to do that, but --

MR. ACKEN: If I can be heard on this. If he wants to have it admitted and he's going to use his witness to discuss it, that would be the proper time and place to admit it. He's only asked Ms. Bond-Simpson to speak about one slide. So maybe I'm a stickler for the rules, but you if you want -- I haven't asked for admission of any of the slides or the entire presentation, and I won't of our testimony until we're complete, until we've actually shown the Committee every slide that's in that exhibit.

CHMN. KATZ: Well, at this point, what I think

is going to be the easiest thing for all of the parties to do, especially the voluminous exhibits, is to wait until the end of this evening and offer -- keep a list of what you want to have admitted, and we'll do it at that time. But without a question, we will be admitting at least slide 6 from SC-33. But I expect we will probably admit the entire exhibit at the appropriate time.

MR. RICH: Thank you, Your Honor. And I just -- it was a -- SRP generated the exhibit, so I figured that with their witnesses on the stand would be the appropriate time to admit it, but I'll wait until the end.

CHMN. KATZ: It just might being easier for bookkeeping purposes.

MR. RICH: Thank you.

I'm checking to make sure my item is not up yet. No, it's not.

CHMN. KATZ: That's fine.

MR. RICH: Okay. All right. Can we pull up Slide 96 from the testimony that was just provided. And which exhibit is that so I refer to the slide deck appropriately for the record?

MR. ACKEN: SRP-2.

MR. RICH: Okay. So Slide 96 from SRP-2.

Sorry, Slide 96.

Q. BY MR. RICH: So, Ms. Bond-Simpson, this Slide 96, you testified that the blue line is a depiction of the standalone -- the ELCC of standalone solar; is that correct?

A. (Ms. Bond-Simpson) That is incorrect. The blue line is the standalone storage.

Q. I'm sorry, I meant to say storage. Thank you. You're listening. The blue line is the depiction of standalone storage, correct?

A. (Ms. Bond-Simpson) Correct.

Q. Thank you. And we just saw the analysis that E3 performed for SRP that showed that the ELCC of 731 megawatts of standalone storage was equal to the ELCC of the proposed Coolidge Expansion Project. Where would that fall on this blue line?

A. (Ms. Bond-Simpson) So the 731 megawatts would -- if you look between the 500 and the 1,000, it would fall in the middle of that line.

Q. Is it your testimony that this slide is consistent with the E3 analysis that was just discussed?

A. (Ms. Bond-Simpson) So E3 used their own effective load carrying capability methodology and tool. What we're seeing here is SRP's effective load carrying capability using our methodology and our tool.

Q. So is the data that backs up this methodology or

tool anywhere in the record in this proceeding? Is there an exhibit that has the analysis, the assumptions, and the data that goes into this blue line?

A. (Ms. Bond-Simpson) This would have been our effective load carrying capability for all of our planning. So I don't believe it was admitted as specific to the Coolidge Expansion Project analysis. This was part of the annual planning methodology that we used to inform the alternative portfolio.

Q. Does the public have access to that analysis and those data assumptions that go into that analysis?

A. (Ms. Bond-Simpson) No.

Q. So that analysis differs with the E3 analysis that was provided to SRP that SRP paid for, and the public has no visibility into why there's that difference?

A. (Ms. Bond-Simpson) There's a couple of questions there that I want to make sure I address.

First, the inputs are the same for both sets.

Second, this is our system, and we don't publicly -- our system operations and performance and assumptions of our portfolio are not public information.

So, no, it would not be publicly available.

Q. So your testimony is that we should take your word for it that the inputs are the same, correct?

A. (Ms. Bond-Simpson) That's a -- seems a bit of a mischaracterization, but under proper confidentiality agreements, some of the information could be made available.

Q. Is this the information that would be available in your Aurora modeling?

A. (Ms. Bond-Simpson) There are different types of Aurora modeling. The probabilistic information is not public. The Aurora information that we have provided for the portfolio analysis as part of your discovery requests you have available to you.

Q. Okay. I want to make sure I understand because if you have the same inputs but with different outputs, how is a participant in this hearing supposed to analyze the difference between what E3 has told you and what you're telling us here today?

A. (Ms. Bond-Simpson) By asking questions.

Q. Okay. Are you aware that my client signed a confidentiality agreement and that SRP refused to provide us with that --

MR. ACKEN: Object, Your Honor. That's a gross mischaracterization of the discovery process. Mr. Rich asked for a great deal of information that, in our opinion, was outside of scope of this proceeding. We, nonetheless, did our very best to provide him everything

we could, even though, again, in our view it was outside the scope of this proceeding.

What we could not provide him, which we told him we could not provide him, was information that required third-party consents, which we were unable to obtain, which we did seek.

So for him to suggest that SRP refused to provide that I think is disingenuous. He knows the answer, which is SRP simply couldn't provide that information because contractually, we were prevented from doing so.

MR. RICH: Your Honor, we were told and we took their word that perhaps it was outside the scope of this hearing. But there's an exhibit in front of us that they have presented to you that we have no way of knowing what it is or if it's reliable, unreliable, or completely flawed, so ...

CHMN. KATZ: I'm going to allow the question to be asked, but I don't know if this witness can answer.

MR. RICH: Okay.

Q. BY MR. RICH: I guess just to tie up this issue, so, Ms. Bond-Simpson, the inputs in this blue line are not anywhere in the evidentiary record in this proceeding, correct?

A. (Ms. Bond-Simpson) Correct.

Q. And are you able to explain why the outputs of your analysis differ from the outputs of the E3 analysis so we can understand that?

A. (Ms. Bond-Simpson) Yeah. So as I explained in my direct testimony, in 2019, we began effective load carrying capability modeling. And while the industry has not developed best practices for this modeling, we are involved in a number of different industry routes, and we participate with consultants to better understand methodologies and how to continuously improve our own.

As part of this, we ran our own ELCC modeling with the system that we understand and the system that we operate for our customers, and we asked an independent third party, E3, to verify or validate the types of modeling approaches. And by and large, we came to a very similar conclusion, that three to four times the capacity was needed to replace the Coolidge Expansion Project.

And so we've done it ourselves, we've asked a third party to do it using their methodology. The methodologies vary a little bit, but they came to very similar conclusions.

Q. Well, Ms. Bond-Simpson, though, we just saw that E3, their analysis showed that in 2026, just 731 megawatts of standalone storage, not three to four times that amount, is enough to replace the Coolidge plant,

correct?

A. (Ms. Bond-Simpson) That is not correct. In 2026, it replaces Coolidge. But you did not show the remainder of the years that were required to add additional solar or additional storage to maintain reliability. So by only looking at 2026 and assuming that that would be static, you miss the additional three to four times capacity throughout the lifetime of the 30 years.

Q. Let's skip to Slide 108, if you could, please. Thank you.

Let's look at the table on the right side of this. For the record, looking at Slide 108 of Exhibit SRP-2.

There's a sensitivity that says low gas prices. Do you see that?

A. (Ms. Bond-Simpson) I do.

Q. Are the assumptions that were used in coming up with the low gas prices on this table, are those anywhere in the record?

A. (Ms. Bond-Simpson) I believe they're in the record in the response to Commissioner Kennedy's request.

A. (Mr. Smedley) Mr. Rich, if I could, I'd like to add, there are a number of other inputs that are listed in that letter in response your questions about whether

the inputs are made available to the public. And that's really, from our perspective, our ability to share that information.

And if you wanted to have every single input to model the entire system, that's where it gets into what Mr. Acken introduced in terms of sensitive information about the prices of our contracts and things that we would need to seek consents for. So making that data publicly available, it's just -- we made publicly available everything that we could for someone to understand the results of this analysis.

CHMN. KATZ: For the record, I think it was Mr. Smedley.

Q. BY MR. RICH: So, Ms. Bond-Simpson, let me ask you, what was the assumption made with regard to the low gas price for this calculation?

A. (Ms. Bond-Simpson) The low gas price and, if I may, the high gas were both derived from historical sensitivities from an IHS market forecast in relation to the base forecast that was informed by Wood Mackenzie as a fundamental forecast.

Q. Do you just have dollars and cents of where the low and high falls so that we can determine on our own the weight that should be applied to those?

MR. ACKEN: Mr. Rich, I believe that Mr. Smedley

referenced the response from Commissioner Kennedy that's been marked for identification, so perhaps that's contained in there.

MS. BOND-SIMPSON: It is.

MR. ACKEN: It is.

Q. BY MR. RICH: Okay. That's not in evidence yet. I'm just asking you, as the one who testified for this, you made assumptions around low gas prices. It wasn't designed to be a trick question.

What is the low gas price that you assumed in calculating this number?

A. (Ms. Bond-Simpson) I don't have those numbers off the top of my head. What I can tell you is that the high gas price escalated to about $10 between -- by 2050, I believe. And the spread between the high and the low is $6 per MMBTU.

Q. And what about the battery costs? When you say that there was a low battery cost assumption, what was that amount?

A. (Ms. Bond-Simpson) So that low battery cost hit $500 per kilowatt in six years rather than 30 years. So that was what I would refer to as a stress test, not informed by any evidence or fundamental sensitivity.

CHMN. KATZ: Would you just explain for us, if you would, what the dollars with the plus signs in front

of them actually represent. I just want to make sure we have a clear record of what the figures 637 million and 872 million actually represent.

MS. BOND-SIMPSON: These are the net present value of a Coolidge Expansion Project compared to the alternative, which was part of my testimony. And so this looks at the 30-year investment horizon and is indicative of how much -- the value in one portfolio over another over that investment horizon.

CHMN. KATZ: Okay.

Q. BY MR. RICH: Let's turn back to the ELCC analysis.

When doing that, is there a cost that's associated with the risks of the use and commitment to further gas-powered generation?

A. (Ms. Bond-Simpson) ELCC does not incorporate any costs for any generators on it.

Q. Thank you.

And so you use the ELCC output to come up with the size of the project or to evaluate sizes of projects, and then you build cost comparisons, correct?

A. (Ms. Bond-Simpson) Correct.

Q. Okay. And when you build those cost comparisons, did SRP consider the risk with a gas-fired infrastructure?

A. (Ms. Bond-Simpson) Are you asking do we consider the risk in the cost or in the portfolio?

Q. Well, I believe your testimony was when looking at the cost of renewables and battery storage, you included adders, if you will, because of certain risk or intermittency or things like that; is that correct?

A. (Ms. Bond-Simpson) I don't recall testifying that we included adders or cost.

Q. When evaluating whether or not to move forward with this project, did you consider the risk of gas line outages?

A. (Ms. Bond-Simpson) So when we commit to -- when we consider a site, we look at the individual site in terms of gas supply risk. So, qualitatively, yes, this site has two different pipeline supplies, it has access to two different basins, and the overall system has access to two different gas storage facilities. So that risk was low.

Q. Where are those gas storage facilities located?

A. (Ms. Bond-Simpson) I believe one is in New Mexico and one is in Texas.

Q. And you don't have gas storage in the state of Arizona, correct?

A. (Ms. Bond-Simpson) Correct. I don't know that there is gas storage in the state of Arizona yet.

Q. So this project would rely on just-in-time delivery for gas, correct?

A. (Ms. Bond-Simpson) Yes. As with all natural gas facilities, yes.

A. (Mr. Smedley) If I could add, Mr. Rich, we do have flexible transportation contracts that allow us to shape deliveries and make use of that storage and optimize those deliveries. So that is something else that we think about when we think about our overall gas purchasing and supply hedging.

Q. Mr. -- I guess, Mr. Mcclellan, you testified about some of the perceived benefits of this project.

Let me ask you about transmission support. Can you -- you had a map -- I didn't write down the number, I guess we don't need it -- where you showed three sort of circles, areas where -- different areas of transmission. Do you recall that discussion? If you know the slide, maybe we can pull that up.

A. (Mr. Mcclellan) I don't have the number memorized, but I believe we were referring to the slide that shows the different regions and the amount of nameplate generation in those regions. That's it.

Q. Correct. Okay. And your testimony was that this plant can provide -- the Coolidge Expansion can provide the benefit by sort of maximizing the use of the

transmission system; is that correct?

A. (Mr. Mcclellan) Yes. It takes advantage of available transfer capability that's available in the Southeast Valley.

Q. And you would agree that battery storage can do the same thing, correct?

A. (Mr. Mcclellan) Yes. If you were to place any resource in the Southeast Valley, it could take advantage of transfer capability in the region.

Q. In fact, you can place battery storage in multiple locations on the grid, correct?

A. (Mr. Mcclellan) Yes.

Q. And when you locate battery storage appropriately, you can have additional benefits, including avoided distribution upgrades that may be required, correct?

A. (Mr. Mcclellan) I don't think I can answer questions about distribution upgrades. That's not something that I have expertise in.

A. (Ms. Bond-Simpson) I can answer some of that question.

Yes, if you strategically site batteries, in some cases, you can have transmission or distribution deferrals. Those are on a case-by-case basis.

Q. In addition, Mr. Mcclellan, you testified that

there was a benefit to this project and that it relies on existing infrastructure. Do you recall that?

A. (Mr. Mcclellan) Yes.

Q. That infrastructure included land, correct?

A. (Mr. Mcclellan) Yes. There's available land at the Coolidge site.

Q. And you could use that land for battery storage devices as well, correct?

A. (Mr. Mcclellan) You could, yes.

Q. And you testified that some of that existing infrastructure also included fuel. Do you recall that?

A. (Mr. Mcclellan) Access to natural gas pipelines. There is access to that at the site, yes.

Q. And with battery energy storage, you could avoid the need to have that access to that fuel, correct?

A. (Mr. Mcclellan) Yes.

Q. And you testified with regard to access to water. Do you recall that?

A. (Mr. Mcclellan) Yes.

Q. And you would agree with me that battery energy storage does not require water for its use and deployment, correct?

A. (Mr. Mcclellan) To my knowledge, they do not require much water.

Q. Earlier, you were asked a question about the

fact that Pinal County received an F rating from the American Lung Association. Do you recall that?

A. (Mr. Mcclellan) Yes.

Q. And you testified that -- well, let me ask you: Were you aware of that?

A. (Mr. Mcclellan) I was not until I heard the question today -- or heard the comment last night, actually.

Q. In preparing for this hearing, did you have a chance to review my client's exhibits?

A. (Mr. Mcclellan) Could you help me in which exhibits you're talking about?

Q. Well, I was going to start with any of them, and then I'll get to it. Have you had a chance to review the exhibits that my client preexchanged with your counsel?

A. (Mr. Mcclellan) I've seen them, yes.

Q. Okay. And have you happened to have a chance to examine SC-21, which is the American Lung Association report on Pinal County?

A. (Mr. Mcclellan) I am aware it was in there. I did not look at it in detail.

Q. Well, we'll have witnesses that can talk to that.

MR. RICH: It keeps you on your toes cross-examining three people at once.

Will you pull up Slide 21, which I believe was the map Mr. Mcclellan used, the overhead map.

Yep, that's it. Thank you.

Q. BY MR. RICH: Mr. Mcclellan, what is currently going on on the parcel that the expansion project is planned for?

A. (Mr. Mcclellan) It's currently used for agriculture.

Q. And on this map, it's surrounded in yellow, and it appears green, correct?

A. (Mr. Mcclellan) Yes, that's correct. Oh, there it goes. Yes. The location for the proposed Coolidge Expansion is located just south of the red box, which is where the existing station is located, and it is outlined in yellow.

Q. Okay. And that green isn't a color that you added to the map. That green is actually the color of the ground when that picture was taken, correct?

A. (Mr. Mcclellan) Yes.

Q. So I had heard this referred to as a brownfield project, but you can confirm that this is not being used as an industrial site today, correct?

A. (Mr. Mcclellan) No. It's currently being used as agriculture.

Q. And then you indicated that there was -- I don't

know if we can see it on here. It was a home for disabled adults. Can you point to that?

A. (Mr. Mcclellan) Yes. That's the Arizona Training Program, and it's in this area here, I believe.

Q. And is SRP aware of whether or not any of those disabled adults have any particular medical conditions that would be aggravated by the pollution from this plant?

MR. ACKEN: I'm going to object on foundation that he's assuming there will be impacts from the plant, and that certainly hasn't been established yet.

CHMN. KATZ: I'll sustain the objection regarding the form of the question, but you can make appropriate inquiry.

Q. BY MR. RICH: Are you aware of any of the health conditions of the people that live at this -- I'm sorry, what was the name of it again?

A. (Mr. Mcclellan) Arizona Training Program.

Q. -- that live at the Arizona Training Program?

A. (Mr. Mcclellan) No, I'm not aware.

Q. So SRP -- is it accurate that SRP is unaware if any of the residents of that facility will be impacted from a health standpoint by this project?

A. (Mr. Mcclellan) No, not to my knowledge.

Q. I'm sorry. I didn't ask that well. "No" means

you're not aware of whether they will be impacted?

A. (Mr. Mcclellan) No, I'm not able to speak to the health status of members that live in that community.

Q. Mr. Smedley, you earlier testified that SRP is, quote, on the market right now for an all-source RFP. Do you recall that?

A. (Mr. Smedley) Yes.

Q. Sorry, I'm realizing we can't really see each other well.

And what is the size of that RFP, and when is the delivery date that SRP is looking for?

A. (Mr. Smedley) We're seeking 400 megawatts in 2024 and an additional 600, for 1,000, in 2026. And that's in addition to the Coolidge Expansion Project. So that's a need that we have beyond if the Coolidge Expansion Project is approved.

Q. Just to make sure, 400 by 2024?

A. (Mr. Smedley) At least 400 by summer of 2024. And an additional 600, for a total of 1,000, by summer of 2026. Again, beyond the Coolidge Expansion Project.

Q. And do you expect -- so that's an all-source RFP, correct?

A. (Mr. Smedley) Correct.

Q. And that means solar, natural gas, wind, batteries, something else, all of them, are potential

winners of that RFP; is that correct?

A. (Mr. Smedley) Yes, it's correct. The only one we have limited is demand response because we have a separate program dedicated to that. So everything else is on the table.

Q. So do you expect that natural gas will win that RFP?

A. (Mr. Smedley) It's possible.

Q. And you did not do an RFP, though, for the Coolidge Expansion Project, correct?

A. (Mr. Smedley) Well, we had recent RFPs that were completed for solar, and then we had a wind RFI that had recently been completed as of about six months before our analysis of the Coolidge against the alternatives was performed. So we had good information on the different options and the market prices that were available.

Q. So why are you doing an RFP now for that 400 and 600 megawatts if you have all the information you need?

A. (Mr. Smedley) Well, that was a year ago. And now, with the benefit of the Coolidge Expansion Project, if it's approved, we can consider a broader range of options to serve those additional needs with the confidence of a firm and reliable source capacity by Coolidge.

Q. You testified that the 2018 IRP is, quote, the

guiding principle by which we add resources.

Do you remember saying that?

A. (Mr. Smedley) Yes.

MR. RICH: Can we pull up SC Exhibit No. 1, please.

CHMN. KATZ: And while the witness is thinking, we're getting a little bit over an hour and a half. So in the next few minutes, think about a break.

MR. RICH: Okay. And I'm told that my item is up next at the Corporation Commission. So I could take a break and then pass the baton and come back if that's --

CHMN. KATZ: Let's take a 15-minute break. And if you are done at the Commission, you'll be back here. If not, the wand, so to speak, will be passed to Mr. Stafford.

MR. RICH: If not, I'd just like to get the wand back. I appreciate that, Mr. Chairman.

CHMN. KATZ: Okay. And we'll say it's 2:50, so at 3:05 or something like that, we can get started again.

(A recess was taken from 2:52 p.m. to 3:13 p.m.)

CHMN. KATZ: Why don't we go ahead. I don't know if Mr. Stafford is going to pick things up, and we'll get back later to Mr. Rich.

MR. STAFFORD: Thank you, Chairman.

CROSS-EXAMINATION

BY MR. STAFFORD:

Q. Good afternoon, Panel No. 2.

Okay. I think we've established that SRP's sustainability goal for reducing it's carbon dioxide output from its generating resources is a 65 percent reduction to its emission rate, that is, the pounds of CO2 per megawatt output, by 2035, correct?

A. (Ms. Bond-Simpson) Correct.

Q. What does that translate to on a mass basis? Like what is the percentage reduction to mass in 2005 levels?

A. (Ms. Bond-Simpson) So that would be dependent upon the load forecast. So the 550 pounds would then be multiplied by the load forecast in 2035, so that would change when the load forecast changes.

Q. What is it right now?

A. (Ms. Bond-Simpson) I don't know that off the top of my head.

Q. Is somewhere in the ballpark of, say, 35 percent, is that what you estimate it to be now? I seem to be recalling it somewhere in there. Does that sound right to you?

A. (Ms. Bond-Simpson) Can you help me understand the year? Are you looking at 2035, that date, or a

different date?

Q. That date, yeah.

A. (Mr. Smedley) Mr. Stafford, I would say it's important to note that that number is changing all the time. We revise our load forecast now on a quarterly basis, so it's very hard for us to say in 2035 what the mass reduction will be. We do know that we'll have a significant amount of mass reduction in that time. We just -- that's why we created an intensity basis, so that we can account for the fact that we do need to serve load, we do need to prepare for growth. But we do expect mass emissions to come down because of all the things we discussed today.

Q. So none of you recall telling anyone that the mass basis would be 35 percent?

A. (Ms. Bond-Simpson) Mr. Stafford, I think we can go to a slide in my direct testimony that would indicate the metric tons of the portfolio with the Coolidge Expansion Project, and that would show you the mass level that is in that plan.

Q. Right. I'm asking for the percentage reduction in mass. I mean, I think because -- didn't SRP say that a 62 percent reduction in its emission rate translated to a 42 percent reduction in mass back in July of 2020?

A. (Mr. Smedley) We might have said that at that

time, but, again, that number changes all the time. So we've since introduced additional renewable projects. Those renewable projects will accelerate those mass reductions. But then we also have an increase in the load forecast. So, again, that's why this is designed that way, to be based on a rate.

Q. Right. So then like the percentage reduction in mass can go up or down depending on what's happening in the future?

A. (Mr. Smedley) Correct.

Q. Okay. And then in February of 2021, SRP updated its carbon intensity percentage from 62 percent to 65 percent, correct?

A. (Mr. Smedley) I believe we made a slight adjustment based on the number at that time. I'm not familiar with the details of that.

A. (Ms. Bond-Simpson) I would have to trust you on the dates, but the 65 percent is the current reduction. So there was an update. And that was based on a third-party verification of a methodology to calculate the carbon intensity output, and that changed the baseline, I believe, 2005.

Q. So if the -- but you can't tell me what the percentage is on a mass basis right now? You don't recall saying that it would be 35 percent, that the 65

reduction to rate translated to a 35 percent reduction in mass? You don't recall saying that?

MR. ACKEN: Can I get some clarification. Are you asking if these witnesses said that in this hearing or if SRP made that representation somewhere else? I'll be honest, I'm confused.

MR. STAFFORD: I believe Ms. Bond-Simpson said that. I'm asking if she remembers saying that.

CHMN. KATZ: And, again, just make sure you're clear as to whether you're talking about earlier testimony here.

MR. STAFFORD: No. Not earlier testimony here, no.

CHMN. KATZ: Okay. Then just indicate at some other venue or location.

MS. BOND-SIMPSON: Could you give me a time frame?

Q. MR. STAFFORD: It was last year. I believe after you revised your percentage of the rate from 62 percent to 65 percent, after that, you revised the mass equivalent from a 42 percent reduction in mass to a 35 percent reduction in mass.

A. (Ms. Bond-Simpson) I don't specifically recall the conversation, but if it was last year, it would have been tied to that particular forecast for that mass

value. It could have been 35 percent.

Q. Now, why did SRP make those changes?

A. (Ms. Bond-Simpson) To the load forecast?

Q. Because the load forecast increased, correct?

A. (Ms. Bond-Simpson) Correct.

Q. Okay. So the decrease to the reduction in mass is driven by the increase to SRP's load, then?

A. (Ms. Bond-Simpson) Correct.

Q. Okay. So it's theoretically possible that even with the reduction to the rate of carbon emissions, if the load grows enough, then the overall mass carbon emissions could increase?

A. (Mr. Smedley) I would say that's true in any given year. But, again, over the course of this time, as we retire our coal generation, as we implement more renewable projects, that number is going to decrease, and it will decrease significantly.

Q. Okay. But we can agree that if you reduce the rate but increase the load, the overall mass could stay the same, or it could go up even depending on how much the load has increased, correct?

A. (Mr. Smedley) Again, in any individual year, that is theoretically possible. It's designed, again, to accommodate our ability to serve load. But over the course of the time between now and 2035, we expect mass

emissions to decrease.

Q. Right. Okay. But the percentage of that decrease will change over time?

A. (Mr. Smedley) Correct.

Q. Which of you in the panel is best suited to address questions about Appendix B, the emission calculations on page 103 of your Exhibit 1?

A. (Mr. Smedley) That would probably be Ms. Watt on our next panel, actually.

Q. Okay. Well, the rest of my questions all involve that -- oh, I got one.

I believe, Mr. Smedley, you said earlier that the air permit would not allow SRP to run the Coolidge Expansion 24/7.

A. (Mr. Smedley) That's correct.

Q. Where does that limit fall in like number of hours per year? Let me back up a second.

Because with the air calculations, it appears that they're all based on about 1,000 hours of operating time for each unit. They have that plus the start and stops of two per day. That operation is under the permit limit, correct?

A. (Mr. Smedley) Right. So we made some assumptions in those calculations about how the units might operate. It's hard to predict how they're going to

run because of the way they're going to run. So, again, they're going to run to back up available resources when we need them for intermittency, and they may start up and shut down multiple times per day. Their emissions during startup and shutdown are different than their emissions during normal operations. So we made some worst-case assumptions in the air permit calculations. And, again, Ms. Watt can speak to those.

Q. Okay. Can they run 2,000 hours per year and still comply with the air permit?

A. (Mr. Mcclellan) I believe that could be possible, yes.

Q. Okay. SRP participates in the EIM, correct?

A. (Ms. Bond-Simpson) Yes.

Q. Now, that -- now, on the -- the emission calculation says annual utilization factor of 11 percent. Is that the same as the capacity factor?

A. (Mr. Mcclellan) Yes. That's analogous to capacity factor.

Q. And that's not a limit on how much the plants can run, right?

A. (Mr. Mcclellan) That's correct. It's not a limit that -- as Mr. Smedley just mentioned, that's a worst-case scenario that's supposed to be illustrative of how the plant could operate for the air permit. And

Ms. Watt can speak to that more in Panel 3.

Q. Okay. So it's totally possible that SRP could run all the new units at Coolidge for much more than 1,000 hours per year and sell that power to California through the EIM, correct?

A. (Mr. Smedley) I don't think I would agree that it could be much more than 1,000 hours. And, again, we would use Coolidge primarily to serve our customers' needs. And the way we would operate in the EIM is if we had surplus power available, as a not-for-profit entity, we do look for opportunities to participate in markets available to reduce costs for our customers. So I wouldn't say it was much more, but we do -- our customers do benefit from our participation in markets, and so we do have those opportunities.

Q. Right. So if you're going to operate the units for 1,000 hours a year, it's 11 percent capacity factor, that leaves like 89 percent that you could potentially sell into the -- well, less than that because you can't let them at 100 percent.

A. (Mr. Smedley) Well, the air permit will limit our emissions, and so that 11 percent capacity factor is an example of an operating scenario that includes a certain number of startups and shutdowns per day. But we have to track our emissions as we go through the year,

and we can't exceed the limits that are in the air permit. So that's kind of how we would look at it.

Q. So what's -- okay.

So does SRP intend to sell into the EIM from these units?

A. (Mr. Smedley) Yes. As I said, we would look for opportunities to sell them into the EIM as a way to reduce costs to our customers if we've already met our customers' reliability.

Q. But if you can only run it a limited number of hours to comply with the air permit, every time you sell to EIM, isn't that taking away potential power you could sell to your customers?

A. (Mr. Smedley) Yes. So it does require us to really balance our participation in markets with our customers' needs. So we think about all of that when we dispatch our units.

A. (Ms. Bond-Simpson) I would just like to add on that we procure resources for our retail customers. The wholesale markets are after we have met the reliability needs of our customers. And so our base schedules in EIM are meant to serve SRP, and anything above and beyond that would sell into EIM would have to meet that air permit requirements. So it would be SRP first and then EIM.

Q. So could you tell -- you mentioned that the air permit won't allow -- what's the maximum number of hours, ignoring starts and stops, that each unit could run under the permit?

A. (Mr. Mcclellan) So if you ignored starts and stops, we think you could approach somewhere between 35 and 40 percent capacity factor.

A. (Mr. Smedley) But, again, that would be if you just turned the unit on and ran it continuously, and that is not the reason that we're building these units.

Q. But they're capable of running like that; isn't that right? I mean, you could run it for a 24-hour period if you have to and turn it off, right?

A. (Mr. Smedley) We could in theory, but we don't have any incentive to operate the units that way. And, again, these are designed to help us integrate renewable energy. And during the day, renewable energy is free to dispatch. So there's no reason we would run these units above those.

Q. Okay. I think the rest of my questions would probably be better directed to the next panel. Ms. Watt will be the expert on the air quality permit, right?

A. (Mr. Smedley) That's correct.

MR. STAFFORD: I think that's all I have. Thank you, Committee Members.

CHMN. KATZ: Okay.

MS. POST: Mr. Rich is back.

Do you want to go back on, Court?

MR. RICH: The Corporation Commission took a ten-minute break. So I thought I would poke my head in here, but they'll be back with my item.

Dianne, if you could go, that would be much appreciated.

MS. POST: But I'm not going to be long, Court.

CHMN. KATZ: Well, worst-case scenario is we'll have to take another break unless we have another direction to head. But, Ms. Post, either you or Ms. Johnson are free to go ahead.

CROSS-EXAMINATION

BY MS. POST:

Q. My first question is for Mr. Mcclellan. How many people work in the existing plant in Randolph?

A. (Mr. Mcclellan) The Coolidge Generating Station is located in the city of Coolidge, and there's about 15 people that work at that facility.

Q. What kind of jobs are they doing?

A. (Mr. Mcclellan) Mostly operations and maintenance of the facility.

Q. Do you expect the same number of jobs for the

expansion plant?

A. (Mr. Mcclellan) We're still working through what the staffing would look like at the facility after expansion. I do not expect there to be an additional 15 people that would be required to operate after the expansion.

Q. So fewer than 15?

A. (Mr. Mcclellan) Well, you would have the 15 that are there already plus some additional staff, yes.

Q. Okay. How many jobs do you expect during the construction period?

A. (Mr. Mcclellan) During the peak time of the construction, we would anticipate around 250 construction jobs. During the peak time of construction.

CHMN. KATZ: Did you say 150?

MR. MCCLELLAN: About 250.

Q. BY MS. POST: Have you made any concrete plans to hire local residents for construction?

A. (Mr. Mcclellan) So the hiring of the contractors for construction of the facility will be up to our EPC contractor. That's engineering, procurement and construction. And we don't have total control over who they actually hire, but we have added into our request for proposal we want them to outline their plan for how they will utilize local construction trades and

local labor. So we are certainly encouraging the use of local labor as well as sourcing materials locally as well.

Q. But at this moment, there are no concrete plans to include local labor?

A. (Mr. Mcclellan) Well, we have plans in our RFPs, and we intend to include those sorts of provisions in our contract with our construction contractors when we get to that.

Q. Those are plans and those are requests, but they're not mandatory at this moment; is that correct?

A. (Mr. Mcclellan) Yes.

Q. What about for the additional jobs that will be in the expansion plant? What kind of jobs might those be and would local residents be hired for those?

A. (Mr. Mcclellan) Those jobs would be similar to what's in the existing facility, and certainly the local residents would be eligible for hire in those positions.

Q. "Similar" meaning what? They're engineers? They're janitors? They're secretaries? They're computer techs?

A. (Mr. Mcclellan) I would say most of the staff at the existing power generating station in the expansion would be operators. So they're people that would walk down equipment. Also there would be maintenance

personnel. So they're checking equipment, performing maintenance on the equipment. And also there are some operators that would actually just operate the equipment, monitoring that it's operating properly and making sure that it's well-maintained and operating within the air permit and various other requirements of the facility.

Q. Do you have any training or internship possibilities or thoughts that you could put into play to engage the local residents?

A. (Mr. Mcclellan) I'm not sure about those opportunities. I think that's something that we could look into.

MEMBER GENTLES: Mr. Chair.

Could you repeat that question, please.

MS. POST: Do you have any plans to have training or internship programs that would engage the local residents.

Q. BY MS. POST: Was there any assessment done about the loss of property value in the Randolph community with the expansion?

MR. ACKEN: Objection to the extent it assumes there was a loss of property value, but maybe she could reframe the question.

MS. POST: No. I said was there any assessment done, whether there would be.

MR. ACKEN: That's a different question. I would withdraw my objection.

CHMN. KATZ: That's fine. The last question asked can be answered. And that was, was there any assessment plan done to determine whether there was any loss to property values in the subject area?

MR. MCCLELLAN: No, not to my knowledge.

Q. BY MS. POST: Yesterday Mr. Coggins said you might be the person to answer this question, which was: The natural gas pipeline that blew up at El Paso burned down a house nearby and killed two people. Do you recall that incident?

A. (Mr. Mcclellan) Yes.

Q. Do you know how far away that house was from the explosion?

A. (Mr. Mcclellan) I don't know the distance. It was across the street from the location of the incident.

Q. Quarter mile? Less? More?

A. (Mr. Mcclellan) Probably less than a quarter mile.

Q. My next question would be for Mr. Smedley.

And what city do you live in?

A. (Mr. Smedley) I live in Phoenix.

Q. And my next would be for Ms. Bond-Simpson.

What city do you live in?

A. (Ms. Bond-Simpson) Scottsdale.

MS. POST: That's the end of my questions, Mr. Chairperson.

CHMN. KATZ: Any suggestions as to what we -- oh, I won't forget the Corporation Commission. They've just been so quiet, lately. Mr. Emedi, go ahead.

MR. EMEDI: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. EMEDI:

Q. I only have a few questions, which I'll be directing to Mr. Mcclellan. However, Mr. Smedley or Ms. Bond-Simpson, if you are more appropriate for the subject, feel free to jump in.

Mr. Mcclellan, as the project manager for the Coolidge Expansion Project, are you familiar with any System Impact Study that SRP has or will conduct related to the project?

A. (Mr. Mcclellan) Yes.

Q. And has SRP completed a System Impact Study for the CEP?

A. (Mr. Mcclellan) The System Impact Study is not complete at this time, but it is in progress.

Q. And do you have any idea when the System Impact Study will be completed?

A. (Mr. Mcclellan) We anticipate that the study will be completed in the next couple months.

Q. And can you tell the Line Siting Committee, just generally, what is the purpose of a System Impact Study?

A. (Mr. Mcclellan) Sure. So the purpose of a System Impact Study is to take a look at the generation that you're adding to the transmission system and then analyze that for any issues that it might create, whether that be overloads to the system or other issues that could be created from addition of that generation.

And then through that study, you determine what mitigations you can take to correct those potential issues that you find with the System Impact Study.

Q. Thank you.

And while SRP hasn't yet completed the System Impact Study for the CEP, do you have any preliminary data on how the project will impact the grid?

A. (Mr. Mcclellan) We do. And we've done some initial high-level preliminary analysis. And through those analyses, we've determined that there would be only minor impacts to the system, and that would require very minimal mitigation, such as reconductoring of cable or potentially additional transformers to be added at locations to be determined. So, really, we don't anticipate any other mitigations that would require

additional transmission lines or authorization by CEC.

Q. Thank you, Mr. Mcclellan.

MR. EMEDI: And those are all the questions that Staff has.

CHMN. KATZ: I don't know if we want to start another -- are you going to have some follow-up questions with this panel?

MR. ACKEN: Mr. Chairman, I have one line of inquiry for redirect, but it really goes to Mr. Rich's questions, so it doesn't makes sense to do that right now.

I would note -- I understand the scheduling issue for Mr. Rich, and I'm sympathetic to that. When you're dealing with the Commission, you just don't know when your item is going to be called. So I'm not sure how you'd like to handle this. I would note that he does have co-counsel who has appeared in this matter. And so if Mr. Hill is available, that would be one way to keep this process on track. If it's a few-minute delay, we can wait for Mr. Rich, sure. But I'm not sure -- it's really up to you and the Committee how you want to handle it.

CHMN. KATZ: Why don't we take a ten-minute break. If Mr. Rich is available sooner -- I mean, I don't know how extensive his presentation will be. I had

to appear before the Commission I think two open meetings ago, and I had to wait about a day before I actually presented. But I was able to keep track of the time, and my presentation didn't take more than about 15 or 20 minutes.

So why don't we investigate and see where we're at. And if we can't get him back here -- by the time we get Mr. Hill involved and up to speed, I'm sure that Mr. Rich will probably be available. Let's take a short break. And don't wander too far.

(A recess was taken from 3:39 p.m. to 4:24 p.m.)

CHMN. KATZ: We can go back on the record now.

FURTHER CROSS-EXAMINATION

BY MR. RICH:

Q. Mr. Smedley, let me follow up on something I asked you. It might have been the last set of questions. We were talking about the pending RFP. Do you recall that discussion? I wanted to get a little more detail on that.

So there was -- and this is the RFP that's asking for 400 megawatts by 2024 and 600 megawatts by 2026, right?

A. (Mr. Smedley) Yes.

Q. And when did that RFP get issued?

A. (Mr. Smedley) Sorry, it's actually 1,000 by 2026, 1,000 megawatts.

Q. Okay. So, sorry, maybe I wrote it down wrong. It's 400 megawatts.

A. (Mr. Smedley) 400 megawatts in 2024, and an additional 600, for a total of 1,000, in 2026.

Q. All right. I think that was consistent with my understanding. Thanks for clarifying.

And when was that RFP issued?

A. (Mr. Smedley) I believe it was around the end of October time frame, October 2021.

Q. Okay. And remind me, when did SRP announce this project?

A. (Mr. Smedley) We presented it to the Power Committee of our board in late August 2021.

Q. Okay. And when did -- okay. So -- I'm sorry. This project was announced in August? I just want to make sure I'm understanding. Correct?

A. (Mr. Smedley) That's when we presented it, yes, to our Power Committee.

Q. Okay. So this RFP came out after this project was announced, correct?

A. (Mr. Smedley) Correct.

Q. Okay. But it's looking for 400 megawatts in 2024, which is prior to the delivery time of this

project?

A. (Mr. Smedley) It's essentially the same, for summer of 2024.

Q. So there would have been time for SRP to have been done an RFP for the Coolidge Expansion Project, correct?

A. (Mr. Smedley) So we did have, again, an RFP that we had done for solar six months prior and an RFI for wind. So we have current pricing information and options for analyzing the alternatives to the Coolidge Expansion Project. So I think our point was it wasn't necessary to inform our alternatives analysis. And that alternatives analysis was necessary to then bring a recommendation to our board.

Q. Okay. My question was just SRP had time to do an all-source RFP for the Coolidge Expansion Project or some alternative, correct?

A. (Mr. Smedley) Yes.

Q. Okay. Now, I think before -- right before we left, I had asked if we could get Exhibit SC-1 up on the screen. Maybe they were anticipating that. Great.

Do you recognize what this is for the record?

A. (Mr. Smedley) Yes, I do.

Q. Would you mind just telling us?

A. (Mr. Smedley) I believe this is a letter that

Commissioner Kennedy sent to Mike Hummel, our CEO, with some questions on the project.

Q. Okay. And it's dated November 19, 2021, for the record, correct?

A. (Mr. Smedley) Yes.

Q. Okay. Now, earlier during your testimony, you said that the 2018 IRP is, quote, the guiding principle by which we add resources.

Do you remember saying that.

A. (Mr. Smedley) Yes. And I was referring to the eight strategic directions that were shown on that slide. Those are the strategic directions that guide our directions over the course of time.

MR. RICH: If whoever is nice enough to be operating that screen, if you can scroll down to the fourth dark bullet point that Commission Kennedy included.

Q. BY MR. RICH: If you see that, in that bullet point -- I'll read it out loud and ask you some questions. It says, quote: In its 2018 Integrated Resource Plan, SRP states "prior to making any financial commitments to major equipment or construction contacts for new-build generation, issue all-source RFPs for the planned capacity. That capacity will explicitly include the opportunity for cost competitive and viable energy

storage and demand response options."

I read that correctly?

A. (Mr. Smedley) Yes.

Q. And do you agree that that quote comes from your 2018 Integrated Resource Plan?

A. (Mr. Smedley) That was one of the principles that was identified in the plan as a way that we would proceed.

Q. Okay. In this case, SRP did not follow that guiding principle, correct?

A. (Mr. Smedley) I wouldn't characterize it that way. And, again, we had information from recent RFPs that we had conducted, and we knew what the technology options were and the costs associated with them. So although it wasn't an all-source RFP, those RFPs were sufficient to inform our analysis.

Q. Okay. And I understand you want to explain it away, but your guiding principle, as you called it, says you will issue all-source RFP before you make major equipment and construction contracts for new-build generation, correct?

A. (Mr. Smedley) Yes. And, again, I just want the Committee to understand that the reason we do that is because we need to have a sense of the options and the costs associated with those options. So, to the extent

we have RFPs on the market at that time or recent information, that's the spirit of that recommendation.

Q. SRP gets a lot of solar during the middle of the day, correct?

A. (Mr. Smedley) Yes, that's correct.

Q. And as you put more solar in place, you'll increasingly have more solar in the middle of the day, correct?

A. (Mr. Smedley) That's correct.

Q. And the Coolidge Expansion Project does nothing to help SRP absorb any of that midday solar, correct?

A. (Mr. Smedley) So it's correct that it wouldn't -- it wouldn't absorb that solar, but it allows us to accommodate additional solar on our system by providing some of those services I described in my testimony, ramping capability, ability to back up renewables during those times, and the ability to support longer-duration reliability events.

Q. Battery storage would allow you - battery storage would absorb some of that midday solar, correct?

A. (Mr. Smedley) That's correct.

Q. And I know your answer wasn't concise before, but the Coolidge Expansion Project will not do that, correct?

A. (Mr. Smedley) Correct.

Q. And by absorbing that midday solar, that ramp that you all talked about would be less later in the day with the addition of more energy storage, correct?

A. (Mr. Smedley) That's correct. But that energy storage would need to be sufficient to be able to serve us into the evening. And, in addition, we would need to be able to serve other times of the day, as I was explaining in my testimony earlier today.

Q. And according to E3, the company that you paid to do an analysis, 731 megawatts of storage would satisfy that requirement, correct?

A. (Mr. Smedley) In the year 2026, that was what E3 found. But we would need increasing amounts of storage in the subsequent years.

Q. So one of the benefits you talked about with the Coolidge Expansion Project is its ability to react to cloud cover. Is that accurate?

A. (Mr. Smedley) Yes. It can support -- cloud cover comes over, and that shades different solar panels in our solar system. And it can quickly start up and help to back up the solar.

Q. And it takes ten minutes to start up, correct?

A. (Mr. Smedley) It takes ten minutes to start from cold to full load; but if it's already online, it can ramp very quickly to meet needs.

Q. And do you know how long it takes a battery storage device to ramp from cold to full output?

A. (Mr. Smedley) It's very fast. It's faster than the Coolidge Expansion Project.

Q. Is it instantaneous?

A. (Mr. Smedley) Yeah, it's very fast. I don't know if I'd call it instantaneous, but it's quick.

Q. Does anyone on the panel know if it's instantaneous?

Come on, you don't want to --

A. (Mr. Smedley) I think it depends on how we operate it. I mean, we could ramp very quickly, but that also might have detriment on the life of the battery. And that's another thing we're trying to understand with batteries, is how quickly changing their output might have effects on their overall lifespan.

A. (Ms. Bond-Simpson) I would like to add to this conversation that we're pointing out different value streams of batteries, and --

Q. Excuse me, actually. I mean, it's not a panel discussion. If I have a question, I'll ask it, if you don't mind.

CHMN. KATZ: It is kind of procedure to pursue one of the panelists at a time.

MR. RICH: I'm trying to. I apologize. I guess

I opened the door by saying, does anyone know, but thank you.

Q. BY MR. RICH: There were questions from one of the Committee Members about the communication systems with inverters. I don't know -- I think it was you, Mr. Smedley, that talked about that, correct?

A. (Mr. Smedley) Yes.

Q. And you would admit you use internet communications to communicate with the Coolidge Expansion Project in the future, correct?

A. (Mr. Smedley) Yes, those are used.

Q. So that's not an unusual feature of an inverter that you would communicate with it electronically?

A. (Mr. Smedley) No. But I think what makes it unique is that we're going to have a lot more of these battery and solar systems in our portfolio. And because there's more of them and they all have all different and we have unique systems, we're going to have to figure out how to operate all of those and integrate those into our operation center; whereas, the Coolidge facility only has one system. It's already integrated into our operating center.

Q. But if that one system goes down, you lose the entire Coolidge Expansion Project, correct?

A. (Mr. Smedley) Well, we have redundancy built

into those systems, so, yes. But I think we have redundant systems to support something like that.

Q. Doesn't the diversity of the battery storage projects, the number of them spread out, help mitigate against any risks of losing any one of those?

A. (Mr. Smedley) That's a fair statement, I think.

MR. RICH: Can we get Slide No. 67 of the presentation, the SRP presentation. I think it's Exhibit 2.

Thank you.

Q. BY MR. RICH: I will admit -- well, I think this still is a question for Mr. Smedley.

When I look at the pie chart that says Today versus the pie chart that says 2025, I see the percentage of natural gas has declined, correct?

A. (Mr. Smedley) Yes.

Q. But the amount of natural gas doesn't decline, does it?

A. (Mr. Smedley) No. It would because we would be serving less of our total energy needs through the year using natural gas. That's what this chart is intended to show.

Q. Well, I understand you're talking -- I think your answer was about the percentage, correct? And what I'm asking you about is the raw amount. The number of

megawatts of natural gas on the system today versus the number of megawatts of natural gas on the system in 2025.

A. (Mr. Smedley) Right. So that's the whole idea with the Coolidge Expansion Project. We're adding capacity, but that capacity is not going to run for a lot of hours per year. So it's going to be that reliability backbone that I talked about, where it will be there for us when we need it. But, again, these numbers show that the amount of energy we're going to serve throughout the year will be more from zero-carbon resources.

Q. So let me -- I think we're being ambiguous between the percentage served by natural gas and the raw amount of natural gas. So I want to ask, how much natural gas does SRP have on its system today, nameplate capacity?

A. (Mr. Smedley) 4,700 megawatts.

Q. And what will that nameplate capacity be after the Coolidge Expansion Project is complete?

A. (Mr. Smedley) So Coolidge will add 820 megawatts. And then we have the two projects at Desert Basin and Agua Fria. So that's an additional roughly 1,000. So it would be 5,700 megawatts after.

Q. Okay. So today -- sorry, let me write it down.

A. (Mr. Smedley) Today is 4,700.

Q. Okay. You're going from 4,700 to what number?

A. (Mr. Smedley) Roughly 5,700. And that's nameplate capacity, so it's not how we would necessarily run these units. That's just the capacity that's available to provide to our system.

Q. And what are the new projects that make up the 5,700?

A. (Mr. Smedley) There's the two units at Agua Fria; the two units at Desert Basin that we're adding for this summer, which equates to a little under 800 megawatts; and then Coolidge is about 800, 820.

Q. Has SRP added other gas to its repertoire of over, say, the last five years?

A. (Mr. Smedley) Five years? I don't believe so.

Q. What about Harquahala?

A. (Mr. Smedley) So we do have a contract for output at Harquahala for summer capacity needs, and it's a short-term contract for summer capacity.

Q. Is that a new contract for new gas?

A. (Mr. Smedley) Harquahala is an existing generating facility that's owned by an independent power provider. So we can contract for that kind of output to help us meet our needs for capacity.

Q. And when did you enter into that contract?

A. (Mr. Smedley) We've had a contract with them I think over the -- I think we had one for this past summer

in 2021, and then we have one for this coming summer, 2022, and then in 2023.

Q. And how many megawatts does that entitle you to?

A. (Mr. Smedley) It varies a little bit over those years, but it's 3- to 400 megawatts, I believe. And then we have a little more in 2023. I don't recall the exact number.

MR. RICH: Maybe you could take us to Slide 112, please.

Q. BY MR. RICH: Okay. In this Slide 112 was this quote from NERC that you read about the adoption of -- it says: Until storage technology is developed and deployed at scale.

Do you recall talking about that earlier?

A. (Mr. Smedley) Yes.

Q. And what we're proposing -- what my client is proposing in this case is that you do develop battery storage at scale, a large amount. Wouldn't that answer the questions that NERC poses here? If we're waiting until it's developed at scale and we're suggesting that you develop it at scale, what's the relevance of this?

MR. ACKEN: I'm going to object to the extent he's asking a legal question as to relevance, but maybe he could rephrase.

MR. RICH: Well, I didn't mean it in a legal

sense.

Q. BY MR. RICH: You read this quote earlier, and I guess I would suggest if you do deploy battery storage at scale, doesn't that answer or respond to the point you made with regard to this quote?

A. (Mr. Smedley) I think that what NERC meant with this quote -- and Ms. Bond-Simpson showed those numbers in her slide -- there's only 3,000 or so megawatts or storage installed around the country right now. So it's not just one utility's actions. We all need to deploy it, and then we need to get operating experience with that technology. Again, they say it cannot be presumed to occur within the horizon of this LTRA.

And so I think the point is we need gas-fired generation to support our system while we're gaining that operating experience.

Q. But when battery storage is developed at scale, you will not need the natural gas to be a balancing resource as this suggests, correct?

A. (Mr. Smedley) No, I don't agree with that. I think we need to gain operating experience with those technologies and see how they operate in our climate, and I think that's really the intent here. And in the interim, you need a resource like a natural-gas facility to provide that backup.

Q. Until battery storage is developed at scale. That's what this is saying. Are you agreeing or disagreeing with this quote? I'm not sure.

A. (Mr. Smedley) Well, I referenced it, so I agree with it. I think what I'm disagreeing with is your interpretation of it. I think what they mean by this is we need to gain experience as an industry with this technology before -- and in doing so, natural gas will help us to integrate it and reduce carbon emissions over time and provide a backbone in place to provide that reliability.

Q. And SRP is moving forward with approximately 500 megawatts of battery storage, correct?

A. (Mr. Smedley) Yes.

Q. And SRP intends to rely on that battery storage, correct?

A. (Mr. Smedley) Yes.

Q. So SRP has confidence that that battery storage will perform as SRP is relying on it?

A. (Mr. Smedley) Well, I think that -- I guess the way I would say it is we are optimistic that battery storage will delivery the benefits that we believe it will. But that's the reason we need this project, is to take a more measured pace at adopting higher levels of storage, and I think that's what this project will do for

us.

Q. When you were talking about this quote, you offered your conclusion that there are no other viable options right now. Do you recall saying that?

A. (Mr. Smedley) I think I said there are no other viable options that wouldn't risk significant reliability risks to our customers, yes.

Q. And E3 would disagree with you. Is that your understanding of their report?

A. (Mr. Smedley) Well, I also mentioned that we have concerns about relying on battery storage to the extent that we would need to, to the extent that we would need to with this project. So with that being said, there are no other viable options that would not introduce much high reliability risk for our customers.

Q. When we talk about battery storage, there's been talk -- you talk about the four-hour being some of -- the industry standard device today, correct?

A. (Mr. Smedley) Yes. That's the one that's most often sold. That's the most economic right now.

Q. And just for clarity, is it your understanding that -- that means it can output its full amount for four hours; is that correct?

A. (Mr. Smedley) Essentially, yes. I think that's an efficiency loss between the input and output, yes.

Q. And that means that it can output at half that amount for eight hours, correct?

A. (Mr. Smedley) I'm not sure.

Q. Okay. Is it your -- so you don't know? You compared your project to battery storage, and you don't know if it can output for eight hours at half of its capacity?

A. (Mr. Smedley) We assume a certain operating mode for those batteries, and, typically, it is to serve our peak. So we would discharge the full amount to get across our peak. We haven't really looked at discharging for half for a longer period, so I'm just not sure.

Q. Are you aware that they can discharge at a lower -- let's talk generally. Are you aware that battery storage can discharge at an amount below its full amount for a period longer than four hours?

A. (Mr. Smedley) I mean, I think that's correct. Again, that's not how we plan to operate them, but I think that's correct.

MR. RICH: Your Honor, let me just check through my notes real quick. I think I'm nearing the end. I may be completed.

CHMN. KATZ: That's fine.

MR. RICH: All right. I appreciate your patience with me earlier and thank the Committee as well.

CHMN. KATZ: Any redirect?

MR. ACKEN: Thank you, Mr. Chairman. Brief redirect.

REDIRECT EXAMINATION

BY MR. ACKEN:

Q. Ms. Bond-Simpson, it was at the beginning of Mr. Rich's cross-examination, so some time has passed, but there was a discussion of the slide from the E3 study that showed storage -- comparison of storage and the ELCC of Coolidge Expansion Project. Do you recall that line of questioning?

A. (Ms. Bond-Simpson) I do.

Q. And can you confirm for me that that slide showed a comparison in 2026?

A. (Ms. Bond-Simpson) Correct.

Q. And I believe you started to testify that the numbers would change in future years; is that correct?

A. (Ms. Bond-Simpson) That is correct for the battery and solar option. They would not change for Coolidge Expansion.

Q. So for 2030, do you know how much additional batteries you would have to add with your alternative portfolio in addition to the batteries you were already planning to add?

A. (Ms. Bond-Simpson) Yes. By 2030, 1,000 megawatts of batteries would be needed.

Q. And what is the number for batteries in 2035, additional batteries?

A. (Ms. Bond-Simpson) In 2035, it's about 1,300 megawatts. But that would not be enough. That would be paired with 684 megawatts of solar as well.

Q. And those are both numbers that would be in addition to beyond the commitments that this panel has already discussed today with respect to what SRP is doing for both solar and storage, correct?

A. (Ms. Bond-Simpson) It would be the plan commitments at the time of the analysis, yes.

Q. There was a line of questioning from Mr. Rich concerning use of batteries. And I think you had wanted to add something to the discussion, and Mr. Rich wanted to direct his questions to Mr. Smedley at that time. But I'd like you to share your thoughts for the Committee at this time.

A. (Ms. Bond-Simpson) Thank you.

What I wanted to share is that there are several technically feasible opportunities for battery value. That was the testimony that Mr. Smedley talked about and benefits.

SRP has many activities in that space, but these

are pilot projects. And the reason they're pilot projects is because those value streams right now are independent. And our concern with reliability is the extent that you can stack them together at the same time or sequence them together in the same day and not sacrifice reliability because of the state of the charge.

So I appreciate all of the different value streams. We agree, but our difference in opinion is how they are being able to be deployed reliably.

Q. And, Ms. Bond-Simpson, let me ask you one final question: Do you have any other additional comments or thoughts in response to the questions that Mr. Rich directed to Mr. Smedley?

A. (Ms. Bond-Simpson) In terms of the E3 study or the comment about the E3 ELCC study and the CEP project, I think that has been covered as far as the 2026.

What I will say is that the ask for that deliverable was an alternative portfolio. It wasn't a recommendation that SRP should do something over the CEP. The ask was a reliably equivalent portfolio.

MR. ACKEN: Thank you. I have no further questions.

MEMBER GRINNELL: Mr. Chairman.

CHMN. KATZ: Yes, sir.

MEMBER GRINNELL: I want to go back to some of

these questions regarding the storage, the battery storage sequence.

There was a chart, forgive me, I forget what number it was, but you have the three circles with the three zones. You had the East Valley and --

CHMN. KATZ: With the circles on it.

MEMBER GRINNELL: -- the South Valley. You had those three areas.

CHMN. KATZ: We can pull that back up. It was the slide with the three service areas.

MEMBER GRINNELL: Thank you.

MEMBER HAMWAY: 118.

CHMN. KATZ: It's not there yet.

MEMBER GRINNELL: Well, he mentioned something about having battery storage capability all along the route. And, No. 1, my question is, would those have to be a series circuit in order for them to provide the same amount of power, No. 1?

No. 2, with the establishments of these battery storage facilities en route to the various regions, wouldn't we also need a separate CEC for gen-ties?

And I don't know who can answer that.

MR. ACKEN: Mr. Chairman, Member Grinnell, I'll take the first swing at it as I think it calls for a legal answer. And the answer is yes. Solar facilities,

battery facilities themselves, are not subject to siting jurisdiction, but the gen-ties to connect them to the grid are.

MEMBER GRINNELL: Correct. So you would have to have a gen-tie connection in order for these battery facilities to get tied into the circuit, correct?

MR. MCCLELLAN: Yes.

MEMBER GRINNELL: And having those, you would still have to adhere to the same safety, ADEQ, all the other studies that are incorporated with this. And potentially depending on where they're sited or located, you would also potentially have to run into NEPA. Is that a possibility?

MR. ACKEN: And I will defer -- I think Mr. Mcclellan can answer that line of questioning, so I will defer to him.

MR. MCCLELLAN: Yes. I think that depending on the project and the scope of that project, you certainly could and would have to do some of those various permitting activities, up to and including NEPA.

MEMBER GRINNELL: And depending on the number of facilities, how much of a time delay in establishing the backup power, No. 1, and how much of an additional cost to the ratepayers?

MR. MCCLELLAN: I think it's hard to

characterization the decision-making amount of time. That would extend the schedule significantly. And I think it's also hard to determine what the cost to the SRP customers would be. Certainly, again, if you have to add additional transmission, it would be a higher cost to SRP's customers.

MEMBER GRINNELL: And when I was discussing the inverters earlier on in the day, I brought up the point the concern for me was not necessarily the internet connection, but the real concern was the potential for inverter failures as they have not been, I would say, fully brought into understanding and how they work or their long-term capacity to function.

MR. SMEDLEY: Member Grinnell, I can address that and add that that is correct. And there have been some incidences where, not sure it's a failure, but the inverter has tripped in an incident where perhaps it shouldn't have. And solar or facilities like that have dropped offline as a result of that, and it's caused reliability issues.

So I agree we need to learn more about inverters and how they work and make sure that they're operating correctly and that we know how to operate them reliably.

MEMBER GRINNELL: Thank you.

CHMN. KATZ: Anyone else?

MEMBER LITTLE: Mr. Chairman.

CHMN. KATZ: Yes. Is that Member Little?

MEMBER LITTLE: Yes.

CHMN. KATZ: Go ahead.

MEMBER LITTLE: I have a question. It's probably for Mr. Mcclellan. I'm not certain. Whoever can answer it is fine.

Staff asked about the System Impact Study that's being done. It's in progress right now. What is the system? Is it just SRP's system? Is it Arizona? Is it the whole Western interconnect? What are we talking about?

MR. MCCLELLAN: We look at the entire system, so that would include the systems of other utilities as well. It's really a very comprehensive study to make sure that there aren't any issues with the addition of the generation.

MEMBER LITTLE: How big an area?

MR. MCCLELLAN: I'm not sure what the entire area encompasses as far as the entire system. I'd have to follow up on that.

MEMBER LITTLE: [Inaudible]

CHMN. KATZ: You're going to have to start again. You're cutting in and out.

MEMBER LITTLE: Okay. Let me try.

Do you or anybody else know whether the WECC studies or WestConnect studies that are currently being done include the CEP?

MR. MCCLELLAN: I don't know the answer to that. I don't know if the other panel members do or not.

MR. SMEDLEY: Member Little, are you referring to the most recent WECC assessment of reliability?

MEMBER LITTLE: Yes.

MR. SMEDLEY: I believe that one -- I need to verify. I'm not sure.

MEMBER LITTLE: Thank you.

CHMN. KATZ: Anybody else on the Committee have any concerns or questions that they want to ask to any of the three members of this panel?

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

CHMN. KATZ: Yes, Mr. Branum.

MEMBER BRANUM: So kind of building off of Member Little's question, I'm familiar with the WECC Resource Adequacy Assessment that was done for 2021. And if I'm not mistaken, the overall assessment covers the entire Western interconnection.

But then there are further deeper dives, if you will, on subregions of the Western interconnection. And for the Desert Southwest, the issues that were identified related to resource adequacy was essentially that with

higher penetrations of renewable energy coming onto the system, utility planning paradigms essentially have to shift. And I think I've heard some of that in testimony here today from SRP.

But I was wondering if you could speak to how, if at all, the Coolidge Expansion Project alleviates or addresses some of these resource adequacy concerns for the Desert Southwest region.

MR. SMEDLEY: Sure. And I can attempt to answer that, Member Branum.

I think it comes back to what we were talking earlier about providing firm, flexible, and reliable generation. And with that kind of generation providing backbone for our system, we can add more variable energy and limited duration energy resources to the system, more solar and battery energy storage, wind, with the right measures in place as we transition. So I think projects like the Coolidge Expansion Project are going to be necessary and will be helpful in maintaining that reliability.

And I believe that's one of the key recommendations from that WECC report, was that, one, we need to change planning paradigms, and I talked about that earlier; and that, two, utilities need to add these kind of resources in order to be able to ensure

reliability going forward.

MS. BOND-SIMPSON: I would like to add to that, if I could. When we're talking about resource adequacy, keep in mind that we're planning for the unplanned. And in with this new shift, we're not only having to accommodate varying customer demand with new technologies like electrification and electric vehicle load, so we know that our customer load is going to change, but we also know that the supply-side resources that we're having to serve that are going to be larger penetrations of variable generation, which means our supply-side resources are going to be harder to predict too.

And so that is exactly why Mr. Smedley testified that this reliability backbone and having firm, flexible generation in place acts as an insurance policy to help us navigate that transition.

MEMBER BRANUM: Thank you. I appreciate the additional information. I think earlier today, we heard kind of the immediate project benefits and needs, you know, both locally within the SRP service territory or on the SRP network, if you will, and then more of the statewide perspective.

I was hoping to just kind of hear more about how it spills over into a -- you know, regional benefits and things of that nature. So I appreciate the additional

information. I think you probably won't be speaking with us any longer once this panel concludes. But if there's additional information throughout the remainder of the hearing related to the subregional kind of benefits, I'd be interested in hearing about it, but thank you.

CHMN. KATZ: Anything further before we recess?

MR. RICH: Mr. Chairman, there were a couple items there that were discussed that I think went beyond the original direct testimony or any previous cross, and I'd like to ask an opportunity for recross on those issues, particularly this issue of a NEPA process being needed for battery storage installations, which I think some factual questions would help resolve that issue. I promise to be quick.

MR. ACKEN: Mr. Chairman, if I could be heard. It is -- in my mind, I don't think I've ever heard recross following Committee Member questions. So I think this would be a first. And I think the answer is self-explanatory and speaks for itself.

CHMN. KATZ: One of the things that we have to realize is that there's some checkerboarding still in Maricopa County where you have federal land, State Trust land interspersed with private lands. So if any federal lands become involved, there might be the need for a NEPA process, but I don't think we have long, drawn-out

Environmental Policy Act issues.

MR. RICH: Well, one of the benefits of storage is it can be installed on a modular basis, avoiding the need for transmission infrastructure, and I'd like to be able to -- because the lawyer on the other side was able to offer contradictory testimony on that point, I'd like to at least --

CHMN. KATZ: Why don't you ask a couple of questions. And then if there's anything that Mr. Acken wants to ask on the same subject matter, we will let him.

MR. RICH: Thank you. I appreciate that, and I will be brief.

RECROSS-EXAMINATION

BY MR. RICH:

Q. I just wanted to follow up on those questions.

You're aware that battery storage can be installed and often is on the distribution grid, correct?

A. (Mr. Smedley) Yes.

A. (Mr. Mcclellan) Yes.

Q. And if it's installed on the distribution grid, there's no need for the CEC for the lines that would connect it to that grid, correct?

A. (Mr. Smedley) I don't know the answer.

A. (Mr. Mcclellan) I don't think I do either.

Q. Okay. Have you ever -- well, the Committee -- we can -- as far as a legal issue, are you aware of whether or not the Committee has jurisdiction over distribution level -- distribution lines?

CHMN. KATZ: We don't -- I think it's 130 kilovolt that our jurisdiction kicks in.

MR. RICH: I appreciate that.

Q. BY MR. RICH: And to the extent there's not a CEC necessary, you wouldn't have to go through this process to install those battery storage devices, correct?

A. (Mr. Smedley) That's true. But I think the question was about the NEPA process, and I think that could be triggered by multiple different things. I think that's possible.

Q. Well, you control, no doubt, where you put the battery storage, correct?

A. (Mr. Smedley) Well, it depends how quickly you want to bring it online. So if you want to bring it online quickly, you need to go through the System Impact Studies, you need to go through the facility studies. And so it needs to be in the queue at some location. And that location, again, could just -- it could trigger additional requirements. I think that was the question.

Q. And battery storage can be collocated with

existing solar as well, correct?

A. (Mr. Smedley) Yes.

Q. And that would not require a new CEC to use the existing transmission with those solar facilities, correct?

MR. ACKEN: I'm going to object to that because it really depends on facts that are not in evidence and what that interconnection would look like, and he's also asking for a legal conclusion from this panel.

CHMN. KATZ: The one thing I'd be concerned about about getting into this is the fact that every configuration is different. Battery storage and solar sometimes are together and are using the same transmission lines. It would be dependent upon where the batteries are located relevant to the solar panels. So we're getting into --

MR. RICH: I just didn't want to leave the Committee with the idea that every new battery storage facility requires a new CEC.

CHMN. KATZ: When we see battery facilities that want to get connected, we'll get the application for the CECs. But until then, I don't want to speculate or guess what the future holds in store for us regarding battery storage.

MR. RICH: Thank you. That's all I have.

MR. ACKEN: Nothing further, Chairman.

CHMN. KATZ: I think we're done for the day.

MEMBER DRAGO: Excuse me, Mr. Chairman. I have a question.

CHMN. KATZ: Go ahead, Mr. Drago.

MEMBER DRAGO: Back when there was a discussion if this Committee were to deny the CEC, what you would have to do is go purchase on the open market, right? Just from my own understanding, when you purchase, do you know what you're getting, whether it's renewable resources or not or -- because you have to -- you want to move toward your goals for becoming carbon-free eventually someday.

MR. SMEDLEY: That's exactly right. And the way we would do it, again, from a resource planning perspective, we wouldn't be relying on the day-ahead market. So we would be purchasing -- we would be entering into a contract with an existing generator. So we wouldn't know what we're getting. We do have a good sense of what's out there. And, again, we don't know of any resource that could provide the capacity and the flexibility and the long duration that we need for this project.

MEMBER DRAGO: Thank you.

CHMN. KATZ: Anything further?

(No response.)

CHMN. KATZ: Are we meeting at 9:15 out front or 9 -- what time do we want to meet for the tour tomorrow?

MR. ACKEN: Thank you, Mr. Chairman. I think 9:15 assembly will work for the schedule if that works for the Committee.

CHMN. KATZ: And I would urge everyone on the buses to be masked for the comfort of everyone on the bus, even if you feel like you don't need protection, so we all stay safe.

And the other thing is that Thursday morning, first thing, that representative -- the supervisor from Pinal County is going to want to briefly speak with us, and I said it was okay because he's isolated now with COVID, and that's why he couldn't participate yesterday or this morning.

Anyway, we'll leave it at that. Everybody relax. Don't think about power lines or power plants this evening. Although some of you lawyers might have to do some extra work, I'm going to relax.

Take care. We do stand in recess.

(The hearing recessed at 5:12 p.m.)

STATE OF ARIZONA)
)
COUNTY OF MARICOPA)

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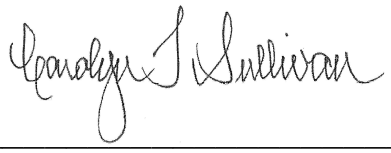

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