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1 BE IT REMEMBERED that the above-entitled and
2 numbered matter came on regularly to be heard before the
3 Arizona Power Plant and Transmission Line Siting
4 Committee, at the DoubleTree by Hilton Phoenix North,
5 10220 North Metro Parkway East, Phoenix, Arizona,
6 commencing at 9:21 a.m. on the 24th of August, 2021.

7

BEFORE: THOMAS K. CHENAL, Chairman

8

ZACHARY BRANUM, Arizona Corporation Commission
LEONARD C. DRAGO, Department of Environmental
Quality

10 JOHN R. RIGGINS, Arizona Department of Water
Resources

11 RICK GRINNELL, Counties, via videoconference

MARY HAMWAY, Incorporated Cities and Towns

12 JIM PALMER, Agricultural Interests

PATRICIA NOLAND, General Public

13 JACK HAENICHEN, General Public

14 KARL GENTLES, General Public

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1 CHMN. CHENAL: Good morning, everyone. This is
2 the time for the continuation of the APS Westwing 230kV
3 interconnection project.

4 Before we begin, I would like to just ask the
5 attorneys if there are any procedural matters or issues
6 that we need to discuss before we proceed.

7 MS. SPINA: No, nothing from APS.

8 CHMN. CHENAL: Okay. Thank you very much.

9 In that event, let's proceed with the testimony.
10 Ms. Spina, if you would like to call your next witness.

11 MS. SPINA: Thank you, Mr. Chairman. I think we
12 will continue with Mr. Clark for just a few minutes
13 longer, if that's okay.

14 CHMN. CHENAL: That's right. We did have a few
15 minutes of -- to finish his testimony.

16 MS. SPINA: We have a little more.

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1 JASON SPITZKOFF, KEVIN DUNCAN, DEVIN PETRY,
2 and DANIEL CLARK,
3 called as witnesses on behalf of APS, having been
4 previously duly sworn or affirmed by the Chairman to
5 speak the truth and nothing but the truth, were examined
6 further and testified as follows:
7

8 DIRECT EXAMINATION CONTINUED

9 BY MS. SPINA:

10 Q. Mr. Clark, I will remind you you are still under
11 oath or affirmation from yesterday. And I think when we
12 broke for public comment yesterday afternoon, we were
13 talking about APS's safety requirements for battery
14 energy storage projects.

15 So I just wanted to take a moment and reorient
16 us all to that conversation. I don't have -- I believe
17 we were on Slide No. 69, but if that's incorrect, please
18 let me know.

19 A. BY MR. CLARK: Yes.

20 Q. I think it is the slide --

21 A. BY MR. CLARK: Oh, just --

22 Q. Yeah.

23 A. BY MR. CLARK: Let's see if I can go back one.
24 Yes.

25 Q. Okay. And so just as a refresher for all of us

1 to sort of get us back on track for the discussion, you
2 had indicated that APS had taken some of the learnings
3 from the McMicken event, and the McMicken investigation
4 and report that followed that event, and incorporated
5 those into a set of safety requirements that APS uses
6 for its own battery installations and also for battery
7 installations that it contracts with under a PPA, is
8 that correct?

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

10 Q. And just to be clear, these APS safety
11 requirements are self-imposed requirements that go
12 beyond the minimum codes and standards that are
13 otherwise required, is that correct?

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

15 Q. And as we talk about these minimum codes and
16 standards that are required, just for the record, who
17 promulgates those? Are they something that the industry
18 puts together, or is there a regulatory body?

19 A. BY MR. CLARK: We, in conjunction with our
20 consultants, put together those requirements.

21 Q. The APS safety requirements.

22 A. BY MR. CLARK: Yes, ma'am.

23 Q. But I am referring to the minimum codes and
24 standards. Where do those come from?

25 A. BY MR. CLARK: Oh, my apologies. Those are put

1 together by bodies and working groups that are
2 established by groups like the NFPA, National Fire
3 Protection Association, the International Fire Code, and
4 other codes and standards development bodies.

5 Q. Okay. And those APS safety requirements meet
6 those minimum codes and requirements and exceed them in
7 some or all instances, correct?

8 A. BY MR. CLARK: Correct.

9 Q. Okay. And I think yesterday Mr. Spitzkoff
10 mentioned in his testimony that APS has a PPA, or a
11 power purchase agreement, with AES. And, therefore, the
12 APS battery installation is also subject to those more
13 stringent safety requirements that are imposed by APS,
14 is that correct?

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

16 Q. Okay. And I wanted to circle back for one
17 moment to the McMicken report again. One of the items
18 that I think you mentioned, when we were covering the
19 findings and recommendations that came out of that
20 investigation and report, was training and the
21 importance of training for first responders and for
22 other entities, is that correct?

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

24 Q. So one of the items that the McMicken report
25 mentions is the importance of having a hazard assessment

1 and training of first responders done early in the
2 process, or at least before commissioning and
3 commencement of operations for the energy storage
4 systems. Are you familiar with that?

5 A. BY MR. CLARK: I am familiar with the hazard
6 mitigation analysis and the training that needs to be
7 done.

8 Q. Okay. And I understand that those requirements
9 are also reflected in APS's BESS safety requirements, is
10 that correct?

11 A. BY MR. CLARK: Correct.

12 Q. Could you speak to that a little bit.

13 A. BY MR. CLARK: Yes. So in Exhibit APS-20, the
14 requirement, or APS battery energy storage safety
15 requirements, there are a number of sections in there
16 that I can refer to. The hazard mitigation analysis is
17 essentially an overview of all the different things and
18 hazards that are available or that could be potentially
19 available on the battery energy storage system. That's
20 in section 5.1a of that exhibit that you can review for
21 more details. And it outlines everything that could go
22 wrong and how to mitigate or minimize the risks.

23 The training is in section 5.4e and f. And it
24 discusses the firefighters and AHJs must be trained on
25 the risks, actions, and updated annually.

1 Q. And is that hazard assessment and training
2 obligation that is set forth in that agreement, is that
3 something that APS will do or has done with respect to
4 this project, or is it something that AES will do or has
5 done with respect to this project?

6 A. BY MR. CLARK: For this project AES will be
7 responsible for that.

8 Q. Okay. And do you know whether that's already
9 being done?

10 A. BY MR. CLARK: It will. I don't know if it has
11 been done yet, but it is required to be done.

12 Q. Okay. And I am assuming, but please correct me
13 if that assumption is incorrect, that APS has discussed
14 the requirements in APS's BESS safety requirement
15 document with AES, is that correct?

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

17 Q. And has APS reviewed AES's project design to
18 determine whether they are in compliance with those
19 requirements?

20 A. BY MR. CLARK: We have. We did a very thorough
21 analysis of the AES energy storage project and the
22 technology they propose. We had third-party experts
23 review the testing, and we have looked at some of their
24 data and modeling that they have done for safety and we
25 found them to be very favorable.

1 Q. Okay. So just to sort of be very specific, you
2 have concluded that their project design was in
3 compliance with the APS requirements, is that correct?

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

5 Q. Okay. I want to turn for just a quick moment to
6 the power purchase agreement. Before I do, though, I
7 want to note for the record that it is a confidential
8 document. It has not been shared more broadly. And so
9 I am asking a question with respect to it, but I really
10 am looking for a high level answer, not any kind of
11 disclosure of the commercial terms and provisions of
12 that agreement. Do you understand?

13 A. BY MR. CLARK: Yes.

14 Q. Okay. Does APS have a mechanism for determining
15 whether AES is continuing to maintain compliance with
16 the safety requirements throughout the duration of the
17 agreement?

18 A. BY MR. CLARK: We do.

19 Q. Okay. And you know, again, very high level sort
20 of generically speaking, is that type of an obligation
21 incorporated or reflected in the agreement?

22 A. BY MR. CLARK: It is. And the Exhibit APS-20,
23 you can look at section 7.

24 Q. Okay. Thank you.

25 Switching gears a little here, I want to talk

1 about batteries more generally. Are you familiar with
2 APS's clean energy commitment?

3 A. BY MR. CLARK: I am.

4 Q. Okay. And I think that came out in early 2020.
5 And if I understand it correctly, APS has pledged to go
6 100 percent clean and carbon free by 2050, is that
7 correct?

8 A. BY MR. CLARK: Uh-huh, yes.

9 Q. And I believe there is also a shorter term goal
10 encompassed within that commitment, and that is to go
11 to -- to utilize a resource mix that is 65 percent clean
12 energy by 2030, and also to reflect a generation
13 portfolio that is 45 percent renewable as of that
14 period. Is that also correct?

15 A. BY MR. CLARK: Yes, that sounds correct.

16 Q. Okay. Can you give me a little bit of an
17 understanding of how battery storage projects like this
18 one, and like some of the others that APS is pursuing,
19 enhance that goal or allow APS to achieve those goals?

20 A. BY MR. CLARK: Yes. Battery energy storage is a
21 key aspect of reaching those goals. It provides an
22 immense amount of flexibility for our grid operators to
23 be able to accommodate an increased production of
24 intermittent resources like solar and wind, and to be
25 able to move around as a load or as a generation source

1 in order to increase that, the amount of renewables we
2 can accept onto our grid at any given time.

3 But additionally, it provides a peaking capacity
4 asset for us. It is very valuable as a peaking capacity
5 asset in the summers or in the winters when we have
6 peaks, similar to what a gas turbine might do for us,
7 but with no emission.

8 Q. Thank you.

9 So is it fair, then, to say that in addition to
10 the benefit of cleaner energy, or enabling cleaner
11 energy, that there are other benefits of storage to
12 customers as well? I think you mentioned peaking
13 capacity, operational flexibility, and those types of
14 things. So there are benefits beyond just the renewable
15 aspect of the power itself, is that correct?

16 A. BY MR. CLARK: Correct.

17 Q. I think you mentioned yesterday that APS has
18 some storage projects in addition to this one that are
19 in development, is that correct?

20 A. BY MR. CLARK: Correct.

21 Q. Do you have any additional information that you
22 can share with us about the status of what is either
23 planned by APS that will be owned by APS or that is
24 under or will be under contract by APS?

25 A. BY MR. CLARK: Yes. So by the end of 2020, we

1 will have this 100 megawatt, 400 megawatt hour facility
2 on line, the contracted facility. We will have an
3 additional 50 megawatt, 200 megawatt hour facility that
4 is contracted on line, and then an APS owned program of
5 battery energy storage systems totaling 141 megawatts,
6 423 megawatt hours spread across roughly six sites, all
7 paired with our existing solar PV arrays.

8 Q. Okay. So APS is making significant investments
9 in battery storage. Is that a fair statement?

10 A. BY MR. CLARK: Yes.

11 Q. For a number of reasons I guess that you already
12 mentioned, there is renewable benefits and there is also
13 operational and other benefits as well?

14 A. BY MR. CLARK: Correct.

15 Q. Is that trend moving towards energy storage
16 projects something that we are seeing across the
17 country?

18 A. BY MR. CLARK: It is. I looked up some numbers
19 from Wood Mackenzie, and there are currently 271
20 projects, of which there is 4,168 megawatts, 8,698
21 megawatt hours of battery, lithium-ion specifically,
22 battery energy storage projects either operational or in
23 construction, and an additional 12,100 megawatts,
24 30,892 megawatt hours that have been announced across
25 just the U.S.

1 Q. Thank you, Mr. Clark.

2 Yesterday I believe Member Hamway asked a
3 question about the largest storage facility in the
4 country. Have you had an opportunity to determine what
5 that project may be?

6 A. BY MR. CLARK: Yes. It actually recently came
7 on line. The phase one was done in December 2020. It
8 was 1,200 megawatt hours at one location. And then I
9 believe very recently the phase two of that came on
10 line. It was an additional 400 megawatt hours, so a
11 total of 1600 megawatt hours all within one location.

12 Q. And, I am sorry, you said that was in -- did you
13 say that was in California?

14 A. BY MR. CLARK: It is, Moss Landing, California.

15 Q. Okay, thank you.

16 We had a couple of additional questions that
17 were posed by the Committee yesterday afternoon, and I
18 want to just take a moment and try to address some of
19 those. And some of them may be directed to you,
20 Mr. Clark, but some of them it is possible that one of
21 the other witnesses on the panel might be better suited
22 to respond. So I will just pose the question, and
23 whoever is best situated, please take a crack at it.

24 I think Member Gentles asked yesterday how many
25 homes are in the two developments that are adjacent or

1 in the vicinity of the AES battery storage facility and
2 this project. Can anyone speak to that?

3 A. BY MR. PETRY: I can, yes.

4 Q. Thank you.

5 A. BY MR. PETRY: Member Gentles, you asked
6 specifically about the two residential developments in
7 closest proximity to the gen-tie project. The
8 development immediately to the east contains
9 approximately 200 residential structures. The
10 development to the north contains approximately 700
11 dwellings. There is additional development you can see
12 not quite in this image here on the screen, on Slide 74,
13 but it is right north of the fire station there. And
14 there are approximately 60 additional residences there.

15 CHMN. CHENAL: Where is that?

16 MR. PETRY: It is outside of this view. When I
17 do a drone tour in a little bit, as well as the virtual
18 tour, I can key into those areas and provide additional
19 details of there as well.

20 MS. SPINA: Thank you.

21 MS. KANE: You said that is an additional 60
22 residences?

23 MR. PETRY: Correct, north of the fire station.
24 Pardon me, north of the church.

25 BY MS. SPINA:

1 Q. Okay. Thank you.

2 And I think Member Gentles also asked if we
3 could determine how far this project is from the
4 McMicken location. Does anyone have an answer for that
5 question?

6 A. BY MR. SPITZKOFF: Yes, I do. And if we could,
7 go back to Slide 42. Yeah, the right side there. One
8 too far. There we go.

9 Okay. The Westwing substation is approximately
10 in this location, 303 and Happy Valley. The McMicken
11 substation is just really right on the edge off of
12 Route 60 over here. And that straight line distance is
13 approximately six miles away.

14 Q. Mr. Petry, if we go back to the question about
15 the residences for just one second, I have a follow-up
16 for that.

17 You mentioned, obviously, there are three
18 developments sort of in the general proximity to that or
19 within the map shown, and then one that is a little
20 outside of that. Do we know the answer to the question
21 what is the close -- how far away from the battery
22 installation will the closest residence be?

23 A. BY MR. PETRY: From the battery installation I
24 believe the closest residence will be approximately 250
25 to 300 feet north of the project, the north side of

1 Happy Valley Road.

2 Q. Okay. And from the transmission line in
3 question?

4 A. BY MR. PETRY: For the transmission line
5 project, the nearest residence would be those to the
6 east of the project. And they are approximately 500
7 feet east of the transmission line.

8 Q. Okay, thank you.

9 I think we also had a question yesterday that
10 was raised by both the Chairman and Member Noland,
11 asking about whether only renewable resources will be
12 used to charge the batteries.

13 Mr. Spitzkoff, have you had an opportunity to
14 follow up with APS's resource procurement group on this
15 topic?

16 A. BY MR. SPITZKOFF: Yes, I have.

17 Q. And do you have an answer you can share with the
18 group?

19 A. BY MR. SPITZKOFF: Yes. So APS's intention is
20 to charge the AES Westwing project with intermittent
21 renewable energy when it is produced and to use it later
22 in the day to meet customers' peak energy needs.

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

25 CHMN. CHENAL: Member Hamway.

1 MEMBER HAMWAY: Is this the only BESS that is
2 not directly connected to a solar or a wind charging?

3 MR. CLARK: I can answer that. The other
4 contracted asset for the 50 megawatts, 200 megawatt
5 hours is also a stand-alone battery energy storage
6 project.

7 MEMBER HAMWAY: I have another quick question.
8 You mentioned a list of issues, I think it is in 5.1a.
9 Do we have that, number one? And number two, how long
10 is that list?

11 Because isn't that a collection of issues across
12 maybe the world, certainly the U.S., of issues with
13 these BESS systems? So if you were looking to create
14 some safety conditions, wouldn't you go to this database
15 to see what all the issues have been? Is that what the
16 purpose of this database is? You called it a list;
17 database is my word.

18 MR. CLARK: You are referring to the hazard
19 mitigation analysis, I believe?

20 MEMBER HAMWAY: Well, I thought that there was a
21 collection of things when all, when these BESSes go bad
22 that could be a new meme something, or meme. When BESS
23 goes bad, is there a place where anyone who is using
24 these puts those info into a database so that other
25 people looking to create safety regulations have a

1 complete list of all the issues that have ever occurred
2 with the BESS?

3 MR. CLARK: I am not currently aware of one
4 place that people go. I do know that the National Fire
5 Protection Association is collecting data from
6 incidents. The Electric Power Research Institute is
7 also collecting information from instances. And there
8 are a number of other groups that are collecting those.
9 Currently there is not a centralized location to look at
10 all of the fine details of that.

11 The hazard mitigation analysis that was
12 performed on this project is specific to this product
13 and this site. And so that has to be performed by AES
14 to look at all the potential risks of this, you know, of
15 this particular site and product and find ways to
16 minimize or mitigate those risks.

17 MEMBER HAMWAY: Well, it said that APS joins
18 lots of forums. So I am assuming you join these forums
19 to get best practice information and to look at what
20 other people are doing in the industry, correct?

21 MR. CLARK: Correct.

22 MEMBER HAMWAY: So is this the most efficient
23 way to gather data about issues with the BESS system? I
24 have done that. Granted it was in the dark ages. But
25 these organizations tend to meet once or twice a year,

1 and they are tedious, and so that not a lot of
2 meaningful information comes quickly. I mean I am not
3 saying it is not, over time, a good collection of data,
4 but it is just not a real quick way to know what is
5 going on in the industry. You know, tell me I am wrong.
6 I hope I am wrong.

7 MR. CLARK: So the codes and standards
8 themselves are slow to be developed, because there is a
9 lot of discussion that has to happen. But the
10 information -- and that's one of the reasons we
11 developed our safety requirements, is because we want to
12 get out ahead of where the codes and standards are,
13 because they do take awhile to be developed.

14 But we participate in a number of other working
15 groups that meet much more regularly to discuss these
16 topics. In particular, EPRI, the Electric Power
17 Research Institute, is a collection of utilities. And
18 we have weekly -- every other week we will have meetings
19 that we will discuss battery storage topics. We
20 participate in studies with them to disseminate
21 information across the utility industry.

22 So myself, I am very involved and I am in a lot
23 of different meetings and discussions. I would say at
24 least weekly I am in a discussion on something new or on
25 a conference.

1 MEMBER HAMWAY: Okay, thank you.

2 BY MS. SPINA:

3 Q. Thank you, Mr. Clark.

4 Just for clarity, when you referred to section
5 5.4 and the training obligations that were included
6 within that provision, I believe you were referring to
7 APS's safety requirement document, correct? And I
8 believe that document is contained in Exhibit APS-20.

9 A. BY MR. CLARK: Correct.

10 Q. Okay, thank you.

11 Mr. Petry mentioned, per my question, that the
12 closest residence to this current project is across
13 Happy Valley Road. Was the McMicken battery also close
14 or in the general vicinity to residences?

15 A. BY MR. CLARK: I believe there were residences
16 just across the highway on the east side, on the
17 northeast of it.

18 Q. Okay. And again just for sort of clarity, when
19 the McMicken event occurred, was there any impact on any
20 of the neighboring residences?

21 A. BY MR. CLARK: None that I am aware of.

22 Q. Okay. Sorry, if you would, bear with me for
23 just one second.

24 Yesterday Member Hamway asked a question about
25 the size of McMicken compared to the size of the battery

1 installation here at this project. I noted that they
2 were different size systems. Can you sort of reorient
3 us for the record what the comparators are. What was
4 the size of McMicken compared to the size of the
5 Westwing battery?

6 A. BY MR. CLARK: Yes. I would like to get my
7 Exhibit APS-22 displayed on the right side. I think it
8 will help this conversation. So hopefully I can --
9 thank you -- pull this over. I apologize for this
10 taking a minute here.

11 So the McMicken battery enclosure was
12 two megawatts, two megawatt hours, and it contained
13 roughly 10 battery racks here. This project in
14 question, these are the enclosures. And I will note
15 that the McMicken enclosure was a walk-in; a human could
16 enter the enclosure and the firefighters could enter the
17 enclosure.

18 On this project, these enclosures are
19 .75 megawatt hours, so it is roughly 35 percent of the
20 size of the McMicken. And it cannot be entered. It is
21 an outdoor enclosure that should just be on its own.
22 Nobody can enter. You don't need to enter.

23 And it would contain, I would need to confirm
24 this, but three or four of these racks. So the amount
25 of energy and the size of these are actually much

1 smaller than McMicken. And those enclosures are what
2 contain the failure of a cell or the hazardous gases.
3 So you have minimized the amount of energy per
4 enclosure.

5 MEMBER HAMWAY: Mr. Chairman.

6 CHMN. CHENAL: Yes, Member Hamway.

7 MEMBER HAMWAY: How close were the nearest homes
8 in McMicken?

9 MR. CLARK: We will have to confirm the exact
10 number to get that. But we could say with confidence
11 that the substation was 15 feet north of it, and it had
12 no impact. But we can get the residences.

13 MEMBER HAMWAY: Okay, thank you.

14 BY MS. SPINA:

15 Q. Okay. So we have established that the McMicken
16 incident did not have any impact on the neighboring
17 residences, and I think you just sort of indicated that
18 it also had no impact on the Westwing substation, even
19 though the Westwing substation was approximately 15 --

20 A. BY MR. CLARK: The McMicken substation.

21 Q. I am sorry, yes. Thank you. My brain did not
22 keep up with my mouth.

23 So even though the McMicken substation was only
24 approximately 15 feet away from the battery
25 installation, there was no impact to the substation

1 either, correct?

2 A. BY MR. CLARK: Correct.

3 Q. And Mr. Spitzkoff, I think you established
4 yesterday that the McMicken event also had no impact on
5 any of the neighboring substation's transmission systems
6 or transmission lines, is that correct?

7 A. BY MR. SPITZKOFF: Correct.

8 Q. And that there was no impact on reliability of
9 either the system or on any individual customer's
10 service, correct?

11 A. BY MR. SPITZKOFF: Correct.

12 Q. Okay. Mr. Clark, just to go back to the
13 question about the size differential between McMicken
14 and Westwing, I just want to ask for clarity: Do you
15 have any reason to believe the difference in size, that
16 the Westwing battery installation is larger from a
17 total megawatt perspective than McMicken was, would make
18 it any more likely to impact grid or system reliability
19 if there were an event?

20 A. BY MR. CLARK: There, in fact, I would say there
21 is less risk due to the size of the enclosure and the
22 advanced technologies and additional safety features
23 added.

24 Q. So a moment ago you mentioned that, unlike the
25 McMicken event, or, I am sorry, unlike the McMicken

1 battery installation, which was inside a walk-in
2 enclosure, this one does not have the ability for a
3 human being to enter inside the enclosure, is that
4 correct?

5 A. BY MR. CLARK: Correct.

6 Q. And is that design change one that was enacted
7 as a result of the learnings from McMicken?

8 A. BY MR. CLARK: It was a recommendation of the
9 studies and of our consultants.

10 Q. Okay. Thank you.

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

13 CHMN. CHENAL: Member Hamway.

14 MEMBER HAMWAY: I am looking at AES, the ones
15 that were passed out this morning, Exhibit 2. And I
16 don't know what page it is. Oh, it is 8.

17 So you have a little picture here of a before
18 and after. And you have -- the little picture shows
19 some people standing up. So I was just curious why you
20 used that since this enclosure doesn't allow people to
21 stand up in it.

22 MS. SPINA: I don't -- Member Hamway, I
23 apologize. Let me just jump in there. I don't believe
24 Mr. Clark has seen these exhibits yet. They are AES's
25 exhibits?

1 MEMBER HAMWAY: Yes, they are. They are
2 absolutely AES's. I am sorry.

3 MS. SPINA: I can show it to him and he can
4 opine or he can opine, or we could maybe wait for AES
5 and ask the question directly to them.

6 MEMBER HAMWAY: I can do that.

7 MEMBER GRINNELL: Mr. Chairman.

8 CHMN. CHENAL: Member Grinnell.

9 MEMBER GRINNELL: I asked this yesterday, and
10 maybe, again, this will be addressed. But we are
11 talking about electronic components, batteries. We are
12 talking about the makeup of these products.

13 What is the disposal process that -- we are
14 trying to maintain some type of environmental approach
15 to dealing with energy. But these aren't going to last
16 forever. And does APS or this other company have a
17 process for disposal of these components, including
18 batteries?

19 MR. CLARK: Member Grinnell, I would defer to
20 AES on what they plan to do with this specific project.

21 MEMBER GRINNELL: Okay. And for another
22 question, just in the event somehow we lose the ability
23 for solar power for any prolonged period of time, does
24 APS have a backup for fossil fuels in the event these
25 other environmental assets fail to produce?

1 MR. CLARK: This particular project isn't linked
2 with renewables, so we have a great amount of
3 flexibility. And these could be considered reserves for
4 capacity.

5 MEMBER GRINNELL: For what period of time?

6 MR. CLARK: A four-hour duration, they can
7 discharge for four-hour duration.

8 MEMBER GRINNELL: I am talking about a prolonged
9 period of lack of sun, a breakdown in the wind
10 production. What is their backup for all these
11 contingencies in the event of these unfortunate
12 scenarios?

13 MR. CLARK: I would have to defer to our
14 resource operations team on how they plan to address
15 intermittent renewables as they scale up. Currently
16 loss of some renewables is not -- I don't believe would
17 impact us greatly.

18 MEMBER GRINNELL: I don't think -- maybe I am
19 not asking -- say we go weeks, a month without the
20 ability to provide solar power or wind power. Is there
21 a renewable -- is there a fossil fuel backup system to
22 continue providing the electricity needed by all the
23 persons that are being affected?

24 MR. CLARK: I will have to defer to other
25 experts within our resource operations or marketing and

1 trading groups to answer that.

2 MEMBER GRINNELL: Thank you.

3 BY MS. SPINA:

4 Q. Mr. Clark, just a couple more questions, I
5 guess, about the -- and I recognize that this probably
6 is more appropriately directed to AES, and we may ask
7 them some questions in that space as well, but just from
8 your perspective as someone who has been working in the
9 battery field for quite some time, we have talked a bit
10 about how this particular battery installation does not
11 have a solar or other renewable project directly
12 interconnected to it, to sort of charge it behind the
13 meter. Is that an anomalous situation? Is that a
14 rarity, or is that sort of just another normal option?

15 A. BY MR. CLARK: We have seen a fair mix of
16 stand-alone batteries in the RFP process. Sometimes
17 they are paired with solar, sometimes they are not. So
18 I would say it is fairly common.

19 Q. Is there anything about that configuration, a
20 stand-alone battery, that makes it inherently more risky
21 than a solar plus battery installation?

22 A. BY MR. CLARK: From a safety perspective, no.

23 Q. Is there anything about that configuration that
24 would require a different or specialized set of safety
25 requirements?

1 A. BY MR. CLARK: No.

2 MS. SPINA: Okay. Thank you.

3 Before I tender -- well, I guess let me back up
4 and say I believe at this point in our presentation we
5 will break and allow AES to present some witnesses. I
6 am not sure whether Ms. Grabel or Staff has any
7 questions for any of these panelists, or prefer to hold
8 them to the end.

9 But before I turn the mike over to Ms. Grabel,
10 or whoever would like to go next, I just wanted to take
11 one quick moment and reorient us all with respect to the
12 ask in this case.

13 BY MS. SPINA:

14 Q. Mr. Spitzkoff or Mr. Duncan, just for clarity,
15 the CEC that has been requested and is currently pending
16 in front of this Committee is for the gen-tie lines,
17 correct, not for the battery installation?

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

19 MS. SPINA: Okay, thank you.

20 Mr. Chairman, I believe I am done with this
21 portion of the direct presentation, and I defer to you
22 and my other counsel here to determine how best to go
23 forward.

24 CHMN. CHENAL: All right. Thank you very much.
25 I have a follow-up question for the panel.

1 I am not sure how to ask it, so let me labor
2 through kind of my general question and have you fill it
3 in for me.

4 This system, the BESS, is to store energy for,
5 say, later use in a day, say after the sun drops and
6 there has been excess energy generated by the solar
7 plants, and now you want to use the stored energy for
8 later in the day. I assume that would be a typical
9 scenario. And this particular project is 100 megawatts,
10 at least the initial phase, and 400 megawatt hours.

11 Okay. I am trying to figure out how much peak
12 power is required, say, in the APS system on those hot
13 summer days and what portion of that peak power does
14 this project represent, just to put -- so we have an
15 idea of the size in relation to the peak power
16 requirements.

17 MR. SPITZKOFF: Certainly. If we are relying on
18 my memory from a month ago, when I testified APS's
19 system all-time system peak was 7,800 megawatts, that
20 was set last year in 2020. So that would be our
21 all-time system peak.

22 Generally the peaks will be staying around that
23 number. So, you know, if you want to look at 7,800 as
24 the target, this is 100 megawatts, at least the first
25 phase, of that 7,800 megawatt need. Plus, from a

1 resource perspective, we do actually need resources
2 greater than that 7,800 for the reserves that I was
3 talking about yesterday; in case anything happens to any
4 one resource, you have reserves that could cover the
5 loss of any one resource.

6 CHMN. CHENAL: So right now that peak power, if
7 you will, is obtained through the, just through the
8 normal sources of energy, correct?

9 MR. SPITZKOFF: Yes. It is a mix of all of our
10 resources. So today that would be the Palo Verde
11 nuclear plant, we have two coal plants, natural gas
12 plants, and a number of renewable projects currently on
13 line, and also purchases from the market, if there is
14 resources available that are, you know, more economical
15 than any of the other resources.

16 CHMN. CHENAL: So let's move forward to 2050,
17 when the goal is for APS to be 100 percent renewable.
18 How does this work? You are going to have solar plants;
19 I assume it is going to be the bulk of the generation.
20 I mean there is wind, there is nuclear. But I mean, if
21 it is renewable, let's assume it is mostly solar. It
22 will generate power during the day, assuming the sun is
23 out, and then it will have excess power and then it will
24 be stored.

25 So will these BESS systems basically provide the

1 power, 100 percent of the power through the evening, you
2 know, and before -- until the sun rises the next day? I
3 know that's a very simple question. I mean I don't -- I
4 don't know if it is -- if I am thinking through that
5 clearly. But I mean is this going to be the way to
6 provide power when the sun is down if you are
7 100 percent renewable?

8 MR. SPITZKOFF: Yes. I believe I understand the
9 question you are asking. It is going to be a
10 significant part of the way that power is supplied. It
11 likely won't be the only way that it is done.

12 And quite frankly, when we are out in 2050 at
13 100 percent clean, we don't know 100 percent what the
14 final answer is. Really no one knows right now. But we
15 are on that process to get there. And energy storage,
16 whether it is batteries, there is also other kind of
17 energy storage that's out there, or a new technology
18 that we don't employ or don't know of just yet, those
19 are all in the mix or will be in the mix.

20 CHMN. CHENAL: But in general, the storage is
21 going to be the key to renewable power to take that
22 surplus power generated during the day and then use that
23 stored energy for the periods of time when there is no
24 generation.

25 MR. SPITZKOFF: Yes. I would say everyone in

1 the industry believes storage is a key component of
2 that.

3 CHMN. CHENAL: Okay.

4 Yes, Member Palmer.

5 MEMBER PALMER: Kind of following up on Chairman
6 Chenal's question, looking forward to 2050, is Palo
7 Verde or other nuclear considered part of that
8 portfolio, or do we anticipate it will be gone by then?

9 MR. SPITZKOFF: So our portfolio -- our promise
10 for 2050 is clean energy. That includes Palo Verde.
11 Nuclear power is a clean source of energy that does not
12 produce carbon or other emissions.

13 MEMBER PALMER: Thank you.

14 CHMN. CHENAL: Yes, Member Haenichen.

15 MEMBER HAENICHEN: Thank you, Mr. Chairman.

16 With this question I am not asking -- I am not
17 prying into your company's secret costs and that sort of
18 thing. It is a general question. But at the present
19 time, right now, and just give me your best answer, is
20 it more expensive or less expensive -- and you have to
21 include the storage system in this -- to generate
22 electricity totally with renewable input than the
23 fossil? Which one is the more expensive?

24 MR. SPITZKOFF: Member Haenichen, my best answer
25 to that would be I don't know. My concern is the

1 reliability of the grid, not the cost of resources.
2 That is a completely different team that handles that.
3 And what we are charged with is making sure that
4 whatever mix they propose keeps the grid reliable.
5 That's what we -- that's what my teams look at.

6 MEMBER HAENICHEN: Well, I understand that. But
7 to your knowledge, has someone within the company
8 studied this, to answer my question?

9 MR. SPITZKOFF: I am sure we can find a
10 statement from someone.

11 MEMBER HAENICHEN: What I am getting at with
12 this question is: Now, when you project to 2050, what
13 can the public expect in terms of the cost of
14 electricity compared to what it is now adjusted for
15 inflation? And if it is going to be twice as expensive,
16 there is going to be an uproar.

17 MR. SPITZKOFF: Member Haenichen, I am not sure
18 anyone has -- well, there probably is people that have
19 studied that. But I would say to think you can project
20 what the cost of power more than 30 years from now will
21 be compared to today is likely not of value that I would
22 consider accurate.

23 MEMBER HAENICHEN: Well, that's why I asked the
24 question for today, how it is now. Because that would
25 give you some feel for it. I mean if it is 10 times as

1 expensive, it is a major chore.

2 MR. SPITZKOFF: Yeah. So I don't know the exact
3 numbers. I do know that over the last 10 years plus,
4 you know, if you go back in time, any renewable source
5 was definitely more expensive than coal or natural gas.
6 The price of probably all renewable sources has come
7 down significantly. Solar, wind, other sources have
8 come down.

9 I can't tell you right now on whether they have
10 crossed the threshold of whether they are still more
11 expensive or less expensive. But it is all variable.
12 The price of what natural gas is, you know, will change
13 that, the price of what your coal purchases would be,
14 other things. But I would say they are -- with me not
15 being an expert, take this with, you know, a grain of
16 salt, but I would say they are at least competitive.

17 MEMBER HAENICHEN: Thank you.

18 CHMN. CHENAL: Thank you.

19 Ms. Grabel, I think we had discussed yesterday
20 either on the record or off line that APS would allow
21 you to bring your witnesses on now and present part or
22 all of your case before APS resumes. So how would you
23 like to proceed?

24 MS. GRABEL: Certainly. Thank you,
25 Mr. Chairman.

1 MR. DERSTINE: Mr. Chairman.

2 CHMN. CHENAL: Yes, Mr. Derstine.

3 MR. DERSTINE: I had a discussion before the
4 start of the hearing with Ms. Scott. My only thought, I
5 mean in terms of tendering our witnesses who have spoken
6 to the battery storage safety issues, I thought it made
7 sense to have Staff ask their questions and
8 cross-examine our witnesses on those topics while their
9 testimony is fresh in the Committee's mind. If
10 Ms. Scott is willing to defer her cross-examination of
11 our witnesses who were just put on pause, that's fine,
12 but this might be an appropriate time for Staff to ask
13 their questions directed to these witnesses.

14 CHMN. CHENAL: Thank you, Mr. Derstine. I have
15 to confess. I had thought that the cross-examination
16 was going to be deferred until the conclusion of the
17 testimony.

18 But let me ask Ms. Scott and Ms. Kane what your
19 preference is.

20 MS. SCOTT: Chairman, we can ask some questions
21 now of the APS panel. And Mr. Derstine has graciously
22 agreed that if questions come up during the AES panel
23 that we want to go back and talk to the APS witnesses
24 about, we could.

25 CHMN. CHENAL: And I think that's fair. And

1 just to be clear, APS, I mean they still have witnesses
2 to present testimony. And since it is a panel, I think
3 we have been pretty liberal with allowing questions of
4 the panel as, you know, as cross-examination as the
5 panel testimony proceeds. So that's fine.

6 Now let me ask Ms. Grabel if that interferes
7 with your witnesses' schedule.

8 MS. GRABEL: No, Chairman. My witnesses are
9 available all morning. And I believe that they are on
10 line; although, I only see Mr. Kumar right now.

11 CHMN. CHENAL: Okay. All right.

12 Well, Ms. Scott or Ms. Kane, if you want to
13 proceed, ask the cross-examination, please proceed.

14 MS. SCOTT: Thank you, Chairman.

15

16 CROSS-EXAMINATION

17 BY MS. SCOTT:

18 Q. I would like to start with APS witness
19 Spitzkoff, and talk a little bit about the CECs, first
20 of all, that you are requesting in your application.
21 The one that I am going to ask you to explain a little
22 further is the second one, and whether that involves a
23 transfer of ownership.

24 A. BY MR. SPITZKOFF: Sure. The second CEC will
25 not transfer ownership of anything. It will be a

1 transfer of the CEC. Nothing has been built to date.

2 Q. Okay. And a transfer of the CEC from APS to
3 AES, is that correct?

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

5 Q. Okay. Thank you.

6 Then I want to talk to you just very briefly
7 about the all source RFP that was issued. I am really
8 not going to ask you anything specific about that, only
9 to establish the fact that the storage facility that we
10 are talking about here was the subject of an all source
11 RFP, is that correct?

12 A. BY MR. SPITZKOFF: I believe that's correct. I
13 am not involved in our RFPs, but I believe that's what I
14 heard from testimony.

15 Q. Okay. Now I would like to talk a little bit
16 about the generator interconnection process. And that's
17 a FERC controlled process, is that correct?

18 A. BY MR. SPITZKOFF: Yes.

19 Q. And FERC has classified storage facilities as
20 generators for purposes of interconnection?

21 A. BY MR. SPITZKOFF: Yes.

22 Q. And can you give me a cite for that decision?

23 A. BY MR. SPITZKOFF: There is -- there were
24 probably a number. The one that I am familiar with was
25 in FERC Order 845. Part of that order was to

1 specifically add a definition for energy storage
2 projects. I am just trying to remember. I think it was
3 just energy storage projects generically, that basically
4 classified them as generators.

5 Q. And is it your testimony, too, that anything
6 over 20 megawatts is a large generator?

7 A. BY MR. SPITZKOFF: Yes.

8 Q. And how are large generators treated differently
9 than small generators under that process?

10 A. BY MR. SPITZKOFF: There are two different
11 processes. The reliability analysis, though, is
12 generally the same, same process that you go through.
13 But the mechanisms within the process allow for
14 different -- sorry. The processes allow for different
15 mechanisms within a large or small.

16 For instance, small can cover all the way down
17 to very small projects which have abilities for
18 different fast track options if they are not connected
19 to a transmission system, if there is, you know, the
20 distribution system can demonstrate no impact, different
21 things like that.

22 For a typical small generator that's within the
23 FERC process, though, you are going to find those
24 typically within the 10 to 20 megawatt range. And at
25 that level, generally the process is fairly equivalent

1 as you go through the study process. And we even
2 combine small generators with large generators in our
3 cluster studies.

4 Q. And I think it was also your testimony that the
5 stage of this process that you are in currently is you
6 don't yet have an agreement, interconnection agreement
7 signed, but that's being worked on, is that correct?

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

9 Q. When do you anticipate the agreement itself to
10 be completed?

11 A. BY MR. SPITZKOFF: I would anticipate that will
12 be a couple of weeks to a couple of months.

13 That agreement is being worked on under the
14 Navajo participants ownership. That group has a handful
15 of interconnection requests along that 500kV line
16 between Navajo and Westwing, including the two ends,
17 Navajo and Westwing. So they are working on those
18 projects in a sequential order. So the first one is
19 being worked on, and really that one will serve to set a
20 template for the next, the next set of projects. So it
21 is going to be a couple of weeks.

22 Q. Are those agreements published?

23 A. BY MR. SPITZKOFF: They will be. So some of the
24 owners are nonjurisdictional entities. However, the
25 jurisdictional entities that are part owners, APS will

1 file the interconnection agreements with FERC on behalf
2 of all of the jurisdictional entities. So once we make
3 that filing, that will be public.

4 Q. The other thing I would like to ask you about
5 the agreement, it was discussed yesterday, I believe,
6 that there is a, more or less, a standard, a lot of
7 standard provisions that go into those agreements, but
8 there are also provisions that can be negotiated. Do
9 you anticipate this agreement to be a mix of both types
10 of provisions?

11 A. BY MR. SPITZKOFF: It definitely will be,
12 because, again, you have multiple owners. So APS has a
13 pro forma, SRP has their pro forma version. All of the
14 entities have their pro forma agreement. And what
15 happens at a joint owned facility, since everyone is
16 signing one interconnection agreement, you really have
17 to come together and basically mix all of the different
18 nuances within each utility's, each owner's agreements
19 into one overall agreement.

20 Q. I want to just switch to the timing of the
21 project, just to get an update from you. Is it still
22 correct that you anticipate completion of this project,
23 the lines, the transmission lines, sometime in 2022?

24 A. BY MR. SPITZKOFF: I believe we are still on
25 track to be able to meet that date, yes.

1 Q. And when is construction planned to begin?

2 A. BY MR. SPITZKOFF: That is probably a -- that's
3 not a question I can easily answer, because APS is going
4 through the engineering and design for the gen-tie, the
5 lines right now. The portion is covered under CEC-1
6 right now.

7 We will be ready to start construction, you
8 know, fairly soon. However, we are contingent upon that
9 final go-ahead from AES that says now, you know, we have
10 all of our agreements, we have all of our permits,
11 everything is ready, so yes, we are going to -- let's
12 put a shovel in the ground and start building. So we
13 will be ready for that construction to commence, you
14 know, in the next few months. And then, you know, the
15 construction will probably take approximately 12 to 16
16 months or so.

17 Q. Okay. Thank you for that update.

18 CHMN. CHENAL: Let me ask a quick question
19 before Ms. Scott resumes.

20 The interconnection agreements are filed with
21 FERC, Mr. Spitzkoff, is that correct?

22 MR. SPITZKOFF: That's correct.

23 CHMN. CHENAL: And they are public records
24 available to the public?

25 MR. SPITZKOFF: That's correct.

1 CHMN. CHENAL: Thank you.

2 BY MS. SCOTT:

3 Q. You also talked yesterday of various system
4 reliability studies that are done on the project,
5 correct, or were done? I am sorry.

6 A. BY MR. SPITZKOFF: Yes.

7 Q. Okay. And I believe when you discussed the
8 results of those studies, was your testimony -- I think
9 you had three categories. And I am missing one. So I
10 would ask you to help me with that. But I think your
11 testimony was that, if you took the battery storage
12 facility out of the equation completely, that there
13 would be no impact on grid reliability was one, is that
14 correct?

15 A. BY MR. SPITZKOFF: I just want to be careful
16 here. There is one 69kV line that would have to be
17 upgraded due to this project, plus the combination of
18 all the other projects that were studied at the same
19 time. However, that is a little bit different in the
20 context of affecting grid reliability.

21 You know, that would -- if all of those projects
22 are connected, producing their output at the same time,
23 and an outage happens on another line, there would be an
24 overload of one line by the point of affecting grid
25 reliability was in terms of if there is an incident

1 at -- or involving the battery, whether the battery had
2 some electrical failure or caused some kind of fault,
3 that situation would not cause any harm to the grid
4 reliability.

5 The way facilities are connected. You know, a
6 transmission line has relays and breakers on the line
7 that are designed to detect any number of different
8 electrical quantities. And if it detects anything that
9 is out of bounds or would cause a system issue, it is
10 designed to respond to that, generally by opening up a
11 breaker. And so those systems themselves have
12 redundancies. There is a breaker that would be at the
13 AES switchyard. There is two breakers at the Westwing
14 side. So all of those are facilities that would also
15 respond. And if there is failure in any of those, then
16 there is also back-ups to those systems as well.

17 Q. Okay. So is it fair to characterize it as, if
18 the battery storage facility becomes inoperable or
19 partially inoperable, that there would be no impact to
20 grid reliability?

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

22 Q. And is the same true with respect to individual
23 customer reliability?

24 A. BY MR. SPITZKOFF: Yes.

25 Q. And then I believe you had a third category that

1 you spoke about in terms of reliability. Is that system
2 wide or -- I can't recall.

3 A. BY MR. SPITZKOFF: Potentially that was. You
4 know, I don't recall specifically. But if you are
5 looking at individual customer reliability, then
6 reliability at Westwing substation itself, and then if
7 you want to look at overall system reliability, that
8 could be what you are referring to.

9 Q. Okay. Let's see. I want to change that
10 scenario a little bit. If there were to be a
11 catastrophic failure of the energy storage facility,
12 what potential impact could that have to the Westwing
13 substation, first of all?

14 And let's start out with -- and if you can't
15 answer this question, just tell me, please. Let's start
16 out with the worst case scenario, whatever that may be.
17 It is a hypothetical I am asking you. If the facility
18 were to explode for some reason, something went
19 catastrophically wrong, what would happen to that
20 substation?

21 A. BY MR. SPITZKOFF: Sure. So under that
22 hypothetical scenario, you know, I would have to
23 understand the energy released with that explosion, but,
24 you know, the batteries themselves are located a few
25 hundred feet north of the substation perimeter wall. So

1 the battery project itself has a wall. I believe I
2 heard it was a concrete wall.

3 Then you have a few hundred feet or more of open
4 desert, basically, and then the outer perimeter wall of
5 the Westwing substation, which itself is a, you know, a
6 ballistic wall. Then there is an inner fence inside
7 that. And then there is a still further distance until
8 you get to the electrical equipment. The closest
9 equipment would be the 500kV bus work that's there.

10 So you have a pretty good distance from the
11 500kV bus up to the north to the battery. You have a
12 number of walls in between. So from an electrical
13 standpoint of an explosion, I don't think -- there would
14 likely be no electrical impact to Westwing itself. I
15 would expect in a scenario such as that, you would
16 probably only be concerned about, you know, debris
17 coming, traveling all of that distance, plus beyond the
18 barriers and maybe hitting some of the facilities that
19 are there. But I think that's a pretty far-fetched
20 hypothetical scenario.

21 Q. Okay. One other hypothetical along these lines.
22 Let's assume that the substation is rendered inoperable
23 due to something that happened with this large scale
24 battery storage facility. What are the implications for
25 the various areas of Phoenix, et cetera, that rely on

1 that? What --

2 A. BY MR. SPITZKOFF: Certainly. So we do perform
3 extreme analysis on various substations. Westwing is
4 one of them. And while those analyses are confidential
5 as critical energy infrastructure information, I will
6 summarize that at a high level.

7 You know, first off it is dependent on the time
8 of year and the time of day that any event would happen.
9 But if it is at system peak, you know, during the
10 summer, you know, you would definitely see the need to
11 go into operational mitigation. So our system operators
12 would have to, you know, take actions that could result
13 in reducing load in some part of the valley, or actually
14 may not.

15 But the system itself likely would not go into a
16 blackout situation. As a matter of fact, over the last
17 20 years there have been, you know, a few system
18 disturbances that have taken out parts of the Westwing
19 substation along with other substations, and either no
20 customer impacts were seen or limited customer impacts
21 were observed.

22 Q. Okay. If the Westwing substation were to become
23 inoperable, how many customers potentially would be
24 affected?

25 A. BY MR. SPITZKOFF: I don't know the answer to

1 that.

2 Q. Right now the proposed transmission line will be
3 capable of handling the total output of the battery
4 facility, correct?

5 A. BY MR. SPITZKOFF: Yes.

6 Q. So that's 200 megawatts?

7 A. BY MR. SPITZKOFF: The line will likely be able
8 to handle more than 200 megawatts.

9 Q. How many megawatts will the line be able to
10 handle, in your opinion?

11 A. BY MR. SPITZKOFF: I don't know that for sure.
12 It does depend on the conductor and the construction
13 configuration. I would just be guessing at a number.

14 I will -- just for a point of reference, typical
15 230kV construction that APS does today overhead, for
16 overhead lines, is capable of approximately
17 1200 megawatts. Given that this line will be basically
18 just a gen-tie line that has 200 megawatts at the end,
19 we may not or likely will not design for the full 1200,
20 but it will be, you know, somewhere, somewhere certainly
21 between 200 and 1200.

22 Q. So the line will be capable of handling
23 additional future interconnections, is that correct?

24 A. BY MR. SPITZKOFF: The line itself would likely
25 be, but given the short distance and the configuration,

1 it would be unlikely to connect additional generators
2 into that line because then it gets into a system
3 protection and communication situation where you have --
4 you are tapping a facility off of another facility. It
5 could be done, but it, as a likely scenario, would not
6 occur.

7 Q. One other question came to mind when you were
8 responding earlier about some of the information
9 involving a potential, the potential inoperability of
10 that substation, Westwing, being confidential.

11 I would imagine that for a facility this large,
12 and now with the storage facility being added to it,
13 that you would have pretty stringent and rigorous
14 terrorist protections in place, is that correct?

15 A. BY MR. SPITZKOFF: The substation will be -- the
16 battery facility is a completely separate facility. And
17 frankly, adding a 200 megawatt storage facility would
18 not change the criticality stance of the Westwing
19 substation.

20 Q. Okay. Thank you. That's all I have of you
21 right now. I may have some questions later.

22 Now on to Mr. Clark. Good morning, Mr. Clark.

23 A. BY MR. CLARK: Good morning.

24 Q. I do have a few questions for you as well.

25 The battery storage facility that's at issue

1 here is a lithium facility, correct?

2 A. BY MR. CLARK: It is a lithium-ion facility,
3 yes.

4 Q. There are other nonlithium-ion storage facility
5 types as well, correct?

6 A. BY MR. CLARK: Some are available, yes, but 90
7 plus percent of utility scale battery energy storage
8 systems are lithium-ion.

9 Q. Okay. You would agree that storage facilities,
10 the technology is still somewhat in its infancy,
11 correct?

12 A. BY MR. CLARK: I wouldn't classify lithium-ion
13 in its infancy. It has been around for roughly 30
14 years. The configurations have changed, and usage. We
15 are learning about best practices for safety. But I
16 wouldn't classify the technology as new, no; maybe the
17 use case, yes.

18 Q. Could we go back to the list that you provided
19 earlier with respect to the storage projects that are
20 planned or under construction or under contract that APS
21 is involved in. And I would ask you to go a little
22 slower, because I didn't catch all of the projects. You
23 went too fast before.

24 A. BY MR. CLARK: Sure. We have three projects
25 currently under contract, this project being 100

1 megawatts, 400 megawatt hours. The second one is
2 50 megawatts, 200 megawatt hours. And the third -- I
3 will call it a program because it is a number of
4 projects spread across a few locations -- is
5 141 megawatts, 423 megawatt hours.

6 Q. And out of that last category, what is the
7 largest storage facility in that group?

8 A. BY MR. CLARK: I am trying to remember. I want
9 to say 30 megawatts, 90 megawatt hours. I will have to
10 confirm that.

11 Q. And is it contemplated that any of these storage
12 facility installations will come before the Line Siting
13 Committee in conjunction with a possible line
14 reconfiguration or --

15 A. BY MR. CLARK: I don't know a whole lot about
16 the CEC, so I can't opine on the second one. I can tell
17 you the ones we own, the third category, they will not,
18 because they are distribution connected.

19 Q. Okay.

20 A. BY MR. SPITZKOFF: Sorry. I can add the second
21 project will not either. It is connected to a facility
22 that is less than 100kV.

23 Q. Okay. And all of these facilities are also
24 lithium-ion facilities?

25 A. BY MR. CLARK: Correct.

1 Q. And is it the same type of technology that's
2 involved in this case?

3 A. BY MR. CLARK: At the cell level it is the same
4 technology.

5 Q. Okay. I want to ask you about best practices.
6 That seems to be a very much developing area yet, is
7 that correct?

8 A. BY MR. CLARK: Correct.

9 Q. What I would like to ask you about are best
10 practices in conjunction with the placement of a storage
11 facility. Do such best practices exist?

12 A. BY MR. CLARK: The current codes and standards
13 contemplate different locations. Be it remote is a
14 classification within NFPA 855. Remote is classified as
15 100 feet away from any structures, essentially. And so
16 yes, they do contemplate the location of the batteries.
17 And then once that's considered, there are different
18 requirements within those standards on how to build or
19 design the facility.

20 Q. And do you know if this current facility meets
21 those requirements?

22 A. BY MR. CLARK: There is not particular
23 requirements on how to site it, but within the context
24 of its classification within the standards, it does meet
25 the requirements of how to build and construct the

1 facility. They don't contemplate where to place it.
2 But once it is placed somewhere, there are then
3 requirements that this project is adhering to.

4 Q. So there are no best practices then with respect
5 to the location of the facility, for instance, how far
6 away from residential structures should it be or --

7 A. BY MR. CLARK: Generally that 100 foot boundary
8 is considered, is what classifies it as remote. And
9 that is when certain exemptions come into place.
10 Because my understanding of the standard is that the 100
11 foot is a sufficient boundary to allow for certain
12 exemptions on the design.

13 However, our APS requirements don't necessarily
14 allow for those exemptions. We will add additional
15 requirements on it. So I would just to say more
16 clearly, 100 foot is considered an appropriate boundary
17 for the risks of the battery energy storage facility
18 generally in those standards.

19 Q. And who set that standard?

20 A. BY MR. CLARK: The National Fire Protection
21 Association. The standard called 855 is considered one
22 of the most developed standards for battery safety. It
23 is a working group made up of industry manufacturers,
24 firefighters, code officials. They all contribute to
25 that standard.

1 Q. Okay. Are other bodies also looking into that,
2 such as EPRI, or is this more of a local standard that's
3 set?

4 A. BY MR. CLARK: This is a national standard.

5 Q. Okay.

6 A. BY MR. CLARK: The International Fire Code is
7 adopting a lot of the standards from 855 into the IFC,
8 which then gets adopted into codes by jurisdictions as
9 they may over time adopt those into.

10 Q. Okay.

11 CHMN. CHENAL: Member Noland.

12 MEMBER NOLAND: Thank you.

13 Excuse me just one minute, Ms. Scott.

14 I wanted to follow up on one of your questions
15 about the projects, not only that are underway, that you
16 already have as APS as a BESS project. Do you have to
17 go through rezoning on those sites?

18 MR. CLARK: The projects we own and are
19 building, we are building them within the existing solar
20 PV boundary, so within the fence line. We are going to
21 all the jurisdictions and asking and making sure that we
22 don't -- you know, to see if we do need special use
23 permits or what may be required there. I believe a few
24 of the sites we are having to get special use permits,
25 but I don't believe rezoning is part of that.

1 MEMBER NOLAND: Okay. And then on those sites
2 in Maricopa County, for instance, you would have to
3 comply with the uniform fire code that's adopted by
4 those entities, would you not?

5 MR. CLARK: Yes. We are following whichever
6 jurisdiction has their codes, but we have noticed the
7 codes are actually older versions that haven't
8 contemplated these new requirements. So we are actually
9 using these exact same APS safety requirements to build
10 our current facilities. So we are well beyond whatever
11 existing codes, or standards or codes that have been
12 adopted by the jurisdictions.

13 MEMBER NOLAND: And many times jurisdictions are
14 behind the curve a little bit in adopting those codes,
15 aren't they?

16 MR. CLARK: Correct.

17 MEMBER NOLAND: Thank you.

18 Thank you, Ms. Scott. I am sorry to interrupt
19 your questioning.

20 MS. SCOTT: No, that's fine. Thank you.

21 BY MS. SCOTT:

22 Q. And it is my understanding that the battery
23 storage facility, there will not be personnel on-site
24 that will oversee its operation, but, rather, that would
25 be done remotely, is that correct?

1 A. BY MR. CLARK: I will have to defer to AES's
2 exact staffing plans, but generally battery storage
3 facilities don't need to be manned all the time.

4 Q. Okay. Let me see. I had a couple other.

5 Let me ask you just a few questions here. You
6 concluded, or APS concluded, that the McMicken event was
7 caused by a thermal runaway due to a cell failure, and
8 concluded that at -- let's see. I am sorry. I am
9 reading from one of the Staff member's questions.

10 It was caused by a thermal runaway due to a cell
11 failure, and it was concluded that the event was caused
12 by an external heat source, is that correct?

13 A. BY MR. CLARK: I believe that our report
14 included, or DNV-GL, who had completed that report for
15 us, concluded there was an internal defect that led to a
16 thermal runaway of that cell.

17 Q. Let me clarify that. APS concluded that the
18 event was caused by thermal runaway due to a cell
19 failure, but LG Chemical concluded that event was caused
20 by an external heat source?

21 A. BY MR. CLARK: I believe LG Chemical's report
22 did claim that the cell failure was different from our
23 conclusion.

24 Q. Do the safety mechanisms of the planned BESS
25 take into account thermal runaways caused by either cell

1 defect or an external heat source?

2 A. BY MR. CLARK: So the cause of the failure of
3 the thermal runaway at a cell is not necessarily all
4 that important when you are doing safety analysis. It
5 is the cascading part of it, and understanding the type
6 of gas, the volume of gas that comes out.

7 So whatever may cause it to fail, what we -- our
8 report and conclusions and recommendations are to stop
9 the cascading portion of that and to do all the testing
10 ahead of time to understand what are the hazards and how
11 to minimize or mitigate the hazards of the failure.

12 Q. Is there a method yet, in your opinion, to stop
13 a thermal runaway?

14 A. BY MR. CLARK: A thermal runaway can be caused
15 by a number of things, heating sources, electrical
16 abuse, mechanical abuse, or internal defect. Some of
17 those can be stopped. There is battery management
18 systems overlaid that can stop electrical abuse.
19 Mechanical abuse can be -- is well protected by the
20 steel enclosures. Internal defects, those are tough to
21 stop with thermal runaway, but the design of the system,
22 the module, the racks, those can be designed to avoid
23 cascading thermal runaway.

24 Q. And how many different fire suppression and
25 explosion prevention systems have been tested?

1 A. BY MR. CLARK: Tested in which way? There are a
2 number of fire suppression systems available on the
3 market that have been out for many years, deflagration
4 or explosion design. Again, we are adopting protection
5 systems that have been out for decades. We are just
6 building them into the systems as they exist today.

7 Q. And those were tested in conjunction with this
8 structure as well?

9 A. BY MR. CLARK: The results I saw during our
10 evaluation was that AES had done, or/and their supplier
11 groups had done a very thorough testing of the safety
12 designs for this project.

13 Q. Okay. Then I forgot to ask you earlier. You
14 went over the projects in Arizona. But there was one
15 that you talked about in California. Is it at Moss
16 Landing?

17 A. BY MR. CLARK: Correct.

18 Q. And you said that that one would be a total of
19 800 megawatts all in one location?

20 A. BY MR. CLARK: 400 megawatts, 1,600 megawatt
21 hours.

22 Q. Is that the largest in the United States that
23 you are aware of?

24 A. BY MR. CLARK: Yes.

25 Q. And if you would look nationally, what would be

1 the second largest storage facility in operation today,
2 if you know?

3 A. BY MR. CLARK: I don't. I should have looked it
4 up while I was looking at the other ones. I don't know
5 the answer.

6 Q. Would it be possible for you to look that up and
7 provide that later?

8 A. BY MR. CLARK: Yes, I can look that up.

9 Q. Okay. And with respect to the California
10 facility, can you give us any more information about
11 that one, its location and the type of storage
12 technology utilized?

13 A. BY MR. CLARK: They don't release a whole lot of
14 details in the press releases. I do know it is located
15 on an existing generation facility.

16 From the pictures, what I could -- this is
17 speculation, but from the pictures it does look like it
18 is an LG Chem system. That may even have been stated in
19 the report. So that's typically a different chemistry
20 than what -- an older chemistry, older technology than
21 what we are using here.

22 Q. And what type of technology would that be?

23 A. BY MR. CLARK: Typically LG Chemical utilizes
24 nickel manganese cobalt. And these projects, all three
25 of our contracted and owned projects, are using a

1 lithium iron phosphate.

2 Q. Are there any advantages to your technology
3 versus the one that LG Chem is using?

4 A. BY MR. CLARK: So far the results from the large
5 scale fire testing have shown that the cascading portion
6 of thermal runaway does not occur in the lithium iron
7 phosphate systems.

8 Now, that's not necessarily inherent to the
9 chemistry. It can also be designed into the module or
10 rack level in order to avoid that cascading portion. So
11 it is not -- I can't say with 100 percent certainty that
12 one is safer over the other. It is really dependent on
13 the full system design and how they build that from the
14 ground up.

15 Q. Okay. And is the California facility located
16 near a solar facility, or is it a stand-alone facility?

17 A. BY MR. CLARK: I don't believe it is paired with
18 solar; I believe it is a stand-alone.

19 Q. And --

20 A. BY MR. CLARK: I will have to confirm that.

21 Q. Okay. Do you know the location of that facility
22 with respect to any residential structures?

23 A. BY MR. CLARK: I don't. I will have to look
24 that up.

25 Q. Okay.

1 A. BY MR. CLARK: I do believe it is in an
2 industrial area, but I can check that.

3 Q. Okay. I would appreciate that. Thank you.

4 MEMBER GRINNELL: Mr. Chairman.

5 CHMN. CHENAL: Yes, Member Grinnell.

6 MEMBER GRINNELL: I don't want to interrupt, but
7 I do want to go back to fire suppression issues. And I
8 am going back almost 50 years for basic electrical
9 training and firefighting.

10 Wouldn't eliminating oxygen from the fire source
11 be the most expedient way to address this cascade issue?
12 And if so, is there a way to do that with these systems
13 you currently have?

14 MR. CLARK: Member Grinnell, I couldn't opine on
15 this particular system. I do know that some batteries,
16 when they go into a thermal runaway, can actually
17 produce their own oxygen, and so they can self-sustain
18 their own thermal runaway event.

19 But I can't opine if it would help this
20 particular system. We have seen and our report shows
21 the best methods to stop the cascading is to design the
22 module level systems to address the amount of heat
23 released from a cell that goes into thermal runaway.
24 That thus far has been the most effective and consistent
25 across different technologies that we have seen.

1 CHMN. CHENAL: We are getting to the point where
2 I think it is time for a morning break. We have gone a
3 little over 90 minutes from when we actually started.
4 And so I think there is going to be some follow-up
5 questions based on the questions Ms. Scott has been
6 asking.

7 So let's take a 10-minute break, and then we
8 will resume with any further questions of Ms. Scott, any
9 follow-up questions, and then we will see what time
10 remains for Ms. Grabel to bring her clients or her
11 witnesses onboard.

12 Okay. So let's take a 10-minute break. Thank
13 you.

14 (A recess ensued from 10:51 a.m. to 11:19 a.m.)

15 CHMN. CHENAL: All right, everyone, let's resume
16 the morning portion of the hearing.

17 Ms. Scott, I believe you were asking questions
18 of one or more of the witnesses. So please proceed.

19 MS. SCOTT: Yes. And Chairman, just to give you
20 an idea, I just have three follow-up questions and then
21 I am finished for now.

22 CHMN. CHENAL: Thank you.

23 BY MS. SCOTT:

24 Q. Mr. Clark, you spoke about NFPA section 855
25 before, correct?

1 A. BY MR. CLARK: Correct. NFPA 885 is the
2 standard.

3 Q. And you were talking about it requiring the
4 station to be 100 feet away from a residence, correct?

5 A. BY MR. CLARK: It doesn't require. It just
6 triggers different standards, portion of the standards.
7 In fact, NFPA 855 contemplates batteries in people's
8 houses and within businesses. So it just would -- those
9 would then trigger different requirements.

10 Q. Okay. We were looking at that section a moment
11 ago. And it defines a remote location as 100 feet away
12 from any property that can be built on. Do you agree
13 with that?

14 A. BY MR. CLARK: I believe so. I would have to
15 verify the language, but I believe that's one of the
16 things, yes, one of the stipulations of being remote.

17 Q. And do you know if that location is 100 feet
18 away from any property that can be built on?

19 A. BY MR. CLARK: I am not familiar with what land
20 around it could be built on.

21 Q. Okay. The other follow-up question I had was
22 you were talking about the McMicken facility at one
23 point, and the proximity of it to residential
24 development, correct?

25 A. BY MR. CLARK: Correct.

1 Q. Subject to check, would you be surprised if I
2 told you that the closest residence to the McMicken
3 facility was over 1200 feet away?

4 A. BY MR. CLARK: I did look that up during our
5 break, and I did see it was a thousand foot, thousand or
6 1200 feet, roughly, if you want to use that. It depends
7 where you define the points.

8 MS. SCOTT: Okay. Thank you. That's all I
9 have, Chairman.

10 CHMN. CHENAL: All right. Thank you very much.

11 I know the Committee has a few questions. I
12 have just a quick question.

13 The LG Chem analysis of the previous event
14 determined it was an external thermal cause of the
15 failure, is that correct.

16 MR. CLARK: LG Chem did come to a different
17 conclusion on the failure. I can't recall what they
18 meant by external thermal source, but I can at least
19 confirm.

20 CHMN. CHENAL: What are possible examples of an
21 external thermal source that might cause such a failure?

22 MR. CLARK: I believe their claim was something
23 to do with electrical arcing, some sort of short within
24 the -- between the rack and the battery itself.

25 CHMN. CHENAL: Okay.

1 MR. CLARK: I would have to go confirm that, but
2 I believe it had something to do that.

3 CHMN. CHENAL: Thank you.

4 Member Branum, did you have some questions,
5 follow-up questions?

6 MEMBER BRANUM: Yes. Thank you, Chairman.

7 Earlier we discussed a hypothetical. I think
8 Mr. Spitzkoff discussed what the impact would be in a
9 worst case scenario failure, catastrophic. And we
10 touched on, I think, just the perspective of the impact
11 to Westwing.

12 I was curious if someone on the panel could walk
13 us through what it looks like for this system and
14 configuration, what it looks like when it does fail and
15 then what that impact would be on the other side, to the
16 north, to those residential structures. So I think we
17 have the perspective of grid reliability and Westwing,
18 but what is that other perspective?

19 Thank you.

20 MR. CLARK: Thank you, Member Branum. I can
21 answer that.

22 So when we talk catastrophic, it sounds -- it is
23 a strong word, because if you look at the worst case
24 scenario in this scenario, or for this project, I
25 believe it to be at the enclosure level, which is the

1 .75 megawatt hour roughly size enclosure.

2 In the event of the cell failure, what would
3 happen -- or, I am sorry, a cell thermal runaway -- is
4 that a certain volume and type of flammable gas would be
5 released within that enclosure. There has to be, given
6 the volume of the enclosure, there has to be a certain
7 amount of that gas for it to become flammable, the
8 environment to become flammable.

9 Any gas or mixture of gases have a lower
10 flammability limit and upper flammability limit. And so
11 I would need AES to confirm this, but I do believe one
12 cell failure would not be enough to reach a lower
13 flammability limit. So there would actually be, in that
14 scenario, no event.

15 A worst case event would be if, for some reason,
16 that cell did cascade, that thermal runaway did cascade
17 and there were additional cells and enough gas to get to
18 the lower flammability limit, that would -- and then
19 there was a source that would trigger that, which isn't
20 certain either, given the design, there is a pressure
21 relief panel built into the enclosure that would release
22 that pressure in a controlled manner. And so this would
23 be, in my mind or in my opinion, this would be the worst
24 case scenario, is that that pressure would be released
25 from that one enclosure.

1 So when people think catastrophic, they are
2 envisioning this entire facility. Well, in my mind the
3 worst case would be the one enclosure failing, and
4 failing in a controlled and expected manner. And in
5 that scenario there would be no impact to anyone, any of
6 the residences.

7 MEMBER BRANUM: Okay. Thank you.

8 I have one follow-up. Were any of the concerns
9 related to the residential structures brought up by the
10 county when this project was contemplated, to your
11 knowledge?

12 MR. CLARK: I will have to defer to AES for
13 that.

14 MEMBER BRANUM: Okay. Thank you. That's all I
15 have for now.

16 CHMN. CHENAL: Thank you.

17 Member Hamway, did you have some questions?

18 MEMBER HAMWAY: Yes. Thank you, Mr. Chairman.

19 So I was a little bit concerned about the fact
20 that APS and LG Chem came to different conclusions on
21 the catastrophic event, the cascading thing. So that's
22 one thing. But I had a question.

23 So was the McMicken, was that an LG Chem?

24 MR. CLARK: Yes. That's why they did, LG Chem
25 did a subsequent study, because that was their batteries

1 and --

2 MEMBER HAMWAY: So it was nickel and magnesium,
3 and the third element you said?

4 MR. CLARK: Nickel manganese cobalt.

5 MEMBER HAMWAY: Cobalt. So the new one, the one
6 that APS is doing now, is a lithium-ion, correct?

7 MR. CLARK: Nickel manganese cobalt is a type of
8 lithium-ion.

9 MEMBER HAMWAY: Oh, okay.

10 MR. CLARK: Lithium-ion is the overarching term.

11 MEMBER HAMWAY: Okay.

12 MR. CLARK: And then there is many
13 chemistries --

14 MEMBER HAMWAY: Okay.

15 MR. CLARK: -- beneath that.

16 MEMBER HAMWAY: Okay. So the technology really
17 hasn't changed much. It is just the manufacturer. So
18 AES is a manufacturer and LG Chem is a manufacturer?

19 MR. CLARK: AES is the developer, and they are
20 procuring their batteries from a manufacturer called
21 Fluence. And then it gets down to who makes the
22 modules, the racks, and that's a different OEM for that.

23 MEMBER HAMWAY: Right. So yesterday when I
24 asked about failure, failure of these cells, and you
25 said between 100,000 and 1 million or something like

1 that, you kind of trailed off and I didn't follow up.
2 So are those numbers -- answer the question. So is
3 there an industry standard of how many cells, you know,
4 in a batch, how many might be bad?

5 MR. CLARK: There is no industry standard or
6 expectation of that at this time.

7 MEMBER HAMWAY: Okay.

8 MR. CLARK: It was dependent on the
9 manufacturer.

10 MEMBER HAMWAY: Okay. And so is the LG Chem,
11 would you call that an older technology, necessarily?

12 MR. CLARK: Not necessarily. The LG Chem nickel
13 manganese cobalt product is continuing to be used in
14 electrical vehicles across the world. It is going to be
15 very prominent throughout that.

16 What we are seeing is the utility industry for
17 stationary storage is going towards, and it is not
18 100 percent, but they are moving towards this lithium
19 iron phosphate, which is also lithium-ion technology.
20 It is just under the umbrella.

21 So I wouldn't say it is older. It is just we
22 are starting to see it move towards a different type.
23 It is no guarantee that will stay that way, but this
24 project is that type.

25 MEMBER HAMWAY: Okay. So Ms. Scott asked you if

1 this technology was experimental --

2 I think was your term.

3 MS. SCOTT: Infancy.

4 MEMBER HAMWAY: Infancy, infancy.

5 So I am going to ask it a different way. Would
6 you say this is proven technology or is it still
7 experimental?

8 MR. CLARK: Lithium iron phosphate is a proven
9 technology. It is commonly used in power tools and
10 other types of, you know, battery-powered devices.

11 MEMBER HAMWAY: Okay. That doesn't really
12 answer the question. I am sorry. So I guess having a
13 lithium battery and a flashlight doesn't really scale
14 for me the kind of technology that we are putting into
15 this thing.

16 So is there another technology out there right
17 now? If right now it is lithium-ion, is there
18 another -- you know, like, for example, I always thought
19 it was going to be hydrogen cars that took off. It is
20 electric cars that took off. So is there another
21 chemical makeup out there of a future battery that is in
22 its infancy that we are looking at?

23 MR. CLARK: There is a number of technologies
24 out there. The issue mostly has to do with commercial
25 terms and their reliability. The lithium-ion is, you

1 know, good backing for commercial agreements, and then
2 also we -- there is understanding of, you know, that it
3 will remain highly reliable, which we need for our
4 peaking capacity asset that these are.

5 MEMBER HAMWAY: Okay. One last question. I am
6 going to go back. So is it troubling to APS that
7 LG Chem and APS came up with different conclusions on
8 what happened at McMicken -- is it McMicken -- whatever
9 it is?

10 MR. CLARK: In my view their differing opinion
11 on the cause of the failure is not a concern to me. It
12 is what happens when a cell fails. And understanding
13 that, we have to be able to control the cascading effect
14 of that and to be able to understand the hazards that
15 come out when it fails and design a safe system around
16 that.

17 MEMBER HAMWAY: All right. Thank you,
18 Mr. Chairman.

19 CHMN. CHENAL: Member Noland.

20 MEMBER NOLAND: Thank you.

21 Mr. Clark, what type of batteries are used in a
22 homeowner's solar system?

23 MR. CLARK: It can be a mix. I think the most
24 common ones or the two most popular ones I believe are
25 the Tesla Power Walls and the LG Chem units. The Tesla

1 ones I believe are either nickel manganese cobalt, again
2 a lithium-ion product, or nickel cobalt aluminum. I
3 can't recall which one it is. And then the LG Chem ones
4 I am fairly certain are the nickel manganese cobalt as
5 well.

6 MEMBER NOLAND: Are there the same kind of
7 concerns about fire or failure that would cause a fire
8 for a homeowner? Because a lot of those are within the
9 home, are they not?

10 MR. CLARK: I can't speak to all the
11 installations where they are located. There are
12 certainly, with any electric chemical storage, concerns
13 there. And that's part of why NFPA 855 was developed,
14 to come up with best practices for the installation of
15 behind-the-meter installations where there might not be
16 as much scrutiny as a utility would put it on for our
17 own assets.

18 MEMBER NOLAND: Thank you.

19 CHMN. CHENAL: Just a couple follow-up
20 questions, Mr. Clark. Is there a useful life for the
21 cells that will be in the BESS?

22 MR. CLARK: Mr. Chairman, the useful life is
23 generally stated as 15 to 20 years, depending on the use
24 case. For these we expect a 20-year asset.

25 CHMN. CHENAL: And is there a way, is it

1 possible to, if a cell goes bad, to remove it and
2 replace the cell?

3 MR. CLARK: There is, yeah. Typically the
4 module will slide out of the rack and then you can
5 replace -- you can take the module to a safe location to
6 do maintenance.

7 CHMN. CHENAL: And I assume there is a remote
8 monitoring system that would let AES or whoever is
9 operating this know if a cell went bad and needs to be
10 replaced?

11 MR. CLARK: Correct.

12 CHMN. CHENAL: Okay. Any further questions from
13 the Committee?

14 (No response.)

15 CHMN. CHENAL: All right. Thank you.

16 Then, Ms. Grabel, I think we are with you.

17 MS. SPINA: Mr. Chairman, I do have some
18 redirect.

19 CHMN. CHENAL: Okay, certainly.

20 MS. SPINA: Unless you prefer I hold it to after
21 Ms. Grabel or --

22 CHMN. CHENAL: Let's do it now, Ms. Spina, while
23 it is fresh in our heads.

24 MS. SPINA: Thank you.

25

1 DIRECT EXAMINATION

2 BY MS. SPINA:

3 Q. Mr. Spitzkoff, let's start with you, if we
4 could. Ms. Scott asked you a series of questions about
5 the large generator interconnection agreement and
6 process, and I think one of the questions was around the
7 differences between large generators and small
8 generators and how they are treated in the process.

9 I think you mentioned that the study work is
10 largely the same and, in fact, they are sometimes even
11 done together in the same cluster. But are there other
12 differences in the process itself, or in the timing, for
13 example, that may be relevant for the purposes of the
14 record?

15 A. BY MR. SPITZKOFF: Well, yes, there are
16 differences. And I mean there is potentially a lot of
17 small differences. So I really don't think the record
18 needs --

19 Q. Well, let me ask it differently. I think what I
20 heard you say is the study work is sort of the same. So
21 if you had to sort of categorize into one bucket what
22 the major differences are between small generators and
23 large generators, my question, I think, is is it largely
24 procedural.

25 A. BY MR. SPITZKOFF: Yes, it is largely

1 procedural.

2 Q. Okay. Thank you.

3 Ms. Scott also asked about whether there are
4 standard pro forma agreements or whether there will be
5 provisions that are negotiated in this agreement. And I
6 think you mentioned that there will likely be some
7 aspects of this agreement that will be negotiated
8 because of the joint participant nature of the systems
9 to which it is interconnecting.

10 When that happens, when you are all negotiating
11 various aspects of those agreements, is it typically
12 around the transmission aspect, or is it typically
13 around the generator configuration? What does the LGIA
14 cover?

15 A. BY MR. SPITZKOFF: The LGIA would cover the
16 interconnection facilities and any identified network
17 upgrades, and sort of the relationship between the
18 interconnector and the parties to which they are
19 connecting. It doesn't cover the configuration of the
20 generating facility itself.

21 Q. So even in situations where there might be
22 aspects of the LGIA that are negotiated, you would not
23 be negotiating things that are specific to the
24 generating piece of the project, is that correct?

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

1 Q. Okay. Chairman Chenal had asked about whether
2 this agreement, I think he asked whether all LGIAs are
3 filed with FERC and if they are public. Are all LGIAs
4 filed with FERC, or is there something specific with
5 this one that makes it nonconforming?

6 A. BY MR. SPITZKOFF: Any nonconforming LGIA would
7 be filed with FERC. And any LGIA that has pro forma I
8 don't believe is -- so I don't want to get into the
9 minutia of this, but I don't think they are specifically
10 filed at FERC. Because it is a pro forma, we just sort
11 of file like the statistics of it and not the actual
12 agreement. Because the agreement is the pro forma
13 version. So it doesn't need to be filed and approved.

14 Q. Okay. But whether filed or not, they are still
15 public and available for individuals to review, correct?

16 A. BY MR. SPITZKOFF: Yes.

17 Q. And this particular one, I think you mentioned,
18 is nonconforming and will therefore be filed with FERC,
19 correct?

20 A. BY MR. SPITZKOFF: Yes.

21 Q. Okay. Ms. Scott gave you a hypothetical, I
22 think, involving a catastrophic failure involving an
23 explosion of the storage facility. What is the
24 likelihood of that type of a catastrophic failure
25 occurring?

1 A. BY MR. SPITZKOFF: Well, I can't put a number to
2 it, but, you know, as Mr. Clark has just testified to,
3 an explosion that I think most people are picturing in
4 their mind, you know, a big fireball is typically not
5 the way these systems would fail. So it would be
6 unlikely, is how I would characterize it.

7 Q. Okay. Thank you, Mr. Spitzkoff.

8 Mr. Clark, turning back to you now, you spoke a
9 bit about best practices and sort of the classification
10 about remote, or I am assuming the alternative
11 classification is nonremote.

12 Are those -- I sort of had -- I think there was
13 a little bit of confusion, at least in my mind, about
14 whether the remote 100-foot distance from structures was
15 a requirement or whether it was simply a criteria for
16 determining whether a facility was classified as remote
17 or the alternative to remote, whatever that may be. Can
18 you confirm?

19 A. BY MR. CLARK: It is the latter. It is a
20 criteria for classifying what the facility is.

21 Q. And are facilities that are not 100 feet away
22 and therefore don't satisfy the designation or the
23 classification as being remote, are those currently more
24 risky or less safe than remote facilities?

25 A. BY MR. CLARK: No. It would just require

1 certain additional layers of design.

2 Q. Okay. And so if I understood you correctly,
3 entities or facilities that qualify for that remote
4 designation may be eligible for some exemptions of
5 requirements that would otherwise be applicable, is that
6 correct?

7 A. BY MR. CLARK: That's true. And I would like to
8 add that the APS safety requirements which this project
9 will adhere to don't allow for those exceptions. We
10 actually still require all of the necessary hazard
11 mitigation analyses and models and studies and
12 everything beyond that, those requirements, for either
13 type of installation.

14 Q. Okay. Thank you.

15 Mr. Clark, we spoke a bit about the Moss Landing
16 project in California and the type of technology that it
17 utilized. Just for clarity, is the technology utilized
18 by Moss Landing the same as the technology being
19 proposed by AES in this battery storage installation?

20 A. BY MR. CLARK: It is not the same at the exact
21 chemistry level. They are both lithium-ion, but the
22 Moss Landing is the, I believe, from what I have seen,
23 is the nickel manganese cobalt type, and this project
24 would be a lithium iron phosphate.

25 Q. Okay. And again just for clarity, so the Moss

1 Landing technology is actually the same as the McMicken
2 technology, but different than the Westwing technology,
3 correct?

4 A. BY MR. CLARK: Correct.

5 Q. Okay. We talked a bit about the distance of the
6 McMicken battery installation from the nearest residence
7 versus the distance in this proceeding of the battery
8 installation from the nearest residence. And if I am
9 recalling correctly, I think currently our current
10 situation is 150 feet. And McMicken was somewhere in
11 the ballpark of a thousand to 1200 feet away from the
12 nearest residence. Is that correct?

13 A. BY MR. CLARK: What was the first?

14 Q. 250 feet, I thought I heard.

15 A. BY MR. CLARK: Okay. I believe that's what I
16 heard, yes.

17 Q. Ballpark. If my number is off a little,
18 ballpark.

19 A. BY MR. CLARK: Yes.

20 Q. In your opinion, does that differential in
21 distance materially increase the safety risks of the
22 current project?

23 A. BY MR. CLARK: No.

24 Q. And in fact, the McMicken battery installation
25 was only a handful of feet away from the Westwing

1 substation, and the event did not have any impact on
2 that structure, is that correct?

3 A. BY MR. CLARK: Correct, 15 feet wall to wall.

4 Q. Okay. Chairman Chenal asked a question about
5 the LG Chem report, and the fact that they had a
6 different conclusion regarding the source of the fire.
7 I think we heard that LG Chem determined that there was
8 an external heat source that caused the event, whereas
9 APS's conclusion in the McMicken investigation was that
10 it was a thermal runaway event due to cell failure, is
11 that correct?

12 A. BY MR. CLARK: Internal defect, yes.

13 Q. Internal defect. Does the source of the event,
14 the cause of the event matter in this instance, or with
15 respect to the safety parameters that should be in
16 place?

17 A. BY MR. CLARK: It does not.

18 Q. So the safety considerations are identical,
19 regardless of whether it was external source, heat
20 source, or an internal failure, correct?

21 A. BY MR. CLARK: Correct.

22 Q. Just a point of clarification just for the
23 record. Member Hamway, I think, was asking also a
24 question along the same vein and referred to the current
25 battery project as a project that APS is doing.

1 Just for clarity, APS is not developing the
2 battery, correct?

3 A. BY MR. CLARK: Correct.

4 Q. That's an AES battery project?

5 A. BY MR. CLARK: Yes.

6 MS. SPINA: Okay. I think that's all I have.
7 Thank you very much. Appreciate it.

8 CHMN. CHENAL: Quick follow-up question. I
9 don't know if it is for Mr. Spitzkoff or Mr. Clark.

10 The typical power purchase agreement versus the
11 power purchase agreement in this case, in this case we
12 have the Exhibit W with certain, you know, safety
13 standards and standards that have to be met for this
14 project. Is that typical in power purchase agreements
15 entered into by APS, where there would be, you know,
16 specific standards and requirements as to construction
17 safety measures for the generation source, or is that
18 more specific to this battery, this BESS project.

19 MR. CLARK: Mr. Chairman, I can take that. This
20 is unique to our power purchase agreements. This is
21 much further than we typically go to on a technical
22 basis for a power purchase agreement, because we do
23 recognize that the industry is new and the standards and
24 codes are lagging. And so we wanted to make sure that
25 we had what we felt and our consultants felt were the

1 best practices for all of our contracted resources.

2 CHMN. CHENAL: Thank you.

3 Any further questions, any further redirect,
4 cross at this time?

5 (No response.)

6 CHMN. CHENAL: I am going to try it one more
7 time. I haven't had much success, Ms. Grabel.

8 MS. GRABEL: Fourth time is a charm.

9 CHMN. CHENAL: Well, I'll try it again, turn it
10 over to you. I recognize it is, you know, it is quarter
11 to 12:00. But I think we can make some progress here,
12 and I'll defer to how long you would like to go.

13 MS. GRABEL: Certainly. Perhaps we can --

14 CHMN. CHENAL: A little past noon is fine.

15 MS. GRABEL: Perhaps we can introduce the
16 witnesses, talk through some of the exhibits, and then
17 wait and have the PowerPoint presentation after lunch,
18 if that works.

19 CHMN. CHENAL: Sure.

20 MS. GRABEL: Great. And just for the record, I
21 would like to state that my colleague, Eli Ancharski,
22 from Osborn Maledon is with us today. And he will be
23 standing in for me starting at 3:00, because I have
24 another obligation, as long as our witnesses are
25 finished. If they are not finished, he is going to go

1 cover my conflict.

2 So will the AES panel turn on their cameras if
3 you haven't already.

4 And the AES panel, as I mentioned previously, is
5 made up of four individuals: Mr. Manish Kumar,
6 Mr. Kristofer Kjellman, Mr. Piers Lewis, and Ms. Shruti
7 Ramaker. The two that will be walking through the
8 PowerPoint presentation are Mr. Kumar and Mr. Kjellman.
9 The other two individuals will be answering additional
10 questions that I pose on invitation from Staff at an
11 earlier conversation prior to this hearing, and any
12 questions, of course, that Committee members may have.

13 So with that, Mr. Kumar, will you please state
14 your name and business address for the --

15 CHMN. CHENAL: Let's swear the witnesses first.

16 MS. GRABEL: Oh, thank you.

17 CHMN. CHENAL: Apologies if I don't pronounce
18 your names correctly. But let's ask who would prefer an
19 oath versus an affirmation. Who will proceed by oath?

20 MR. KUMAR: This is Manish Kumar. I would
21 prefer an oath.

22 MR. KJELLMAN: Kris Kjellman. I would prefer an
23 oath.

24 MR. LEWIS: Piers Lewis here. I would prefer an
25 oath, too. Thanks.

1 MS. RAMAKER: I would prefer an oath as well.

2 CHMN. CHENAL: All right. Would you all four
3 raise your right hands, please.

4 (Manish Kumar, Kristofer Kjellman, Piers Lewis,
5 and Shruti Ramaker were duly affirmed.)

6 CHMN. CHENAL: Ms. Grabel.

7 MS. GRABEL: Thank you.

8

9 MANISH KUMAR, KRISTOFER KJELLMAN, PIERS LEWIS, and
10 SHRUTI RAMAKER,
11 called as witnesses on behalf of AES, having been
12 previously duly sworn by the Chairman to speak the truth
13 and nothing but the truth, were examined and testified
14 via videoconference as follows:

15

16 DIRECT EXAMINATION

17 BY MS. GRABEL:

18 Q. Mr. Kumar, will you please state your name and
19 business address for the record.

20 A. BY MR. KUMAR: Sure. My name is Manish Kumar.
21 Business address is 4300 Wilson Boulevard in Arlington,
22 Virginia. Zip code is 22203.

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

24 A. BY MR. KUMAR: I am employed by the AES
25 Corporation as a managing director of battery energy

1 storage.

2 Q. Will you please give the Committee a brief
3 summary of your education and background.

4 A. BY MR. KUMAR: Sure. I have earned a bachelor's
5 degree in engineering in electronics from the University
6 of Mumbai in India, and I also have an MBA from Columbia
7 Business School.

8 Q. Thank you.

9 You have before you a document marked AES-1.
10 This is the AES witness panel summary that was prepared
11 in this case. Was this document prepared by you or
12 under your direction and control?

13 A. BY MR. KUMAR: Yes.

14 Q. Thank you.

15 You should also have before you a document
16 marked AES-2, which contains a PowerPoint presentation.
17 Was AES-2 prepared by you or under your direction and
18 control?

19 A. BY MR. KUMAR: Yes.

20 Q. You will be presenting this presentation with
21 Mr. Kjellman, is that correct?

22 A. BY MR. KUMAR: Correct.

23 Q. All right. I would like to turn briefly to
24 Mr. Kjellman.

25 Would you please state your full name and

1 business address for the record.

2 A. BY MR. KJELLMAN: My name is Kris Kjellman. My
3 business address is 282 Century Place, Suite 2000,
4 Louisville, Colorado 80027.

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

6 A. BY MR. KJELLMAN: I work for the AES Corporation
7 as a battery storage project manager.

8 Q. Will you please give a brief summary of your
9 education for the Committee, Mr. Kjellman.

10 A. BY MR. KJELLMAN: Yes. I have a bachelor of
11 science in mechanical engineering from California
12 Polytechnic State University, San Luis Obispo.

13 Q. Thank you.

14 And before I ask Mr. Kjellman and Mr. Kumar to
15 walk through the presentation, I would like to introduce
16 the other two AES witnesses who will be present and will
17 be available to answer the technical questions.

18 Mr. Lewis, will you please state your name and
19 business address for the record.

20 A. BY MR. LEWIS: Yes. My name is Piers Lewis and
21 I am employed by Fluence Energy.

22 Q. Thank you.

23 What is your area of technical expertise with
24 respect to this matter?

25 A. BY MR. LEWIS: I have been an engineer, worked

1 in energy storage since 2010 in various roles at AES and
2 through Fluence Energy.

3 Q. Thank you.

4 And Ms. Ramaker, can you please state your name
5 and business address for the record.

6 A. BY MS. RAMAKER: My name is Shruti Ramaker. My
7 business address is 111 East Victoria Street in Santa
8 Barbara, California, zip code 93101.

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

10 A. BY MS. RAMAKER: Employed by Stantec as a
11 principal environmental planning and permitting
12 specialist.

13 Q. And what is your area of technical expertise?

14 A. BY MS. RAMAKER: I have been working on
15 permitting, licensing, conducting environmental reviews
16 of power projects over 20 years, covering --

17 Q. We have a court reporter here, and it is hard
18 for her to type if you -- and I am a terrible violator
19 of this, by the way, but if you speak too quickly. So,
20 if you could, try and slow down. It is also probably
21 difficult because you are presenting by Zoom.

22 If you could, just answer that last question one
23 more time a little bit more slowly.

24 A. BY MS. RAMAKER: Sure. I have been working on
25 permitting, licensing, and conducting environmental

1 review on power projects for over 20 years, including
2 renewable energy products and power lines.

3 Q. Thank you very much.

4 So, Mr. Kumar, one last question for you before
5 I turn the time to you and Mr. Kjellman to walk through
6 AES-2, or we take our lunch break, whichever the
7 Chairman determines is best.

8 Were you listening to the hearing testimony
9 yesterday and this morning?

10 A. BY MR. KUMAR: I was.

11 Q. Did you hear the questions that were posed by
12 various Committee members both yesterday and throughout
13 the day today?

14 A. BY MR. KUMAR: Yes, I did.

15 Q. And will you address some of those questions,
16 some of the questions that were raised during your
17 presentation today.

18 A. BY MR. KUMAR: Yes, I will.

19 MS. GRABEL: Okay. Great.

20 So, Mr. Chairman, would you like us to proceed
21 with AES-2, or would you like us to take a lunch break?

22 CHMN. CHENAL: Well, I will ask the Committee,
23 but I don't think it would hurt if we went for 15
24 minutes or so. I mean we have had kind of a -- we had a
25 break and we have only been going 50 minutes. So if it

1 is okay for the Committee, maybe if we go for another 15
2 minutes or so, unless there is an objection.

3 I don't have a good sense yet of how long this
4 testimony is going to take before we complete the
5 hearing. And, you know, I just say let's go another 15
6 minutes.

7 MS. GRABEL: Certainly. We are happy to do
8 that.

9 BY MS. GRABEL:

10 Q. So go ahead, Mr. Kumar, if you would like to
11 start walking through AES-2. And just so you know, we
12 have control of the presentation on our side. So when
13 you are ready to advance, just let us know and we will
14 go to the next slide.

15 A. BY MR. KUMAR: Sounds good.

16 Good morning, Chairman Chenal and respected
17 members of the Committee. Thank you for giving AES the
18 opportunity to speak in support of this project. I know
19 there have been a number of questions that have been
20 raised generically about battery energy storage in terms
21 of operation, engineering, chemistries, and safety. So
22 I am happy to answer all those as I am proceeding with
23 the presentation.

24 I do want to apologize in advance if I'm not
25 able to address Committee members by name. Since we are

1 on Zoom, I am not able to see their names. But I still
2 feel fortunate that we are able to attend remotely.

3 Having said that, can we please go to Slide
4 No. 2.

5 I want to start off by providing an introduction
6 of AES. AES Corporation is a Fortune 500 independent
7 power producer. We currently operate in 14 countries.
8 In the U.S. we own two utilities, namely AES Ohio and
9 AES Indiana. And we have a total of six utility or
10 distribution companies in other countries that we
11 operate.

12 Our 2020 revenues were approximately
13 \$10 billion, and we currently operate close to
14 30,000 megawatts of energy assets. Our portfolio
15 includes renewable assets that involves solar, wind,
16 hydro, battery energy storage, as well as other thermal
17 assets in the 30,000 megawatt portfolio.

18 Next slide, please.

19 I want to introduce Fluence Energy. In 2018,
20 AES and Siemens formed a 50/50 joint venture creating
21 Fluence Energy, which is the number one battery energy
22 storage integrator in the world. Fluence will be our
23 EPC contractor or solution provider for this project.
24 Fluence currently has over 150 projects, approximately
25 somewhere around 2700 megawatts awarded to contractors.

1 And you can see the list of customers that they have
2 provided energy storage solutions to.

3 I do want to take a step back to emphasize that
4 AES has been working on what I call stationary battery
5 energy storage projects as early as 2008. So between
6 AES and Fluence, we have over 13 years of experience
7 installing and operating stand-alone as well as
8 renewable energy integrated battery energy storage
9 projects in different countries around the world, in
10 different grid applications, whether it is transmission,
11 distribution, customer side, et cetera.

12 Our first large scale battery energy storage
13 project was installed in 2008 in the middle of the
14 Atacama Desert in Chile. It is one of the longest
15 running lithium-ion based projects in the world.

16 Next slide, please.

17 Let me focus on the aspects of the energy
18 storage project, also referred to as the ESP. In terms
19 of location, you can see in this slide the two squares
20 marked right next to the APS Westwing substation. The
21 north parcel, as we refer to, is the location of this
22 battery energy storage project. It is approximately
23 10 acres, of which AES has site control to approximately
24 half, or 5.5 acres. And the lower parcel, as we refer
25 to as the south parcel, is also approximately 10 acres.

1 And we will -- we have site control for approximately
2 half or five acres.

3 These two parcels are what we refer to as
4 Phase 1 and Phase 2, totaling up to 200 megawatts, four
5 hours, or 800 megawatt hours of potential battery energy
6 storage projects that are currently under the scope of
7 the CEC application.

8 Any questions so far before I move forward?

9 Okay. If not, next slide, please.

10 Let me start with the overview of the project
11 itself. It is located in unincorporated Maricopa
12 County. Phase 1, as we mentioned before, is contracted
13 under a power purchase or tolling agreement with APS.
14 It is a 20-year contract.

15 The project involves rebuilding of the existing
16 transmission line. And as was mentioned before, we have
17 received unanimous approval through the zone change
18 process converting from Rural-43 to light industrial
19 through a two-step process, so first approved by the
20 Maricopa County Zoning Commission back in May of this
21 year, and then subsequently approved during the Board of
22 Supervisors meeting in June.

23 As a condition of our approval, AES is required
24 to seek approval by the Arizona Fire & Medical Authority
25 that the project meets all the safety requirements

1 before we can begin construction, and post construction
2 we are required to receive a letter by the AFMA before
3 certificate of occupancy can be issued.

4 As you can see on the right side of the screen,
5 there is a simulation of both the 100 megawatt -- both
6 the -- each 100 megawatt projects, totaling 200
7 megawatts, or 800 megawatt hours.

8 Next slide, please.

9 Again, to continue the overview of the project,
10 I want to take a moment to share the parameters on site
11 selection and design. This site was selected based on
12 the capacity need specifically at the Westwing
13 substation. The site is adjacent to the substation,
14 resulting in a very short gen-tie line. The low
15 intensity use is compatible with the surrounding land
16 uses. And the design is based on Fluence's sixth
17 generation GridStack product which we will often refer
18 to based on a cube format.

19 CHMN. CHENAL: Mr. Kumar, just a moment before
20 we move to the next slide. What are we looking at in
21 the photo, in the simulation? Are those the modules,
22 individual modules, or what is it exactly we are looking
23 at, the white structures?

24 MR. KUMAR: Sure, absolutely. So if we can go
25 back to the previous slide, the essence of the design,

1 what you are seeing here in white is basically a number
2 of what we refer to as cubes or enclosures. Think of it
3 as a Lego block. Each cube or enclosure is roughly
4 eight feet by eight feet and nine feet. These cubes are
5 then arranged in sets of 44, which we call a core. And
6 then they keep repeating.

7 So what you are seeing in each of the two
8 layouts is roughly around what I refer to end of life
9 about 800 individual enclosures of cubes arranged in a
10 specific design. So the white blocks is an assembly of
11 around 800 cubes in the south parcel and 800 cubes in
12 the north parcel. And if you go to the next slide,
13 please, you can see another simulation that shows these
14 cubes.

15 CHMN. CHENAL: Yeah, Member Haenichen. Excuse
16 me.

17 MEMBER HAENICHEN: I just want to ask one
18 question. Could you put the previous slide back up so I
19 have it clear in my mind on the storage capacity of
20 these batteries.

21 So we have a collection of batteries that are
22 capable at full charge of holding 800 megawatt hours of
23 energy, is that correct?

24 MR. KUMAR: Correct, when both the projects are
25 up and running, that's correct.

1 MEMBER HAENICHEN: Okay. But now another
2 question. The 200 megawatt entry there is a power level
3 at which these can be charged. Does this mean that an
4 empty storage that has no storage in it can be fully
5 charged in four hours at a rate of 200 megawatts, four
6 continuous hours, or contiguous hours?

7 MR. KUMAR: Correct. The way the charge and
8 discharge, when we refer to megawatts and megawatt
9 hours, you can think of as capacity or megawatts on the
10 Y axis and duration or hours on the X axis. So a
11 100-hour four-hour duration project will take four hours
12 to charge and four hours to discharge.

13 MEMBER HAENICHEN: Okay. And then you could
14 scale that up with bigger --

15 MR. KUMAR: Absolutely.

16 MEMBER HAENICHEN: -- bigger --

17 MR. KUMAR: And I do want to emphasize the
18 battery energy storage is bidirectional and also
19 extremely flexible, as we will get into the details.
20 But at the same time, instantaneously, without any
21 changes to architecture, you can keep halving the
22 capacity and doubling the duration. So, for example,
23 100 megawatt, four-hour duration project is exactly the
24 same as a 50 megawatt, eight-hour duration project.

25 MEMBER HAENICHEN: Okay.

1 MR. KUMAR: So the --

2 MEMBER HAENICHEN: Go ahead.

3 MR. KUMAR: Sorry. Go ahead.

4 MEMBER HAENICHEN: Go ahead. I am sorry.

5 MR. KUMAR: I just wanted to mention, and there
6 are several applications of why we would want to
7 dispatch the project, and I will address a number of
8 questions that revolve around capacity and energy. So
9 maybe this is a good time for me to take a moment on why
10 do we even need battery storage.

11 Before the commercial large scale deployment of
12 battery energy storage, grid operators have been relying
13 on slower, inefficient resources, mostly thermal and
14 coal, and most nearly natural gas peaking plants, which
15 are, in my view, energy generators that are being used
16 for solving some of the power applications on the grid.

17 What are examples of power applications? Those
18 would be frequency regulation, voltage regulation, grid
19 stabilization, et cetera. And until large scale
20 deployment of batteries on the grid, grid operators and
21 transmission and distribution companies had to rely on
22 slower thermal or natural gas peaking plants to solve
23 some of these grid challenges.

24 Those technologies were not designed for
25 instantaneous dispatch or absorption of power. This is

1 where batteries come in. Batteries have no standby
2 costs. They are always on. They emit no emissions, no
3 noise. And they can respond to a signal within 200
4 milliseconds to provide the flexibility and resiliency
5 to the grid. That's why I just wanted to take a moment
6 to address that.

7 And if you look at costs, the best way to
8 analyze and evaluate costs associated with some of these
9 newer technologies is to look at the standby cost and
10 fuel cost of technologies such as natural gas peaking
11 plants that are mostly unutilized throughout the year,
12 but the cost associated, which we refer to as standby
13 costs, are being paid by the ratepayers.

14 So this is an issue of using technologies that
15 were not built to address some of these power
16 applications. But without having any other alternative
17 until battery energy storage, grid operators, as I
18 mentioned, distribution and transmission companies have
19 been relying on some of these slower technologies.

20 MEMBER HAENICHEN: That's a very good
21 explanation.

22 What is it that limits the rate at which the
23 battery pack can be charged? Is it the temperature that
24 arises in the batteries?

25 MR. KUMAR: It is only limited by the

1 composition of the battery itself. So again, our
2 project is currently built for four-hour duration, but
3 we are building and other developers are building
4 six-hour duration batteries, eight-hour duration
5 batteries.

6 AES currently operates a 20 megawatt solar
7 facility, along with a five-hour battery, on the island
8 of Kauai in Hawaii for the Kauai Island Utility
9 Cooperative. And that project, because it is coupled
10 with solar, primarily performed what we call an energy
11 load shifting application, which most people understand
12 it is basically taking solar energy during the day and
13 shifting it between the hours of, let's say, 6:00 p.m.
14 to 11:00 p.m. when the sun is set, which is one of the
15 applications that our project will be providing in
16 Arizona.

17 But at the same time, in the project that we
18 have in Hawaii, which if you go to the opening slide in
19 my presentation, there is a picture on the top right
20 corner, certain times during the day or even at night,
21 that project actually is operated on a 10-hour basis.
22 So if you remember what I said, it is a 20 megawatt,
23 five-hour battery, but it can instantaneously behave as
24 a 10 megawatt, ten-hour battery.

25 And so on the island, they are using the

1 battery, or the utility in this case, at times extending
2 their five-hour battery for critical load that is less
3 than the 20 megawatt to be supported on 10 hours, maybe
4 even 15-hour duration. And that's a huge benefit of the
5 flexibility that battery energy storage provides
6 compared to other technologies that are available today.

7 MEMBER HAENICHEN: Okay. I still want to go
8 back to an earlier question I asked you. What is it
9 that limits the rate at which the batteries can be
10 charged?

11 MR. KUMAR: Piers, do you want -- let me direct
12 that question to my colleague, Piers.

13 MR. LEWIS: Yeah. What limits the ability of
14 the project to charge? Are you asking, sir, about the
15 rate of the charging or limit how low the charge rate
16 could be?

17 MEMBER HAENICHEN: In other words, instead of
18 200 megawatts, what if 400 megawatts is going into the
19 battery? What limits that number?

20 MR. LEWIS: The energy capacity of the project.
21 So this project is 200 megawatts and 800 megawatt hours
22 of energy. So that's, you know, it could work at 200
23 megawatts for four hours from being empty to being full
24 and then from being full to being empty.

25 MEMBER HAENICHEN: Okay.

1 MR. LEWIS: So think about -- go ahead.

2 MEMBER HAENICHEN: What if you wanted it to
3 charge at 400 megawatts for two hours, what would
4 happen?

5 MR. LEWIS: That's a good question, right. So
6 the major pieces of equipment that we have in the
7 project are batteries that store the energy. That's
8 where -- sort of like the gas tank, you know, the level
9 of the gas tank is the level of the state of charge and
10 the amount of energy that's in the tank there.

11 The other big part, the important part of the
12 project is the inverters and transformers. And the
13 inverters, they turn, you know, the grid -- they
14 basically transform energy from the grid into battery DC
15 energy, from AC to DC. And then they also convert from
16 DC battery power back to the grid alternating current,
17 AC of the grid.

18 So those are the constraints on the maximum
19 power that can be produced by the project, you know, the
20 maximum discharge megawatts, power that can be produced
21 by the project towards the grid on discharge, and,
22 similarly, on charge, on taking power as a load to fill
23 the battery up, you know, from the grid.

24 MEMBER HAENICHEN: That's what I want to talk
25 about, is the charging part.

1 MR. LEWIS: Okay.

2 MEMBER HAENICHEN: What limits how fast that can
3 be done?

4 MR. LEWIS: Okay. So I see. Right, yes.

5 The main, the constraint is, the way we design
6 the systems, the inverter limits -- you know, the
7 maximum power rating of the inverter, the maximum
8 ability of the inverter to transform -- you know, the
9 alternating current from the grid transform those
10 electrons, you know, in passing through the inverter
11 block into direct current, DC. So charging the battery,
12 that's a piece of solid state equipment that has a
13 certain, you know, maximum rating, similar to how --

14 MEMBER HAENICHEN: I understand that. But
15 forgetting about the inverters for a minute, let's just
16 talk about the batteries themselves. What limits how
17 fast they can be charged? Is it temperature?

18 MR. KUMAR: It is the makeup of the battery
19 itself. Batteries have a C rating. And so based on the
20 specific application, like, for instance, in our
21 project, we are actually procuring a battery cell that's
22 rated for a particular C rating basically a four-hour
23 duration battery, if we were building a six-hour
24 duration project, we will procure a battery that's rated
25 for six hours. And to Piers' point, on the power side,

1 we are limited by the inverter itself.

2 And then if you take a step back, because our
3 interconnection is for 200 megawatts, we are then
4 limited at the project level to the point of
5 interconnection and the capacity that's been approved
6 for the project.

7 MEMBER HAENICHEN: No, I understand all that. I
8 understand the battery has a rating. But what factors
9 in the chemistry of the battery provide the information
10 needed to write down that rating?

11 MR. LEWIS: Manish, I can help answer that one.

12 In terms of different -- there is a whole range
13 of, you know, battery suppliers. And the battery
14 suppliers make different batteries, you know, based on
15 the C rate that they are going to operate, you know, the
16 charge rate that they are going to operate at.

17 And, you know, generally speaking, there are two
18 types of, two families of battery cells. There are the
19 power cells and the energy cells. And the power cells,
20 they really are working at, you know, the C rates of --
21 for example, projects where you have like a 10 megawatt
22 rating and it is holding 10 megawatt hours, that would
23 be a one-hour battery. That's a, relatively, a faster,
24 you know, power rating. So that's sort of used more,
25 the power battery cells for that application.

1 And then if you have a longer duration charge
2 and discharge and C rates, you know, for the two, three,
3 four, five, six hours kind of duration, then you use the
4 energy family. And the chemistries are a little bit
5 different. The designs of the cells are different, and
6 so on.

7 But in this project, the four-hour, you know,
8 with the four-hour rating, we are using a type of
9 battery that is suited to that sweet spot for that type
10 of battery. And we design our ancillary systems for
11 that battery application, you know, the cubes. We
12 have -- the cooling systems and the fusing systems and
13 the protection systems and so on of electrical
14 protection systems are all, you know, designed to suit
15 that maximum rating.

16 MEMBER HAENICHEN: Okay. But what happens to
17 the battery if you try to charge it way above the rating
18 of the battery? What happens?

19 MR. LEWIS: Well, I mean, you know, there is
20 various constraints in the system that prevent that from
21 even being able to happen physically.

22 MEMBER HAENICHEN: I understand that. But what
23 if you deliberately did it?

24 MR. LEWIS: I mean, you know, I am not -- I
25 haven't done testing. I am not sure I would be able to

1 answer that, unfortunately. I mean certainly if -- for
2 example, this is what our hazard assessment reviews and
3 general design, you know, criteria are all about, is
4 designing systems that, you know, don't allow that to
5 happen. And, you know, fuses will, protection devices
6 will trip and so on.

7 And just, quite frankly, the inverters, they are
8 not capable of providing, you know, those high levels of
9 power anyway. So, you know, we just, we just couldn't
10 do it. You know, we don't -- so in terms of -- you
11 know, it is hard to just -- it wouldn't -- it is really
12 not possible. So I don't know, you know.

13 MEMBER HAENICHEN: Okay.

14 MEMBER GRINNELL: Mr. Chairman.

15 CHMN. CHENAL: Member Grinnell, yes.

16 MEMBER GRINNELL: So if I am interpreting what
17 you are saying correctly, theoretically you aren't able
18 to overcharge your batteries. Would that be a fair
19 statement?

20 MR. LEWIS: Correct.

21 MEMBER GRINNELL: Thank you.

22 MS. GRABEL: Are there any additional questions
23 from the Committee on this topic?

24 (No response.)

25 BY MS. GRABEL:

1 Q. Mr. Kumar, did you want to say something
2 further, or do you want to move forward with your
3 presentation?

4 A. BY MR. KUMAR: I wanted to move forward, but I
5 also want to address some of the questions that were
6 raised. Let me start off by responding to the charging
7 question, whether it is going to be 100 percent
8 renewable energy or not.

9 I think as was mentioned before, the intention
10 is to charge the batteries with the excess solar that
11 will be available during the day. But APS will decide
12 both when and how to charge the batteries based on the
13 type of agreement which we have, which was traditionally
14 referred to as a tolling agreement, which means that it
15 is likely that they will be charging the batteries at
16 night when there is excess of cheap energy available
17 from the grid, and then dispatching the batteries at
18 times of peak need, which in this case will likely be
19 when the solar generation is ramping down during the
20 later hours of the evening and demand is rising
21 exponentially during the hours of 4:00 to 8:00 p.m. So
22 I just wanted to address that question first.

23 There was another question on how to measure
24 battery life. And the best way to think about batteries
25 is what we refer to as cycles. Each battery has

1 approximately between 4,000 to 4,500 cycles throughout
2 its life. Those cycles can be consumed very quickly if
3 those batteries are designed and used to what we call
4 power applications. As I mentioned earlier, examples of
5 those include second-by-second balancing for frequency
6 regulation, voltage regulation, et cetera.

7 This project is likely going to be used for one
8 cycle per day, or 365 annual cycles. That puts battery
9 life somewhere in the vicinity of 10 to 11 years.

10 Beyond that, because our agreement with APS is
11 for 20 years and maintaining the nameplate capacity, we
12 utilize a concept called augmentation. Think of it as
13 sort of topping off. So when batteries reach their
14 useful life of 10 to 11 years, they still have battery
15 life left in them, although not to the right efficiency
16 level. So instead of removing those batteries we
17 actually top off or add new ones. And this is how we
18 will maintain nameplate capacity on the 100 megawatt,
19 four-hour duration project for the entire 20 years of
20 life.

21 Another question was raised on recycling. And
22 so at the end of the project life, we will decommission
23 the project. And our contracts with our battery
24 suppliers require these batteries to be safely disposed
25 and/or recycled. And under the current regulation,

1 batteries have to be recycled in the country of
2 operation. And for our project, at the end of project
3 life these batteries will be recycled or can be recycled
4 by suppliers here in the U.S. And there are designated
5 recycling facilities that we are happy to provide names
6 and addresses where these batteries will be destined to
7 go.

8 Any questions so far?

9 Q. It doesn't look like it. Why don't you go
10 forward with your presentation.

11 A. BY MR. KUMAR: Okay, wonderful.

12 So coming back to the slide, we thought it was
13 useful -- sorry, next slide, please -- to provide the
14 Committee before and after view in this case from the
15 community across the street, also known as Coldwater
16 Ranch.

17 So what you are looking at here is a view of how
18 it is today, or what I will call an existing view. You
19 can see it is heavily encumbered by multiple
20 transmission lines. And if you go to the next slide,
21 please, the after view shows a low profile, low
22 intensity buildout. The wall that you see is roughly
23 nine feet tall.

24 And this is why we believe, given the low
25 profile nature, the fact that our batteries don't

1 produce any direct emissions, no water is required for
2 operation, it is a completely unmanned facility,
3 remotely monitored, we believe this is a perfect site
4 for the project that we are discussing.

5 CHMN. CHENAL: Yes, Member Gentles.

6 MEMBER GENTLES: Just for clarification, so
7 the -- I think Ms. Hamway asked the same question. Are
8 those people standing there just for context in terms of
9 height and size, et cetera, of the facility?

10 MR. KUMAR: Exactly. The intention to have
11 those people, which are likely simulated to be
12 technicians that may be visiting the facility from time
13 to time to conduct routine maintenance, but the
14 intention was just to show context in terms of the low
15 profile nature of the project.

16 MEMBER HAMWAY: Mr. Chairman, real quick.

17 So the wall will continue and we won't see any
18 of that white part, correct?

19 MR. KUMAR: Correct, except for the gate which I
20 think is probably depicted or simulated in this picture.

21 MS. GRABEL: All right. Would you like to
22 continue.

23 CHMN. CHENAL: Let's -- I think there is one
24 more slide, which reflects the proximity to the homes in
25 the ranch. And let's stop after that point, because

1 then we are getting into a different subject area matter
2 and would be a good time for our lunch break.

3 MS. GRABEL: Certainly.

4 MR. KUMAR: Sure. Absolutely.

5 Again, we thought it was very important to show
6 the exact distances to the nearest home. As you can see
7 on this slide, the distance to the nearest home is
8 roughly around 280 feet. And the distance from the
9 nearest cubicle, I believe, is roughly around 300 feet.
10 So the first distance is from the wall from the project.
11 And the longer distance is to the nearest cube or
12 enclosure.

13 CHMN. CHENAL: That's kind of hard to read. Can
14 you -- yeah, maybe magnify it. Thank you.

15 MR. KUMAR: Yeah. Let me rephrase, actually.
16 The distance from the property wall is 250 feet to the
17 nearest home. And the distance from the nearest cubicle
18 is actually 286 feet and not 300, as I mentioned.

19 CHMN. CHENAL: Okay. All right. Any questions
20 from the Committee on that? And we can come back to
21 that when we come back from lunch.

22 It doesn't appear that there are any further
23 questions.

24 Let me ask the Committee and the applicant how
25 much time we need for lunch. We normally take an hour.

1 But I don't know if we need an hour, or if we can do it
2 in -- I think the last time I asked this question,
3 someone said a half hour, someone said an hour, and we
4 split the baby at 45 minutes.

5 Does the applicant or the intervenors need more
6 than 45 minutes for preparation for the this afternoon's
7 session?

8 MS. GRABEL: No, sir.

9 MS. SPINA: Mr. Chairman, we are fine with 45
10 minutes.

11 CHMN. CHENAL: Is the Committee good with 45
12 minutes or 30 minutes?

13 MEMBER NOLAND: 30.

14 MEMBER HAMWAY: 40.

15 CHMN. CHENAL: Are the attorneys good with
16 30 minutes?

17 All right. Let's take a 30-minute lunch break,
18 and then we will resume the hearing. Thank you.

19 (A recess ensued from 12:30 p.m. to 1:38 p.m.)

20 CHMN. CHENAL: All right. Well, good afternoon,
21 everyone. Let's resume the afternoon portion of the
22 hearing.

23 I will ask the applicant, intervenor counsel if
24 there are any procedural matters we should discuss
25 before we begin. If not, then let's proceed,

1 Ms. Grabel, with your panel.

2 MS. GRABEL: Thank you very much, Chairman.

3 BY MS. GRABEL:

4 Q. Mr. Kumar, I believe we left off on page 9 of
5 your PowerPoint presentation, which has been marked as
6 AES Exhibit 2. Are you still presenting that, or is
7 Mr. Kjellman presenting?

8 A. BY MR. KUMAR: I am still presenting one more
9 slide.

10 Q. Okay. Would you like to begin walking through
11 page 9.

12 A. BY MR. KUMAR: Yes, please.

13 Next slide, please.

14 Okay. We wanted to focus on the safety aspects
15 of the project because I know how important that topic
16 is.

17 Before I delve into the slide, I want to
18 emphasize that safety is our number one value. What
19 happened to McMicken is extremely unfortunate, and we
20 are taking all possible measures to ensure that an
21 incident like McMicken does not happen again.

22 With that in mind, we are using a multi-layer
23 approach to safety, and so I am going to talk about the
24 site specific safety enhancements that we have
25 incorporated. And I am going to turn it over to my

1 colleague, Kris Kjellman, to talk about the product
2 level safety.

3 After the incident, or the McMicken incident,
4 Fluence did not wait for the investigation report to be
5 published, but accelerated a number of the safety
6 enhancements that are now included in Generation 6.

7 I do want to mention that the McMicken project
8 was the fourth generation, so sort of an earlier
9 generation of the Fluence product, albeit it did still
10 meet the design features and the codes and standards
11 relevant at that time, which was in 2017. The Gen6
12 design, as we mentioned before, meets or exceeds all the
13 codes and standards, especially as they relate to
14 thermal runaway. And as we mentioned before, we are
15 complying with APS's stringent codes and standards, also
16 referred to as Appendix W.

17 I will focus on four key design enhancements
18 that were the recommendations in the investigation
19 report. Again, these four are not the total exhaustive
20 list, but key differences between the McMicken design
21 and the Generation 6 of the Fluence product.

22 The first that I want to focus on is the
23 non walk-in space of the enclosures.

24 The second aspect is the UL 9540 certification,
25 which is basically the cubes including the racks,

1 modules, and cells subjected to fire testing, which
2 basically concluded non-propagation.

3 The third feature is venting by deflagration.
4 This is a concept which is similar to a pilot ejection
5 seat. So in the case of a thermal runaway, if pressure
6 did build up in the cube, the top will pop off. Again,
7 this was not a feature available in Generation 4 of the
8 product because that format was based on a shipping
9 container design which involved first responder to walk
10 in.

11 And the fourth aspect of the safety enhancement
12 is incipient gas detection. So again, in the case of
13 any event or temperature increase, if there is gas
14 buildup, the Gen6 design has sensors and detection
15 systems built in to monitor any emissions.

16 Focusing back on the safety enhancements as it
17 relates to the site itself, as you can see on the right
18 side of the screen, we have designed a first responder
19 station at the entrance. Again, based on a multi-layer
20 approach to safety, the emphasis is to keep humans away
21 from any incident until the firefighters can check the
22 health of the system and pretty much access very
23 granular detail off of the site at the entrance in case
24 they are responding to an event. This basically
25 prevents them from even entering the facility in the

1 case of an event.

2 I mentioned earlier that the battery itself, or
3 the battery project itself, does not require water for
4 operation. For safety reasons, we are still installing
5 a fire water loop with hydrants.

6 Again, I mentioned we are meeting or exceeding
7 the relevant codes and standards. And they are listed
8 here. I want to go over them in detail. But we are
9 meeting NFPA 855, the different UL certifications, and
10 also the IFC 2018 as it is adopted by the AFMA. The
11 hazard mitigation analysis is in progress. And the site
12 will be surrounded by an eight-foot masonry block wall.

13 Any questions on the site specific safety
14 features before I turn it over to my colleague, Kris
15 Kjellman?

16 CHMN. CHENAL: Any questions from the Committee?

17 (No response.)

18 CHMN. CHENAL: Appears there are none.

19 MR. KUMAR: Okay, thank you.

20 Kris.

21 MR. KJELLMAN: Thank you, Chairman Chenal and
22 respected members of the Committee.

23 Next slide, please.

24 As many should know, the Fluence sixth
25 generation battery storage design is a non-walk-in

1 enclosure that complies with the latest stringent
2 industry standards, including UL 9540A, which is an
3 energy storage standard covering batteries and other
4 storage technologies, or should I say 9540. 9540A is
5 the testing, thermal runaway for a design. And then
6 NFPA 68 covers deflagration venting.

7 The battery module complies with UL 1973, which
8 is a standard for battery design. And then the cells
9 and racks are in compliance with AEC standards for
10 lithium-ion batteries. The battery enclosures have
11 undergone large scale fire testing per UL 9540A, as
12 Manish mentioned, and this covers tests at the cell
13 level, module, rack, and enclosure level, and the result
14 showed no propagation beyond the cell and module level.

15 If you look at the visual on the right, you
16 know, there is several safety features of the cube that
17 are mentioned. The battery management system monitors
18 the health of the batteries to ensure operation within
19 the specifications, and any anomalies will cause a
20 shutdown of the system in the event of a fault.

21 The fast shutdown or emergency shutdown can be
22 done locally, manually, as well as it automatically
23 occurs when there is a fire alarm. It shuts down the
24 power to the cubes and to the batteries.

25 And then as Manish mentioned, there is an

1 incipient gas detection, which provides early detection
2 of any potential battery problems and allows a
3 preemptive shutdown.

4 This is in addition to the normal fire
5 protection, detection system, and suppression system.
6 Each cube is self-contained so it has its own detection
7 system, suppression, as well as cooling systems for the
8 batteries.

9 And then if you notice, item number 5 as noted
10 in the diagram is a deflagration panel for pressure
11 relief. And that design complies with NFPA 68
12 requirements.

13 The other thing to note, we are already working
14 with the AFMA, but we will continue to work -- AES and
15 Fluence will develop an emergency response plan and work
16 with the fire marshal. Any emergency response plan has
17 to be specific. And we have quite a few emergency
18 response plans at the other facilities and a template
19 that we use, and we will start with those and then make
20 it site specific and work with the fire marshal on that.

21 Any questions on this slide before we move to
22 the next?

23 CHMN. CHENAL: One question. What is the
24 suppression system, the fire suppression system?

25 MR. KJELLMAN: The suppression system is the

1 gaseous system. And it floods the enclosure with gas to
2 prevent spread of fire.

3 CHMN. CHENAL: Thank you.

4 MR. KJELLMAN: If no more questions, we will go
5 to the next slide.

6 So in addition to the county approvals, the
7 project went through a NEPA environmental assessment
8 process for federal approval. This process is nearing
9 completion. We conducted environmental studies for the
10 county approvals as well as the NEPA process. And the
11 EA process was led by WAPA, as well as review and
12 approval by the U.S. Bureau of Reclamation.

13 The public review of the draft EA was completed
14 in July with notices to 700 parcel owners, and no
15 comments were received. Finally, a FONSI, or finding of
16 no significant impact, is in progress and expected to be
17 completed at the end of the month.

18 MEMBER HAMWAY: Mr. Chairman, can I ask a
19 question?

20 CHMN. CHENAL: Yes, Member Hamway.

21 MEMBER HAMWAY: Thank you.

22 So how were the 700 parcel owners notified?

23 MR. KJELLMAN: There were letters that were sent
24 to every landowner within a half a mile, and so that's
25 how we ended up with 700. So a postcard was sent out

1 with details of the project. In addition, WAPA has a
2 website of the project NEPA process and providing
3 information to, additional information to the
4 landowners.

5 MEMBER HAMWAY: So did you find it unusual that
6 out of 700 people nobody responded?

7 MR. KJELLMAN: I can't make an opinion on that.
8 But, you know, 700 of them were mailed out. So I don't
9 know why that was.

10 MEMBER HAMWAY: So if I wanted to make a comment
11 and I was one of those 700, how would I do that?

12 MR. KUMAR: I believe we have provided the
13 postcard that WAPA sent out to these 700 parcel owners.

14 MS. GRABEL: I was just going to say that,
15 Mr. Kumar.

16 Member Hamway, we will admit AES-4 -- we are
17 going to try AES Exhibit No. 4, which is the postcard
18 that WAPA has, and talk through that a little more. But
19 there is information at the bottom of AES-4 that talked
20 about how the public can reach out to WAPA.

21 MEMBER HAMWAY: Perfect. Thank you.

22 MR. KUMAR: Correct. There is contact
23 information, phone numbers, and address to a website to
24 respond.

25 Back to you, Kris.

1 MR. KJELLMAN: Any other questions regarding the
2 environmental assessment?

3 Should we move to the next slide?

4 BY MS. GRABEL:

5 Q. Please continue.

6 A. BY MR. KJELLMAN: Regarding public
7 participation, as part of the county process, a
8 notification letter with the project details was sent
9 out in December of 2020 to all the property owners
10 within 300 feet. This is the requirement of the county.

11 In addition, Coldwater Ranch and Vistancia HOA
12 were notified. And then County also requires signage
13 that was posted at the site. And we received two emails
14 regarding the project in January of 2021 and responded
15 to those, with no further correspondence received after
16 that.

17 MEMBER HAMWAY: Mr. Chairman, I have one
18 follow-up question.

19 CHMN. CHENAL: Member Hamway.

20 MEMBER HAMWAY: So the Coldwater Ranch and
21 Trilogy at Vistancia, the HOAs were notified. Were the
22 individual homes within those associations, are they
23 part of the 700 that received the postcard?

24 MR. KJELLMAN: I can't say for sure whether all
25 of the Vistancia homeowners. I know the Coldwater Ranch

1 were. But the Vistancia owners would be anybody within
2 a half a mile of the project. So that's a fairly large
3 development. I don't know as though everybody --

4 Shruti, I don't know if you, if you know.

5 We do have a list of those homeowners that were
6 sent notifications that can be provided, if you would
7 like.

8 MEMBER HAMWAY: No. I don't really care. I
9 just was wanting to know the reach, if it just went to
10 the HOA. Because I have been on an HOA and they don't
11 always make it to the residents. So that was my
12 question, was --

13 MR. KUMAR: If I may, sorry, I can address this.
14 So the homes within the Coldwater Ranch that
15 are --

16 MEMBER HAMWAY: Within a half mile.

17 MR. KUMAR: -- jurisdiction 300 feet were
18 notified, the specific homes, along with the HOA itself
19 at Coldwater Ranch.

20 Trilogy at Vistancia is actually within City of
21 Peoria limits. Those homes, or the HOA, do not fall
22 within the 300 feet requirement by Maricopa County. But
23 as part of our proactive outreach and stakeholder
24 management, we reached out to the HOA board members and
25 had a phone call and a meeting. And they were also

1 notified.

2 We, in addition, provided a description of our
3 project, the ESP, and provides a narrative, which we
4 believe was used to send out notices within the HOA's
5 newsletter.

6 MEMBER HAMWAY: Thank you.

7 MS. GRABEL: If I may interject for one moment,
8 keep in mind this is the notification process required
9 by the Maricopa County Board of Supervisors about the
10 300 feet. And then the WAPA outreach that's distinct
11 from the outreach associated with the gen-tie project,
12 which also mentions the battery storage project, and I
13 believe APS's later witnesses will speak to that, but I
14 believe that was broader in scope, given the nature of
15 these proceedings, versus the ones that this ESP went
16 through.

17 MEMBER HAMWAY: Thank you.

18 CHMN. CHENAL: Member Gentles.

19 MEMBER GENTLES: Thank you.

20 Just so I am clear in my mind, so WAPA did some
21 public outreach, 700 households effectively?

22 MS. GRABEL: Correct.

23 MEMBER GENTLES: AES did some public outreach --

24 MS. GRABEL: Correct.

25 MEMBER GENTLES: -- targeting those same 700

1 households or more?

2 MS. GRABEL: AES's outreach -- would you like
3 Mr. Kumar to address or me to address that?

4 MEMBER GENTLES: Doesn't matter.

5 MS. GRABEL: AES's outreach was the 300 feet
6 that hit 27 homes.

7 MEMBER GENTLES: 27?

8 MS. GRABEL: 27, correct. That's the
9 requirements of the Maricopa County Board of
10 Supervisors, is just a 300-foot radius from the project
11 and within 300 feet.

12 MEMBER GENTLES: So there was WAPA who did
13 outreach. As a result of the county supervisors'
14 outreach, they hit 27 homes?

15 MS. GRABEL: So there are two distinct
16 proceedings.

17 MEMBER GENTLES: Right.

18 MS. GRABEL: And Mr. Kumar, maybe I can address
19 this, but I will start at a high level and let him get
20 to any details. And we will get this also in Exhibits
21 AES-3 and 4.

22 MEMBER NOLAND: Slow down.

23 MS. GRABEL: Sorry. I told you I was bad at
24 that.

25 AES Exhibit 3 is the letter that went out to the

1 27 residents, as required by the Maricopa County Board
2 of Supervisors, because they needed a zoning change.
3 That hit the 300 foot radius. That's distinct from the
4 WAPA outreach. WAPA was going through the NEPA process
5 because there was a federal funding tie.

6 And, Mr. Kumar, I am going to let you address
7 that because you know the details better than I.

8 But there are 22 distinct proceedings. So they
9 have --

10 MEMBER GENTLES: That's what I am getting at. I
11 am just trying to understand the distinct proceedings
12 that occurred --

13 MS. GRABEL: Sure.

14 MEMBER GENTLES: -- and how many there were.

15 MS. GRABEL: Sure.

16 MR. KUMAR: I am happy to address the specifics.
17 So as Ms. Grabel mentioned, we were required under
18 Maricopa County's requirement to send letters to
19 landowners or parcel owners within 300 feet of our site,
20 which was the 27 parcel owners. That letter was sent on
21 April 27th. It included the homes, as I mentioned
22 earlier, in Coldwater Ranch plus the HOA. It did not
23 include the nearby church, because it was not within 300
24 feet.

25 In addition, as part of our public outreach into

1 City of Peoria, the Trilogy at Vistancia HOA was
2 notified. And because of WAPA's NEPA EA process, that
3 fell under the half-mile radius. And so the postcards
4 that we are referring to were sent by WAPA to those
5 homes. And again, that list is roughly 700 parcel
6 owners. We are happy to provide specific addresses to
7 you.

8 BY MS. GRABEL:

9 Q. And Mr. Kumar, perhaps you can talk a little bit
10 about why WAPA is involved in this project.

11 A. BY MR. KUMAR: Sure, absolutely.

12 So WAPA, or the Western Area Power
13 Administration, is the financier of this project. And
14 as part of the financing requirements, they are required
15 to conduct the federal due diligence process, as was
16 covered by Mr. Kjellman on the previous slide, including
17 the NEPA EA as well as the FONSI that we mentioned
18 earlier.

19 MS. GRABEL: Thank you.

20 Are there any additional questions on this
21 topic?

22 (No response.)

23 BY MS. GRABEL:

24 Q. Okay. Mr. Kumar, would you like to continue, or
25 Mr. Kjellman, whoever is next.

1 A. BY MR. KJELLMAN: I did have one more item I
2 wanted to note on the outreach. Additional outreach we
3 made included the local firefighters. The Arizona Fire
4 & Medical Authority is the authority having jurisdiction
5 for fire review for this project. So we had reached out
6 to them last fall, and then also to the Peoria
7 firefighters and to the City of Peoria. We continued to
8 work with the AFMA and the Peoria firefighters. And
9 working with them we are going to submit our design
10 plans to them for approval.

11 Prior to any construction, they have to approve
12 the project, as well as prior to any operation they need
13 to kind of certify that the project construction meets
14 their requirements. And they follow International Fire
15 Code.

16 So that's some additional outreach. And we
17 continue to talk to them regularly.

18 That's all I had on the public outreach effort.

19 Q. Okay. Mr. Kumar, would you like to speak to the
20 next slide?

21 A. BY MR. KJELLMAN: I can cover that. I know this
22 covers kind of the AES CEC. So APS has already covered
23 this in other slides, so I will make it fairly quick.

24 But as you can see from the diagram, the black
25 and green line is a single 400-foot span between the

1 point of demarcation and the AES battery storage
2 substation. And there is no intermediate poles. It is
3 a single span. So it is a fairly simple connection.
4 That's the AES scope of the portion of the CEC.

5 Q. Thank you.

6 A. BY MR. KJELLMAN: Any questions?

7 CHMN. CHENAL: So just one for clarification.
8 Your third bullet point says the AES portion of the
9 gen-tie line is approximately 400 feet with no
10 intermediate transmission poles. So if I am
11 understanding, there will be a pole prior to the point
12 of demarcation in an area covered by CEC-1, and the
13 transmission line will go from that pole to the tie-in
14 to the battery, to the BESS?

15 MR. KJELLMAN: That is correct. We have one
16 pole at the BESS facility. And the last pole that APS
17 is building, we connect to that, that's correct.

18 CHMN. CHENAL: So there will be a pole on the
19 AES BESS site?

20 MR. KJELLMAN: That is correct.

21 CHMN. CHENAL: Okay. All right. Thank you.

22 BY MS. GRABEL:

23 Q. Shall we advance to the next slide?

24 A. BY MR. KJELLMAN: Sure.

25 A. BY MR. KUMAR: I can cover this one.

1 Again, just to conclude the presentation, I did
2 want to emphasize that AES supports APS's CEC
3 application. So both CEC-1 and CEC-2, we believe that
4 the battery energy storage project meets or exceeds
5 industry safety standards. The project design is safe
6 and does not pose a risk to first responders, the
7 community, or our employees and contractors.

8 The benefit to the community will be a safe
9 project that increases local capacity for reliability
10 and will provide Arizona customers continuous access to
11 a cleaner, more reliable energy mix.

12 So that concludes the prepared portion of our
13 presentation. I know there are numerous questions both
14 that, I guess, Ms. Grabel is going to address and also
15 the ones that we heard throughout the day yesterday and
16 also earlier this morning that I am prepared to address.
17 Thank you.

18 CHMN. CHENAL: One question, Mr. Kumar, before I
19 ask if the Committee members have questions and we turn
20 it over for any cross. Are you familiar with what has
21 been referenced as Exhibit W, which is APS Exhibit 20,
22 the safety standards for construction of the BESS?

23 MR. KUMAR: Yes, Chairman Chenal, I am familiar.

24 CHMN. CHENAL: And AES will enter into a power
25 purchase agreement with APS, and Exhibit W will be a

1 part of that; is that your understanding, sir?

2 MR. KUMAR: Yes. We have already entered into a
3 power purchase agreement, which was executed back in
4 February of 2019. And Appendix W is part of that
5 agreement.

6 CHMN. CHENAL: Is or is not part of it?

7 MR. KUMAR: It is.

8 CHMN. CHENAL: It is.

9 MR. KUMAR: Yes.

10 CHMN. CHENAL: Okay, thank you.

11 MS. GRABEL: Mr. Chairman, I actually do have
12 additional direct, if that's okay.

13 CHMN. CHENAL: Sure, absolutely.

14 MS. GRABEL: Great. Thank you.

15 We spoke during your presentation about
16 Exhibits 3 and 4, which is the public outreach.

17 Did the Committee have any additional questions
18 associated with those exhibits before I move on to
19 Exhibit 5?

20 CHMN. CHENAL: Give us a moment to look at 3 --

21 MS. GRABEL: Oh, yeah, fair enough.

22 CHMN. CHENAL: -- and 4.

23 Just so I understand, Exhibit 3 was sent
24 pursuant to the zoning requirements to property owners
25 within 300 feet of the project, and that included 27

1 property owners, is that correct?

2 MS. GRABEL: That's correct, yes.

3 CHMN. CHENAL: Okay.

4 MS. GRABEL: It was also sent to the homeowners
5 associations in the area.

6 CHMN. CHENAL: And then Exhibit 4 is the
7 notification that was sent by WAPA to property owners
8 within half a mile, and that was 700 or so property
9 owners, is that correct?

10 MS. GRABEL: That is correct, yes.

11 CHMN. CHENAL: Okay. Any questions from the
12 Committee on AES Exhibits 3 or 4?

13 (No response.)

14 CHMN. CHENAL: Okay. Thank you, Ms. Grabel.

15 MS. GRABEL: Thank you.

16 BY MS. GRABEL:

17 Q. So if you would turn to AES Exhibit 5, Exhibit 5
18 contains two documents. One is a letter to Mr. Kumar
19 from the Maricopa County Planning & Development
20 Department advising Mr. Kumar of the approval of the
21 zoning change requested to accommodate the battery
22 storage project. And the second document, which is the
23 third page in, is an approved copy of the plan of
24 development associated with the battery storage project
25 that was presented to Maricopa County Planning &

1 Development Department.

2 Mr. Kumar, are you familiar with these
3 documents?

4 A. BY MR. KUMAR: Yes, I am.

5 Q. Yesterday Member Noland asked for the formal
6 document containing the condition to which the battery
7 storage project is subject requiring the firefighters'
8 approval. Will you please direct us to that condition.

9 A. BY MR. KUMAR: Sorry. I don't see it on the
10 screen. I am assuming you are not projecting, right,
11 Ms. Grabel?

12 Q. No, I am not projecting. Are you familiar with
13 section H of their conditions?

14 A. BY MR. KUMAR: Correct. Yes, I am aware of the
15 stipulation language, which requires us to seek explicit
16 approval before construction, and then again
17 post-construction before certificate of occupancy.

18 MS. GRABEL: Thank you.

19 And for Member Noland's benefit, the section H
20 is found on page 2 of the letter to Mr. Kumar, and then
21 again the same section H on page 9 of the approved copy
22 of the plan of development.

23 Are there any additional questions on this topic
24 before we move on to the next?

25 CHMN. CHENAL: Any further questions from the

1 Committee?

2 (No response.)

3 CHMN. CHENAL: Please proceed.

4 MS. GRABEL: Okay. Thank you.

5 BY MS. GRABEL:

6 Q. Mr. Kumar, counsel had a conversation with Staff
7 prior to the hearing today pursuant to a direction from
8 the Chairman at the prehearing conference, and Staff
9 asked AES several questions that it would like to have
10 answers put into the record. So I am going to go
11 through those now. And, of course, Staff will have an
12 opportunity to ask further questions of you later.

13 We have covered, I think, the notices and
14 outreach that we did specific to the energy storage
15 project. So the next is can you please explain in some
16 detail the differences between the Westwing installation
17 and the McMicken battery storage project.

18 A. BY MR. KUMAR: Absolutely. The APS McMicken
19 project was a two megawatt, one-hour system that used,
20 or I should say was based on Fluence's fourth generation
21 architecture, which was basically based on a shipping
22 container format that required first responders to
23 basically walk in in the event of an emergency.

24 The Westwing Phase 1 project is a 100 megawatt,
25 four-hour duration project, which is based on the sixth

1 generation of the Fluence GridStack product, using as
2 its base a non-walk-in UL 9540 certified container,
3 which is much, much smaller in terms of battery density.
4 Each unit is roughly around 600 to 700 kilowatt hours,
5 which is one-third the two megawatt or 2,000 kilowatt
6 hour McMicken system.

7 And while the project as a whole is much larger
8 than APS McMicken, at its root level, each enclosure is
9 less dense. And by the virtue of it being UL 94 -- I am
10 sorry, 9540 certified, it has proven to show
11 non-propagation beyond cell or margin failure. So those
12 are some of the high level differences.

13 Again, the Westwing one project uses a
14 multi-layer safety approach in terms of a first
15 responder station being outside of the project site or
16 at the entrance. And then it meets or exceeds all the
17 current codes and standards which have been addressed
18 before.

19 Q. Thank you.

20 Do you have any examples of where the technology
21 that will be used for the Westwing battery storage
22 project is already being used, either in the United
23 States or elsewhere?

24 A. BY MR. KUMAR: Sure. We are in very late stage
25 construction of a similar Generation 6 bays,

1 100 megawatt, four-hour duration project in Los Angeles
2 County known as the Luna project. So that will be the
3 first installation coming on line very, very shortly.

4 Q. Thank you.

5 The next question Staff asked us was relating to
6 training for the individuals either operating the plant
7 remotely or APS. What kind of training will be provided
8 to the employees working on the project, the battery
9 storage project?

10 A. BY MR. KUMAR: Sure. Let me direct this
11 question to my colleague, Kris Kjellman.

12 A. BY MR. KJELLMAN: Sure. I would be happy to
13 address that one.

14 So as we do with, you know, every project, we
15 will conduct safety operations and emergency response
16 training for any of the employees that work at our site.

17 This is an unmanned site, but the facility will
18 be monitored 24/7 to ensure safe operation. And AES or
19 Fluence personnel will be monitoring to ensure that any
20 safety or operational concerns, potential fire alarms,
21 are taken care of and get addressed. In addition, there
22 are local personnel that will be available to respond to
23 potential issues within a reasonable period of time.
24 And we will coordinate any emergency response with the
25 first responders.

1 Q. Thank you.

2 This has been discussed a little bit previously
3 by Mr. Clark, but Staff also noted that the McMicken and
4 Westwing are different sized systems. And so if someone
5 could address the relevance of that and whether the
6 greater capacity of the Westwing project would cause
7 greater harm to the residents or to the reliability of
8 the energy grid, if an event occurred.

9 A. BY MR. KUMAR: I am happy to address this
10 question.

11 Again, as I previously mentioned, even though
12 the Westwing project Phase 1 is larger than the McMicken
13 project, we still believe that at a unit level these
14 enclosures are safer. They are less dense. They have
15 gone through a rigorous certification process. The
16 design itself meets or exceeds the APS Appendix W,
17 which, as we mentioned before, is a much more stringent
18 approach beyond the current relevant safety codes and
19 standards.

20 So I believe it doesn't pose a greater risk
21 given the size. And I will direct my colleague, Kris
22 Kjellman, to talk about the distances from a project to
23 the Westwing substation, which will also shed some light
24 on why we believe the impact is zero or minimum.

25 A. BY MR. KJELLMAN: Yeah. The battery storage

1 containers for the north site are approximately 900 feet
2 from the closest part of the Westwing substation. And
3 the southern site, the battery storage containers will
4 be about 500 feet, well, well beyond any potential
5 impact that any event that happened at the BESS site
6 would provide any impact. So there is really no concern
7 at all to any impact from an event at the BESS station.

8 Q. Thank you.

9 The initial phase of this project is
10 100 megawatts. Staff wanted to know when the expansion
11 to 200 megawatts would take place. Mr. Kumar, would you
12 like to address that?

13 A. BY MR. KUMAR: Sure, I would like to address
14 that.

15 We will make a decision in the next two to three
16 months on the second phase of the project, which could
17 likely have a potential on-line date in summer of 2023.

18 Q. Thank you.

19 Staff also noted that initially some time ago
20 two locations were examined for the facility and would
21 like to put on the record why this was chosen over the
22 other and whether it is possible to move this storage
23 project to a different location.

24 A. BY MR. KUMAR: Sure. I am happy to address
25 that.

1 We first started reaching out to landowners near
2 the Westwing substation back in summer of 2018, before
3 the all source RFP process. We were able to secure or
4 obtain site control for a portion of the land which is
5 our primary site. But we needed more land, so we
6 reached out to a couple more landowners east of the
7 north parcel. Commercially we were unsuccessful in
8 securing additional sites from these alternate parcels
9 because the land was already committed or was under
10 existing transactions.

11 Eventually we reached agreement with our current
12 landowner for an additional site and hence abandoned the
13 pursuit for an alternate site back in May of 2019.

14 As you probably recall from our slides, all
15 environmental studies, interconnection studies, the NEPA
16 EA, have been completed on the primary site. And so at
17 this time, moving to another location is not viable.

18 Q. Thank you.

19 And finally, Staff asked for a discussion of the
20 different forms of battery storage that are available
21 and why the lithium-ion solution that is contained in
22 the current BESS is superior.

23 A. BY MR. KUMAR: Sure. So there are many
24 different forms of energy storage available. The most
25 simple ones you probably already know, hydroelectric,

1 then there is lead acid, flywheels, compressed air,
2 lithium-ion.

3 There have been long discussions about the
4 different chemistries. I do want to emphasize that the
5 Fluence architecture is actually both technology and
6 supply agnostic, which means it can work with any form
7 of energy storage.

8 The Fluence product team evaluates different
9 technologies and suppliers every year. Based on
10 performance, safety, economics, and availability of
11 supply chain at large, as you probably heard from
12 Mr. Clark's testimony on the sizes of the projects, some
13 of the technologies that are in R&D and beyond that do
14 not possess supply chain or availability of scale, which
15 is where, based on the parameters that I mentioned,
16 lithium-ion has been the focus of Fluence and of the
17 industry at large. Almost 90 percent of all projects at
18 the utility scale level that are deployed to date, and
19 that will be deployed in the short term, are lithium-ion
20 based. We believe strongly that this is the best
21 technology suitable for our project.

22 MS. GRABEL: All right, thank you.

23 Mr. Chairman, I have no additional direct. So
24 if the Committee has any other questions for the AES
25 panel, please feel free.

1 CHMN. CHENAL: I have a question for, I guess,
2 Mr. Kumar.

3 Mr. Kumar, you have indicated that you are
4 familiar with the standards set forth in Exhibit W to
5 the power purchase agreement, which you testified to
6 earlier that AES has entered into with APS.

7 Hypothetical question. Would the storage, the
8 two megawatt storage system at McMicken, would that have
9 passed or failed the standards set forth in Exhibit W?
10 And if they would have failed, can you point to the
11 particular provisions that would have caused it to fail?

12 MR. KUMAR: Sure. Just so I understand the
13 question correctly, Chairman, based on Appendix W will
14 the McMicken project pass safety standards?

15 CHMN. CHENAL: Yes. Would the McMicken storage
16 facility that had that event, had the standards been in
17 place, would -- I suppose the better way of asking the
18 question: Would the McMicken storage facility have
19 complied with the standards set forth in Exhibit W or
20 not? And if not, can you point to any provisions that
21 it would not have complied with?

22 MR. KUMAR: Sure, absolutely. So the McMicken
23 project, as I mentioned before, complied with the then
24 relevant safety codes and standards. It did not or
25 would have not complied the standards referenced in

1 Appendix W. And I may elaborate a few key ones there.

2 As we mentioned before, one of the major
3 overarching requirements for Appendix W is that the
4 projects, both at the product level, meaning solid
5 module, rack, and enclosure level, be 9540 certified.
6 McMicken was not certified, again, because in 2017 that
7 was not a requirement.

8 Secondly, Appendix W points to a non-walk-in
9 design. So McMicken wouldn't have complied with that.

10 Appendix W also references ventilation or
11 venting features be in place, which we have addressed in
12 the Gen6 design by the deflagration, or where the roof
13 will pop off when subjected to certain pressure. So
14 McMicken wouldn't have passed that, because no venting
15 was in place.

16 So those are some of the key features or
17 enhancements that I can point to in Gen6. Again,
18 McMicken did comply with the then prevalent codes and
19 safety requirements.

20 CHMN. CHENAL: Okay. Thank you very much. That
21 was very helpful.

22 Any further questions from the Committee at this
23 time?

24 (No response.)

25 CHMN. CHENAL: If not, Ms. Scott, do you have

1 any questions, or Ms. Kane?

2 MS. SCOTT: Ms. Kane intends to cross-examine on
3 the notice issue.

4 MS. KANE: Just writing my last question,
5 Chairman.

6 CHMN. CHENAL: Sure.

7 Then I will allow the applicant, if they have
8 any questions, obviously, cross.

9 So Ms. Kane, go ahead when you are ready.

10 MS. KANE: All right.

11

12 CROSS-EXAMINATION

13 BY MS. KANE:

14 Q. WAPA did notification, not AES, and WAPA was
15 required by NEPA, correct?

16 A. BY MR. KUMAR: Correct.

17 Q. Okay. Is it fair to say that the only outreach
18 AES did was to the 27 property owners?

19 A. BY MR. KUMAR: We did outreach to the 27
20 property owners. In addition, we conducted outreach not
21 required by any jurisdiction, as I mentioned before, the
22 City of Peoria, to their planning commission. We also
23 did active outreach to the different firefighters. And
24 we have an appendix slide that can be referenced, which
25 shares the details of these proactive outreach to the

1 City of Peoria, the AFMA firefighters.

2 So I would say in addition to the requirement of
3 the Maricopa County Planning & Zoning Commission, we did
4 additional outreach, as I mentioned just now, and also
5 to Trilogy and Vistancia.

6 Q. Right. So as far as residents go, because those
7 are the ones who are truly impacted, not necessarily the
8 fire station, those employees of the fire station don't
9 live right there, it was just to the 27, correct?

10 A. BY MR. KUMAR: Correct.

11 Q. Okay.

12 A. BY MR. KUMAR: And like I said, the HOA at
13 Trilogy at Vistancia.

14 Q. But do you have any reason to believe that the
15 residents were contacted by their HOA and notified?

16 A. BY MR. KUMAR: We don't right now, but we can
17 confirm.

18 Q. Thank you. That would be great.

19 Of the 27 letters that went out, how many were
20 sent to actual homeowners? And the term property owner
21 was used a lot, or property was used a lot. I wanted to
22 know how many were actually homeowners.

23 A. BY MR. KUMAR: Shruti or Kris, can you check?

24 I think the requirement is parcel owners. And I
25 believe most were homes, but we can confirm that.

1 Q. Okay, thank you.

2 Would APS be considered one of those property
3 owners?

4 A. BY MR. KUMAR: I don't know the answer. I don't
5 think so, but I think we have the specific list of the
6 27 addresses, so we can confirm them.

7 Q. Okay. Thank you.

8 And you stated earlier that 700 landowners,
9 slash, homeowners received the Quarles & Brady letter,
10 is that correct?

11 A. BY MR. KUMAR: The 700 parcel owners received
12 the WAPA postcard.

13 Q. Okay.

14 A. BY MR. KUMAR: The Quarles & Brady letter is
15 actually the letter that went out to those 27 parcel
16 owners.

17 Q. Okay. Thank you for clarifying that.

18 Did AES ever consider providing more
19 notification beyond the 27 residences?

20 A. BY MR. KUMAR: We were not required, so we did
21 not. Like I said, we did do additional outreach to the
22 HOAs and other stakeholders, as I referenced earlier.

23 Q. Okay. And considering what happened at
24 McMicken, if you went above and beyond for ensuring
25 public safety, why didn't you also go above and beyond

1 for public notice?

2 A. BY MR. KUMAR: I am not sure I can answer that,
3 only because we believe that the safety enhancement and
4 codes and standards that we are complying with, we
5 believe the project design is safer and don't believe it
6 poses a risk to the community, to the first responders,
7 or to our contractors or technicians.

8 Q. When McMicken was receiving its CEC -- or was
9 it? I am not sure if it was or not, but -- it was not?
10 Okay.

11 I guess my question is: When McMicken was built
12 whenever, wouldn't you have thought in that year that it
13 was at the top of its safety as well?

14 A. BY MR. KUMAR: That is correct. As I mentioned
15 earlier, the McMicken project went through the plan
16 check process that was required at that time and did
17 comply and meet the codes and safety standards before it
18 was brought on line.

19 Q. Okay. And then who at the County sent those two
20 separate emails about the project?

21 A. BY MR. KUMAR: We do have the names and
22 addresses, the email addresses of those two respondents
23 that we can provide.

24 Q. Okay. And then the postcard states, quote, a
25 proposed battery energy system near the City of Peoria,

1 end quote. Wouldn't you agree that the City of Peoria
2 is a large city? And as far as the 700 homeowners go,
3 how would each of those resident owners know that meant
4 200 to 500 feet from their house?

5 A. BY MR. KUMAR: I am sorry. I am not
6 understanding the question. Just so I can rephrase, you
7 are asking how would the City of Peoria residents know
8 how far the project was from their homes?

9 Q. Well, stated in your postcard, it says that this
10 battery energy system is near or located near the City
11 of Peoria. Wouldn't you agree that the City of Peoria
12 is large, and as far as those 700 homeowners that
13 received the postcard go, how would each of those
14 resident owners know that meant 200 to 500 feet from
15 their house?

16 A. BY MR. KUMAR: I don't know.

17 And, Kris, can you confirm? I think the
18 distances we are talking here is within the half-mile
19 radius.

20 A. BY MS. RAMAKER: I am happy to answer the
21 information.

22 In terms of, in terms of distance, it would be
23 difficult to quantify, because there are 700 property
24 owners, to exact distance from all of those homes. But
25 the EA that is -- that the link is provided to does

1 actually provide the addresses of the project site as
2 well as information on the exact location of where the
3 battery storage project would be.

4 MEMBER NOLAND: Mr. Chairman.

5 CHMN. CHENAL: Yes, Member Noland.

6 MEMBER NOLAND: Thank you.

7 Mr. Chairman, I don't know who to address this
8 to. But in Pima County, when you are doing a rezoning
9 or use permit, you have to post the property that there
10 is a case under consideration. Did the property have to
11 be posted for the rezoning on this project?

12 MS. RAMAKER: Yes, it was.

13 MEMBER NOLAND: Thank you.

14 MEMBER HAMWAY: Mr. Chairman, I have one quick
15 question. Is McMicken still in operation?

16 MR. KUMAR: I will direct that question to APS.

17 I do want to highlight one detail. The APS
18 McMicken project was an EPC contract or relationship,
19 meaning AES was not the owner or operator of that
20 project. We were the EPC solution provider. So it was
21 sort of a product sale to APS.

22 And so with that, I would direct the question to
23 APS, please.

24 MR. CLARK: I can answer that. The McMicken
25 battery has been decommissioned.

1 MEMBER NOLAND: I can't hear.

2 MR. CLARK: The McMicken battery has been
3 decommissioned.

4 MEMBER HAMWAY: Mr. Chairman, I have one other
5 question.

6 CHMN. CHENAL: Member Hamway, let me just follow
7 up.

8 The whole site has been decommissioned?

9 MR. CLARK: I will have to follow up on where
10 the site is, but the enclosure is gone, the batteries
11 have been sent back to the original OEM. And so the
12 whole BESS enclosure and everything in it has been
13 decommissioned.

14 CHMN. CHENAL: All right. Thank you.

15 Member Hamway.

16 MEMBER HAMWAY: I am good. Thanks.

17 BY MS. KANE:

18 Q. As you were saying before that someone would
19 have to go onto a link that was in the postcard --
20 correct -- so they would have to take a separate step to
21 go onto this website to determine where exactly in the
22 City of Peoria this battery project is being created,
23 correct?

24 A. BY MR. KUMAR: Correct, they would have to go to
25 the link. But the project is outside of City of Peoria

1 limits.

2 Q. So when you are saying near the City of Peoria,
3 then that could cause confusion if someone was just
4 reading the postcard and didn't go onto the website,
5 correct?

6 A. BY MR. KUMAR: The site is within Maricopa
7 County, unincorporated Maricopa County. It is near the
8 City of Peoria, but it is not within, as far as I
9 understand, City of Peoria.

10 Q. No, that wasn't my question. I will better
11 phrase it.

12 So when someone is reading the postcard that was
13 sent, mailed to their residence, and it says that this
14 battery project is being built near the City of Peoria,
15 and they did not go onto the website, they would have no
16 idea that it was actually in Phoenix and it was across
17 the street from them, correct?

18 MEMBER HAMWAY: And to add, that they would not
19 know that 699 other people got that letter. So they are
20 thinking they are the only ones.

21 And I do have to say for the record this has to
22 be the worst written postcard I have ever seen.

23 MS. GRABEL: I didn't write it. Don't look at
24 me.

25 MEMBER HAMWAY: I wasn't looking at you.

1 It was a terrible postcard. If I got this in
2 the mail, there is no way I would know what to do with
3 it. I just wouldn't. And I am even kind of aware of
4 this kind of stuff. And I am reading this postcard and
5 I think Ms. Kane's comments are right. No one would
6 know why I received this. I would have no understanding
7 of why I received this.

8 CHMN. CHENAL: I don't know if there is a
9 question pending.

10 MEMBER HAMWAY: No, I don't have a question. I
11 am just making a comment.

12 MS. KANE: I just want the record to reflect
13 that the postcard is very vague and broad and does not
14 explain to residents, other than them going and taking
15 the extra step to go onto the website, any information
16 about this project or where it is located.

17 MS. GRABEL: I would indicate that the exhibit
18 speaks for itself.

19 CHMN. CHENAL: Yeah, Member Gentles.

20 MEMBER GENTLES: I think one of the things
21 that's kind of knocking around in my brain is that there
22 is a similar project to the McMicken project going up in
23 this neighborhood, less than 10 miles apart from the
24 McMicken.

25 I am just wondering in terms of the

1 notification, and, you know, I know you don't like to,
2 you know, broadcast your bad news, but when it comes to
3 a plant that's 100 times larger than, my math, is less
4 than 10 miles away that had a major incident, how do the
5 residents, unless they saw it on the news, how do they
6 know that this is what they are getting in their
7 neighborhood?

8 MS. GRABEL: Member Gentles, if I may respond to
9 that, the McMicken incident was incredibly unfortunate,
10 but its injuries were limited to the first responders.
11 And for that reason, the outreach that AES engaged in,
12 which far exceeded, frankly, what the Board of
13 Supervisors' requirements were, was focused very much on
14 the first responders, making sure that the firefighters
15 and medical responders were comfortable with the new
16 design, were comfortable with the project, were
17 comfortable with the site. And I think that's where it
18 was. Because it wasn't necessarily the residents,
19 because there really wasn't any, you know, propulsion or
20 explosion that would have affected anything within -- I
21 think we heard testimony of 15 feet was the closest.
22 The closest residence to this project is 288 feet away.

23 And so the focus of the outreach was on those
24 who will be affected if an event occurred, which was
25 very much aimed at the first responders.

1 And Mr. Kumar and Mr. Kjellman, if you would
2 like to elaborate, that's, I think, where the AES
3 outreach was focused. And that's different from what
4 you will hear from APS when they talk about this project
5 and the outreach that was conducted pursuant to the
6 Corporation Commission and this Committee's expectations
7 as to public outreach.

8 MS. KANE: I have one last question.

9 MR. KUMAR: That is correct.

10 BY MS. KANE:

11 Q. This can either go to Mr. Kumar or Mr. Clark,
12 whichever one of you is best able to answer. My
13 question is: If the McMicken battery project was
14 two megawatt hours and it didn't disturb neighboring
15 homes, as you testified, that were 1200 feet away, but
16 wouldn't it be true that 200 megawatt hours could
17 disturb homes and developments 300 feet away?

18 A. BY MR. CLARK: I can answer that. You know, as
19 Mr. Kumar has noted and I have noted, the enclosure size
20 is roughly .75 megawatt hours, and thus the energy is
21 limited to actually 35 percent or 33 percent of what the
22 McMicken was. So I don't believe that it would impact
23 those homes.

24 Mr. Kumar, do you have anything else to add?

25 A. BY MR. KUMAR: No. I concur.

1 MS. KANE: Thank you.

2 MEMBER HAMWAY: Mr. Chairman.

3 CHMN. CHENAL: Member Hamway.

4 MEMBER HAMWAY: So we have talked about McMicken
5 until we are -- kind of had beat that dead horse, but it
6 was an important thing.

7 So what other catastrophes, for lack of the
8 right word, have these battery storage units experienced
9 throughout the world? I mean, have we -- and when one
10 of these BESS goes down, how do we disseminate that
11 information to other people?

12 So I hear what Mr. Kumar said about McMicken
13 meeting the requirements, and this new one meets the new
14 updated cycle 6 or Generation 6 requirements. But how
15 do you, when a catastrophe happens, how do you in your
16 industry communicate that information to others who
17 might have a similar configuration?

18 And I guess I am just wanting to know that all
19 these companies out here who are making these
20 lithium-ion batteries are kind of communicating with
21 each other so that, when one has a problem, everyone
22 knows about it and can take those corrective systems.

23 So what is -- are there other catastrophes
24 besides this cascading thermal event that has happened
25 with these BESS systems? I guess that's my question,

1 Mr. Kumar.

2 MR. KUMAR: Sure. There has been publicly
3 documented events in South Korea and other places in the
4 world of battery fires that have occurred in addition to
5 McMicken. In my view, industry associations like the
6 Energy Storage Association in the U.S., or shortening
7 form, ESA, and as for Mr. Clark's testimony, the safety
8 working groups like the NFPA and IFC do keep track of
9 these events and the shortcomings or root cause analysis
10 that are published after the investigation into these
11 events have concluded.

12 So I think that's the forum or form how the
13 industry is learning from these events and improving the
14 codes and safety standards so that future projects are
15 much safer and pose no harm to the communities or the
16 first responders.

17 Mr. Clark, if you want to add more to what I
18 said.

19 MR. CLARK: No. My previous testimony on this I
20 think covered the similar groups.

21 CHMN. CHENAL: Ms. Scott, did you have a
22 question?

23 MS. SCOTT: I had some follow-up for the AES
24 panel, if that's all right, that's not noticed.

25 CHMN. CHENAL: Sure. I obviously want to make

1 sure that we give the opportunity for cross and any
2 redirect. But let's finish up with Staff now with AES's
3 panel, and then we will go to APS. Then we will finish
4 with Ms. Grabel.

5 MS. SCOTT: Okay. Thank you, Chairman.

6

7

CROSS-EXAMINATION

8 BY MS. SCOTT:

9 Q. I wanted to ask, I believe the AES witness would
10 be Mr. Kumar.

11 MS. GRABEL: We have a panel of witnesses. It
12 depends on your question.

13 MS. SCOTT: Okay, fair enough.

14 BY MS. SCOTT:

15 Q. I was interested in finding out more about
16 projects of comparable size that are in operation now
17 throughout the United States or elsewhere. Is my
18 understanding correct that there aren't any right now?

19 A. BY MR. KUMAR: No. As Mr. Clark mentioned, the
20 largest battery energy storage in the country currently
21 is a 400 megawatt, four-hour duration project earlier
22 referred to as the Moss Landing project. That is in
23 operation today. It is four times as large as the
24 project -- I should say twice as large as the
25 200 megawatt project that we are talking here. AES

1 itself commissioned a 100 megawatt, four-hour duration
2 project known as the Alamitos project in Long Beach,
3 California, earlier in January of 2021.

4 I believe the second largest project operating
5 as of last year, which at that time I believe was the
6 largest project -- again, this is just based on public
7 information -- is a project by LS Power called the
8 Gateway project. And that's a 250 megawatt project. I
9 cannot tell the duration of that project. But that
10 project is located in East Otay Mesa community in
11 San Diego.

12 Q. And the first project that you spoke of, the
13 400 megawatt one, how long has that been in operation?

14 A. BY MR. KUMAR: Again, I am going by what is
15 publicly available. I believe the first phase was
16 300 megawatt, four hours. That was the deployed
17 sometime last year. And then the additional phase,
18 which was another hundred megawatts, four hours, was
19 deployed just last week, I believe. I need to confirm
20 my dates. But Mr. Clark might have more details on
21 that.

22 Q. And the Alamitos project that you spoke of, is
23 that on line yet or not?

24 A. BY MR. KUMAR: It is. It was commissioned in
25 January of 2021.

1 Q. Okay. So besides California, are there any
2 other facilities of this scale in operation around the
3 United States that you are aware of?

4 A. BY MR. KUMAR: I am trying to think. I am
5 personally not aware of, but that doesn't mean they
6 don't exist.

7 Q. Okay.

8 A. BY MR. KUMAR: Piers or Kris?

9 Q. I also believe APS was going to check on whether
10 one of these projects was close to any residential
11 development. Were you able to do that, Mr. Clark?

12 A. BY MR. CLARK: The largest one that is
13 1,600 megawatt hours is roughly a thousand feet from the
14 closest residential home. AES would be well-suited to
15 speak to the Alamitos project since they developed that.
16 I couldn't quite tell where that one was located.

17 Q. And was that just one home or were there -- were
18 there multiple homes or --

19 A. BY MR. CLARK: It was a few. It was like a
20 strip of homes located along the bay on the west side of
21 the Moss Landing area.

22 Q. Okay. Thank you.

23 I also wanted to go back to the location of the
24 facility for a moment. And this I will direct to the
25 AES panel members.

1 As far as the location, did you -- I think you
2 indicated there was a third parcel you looked at but you
3 could not get landowner approval, is that correct?

4 A. BY MR. KUMAR: That is correct, just one
5 qualifier. Approval of the site was not available
6 because it was already committed to another development.

7 Q. Okay. Were there any other sites looked at
8 besides those three, the three parcels at issue here?

9 A. BY MR. KUMAR: At this substation, no, nothing
10 was available. So we evaluated the potential of sites
11 that are available. And these were the only that we
12 could talk to landowners that had some potential of
13 leasing the site to us.

14 Q. Because of the proximity of the Westwing
15 substation to all of these residential homes, did you
16 consider at all a more remote location?

17 A. BY MR. KUMAR: Yeah. I think this would be a
18 good time for me to share the reason for us picking this
19 substation and the sites around it as opposed to a more
20 remote location, which mostly, if you think about solar
21 storage projects, so the way the process works is, when
22 the RFP was issued, APS and its RFP document identified
23 several substations where they had a need, Westwing
24 being one of them.

25 And as I mentioned earlier, stand-alone storage

1 serves a very specific need. There are location
2 benefits including grid congestion, peaking needs,
3 et cetera, that are different than energy needs, which
4 is usually satisfied by a solar plus storage project or
5 a wind plus storage project.

6 And just by rule of thumb, if I can mention this
7 if I have not done before, 100 megawatt, four-hour
8 duration battery requires roughly around five and a half
9 to six acres, which is the equivalent land usage for
10 one megawatt of solar.

11 So remote locations tend to be better for solar
12 and storage projects because the land required by solar
13 is hundreds if not thousands of acres, depending on the
14 size of the project. So given the locational need at
15 the Westwing substation, that was basically decided by
16 APS. Among the many other substations they identified,
17 we chose to find sites around it.

18 And as is evident from the Line Siting
19 Committee, the gen-tie part plays a huge role in the
20 development feasibility, meaning the shorter the
21 gen-tie, the better likelihood of the project being
22 commissioned, because a longer gen-tie line requires
23 easements that could traverse private lands and other
24 parcels.

25 So those were kind of the needs or requirements

1 that led us to find sites almost contiguous to the
2 Westwing substation.

3 Q. Okay. Thank you for that response. That was
4 helpful.

5 I want to follow up with you. Are you familiar
6 with the all source RFP that was issued by APS for this
7 project?

8 A. BY MR. KUMAR: Yes, I am.

9 Q. Okay. Was it site specific to the Westwing
10 substation, or did it also ask about other substations
11 where perhaps a project could be located?

12 A. BY MR. KUMAR: The RFP was very generic. It did
13 call out potential capacity needs within the APS
14 territory for several substations. Westwing was one of
15 them. But there was nothing in that RFP that pinpoints
16 to either one substation or the sites around it.

17 Q. When AES responded to the RFP, did you respond
18 with respect to all of the substations, or just
19 Westwing?

20 A. BY MR. KUMAR: We responded with two potential
21 substations. One was Westwing and the other one was the
22 Raceway substation, which is within City of Peoria.

23 Q. I am sorry. Could you repeat the last part of
24 your response.

25 A. BY MR. KUMAR: Sure. The second substation and

1 site that we included in our proposal is the substation
2 referred to as the APS Raceway substation. And we
3 offered a site next to that substation as well.

4 Q. And you said it was APS that picked the Westwing
5 substation?

6 A. BY MR. KUMAR: That is correct.

7 Q. Do you have any information as to why that
8 substation was chosen over the ABS?

9 A. BY MR. KUMAR: I did not. That is, as I
10 mentioned earlier, APS's decision. It is both
11 qualitative and quantitative. But developers don't have
12 insights into that process, or the inputs. I can just
13 say that it goes through a series of modeling exercises
14 using production cost models and other qualitative and
15 quantitative phases. But that's entirely decided by
16 APS.

17 Q. Okay. And do you recall the location of the ABS
18 substation?

19 A. BY MR. KUMAR: I am sorry. I am not following.
20 The location of which substation?

21 Q. Did you say it was called ABS?

22 A. BY MR. KUMAR: No. I meant APS, Arizona Public
23 Service.

24 Q. I am sorry.

25 A. BY MR. KUMAR: Raceway.

1 Q. Raceway. Do you recall the location of that
2 substation?

3 A. BY MR. KUMAR: I do. Sorry, again I am not
4 following the question. You are asking me where it is?

5 Q. Yes.

6 A. BY MR. KUMAR: Just give me one second.

7 A. BY MR. KJELLMAN: Manish, I can jump in here.
8 Raceway is located about seven miles
9 north-northwest -- north-northeast of the Westwing
10 substation.

11 Q. You said of the Westwing substation?

12 A. BY MR. KJELLMAN: Correct.

13 Q. Okay. I had one other question regarding the
14 all source RFP that you responded to. Was it technology
15 specific with respect to the storage facility?

16 A. BY MR. KUMAR: No. It was actually an all
17 source RFP. So we were competing against all types of
18 technology, thermal, natural gas, renewables, et cetera.

19 Q. Okay. Would you agree that the technology that
20 this Westwing project is using is somewhat unproven and
21 untested at this point?

22 A. BY MR. KUMAR: No, I don't agree that the
23 technology is unproven or untested.

24 Q. Maybe I should say the design characteristics
25 which you implemented to respond or address the McMicken

1 failures. Would you agree that those design
2 characteristics are untested or unproven at this point?

3 A. BY MR. KUMAR: I am sorry. Again, I am not
4 following the question. It referenced McMicken design.
5 Are we talking about the McMicken design with the POI or
6 are we referring to the Gen6 design? Could you please
7 repeat.

8 Q. Yes. And I am sorry if I am not being clear. I
9 am referring to the new design changes that were
10 implemented in part to prevent another occurrence of
11 what happened at the McMicken facility. Would you agree
12 that those new design features are somewhat unproven at
13 this point?

14 A. BY MR. KUMAR: I would say that they have been
15 tested and go through the certification that we
16 received. If you are asking is there sufficient or
17 extended operating history off the Gen6 architecture, I
18 would agree that we don't. But based on the
19 requirements and codes and standards, we believe we are
20 putting all the features and enhancements to make the
21 product safer.

22 Q. Okay. Thank you for that response.

23 Given that this technology, the Gen6, has not
24 been in operation for a long period of time yet, can you
25 understand where there may be some concern with its use

1 in this particular area where there are a lot of
2 residential customers?

3 A. BY MR. KUMAR: I understand the concerns. But
4 as I said before, we believe the Generation 6 design
5 exceeds the industry standards that are in place or
6 required over a project of this nature.

7 MS. SCOTT: I am just looking at my notes,
8 Chairman. I am wrapping up here.

9 BY MS. SCOTT:

10 Q. Before you had indicated that finding another
11 location at this point would be simply infeasible.
12 Could you please expand on that comment.

13 A. BY MR. KUMAR: Yes. We have an obligation under
14 our agreement with APS to commission this project by Q4
15 of next year. So that's number one, again.

16 And number two, as I mentioned earlier, I
17 believe APS's decision was based on a specific capacity
18 need at the Westwing substation. So if we tried to
19 still use Westwing as the POI but tried to move away, we
20 feel it will be extremely difficult to get the
21 right-of-way or the gen-tie path to connect this
22 project.

23 Q. Was that looked at at all?

24 A. BY MR. KUMAR: I believe when we worked with
25 APS's interconnection team several paths were evaluated

1 to connect the line to the primary parcel, if that was
2 your question. But if you are asking if we could find a
3 remote site that could still connect to the Westwing
4 substation, we did not, again, because it will highly be
5 impossible to get the clearances and right-of-ways to
6 connect the project.

7 Q. And is that primarily based upon just your
8 perception of difficulties involved in securing
9 right-of-ways, or did someone actually look at what
10 right-of-ways would be required and the feasibility of
11 acquiring them?

12 I am sorry. I could not hear you.

13 MS. GRABEL: Mr. Kumar, can you hear us?

14 MR. KUMAR: Yes. Sorry. I don't know if I put
15 it on mute accidentally, but I responded by saying that's
16 just based on experience developing other projects.

17 MS. SCOTT: Okay.

18 MR. KUMAR: Am I audible?

19 MS. GRABEL: Yes.

20 MR. KUMAR: Thank you.

21 BY MS. SCOTT:

22 Q. Okay. I have a last question here from the
23 Staff. When you explained in your testimony that the
24 panels pop off the top, do the panels fall to the side
25 or do they just shoot upwards and off?

1 A. BY MR. KUMAR: The panels pop upwards and they
2 are quartered -- and Piers, feel free to add here -- but
3 they remain connected post-deflagration. But I will
4 defer to my colleague Piers Lewis.

5 A. BY MR. LEWIS: That's correct. They are on a
6 leash that connects them to the body of the cube,
7 correct.

8 MS. SCOTT: Okay. Chairman, that's all I have.
9 Thank you.

10 CHMN. CHENAL: Well, it is nice to know when I
11 blow my top the same thing happens.

12 Let's use this as an opportunity to take a
13 15-minute afternoon break. When we come back I think we
14 will then go to APS for any cross, and then redirect
15 from Ms. Grabel. Okay?

16 So we will take a 15-minute break.

17 (A recess ensued from 3:12 p.m. to 3:40 p.m.)

18 CHMN. CHENAL: All right. Good afternoon,
19 everyone. Let's go back on the record and resume the
20 afternoon portion of the hearing.

21 I think when we left we were going to turn it
22 over to the applicant to do any cross or redirect.

23 MS. SPINA: Yes. Thank you, Mr. Chairman.

24 MS. GRABEL: Mr. Chairman, before you go,
25 Ms. Scott asked to ask a couple of follow-up questions.

1 CHMN. CHENAL: Sure. Absolutely, Ms. Scott,
2 sure.

3 MS. SCOTT: Thank you, Chairman. Thank you,
4 Ms. Grabel. I just have two quick follow-up questions.

5 CHMN. CHENAL: That's always the way it starts
6 out.

7 MS. SCOTT: I know.

8 BY MR. SCOTT:

9 Q. I believe it was Mr. Kumar mentioned about the
10 hazard mitigation analysis still being underway for the
11 McMicken failure. Could you describe what that is and
12 when you anticipate it will be completed, and then where
13 that report will -- who that report will be provided to.

14 A. BY MR. KUMAR: Sure. Just to clarify, the
15 hazard mitigation analysis is not for the McMicken
16 project but the Westwing project that we are discussing
17 here.

18 Q. Okay.

19 A. BY MR. KUMAR: It is required by APS under the
20 scope of Appendix W. We expect it should be completed
21 in the next month or so, or I should say be finalized.
22 Once complete it will be shared with APS.

23 And Kris, please feel free to add if there are
24 other stakeholders that we will be sharing the report
25 with.

1 A. BY MR. KJELLMAN: Yeah. In addition, we will be
2 providing it to the fire authority, the AFMA, as part of
3 their review of the project. They will review that with
4 their expertise and ensure that the project meets all
5 their requirements and all the code requirements.

6 A. BY MR. KUMAR: Can you talk about the timing,
7 Kris, as well.

8 A. BY MR. KJELLMAN: Yeah. We expect within the
9 next month that will be finalized and issued.

10 Q. Will the report largely address whether code
11 requirements are complied with, or will it address
12 hazard mitigation on a broader scale?

13 A. BY MR. KJELLMAN: All code requirements will be
14 complied with. The hazard mitigation analysis just
15 talks about analyzing hazards on a broader scale. And
16 it helps to ensure the public safety, and then it helps
17 the firefighters and the rest of the owner -- the owner
18 to provide a proper emergency response plan.

19 Q. Okay. Thank you.

20 If we could just, then, go back to the McMicken
21 event. Did AES do any sort of a root cause analysis
22 with respect to the McMicken event? Did it assist
23 either APS or LG Chem? Or what was AES's role in any
24 root cause analysis?

25 A. BY MR. KUMAR: I can respond to that. AES

1 supported the root cause investigation that was actually
2 led by APS. So I will redirect to the APS team. But to
3 answer your question, both AES and Fluence supported the
4 process that was led by APS.

5 Q. One last question. Did you disagree with
6 LG Chemical's analysis?

7 A. BY MR. KUMAR: I wasn't part of that
8 investigation or that process, so, unfortunately, I
9 cannot answer that question.

10 MS. SCOTT: Okay. That's all I have. Thank
11 you.

12 CHMN. CHENAL: All right. Thank you.

13 Ms. Spina, if you would like to do, I guess,
14 combined cross and redirect.

15 MS. SPINA: I will leave redirect to Ms. Grabel,
16 but I will happily jump in here with some
17 cross-examination of APS's witnesses, if that's okay.

18 CHMN. CHENAL: That's certainly fine. But you
19 also have questions that were asked of the APS
20 witnesses.

21 MS. SPINA: I think we have largely covered off
22 redirect on those. I think they only sort of weighed in
23 on a couple that were directed to AES. But if anything
24 else pops up, I will.

25 CHMN. CHENAL: You can do it now if you would

1 like, if it presents itself.

2 MS. SPINA: Okay, perfect. Thank you.

3

4

CROSS-EXAMINATION

5 BY MS. SPINA:

6 Q. Mr. Kumar, there were a couple questions
7 presented to you by both, I think, Chairman Chenal and
8 Ms. Kane about McMicken, and whether that project would
9 have passed or failed the safety standards if we were
10 looking at it today, if we were looking at that project
11 today. And I guess I had a couple clarifying questions
12 there.

13 The first is I think you said, and I don't want
14 to put words in your mouth, but correct me if I am
15 incorrect here, I think you said that it would have
16 passed all of the applicable codes and requirements, but
17 it would not have passed all of the APS BESS safety
18 requirements. Is that correct?

19 A. BY MR. KUMAR: Sorry. I meant that the project
20 did comply with the codes and safety standards of that
21 time prior to the new safety standards, whether it is
22 NFPA or UL or the other stringent requirements under
23 Appendix W. So I apologize if --

24 Q. Okay. Thank you for the clarification.

25 A. BY MR. KUMAR: -- that was the interpretation.

1 Q. Okay. And the APS safety requirements that we
2 have talked about at length over the course of the last
3 day and a half or so, those did not exist at the time
4 that the McMicken battery installation was constructed
5 and put into service, is that correct?

6 A. BY MR. KUMAR: That's correct.

7 Q. And those safety requirements, the APS safety
8 requirements, those grew out of the McMicken event and
9 subsequent investigation and recommendations, is that
10 correct?

11 A. BY MR. KUMAR: That is correct.

12 Q. Okay. Turning next to the questions around
13 notice, I think Ms. Kane asked you some questions around
14 the postcard that was sent out by WAPA and the fact that
15 someone would need to click a link on that postcard or
16 on a website to determine whether or not they would be
17 impacted by the battery installation, or, rather,
18 whether they would be in the vicinity of the battery
19 installation.

20 My understanding, and please correct me if I'm
21 wrong in this phase, but my understanding is that, in
22 addition to that mail, there was an additional mailing,
23 a scoping letter that was sent out that included a map
24 of the project location. I didn't see it in the
25 exhibits that AES had handed out earlier today, so I

1 just want to touch base. Is my understanding correct?
2 Was there a scoping that included a map that was mailed
3 out?

4 A. BY MR. KUMAR: Yeah. Let me redirect to my
5 colleague, Shruti Ramaker.

6 A. BY MS. RAMAKER: Can you repeat the question.
7 Regarding whether a map was contained as part of that
8 original scoping process, was that the question?

9 Q. Well, I think we have -- let me rephrase that.
10 I think we have had some questions and answers around
11 the notice that was conducted or provided by AES in
12 connection with the battery installation. And Staff
13 posed a question that suggested that, unless someone
14 clicked through to the link that was provided in the
15 WAPA postcard, they would have no way of knowing whether
16 they would be in the vicinity of this battery
17 installation.

18 And I guess I am -- that's inconsistent with my
19 understanding, because I thought there was also a
20 scoping letter that was sent out that predated the
21 postcard and that included a map of, you know,
22 identifying where the battery installation would be
23 located. So I am testing my understanding of that first
24 mailing.

25 A. BY MS. RAMAKER: So I can provide what I know to

1 my knowledge. We were notified by WAPA that a project
2 map would be included with that scoping letter that was
3 sent out, and copies of the map was shared with our
4 team. However, I actually did not see the mailing that
5 went out. But the initial drafts were shared with us,
6 and they did tell us that the map and the scoping
7 letter -- the map was to accompany the scoping letter.
8 So I do have confirmation that that was the intention of
9 WAPA. We were not involved with that actual mailing.
10 That was WAPA initiated at the time.

11 CHMN. CHENAL: Let me jump in here. The scoping
12 letter that you just referred to, is that Exhibit 4, the
13 WAPA mailer?

14 MS. GRABEL: It is not, Mr. Chairman. Actually,
15 I was going to walk through this a little bit on my
16 redirect with the witnesses.

17 So maybe save that, Ms. Spina, and I will
18 address it.

19 MS. SPINA: Perfect. Thank you.

20 BY MS. SPINA:

21 Q. Okay, a follow-up question. This one might also
22 be in line, Ms. Grabel; if you want to defer this one,
23 too, let me know.

24 But, so I understand, the AES project went
25 through both a rezoning process with Maricopa County,

1 but also with this NEPA WAPA outreach in connection with
2 the funding, is that correct?

3 A. BY MR. KUMAR: That's correct.

4 Q. And in connection with those processes, was
5 there signage located at the actual facility location to
6 notify people of the zoning change at least?

7 A. BY MS. RAMAKER: Yes, that is correct.

8 Q. So in addition to the original scoping letter
9 with map that Ms. Grabel will walk you through a little
10 bit later, there was also signage posted on the property
11 itself that would notify people that something was going
12 into that location and assumably what it was, is that
13 correct?

14 A. BY MS. RAMAKER: Yes, that's correct.

15 Q. Okay. And you did -- I think someone testified
16 to earlier, I believe, that there were a couple of
17 comments received as a result of that outreach. I think
18 someone mentioned two comments. Is that correct?

19 A. BY MS. RAMAKER: My understanding, it is in
20 response to the 300 foot notification as part of the
21 zone change requirement.

22 Q. Okay. And so two comments, both of which I am
23 assuming were resolved or otherwise addressed, is that
24 correct?

25 A. BY MS. RAMAKER: As the AES team contact, I will

1 let Manish actually answer those questions. He was
2 involved in that outreach.

3 A. BY MR. KUMAR: That is correct.

4 Q. Okay. Thank you.

5 Shifting gears now to the all source RFP that
6 Ms. Scott asked you about, starting out, I think,
7 Mr. Kumar, just could you give us an idea of what is
8 meant by an all source RFP. Is that -- well, let me
9 just end it there. Do you know what that term means in
10 the industry?

11 A. BY MR. KUMAR: Sure. It means agnostic of
12 technology.

13 Q. So that means not just with the lithium-ion
14 battery versus some other battery or storage, but it
15 means it could be solar, it could be battery, it could
16 be natural gas, it could be nuclear, it could be any
17 type of resource at all, is that correct?

18 A. BY MR. KUMAR: That is correct.

19 Q. Okay. And continuing on in this vein, we talked
20 a little bit about the parameters of that RFP. And I
21 think you testified that it was actually for multiple
22 areas and/or substations; it was not specific to the
23 Westwing substation, is that correct?

24 A. BY MR. KUMAR: That is correct.

25 Q. And ultimately your project, the battery

1 installation, was of the winner of that RFP. And so I
2 am assuming and looking to you for confirmation that
3 that means that APS evaluated all the proposals that it
4 received as a result of the RFP, and determined that
5 your project was the winner for whatever reason,
6 whatever metrics they look at to make that
7 determination, but that your project was the successful
8 bid, is that correct?

9 A. BY MR. KUMAR: That is correct.

10 Q. And so, really, the location at Westwing was
11 derived not necessarily because APS had asked for
12 something at Westwing, but because the winning proposal
13 included a project at Westwing, correct?

14 A. BY MR. KUMAR: Correct.

15 Q. And as to where to site the battery installation
16 near Westwing, once your project was identified and bid
17 into the project, that was a determination that was made
18 by AES based on any number of considerations, including
19 the availability of land, is that correct?

20 A. BY MR. KUMAR: That is correct.

21 Q. Okay. Shifting gears yet again, we have been
22 hearing the term catastrophic used in connection with
23 the McMicken event. And although I think we all would
24 agree that any injury is certainly something we don't
25 want to see and is regrettable, to put it mildly, I am

1 not sure that catastrophic is a good term for the sort
2 of the event itself, putting aside the injury part.

3 What would a failure of a storage project look
4 like? I guess when I hear catastrophic, I am
5 envisioning, you know, debris flying in the air and a
6 giant fireball. Just, you know, give us an idea of what
7 is meant when we talk about a catastrophic battery
8 failure.

9 A. BY MR. KUMAR: Piers, do you want to address
10 this one?

11 A. BY MR. LEWIS: Yeah, sure. I mean I think the
12 Appendix W and requirements from APS lay out a range of
13 scenarios to be studied that would, you know, that would
14 cover the range of what could be expected, you know, in
15 the range of cases, including worst cases.

16 And so, you know, those, you know, those
17 contemplate for us looking at the cube and contents of
18 the cube and the possible failures that would occur
19 inside the cube. So those are the, you know, that's
20 really applying Appendix W to the 100 megawatt, you
21 know, four-hour project. And, overall, understanding
22 the two of those total 200 kind of presents the range of
23 scenarios that, you know, of outcomes for worst case
24 events.

25 So, you know, that -- you know, so basically

1 these include, I guess, you know, the, you know, cells
2 failing and emitting gas and fire starting. So there is
3 a certain -- like there is a range of scenarios that
4 Appendix W includes. And that's, I guess, what one
5 could consider the, you know, worst of those would be
6 catastrophic, I guess would be the situation. So, you
7 know, I guess that's --

8 Does that answer the question?

9 Q. I am not sure it quite got me where I was, you
10 know, sort of hoping to get an answer on it.

11 Maybe let me phrase it this way. Would I
12 actually have to see a giant fireball in the sky?

13 A. BY MR. LEWIS: No. No one would, no.

14 Q. What would I expect to see?

15 A. BY MR. LEWIS: You know, you could see, I guess
16 one can expect to see a cube that has an event inside
17 the cube with, you know, one or more cells failing and
18 then gas and potentially burning. And depending on how
19 much gas was emitted and so on, the decompression panels
20 on the top would pop off, and then you would have a
21 situation where you would have kind of a -- one could
22 have a plume of gas, you know, of smoke being emitted
23 for a certain period.

24 You know, this would all be obviously tracked by
25 the alarm systems. And first responders would be on the

1 scene and, you know, they would likely be using, you
2 know, water as a preventative, you know, measure to, you
3 know, to douse the situation and keep an eye on things
4 until the event wound down.

5 So that's really, I guess -- I hope that -- does
6 that scenario, explanation of a scenario give an idea of
7 what could be a worst case event?

8 Q. Yeah, I think you are helping paint a picture
9 for me.

10 So just for clarity, I could expect, sounds like
11 I could expect to see perhaps in sort of a worst case
12 scenario, I could expect to see perhaps some flames,
13 some smoke, but I should generally expect that the
14 damage and the -- you know, that the flames and that
15 type of thing would be largely contained to the
16 immediate facility, the immediate vicinity of the
17 container itself. Or that terminology I think just
18 eluded me. I am not sure that's what we are calling it.

19 A. BY MR. LEWIS: Correct, the cube, to one of the
20 cubes, because, yeah, given that the cubes are small
21 modular blocks, like I think Manish explained, like Lego
22 blocks, and the project being built up with these blocks
23 that are separated from each other and so on and have
24 their own systems, you know, for margining and
25 disconnecting and their own layer of safety protection,

1 exactly.

2 Q. Okay. So we have spent some time talking not
3 only about the McMicken event, but about the distance of
4 the McMicken battery installation from the closest
5 residences as compared to the distance of this project,
6 this battery installation portion of the project to the
7 closest residences.

8 Focusing on McMicken for just a moment, in your
9 experience, what would have been the impact to
10 residences at the McMicken event if there had, in fact,
11 been some residences within 200 feet of the battery
12 installation? Would you have anticipated or expected to
13 see any damage to those residences?

14 A. BY MR. LEWIS: You know, I wasn't involved in
15 the analysis and the -- you know, I wasn't involved
16 really in that. But I think, from what I understood,
17 you know, there was no damage to the very close by
18 McMicken substation. 15 Feet was discussed, you know,
19 as the closest piece of equipment and so on.

20 So from what I heard, you know, in this hearing,
21 you know, correct, if there are residences 200 feet
22 away, there would be no, there would be no impact.

23 Q. And sort of recognizing your caveat that, you
24 know, you were not directly involved, would the same be
25 true for a residence that was, let's say, 100 feet away?

1 A. BY MR. LEWIS: I believe not from what I have
2 heard of this hearing. But, you know, that's -- yep.

3 Q. Okay. So no damage expected for residences 200
4 feet away, no damage expected for residences 100 feet
5 away given sort of the McMicken experience, correct?

6 A. BY MR. LEWIS: Yes, absolutely correct.

7 Q. Okay. So we also heard a bit, and I think this
8 was in Ms. Scott's line of questioning, she was asking a
9 little bit about the technology and whether we would
10 consider that to be untested and unproven. I have to
11 assume that there have been a number of tests done with
12 regard to the safety of your new Generation 6 design.
13 Is that a correct assumption?

14 A. BY MR. LEWIS: Yes. Yes, absolutely.

15 Q. And can you walk us through the types of testing
16 that you have conducted with respect to safety in this
17 most recent generation of battery?

18 A. BY MR. LEWIS: Well, you know, as called out in
19 the Appendix W requirements by APS, you know, we run
20 battery cells through failure testing to clarify the
21 gas, you know, emitted and the contents of that gas and
22 so on, and the impacts from a cell failure, and whether
23 that cell, you know, failing would, you know, catch a
24 cell next to it, you know, you know, of course thermal
25 runaway in that cell.

1 So all of that testing has been done and used as
2 design input in the cube design and the safety system's
3 design, for example, the detection equipment that we use
4 and the profile of gases emitted and, you know, smoke
5 and so on that are considered abnormal, and the design
6 of the panels on the top, the deflagration panels and,
7 you know, what the triggering points are for those to
8 pop off, for example.

9 So, you know, so there is a whole range
10 certainly of testing that we have done to, you know, to
11 develop our design and our solution, you know, that we
12 are, that we are proposing to install here.

13 Q. Thank you, Mr. Lewis.

14 So given all of the testing, the safety specific
15 testing that you have done in connection with your
16 Generation 6 batteries, if there was a failure, which I
17 know we are not expecting or anticipating, but if there
18 were to be a failure, would you expect there to be any
19 risk to residences that are located, let's say, 200 feet
20 away?

21 A. BY MR. LEWIS: No. I mean the distances, yeah,
22 I mean the distances are great, you know, 200 feet. It
23 is a long distance.

24 Q. What about residences that are approximately,
25 let's say, 100 feet away, any expectation of damages to

1 those?

2 A. BY MR. LEWIS: No. No.

3 Q. Okay. Thank you very much.

4 Last question, and I am frankly not sure whether
5 this is most appropriately directed to you, Mr. Lewis,
6 or to Mr. Kumar, so I will just ask that whichever of
7 you is most appropriate answer.

8 My understanding at least, AES has been
9 developing storage facilities around the country. Based
10 on that experience and what you are seeing out there,
11 would you consider APS's safety requirements to be
12 industry leading?

13 A. BY MR. LEWIS: Manish, would you like to comment
14 on that?

15 A. BY MR. KUMAR: Yes, I would say they are
16 industry leading.

17 MS. SPINA: Okay. Thank you very much. I have
18 nothing further.

19 CHMN. CHENAL: Ms. Grabel.

20 MS. GRABEL: Thank you.

21

22 REDIRECT EXAMINATION

23 BY MS. GRABEL:

24 Q. Mr. Kumar, I believe I will start with you on
25 redirect. We heard several questions from Staff that

1 were critical of AES's public outreach, so I would just
2 like to walk through this a little bit with you.

3 The Maricopa County Board of Supervisors is the
4 governmental entity with jurisdiction over where the
5 project can be located, to the extent there is a zoning
6 change needed, is that correct?

7 A. BY MR. KUMAR: That's correct.

8 Q. And the zoning letter that was sent by the
9 Quarles & Brady law firm, which is marked as
10 Exhibit AES-3, was compliant with the outreach required
11 by the Maricopa County Board of Supervisors rules and
12 regulations, is that correct?

13 A. BY MR. KUMAR: Correct.

14 Q. Were there signs posted at the project site
15 talking about the battery storage project?

16 A. BY MR. KUMAR: Yes, they were posted.

17 Q. Thanks.

18 And I had a really interesting conversation with
19 your zoning attorney this morning who said that AES went
20 way above and beyond what is typically required of
21 zoning hearings in terms of informing the supervisors
22 about the safety implications and outreach to
23 firefighters and first responders, many of whom know
24 Mr. Kjellman by his first name. Is that consistent with
25 your recollection of those proceedings?

1 A. BY MR. KUMAR: That is correct.

2 Q. So we will talk now about the outreach required
3 from the zoning proceeding. There is also additional
4 outreach that was done pursuant to the NEPA
5 requirements, the National Environmental Protection Act,
6 by the Western Area Power Administration, is that right?

7 A. BY MR. KUMAR: That is correct.

8 Q. And AES Exhibit 4 is a postcard. But I think
9 probably the better exhibit that we should have put in
10 the record was the one sent to area residents three
11 years earlier, in September of 2019, which is a public
12 scoping letter. Do you recall that document?

13 A. BY MR. KUMAR: Yes, I do.

14 Q. And perhaps these questions are better addressed
15 to Ms. Ramaker -- and if I am pronouncing your name
16 wrong, I've got the word ramekin in my head -- or
17 Mr. Kjellman. But do you recall the scoping letter
18 addressed with great specificity the nature of the
19 project?

20 A. BY MS. RAMAKER: Yes, to my recollection. I was
21 just reviewing it.

22 Q. And I am actually on the project website that's
23 on the Department of, the DOE -- I am sorry, it is the
24 WAPA.gov website -- talking specifically about this
25 project. And you can pull up the documents that were

1 sent to the area residents, the 700 that WAPA notified.
2 And if you scroll down, and I will admit this is a
3 late-filed Exhibit AES-6, but if you scroll down to the
4 very bottom of that letter, it says the word enclosure.
5 Do you see that, if you have the document up?

6 A. BY MS. RAMAKER: I don't have that up.

7 Q. Okay. Well, subject to check, would you take my
8 word it has the word enclosure at the bottom of the
9 public scoping letter?

10 A. BY MS. RAMAKER: I do. I am opening it also as
11 we speak, yes.

12 Q. Okay. And then immediately beneath the letter
13 there is an additional link that says project map, also
14 dated 2019. Would you agree that it is WAPA's practice
15 to include a map of the area from which they are taking
16 scoping comments in a scoping letter?

17 A. BY MS. RAMAKER: That's my understanding.

18 Q. So is it reasonable to assume that this project
19 map was included with the project -- the scoping letter
20 that went out in September of 2019?

21 A. BY MS. RAMAKER: It is reasonable to infer that,
22 yes.

23 Q. And, in fact, that's consistent with what WAPA
24 told you it was going to do, correct?

25 A. BY MS. RAMAKER: Yes, that's correct.

1 Q. And so that letter went out to the 700 residents
2 within the half-mile radius of the project, correct?

3 A. BY MS. RAMAKER: Yes, correct.

4 CHMN. CHENAL: What is the date of the scoping
5 letter, Ms. Grabel?

6 MS. GRABEL: September 27th, 2019. And I will
7 enter this as a late-filed AES exhibit.

8 CHMN. CHENAL: And provide copies tomorrow.

9 MS. GRABEL: Absolutely.

10 CHMN. CHENAL: Thank you.

11 MEMBER HAMWAY: Could I ask a quick follow-up?

12 CHMN. CHENAL: Member Hamway.

13 MEMBER HAMWAY: Yes. How many people did the
14 Quarles & Brady scoping letter go out to?

15 MS. GRABEL: I believe it was 27 homes.

16 MEMBER HAMWAY: So that was the Maricopa County
17 for the zoning, and that only went to 27 homes?

18 MS. GRABEL: Correct.

19 MEMBER HAMWAY: Okay.

20 BY MS. GRABEL:

21 Q. Was an environmental assessment completed on the
22 battery storage project before us today, well, not
23 before this Committee, but at issue today?

24 A. BY MS. RAMAKER: Yes, it has, an environmental
25 assessment has been completed. It has not been -- the

1 final has not been issued yet.

2 Q. Okay. Thank you.

3 And I guess I just have one final question.

4 Mr. Kumar, I think this is probably best addressed to
5 you.

6 Are you familiar with the energy rules that the
7 Arizona Corporation Commission have currently proposed
8 and is presenting to the Arizona Secretary of State for
9 a final rulemaking?

10 A. BY MR. KUMAR: Yes, I am aware.

11 Q. Are you aware that they would set a standard of
12 meeting 100 percent clean energy by 2070?

13 A. BY MR. KUMAR: Yes, I am aware.

14 Q. And do you believe that the Commission could --
15 that utilities could meet such a standard if battery
16 storage projects such as yours, that are untethered to
17 generation resources and located in more urban
18 environments, if those were not allowed to proceed,
19 could that standard be met realistically?

20 A. BY MR. KUMAR: Given the intermittent nature of
21 both solar and wind, that would be not feasible without
22 storage.

23 MS. GRABEL: All right. Thank you. I have no
24 further questions.

25 CHMN. CHENAL: One question. I don't know who

1 this should go to, but there has been some discussion of
2 signage regarding this project. Can someone provide a
3 little more detail about the signage, specifically when
4 the signs were in place, where they were located, and
5 what information was on the signage?

6 MS. RAMAKER: Since Quarles -- I can take this.
7 Since Quarles & Brady carried out the public
8 participation component, I can say what I know and
9 additional information afterwards. But the site was
10 posted in four locations on April 20.

11 CHMN. CHENAL: Excuse me. Excuse me. A little
12 slower. Part of the problem is you are -- the video,
13 audio component is not as clear as the other witnesses.
14 So it is hard for the court reporter and for us to hear
15 everything you are saying. So if I could ask you to
16 slow down a little and maybe repeat what you were
17 saying, and just slow it down just a little. Thank you.

18 MS. RAMAKER: Sure. My apologies.

19 So my understanding, the law firm that AES was
20 working with, they put out the actual citizen
21 participation process that's required by Maricopa
22 County. However, we were involved. My understanding is
23 that the site was posted in four distinct locations, and
24 the postings occurred on April 8th, 2021. And a copy of
25 the photographic evidence was included in the final

1 citizen participation report that was filed with
2 Maricopa County.

3 CHMN. CHENAL: How long were the signs up? You
4 said April 8th, I believe, 2021. And for how long were
5 the signs in place?

6 MS. RAMAKER: I am happy to follow up with that
7 information.

8 CHMN. CHENAL: Okay. And can you provide any
9 information as to what was on the signage, what
10 information was contained in the signage?

11 MS. RAMAKER: I actually don't have that
12 information, but, again, happy to follow up with that
13 information.

14 CHMN. CHENAL: Okay. Yeah, I think that would
15 be very helpful to have that information, because that's
16 another way that the residents, you know, could have
17 been provided information about this project, and I
18 think it would be good to have that in the record.

19 So again, what I am looking for is when the
20 signage was in place, where the signage was located, and
21 what information was contained in the signage.

22 Are there any other questions that the Committee
23 has? And then we will have opportunity for additional
24 questions from attorneys.

25 But Member Haenichen.

1 MEMBER HAENICHEN: Yeah. I was just, maybe this
2 has been covered, but I was wondering, how were the 27
3 addresses selected for the mailing?

4 MR. KUMAR: I can answer this one.

5 They were selected based on the Maricopa County
6 Planning & Zoning requirement, which we mentioned
7 before, of 300-foot radius. So all parcels that were
8 within the 300-foot radius from our site were selected
9 and notified.

10 MEMBER HAENICHEN: Thank you very much.

11 MS. GRABEL: Mr. Chairman, I have been informed
12 by APS that they have a picture of the sign that's on
13 AES's site, if you would like to see it.

14 CHMN. CHENAL: I think that would be wonderful.

15 MR. PETRY: If I may, Mr. Chairman.

16 The photo I am about to share was a photo taken
17 during our land use inventory during this year, and is a
18 photo of one of the signs on the site relating to the
19 zoning process that has been described thus far.

20 CHMN. CHENAL: Any way to blow that up a little?

21 Good. I think it would be good to have a copy
22 of the photo as an additional exhibit, and then, again,
23 confirmation of when it was posted and where.

24 MS. GRABEL: Looks like the posting date is on
25 there, sir, January 4th, 2021 at the very bottom.

1 CHMN. CHENAL: Right. How long --

2 MS. GRABEL: Got you.

3 CHMN. CHENAL: -- it was up in that location, in
4 the locations where they were put in the ground. And
5 also it would be good to know the location of the
6 signage. Good, thank you.

7 Any further questions from the Committee?

8 (No response.)

9 CHMN. CHENAL: If not, Ms. Scott, do you have
10 any further questions?

11 MS. SCOTT: Chairman, I have one. And this is a
12 follow-up to Ms. Spina's questioning of Mr. Lewis with
13 AES. So it will be directed to Mr. Lewis.

14

15 RECROSS-EXAMINATION

16 BY MS. SCOTT:

17 Q. Mr. Lewis, you talked about at one time what
18 failure would look like if failure were to occur. You
19 talked about a range of scenarios. And the worst of
20 those would, of course, at the upper end of the range,
21 be what some may consider catastrophic.

22 When one provides a product, even a household
23 product, normally what you see are a list of scenarios
24 like that, worse, and then it goes to worst case
25 scenarios. And a lot of times those scenarios are not

1 the expected scenarios, they are the unexpected
2 scenarios. Because those are what you really want to
3 ensure don't occur or how you make sure that you plan to
4 mitigate those.

5 So you typically, when you provide a product,
6 especially one this large, you would typically provide
7 that range of what could occur and what are unexpected
8 scenarios so that the user has all of the information it
9 needs in order to take protective measures.

10 We did bring this up at your meet and confer
11 with both APS and AES. I am not sure if anything was
12 put in the record in that regard. But I asked you now
13 whether there is some sort of information like that that
14 you provide to the user of your products. Because that
15 would seem to be very important.

16 A. BY MR. LEWIS: Sure, yes. No, good question,
17 absolutely.

18 I just would go back to the batteries that are
19 being used. You know, they are rigorously tested to
20 confirm that they do not cause thermal runaway. So
21 that's really the worst expected case, you know, is
22 that, is -- I am using the wrong language there maybe,
23 but the fundamentals of the battery would not cause
24 thermal runaway beyond, you know, a cell. And testing
25 has been proven, shown to -- you know, on this you can

1 use the UL 9540 protocols for all this and so on. So,
2 you know, that's really the, you know, expected baseline
3 scenario of a, you know, a worst case.

4 But the Appendix W requirements that we have
5 talked about that APS has developed, which are certainly
6 above and beyond code requirements and so on, require
7 that a range of much more severe scenarios are studied
8 and modeled and reviewed and so on. So, you know, so we
9 have done that. We are doing that. And we do that in
10 general, but, you know, we are doing it for this
11 specific project. And that was discussed, that we are
12 doing that, and that we would present that information
13 to APS. It is a contractual cell requirement for the
14 project, and also to first responders.

15 So that's the process for reviewing, as it were,
16 expected and then certainly much more extreme scenarios
17 of, you know, of worst case events such that response
18 plans can be defined and everybody be ready should there
19 be such an eventuality, which is obviously a very small
20 probability of such, but to your point, to be -- so that
21 everybody is, you know, prepared and ready for such a
22 low probability but, you know, type of event.

23 Q. So, Mr. Lewis, just to follow up quickly, so you
24 do provide such a list of unexpected scenarios, even
25 though low in probability could turn out to be quite

1 catastrophic, you do provide those in writing to APS and
2 the first responders?

3 A. BY MR. LEWIS: Absolutely, yes, yes.
4 Absolutely, yep. And so it is a requirement. It is,
5 yep, it is a requirement here and in many jurisdictions.
6 But the range of scenarios that are required to be
7 reviewed, you know, given APS's requirements, certainly
8 include more severe scenarios. And so, yes, we will do
9 that, yes.

10 Q. Do you think that that would assist the
11 Committee in seeing something like that?

12 A. BY MR. LEWIS: You know, we are developing this
13 information. You know, I mean I don't know on the
14 timing and so on, but yeah. I mean...

15 CHMN. CHENAL: Is it completed, Mr. Lewis?

16 MR. LEWIS: No. We haven't completed work, no.

17 CHMN. CHENAL: All right. Thank you.

18 MEMBER NOLAND: Mr. Chairman.

19 CHMN. CHENAL: Yes, Member Noland.

20 MEMBER NOLAND: Thank you, Mr. Chairman.

21 I think I want to ask this of Mr. Clark. And if
22 he doesn't know, then tell me who might. Was part of
23 the situation with McMicken exacerbated by the first
24 responders that opened the container with the batteries
25 and allowed the air in, which then caused the explosion?

1 MR. CLARK: That's correct. The introduction of
2 either oxygen or just movement of the gases within the
3 enclosure did create a combustible scenario.

4 MEMBER NOLAND: And as I understand it, that was
5 approximately three hours after the beginning of the
6 failure of the cell and the resulting catastrophe,
7 cascading thermal event, is that correct?

8 MR. CLARK: I would have to confirm exactly, but
9 I believe up around three hours, yes.

10 MEMBER NOLAND: So now you have said that there
11 has been more training and will be more training with
12 first responders that would need to respond to any kind
13 of event in these individual modules, is that correct?

14 MR. CLARK: Yes. They would be provided
15 specific training to this project.

16 MEMBER NOLAND: All right. Thank you.

17 MS. KANE: Mr. Chairman, Staff has one last
18 question.

19 CHMN. CHENAL: Yes, Ms. Kane.

20 MS. KANE: It can go to any of the witnesses.

21 MEMBER NOLAND: I can't hear you.

22 MS. KANE: Okay. I will get closer. All right.

23
24
25

1 RE CROSS-EXAMINATION

2 BY MS. KANE:

3 Q. In the scoping letter, in quotes, WAPA seeks
4 your participation, involvement in establishing the
5 scope of environmental issues and studies. It does not
6 specify public comment regarding a line siting, correct?

7 A. BY MS. RAMAKER: I don't believe so.

8 CHMN. CHENAL: Let me -- Ms. Kane, you are
9 talking about a scoping letter that's going to be -- a
10 copy of which will be submitted to the Committee
11 tomorrow as an additional AES exhibit?

12 MS. KANE: Yes. Staff has determined that the
13 link in the postcard that we do have goes to the scoping
14 letter that Ms. Grabel was discussing.

15 CHMN. CHENAL: Okay. So just so we are clear,
16 Exhibit AES Exhibit 4 is the WAPA mailer. And you are
17 saying that the WAPA mailer contains a link to the
18 scoping letter?

19 MS. KANE: It does, Chairman.

20 CHMN. CHENAL: And then tomorrow we will get a
21 copy of the scoping letter so we can look at it. But
22 you are saying, your position is that scoping letter
23 does not reference the line siting hearing, this line
24 siting hearing, is that correct?

25 MS. KANE: That is correct. It only mentions

1 environmental issues.

2 CHMN. CHENAL: Okay. Well, we will look at the
3 scoping letter tomorrow, and I think it will speak for
4 itself, as we say. And if you have questions tomorrow
5 about it, we will give you the opportunity to ask
6 questions about the letter.

7 Ms. Scott, are there any further questions,
8 Ms. Kane or Ms. Scott?

9 MS. SCOTT: I don't believe so. Thank you,
10 Chairman.

11 CHMN. CHENAL: Okay.

12 MEMBER GRINNELL: Mr. Chairman.

13 CHMN. CHENAL: Yes, Member Grinnell.

14 MEMBER GRINNELL: I apologize, but you know
15 what? I think I just realized on these public notices
16 that was on the -- for the county board of supervisors,
17 or for, yeah, for the Maricopa, about the signage, it
18 had a time. But if I am not mistaken, it didn't have a
19 date other than the date it was posted. It did not have
20 a date for the public hearing itself.

21 Am I imagining things? Can we go back to that
22 sign?

23 MEMBER NOLAND: Mr. Chairman, I don't think it
24 had -- this is Member Noland. I read it; I am familiar
25 with them. It didn't have a date, but it gave a

1 reference to go into a website to get that information.

2 They probably hadn't set the date as of that time.

3 CHMN. CHENAL: Let's put it back up on the

4 screen. That's my recollection, Member Noland.

5 Mr. Petry, if we can ask you to put it back up.

6 So Member Grinnell, it does look like the actual

7 hearing dates are to be determined.

8 MEMBER GRINNELL: Right. And I understand the

9 website. But when you are posting a public hearing,
10 there should be a more obvious time, date, and location.

11 That's just my -- it is just a point of clarity for

12 myself as maybe anybody else. Because this tells me

13 there is a public hearing, but it doesn't complete the

14 information, I guess is my point. And it is just more

15 of an observation than it is anything.

16 CHMN. CHENAL: Okay.

17 MR. KUMAR: I can try and respond to that. I

18 believe it was because we were relying on the Maricopa

19 County planning staff to tell us which one of the

20 monthly meetings we were going to be the topic of

21 agenda. And so that was the reason why the specific

22 date was not mentioned. But I can follow up with our

23 counselor, Quarles & Brady, who led this initiative for

24 us.

25 MEMBER GRINNELL: And that's fine. But if you

1 are going to tell somebody there is a public hearing,
2 then follow-up should have been provided. That's just
3 more to the point than anything. Thank you.

4 CHMN. CHENAL: Okay. I have a couple follow-up
5 questions. Let's go back to notice just for a second.

6 We have discussed that there was the WAPA
7 mailer, for lack of a better term. There was the
8 Quarles & Brady letter. There was some signage that was
9 posted regarding this project. I know these are notices
10 for different, for different persons, but at least
11 notice to the community of the battery storage project.

12 First question: Was there publication in a
13 newspaper of general circulation of any notice about
14 this project?

15 MS. GRABEL: Mr. Chairman, nothing like that is
16 required by law for this project. There was, however,
17 notice of this line siting hearing published. And APS
18 will address that because they are the CEC applicant in
19 this case and they attended to all of the statutory
20 requirements and all of the requirements in your
21 procedural order --

22 CHMN. CHENAL: Sure.

23 MS. GRABEL: -- which, of course, mentions the
24 battery storage project.

25 CHMN. CHENAL: Right. So we do have that as

1 well. And then last is social media. Was there any
2 social media utilized by AES, I know there was by APS,
3 but AES in connection with notification to the community
4 of the battery storage project?

5 MS. GRABEL: I don't know the answer to that.

6 AES panel, do any of you know whether social
7 media was used to talk about your project?

8 MR. KUMAR: I don't think so.

9 CHMN. CHENAL: Okay. Any further questions,
10 Ms. Spina?

11 MS. SPINA: No, Mr. Chairman. Thank you.

12 CHMN. CHENAL: Ms. Scott? Ms. Kane?

13 MS. SCOTT: No.

14 CHMN. CHENAL: Any further --

15 MS. KANE: No.

16 CHMN. CHENAL: Ms. Grabel.

17 MS. GRABEL: I guess I have one short redirect
18 with respect to Ms. Kane's cross-examination.

19 CHMN. CHENAL: Sure.

20 MS. GRABEL: I think this was directed to
21 Ms. Ramaker. So I will address it to you.

22

23 FURTHER REDIRECT EXAMINATION

24 BY MS. GRABEL:

25 Q. You were asked whether or not the public scoping

1 letter -- and, by the way, I have AES Exhibit 6 with me
2 because of APS's incredibly efficient paralegal.

3 But, Ms. Ramaker, was the CEC application in
4 this matter even filed at the time the scoping letter
5 was sent in 2019?

6 A. BY MS. RAMAKER: No, it was not.

7 Q. Is WAPA a party to this line siting proceeding?

8 A. BY MS. RAMAKER: No, they are not, which is
9 why -- my understanding is that's likely why it was not
10 mentioned.

11 MS. GRABEL: Thank you.

12 I have nothing further.

13 CHMN. CHENAL: Okay. Any further questions from
14 the Committee?

15 (No response.)

16 CHMN. CHENAL: Okay. I guess, Ms. Grabel, is
17 there anything further that AES wishes to submit at this
18 time?

19 MS. GRABEL: Just to pass out AES-16, if I may.

20 CHMN. CHENAL: Sure.

21 MS. GRABEL: Or 6, not 16.

22 CHMN. CHENAL: 6.

23 MS. KANE: Mr. Chairman, now that we have a copy
24 of Exhibit 6, is my question needed again so we have it
25 in front of us what I was discussing before in my

1 question?

2 CHMN. CHENAL: And your question is that the
3 letter does not mention anything about the line siting
4 hearing?

5 MS. KANE: Yeah.

6 CHMN. CHENAL: Yes. I think we can -- that's
7 well established. Back in 2019, yeah, that was well
8 before the process was started.

9 I have a question, though. Just to remind us to
10 whom this letter was sent, the scoping letter or the
11 area of residents it was sent to.

12 MS. GRABEL: This was sent to the residents
13 within a half-mile radius of the project. That was
14 WAPA's outreach. So the 700 people received this
15 letter.

16 CHMN. CHENAL: Okay. Thank you.

17 MEMBER HAMWAY: Mr. Chairman, I just have one
18 quick follow-up.

19 CHMN. CHENAL: Member Hamway.

20 MEMBER HAMWAY: Was there any comments from
21 residents after they received this letter?

22 MS. GRABEL: I actually did just pull up the
23 environmental assessment which suggests there were
24 comments received. And I would actually like --

25 Maybe, Ms. Ramaker, would you like to clarify

1 the record? Because I think earlier we stated there
2 were no comments received, and that might have been a
3 misstatement.

4 MS. RAMAKER: In terms of the scoping letter, I
5 understand there were some comments received by WAPA.

6 MS. GRABEL: I read in the environmental
7 assessment that there were 18 comments received that
8 were addressed by WAPA during the environmental
9 analysis. Does that refresh your recollection?

10 MS. RAMAKER: Yes.

11 MEMBER HAMWAY: So those 18 comments just went
12 away.

13 MR. KJELLMAN: The reference to comments
14 received was when WAPA sent out the draft EA for public
15 comment. There were no public comments on the draft EA.

16 MS. GRABEL: My apologies. I misunderstood.
17 But there were, according to the environmental analysis,
18 there were 18 comments received that WAPA, what it says,
19 is it took into consideration during the environmental
20 planning process.

21 MEMBER GENTLES: Can you give us an idea what
22 those 18 comments entailed? Was it a yea, no, or don't
23 care?

24 MS. GRABEL: I can pull up the EA if you would
25 like. They did kind of categorize them. Some of them

1 were --

2 MEMBER GENTLES: That would be nice.

3 MS. GRABEL: I would like to read it verbatim.
4 I am not going to summarize. Let me pull it up real
5 quickly.

6 MEMBER NOLAND: Ms. Grabel, I am having trouble
7 hearing you and understanding you.

8 MS. GRABEL: I am sorry.

9 MEMBER NOLAND: I know you are trying to work
10 off your computer and talk at the same time. If I am
11 having trouble, Colette is probably having more trouble.

12 MS. GRABEL: Absolutely.

13 So according to the environmental assessment on
14 page 10, which talks about the outreach that was done,
15 the public comment period began on September 25th, 2019,
16 and WAPA accepted comments on the project until
17 October 25th, 2019. A total of 18 comments were
18 received. Comments received during the scoping comment
19 period were considered in the environmental analysis.
20 Comments were received during the scoping comment period
21 on the following topics:

22 Consider the environmental effects of battery
23 disposal at their end of life versus more
24 environmentally friendly options;

25 Consider the economic impacts to adjacent

1 residential neighborhoods and local businesses;

2 Request to consider siting the proposed battery
3 storage facility in a less populated area;

4 Request to consider the visual and traffic
5 related impacts and adjacent residential development;

6 And request to consider fire and other public
7 health hazards to an adjacent residential development.

8 CHMN. CHENAL: And I wonder, Ms. Grabel, because
9 I don't know what it is that you are looking at, but is
10 there a way that could be printed and made an exhibit
11 that we could, you know, have tomorrow?

12 MS. GRABEL: Certainly.

13 CHMN. CHENAL: I think that would be helpful to
14 just make sure the record is complete. Then we can see
15 what it says.

16 All right. Anything further from AES? We will
17 accept tomorrow the comments on the environmental
18 assessment. But is there anything else in terms of
19 testimony or exhibits at this time?

20 MS. GRABEL: I will ask the AES panel.

21 Is there anything you would like to conclude
22 with before we end our testimony?

23 (No response.)

24 MS. GRABEL: Sounds like none.

25 CHMN. CHENAL: And again, we are pretty loose

1 here in terms of evidence. So if there is something
2 that comes up that you would like to add, based upon the
3 remaining evidence that will be presented by the
4 applicant, we will give you the opportunity to do so.

5 So Ms. Spina, we still have time today this
6 afternoon. And I know you have two witnesses who
7 haven't testified yet. So what would you propose at
8 this time?

9 MS. SPINA: So I think that next up on our
10 agenda is the drone or the drone images and the virtual
11 project tour. So I believe we can probably get through
12 at least some of that. And I would like to hand it over
13 to Mr. Derstine at this point to walk us through that.

14 CHMN. CHENAL: Mr. Derstine.

15 MR. DERSTINE: Sad but true.

16 CHMN. CHENAL: Let me ask this question. I know
17 this is a tough question to answer, but approximately
18 how much more time do you think it will take to present
19 the applicant's case?

20 MR. DERSTINE: On the transmission line or on
21 the battery issues?

22 MEMBER GENTLES: Wow, nicely done.

23 CHMN. CHENAL: I think both.

24 MR. DERSTINE: I think on the transmission line
25 issues before the Committee we have got about maybe

1 three hours.

2 CHMN. CHENAL: Three hours.

3 MR. DERSTINE: Yep.

4 CHMN. CHENAL: And, I mean, in all seriousness,
5 we have discussed the battery a lot. I don't know. Is
6 there anything that you have prepared on the battery
7 that, you know, that --

8 MR. DERSTINE: I don't know what more could be
9 said on the battery.

10 CHMN. CHENAL: Yeah. We have -- Staff has asked
11 to get into the battery, and I think we have done it. I
12 think we have created a record. So three hours is
13 probably what we have left, estimate on that.

14 MR. DERSTINE: I mean that's my estimate in
15 terms of the direct. I don't know how much scathing
16 cross my witnesses will receive and how long that will
17 take, but I think relatively a short presentation. It
18 is a short line; it is a simple project.

19 MEMBER NOLAND: As compared to a day and a half
20 on the battery aspect.

21 MR. DERSTINE: Right.

22 CHMN. CHENAL: So let's use the time we have now
23 and we will see where we are tomorrow. I am thinking in
24 terms of tomorrow and, you know, do we need to go into
25 Thursday to the deliberations. That's the reason I was

1 asking.

2 So if we want to start with a flyover, or
3 however you would like.

4 MR. DERSTINE: I would like to spend just a few
5 minutes with Mr. Duncan, just reminding the Committee
6 about the transmission line, the element of the project.
7 And then we will do the flyover and the drone footage.
8 So I think we can do all that before 5:00.

9 CHMN. CHENAL: Okay.

10 MR. DERSTINE: All right?

11

12 JASON SPITZKOFF, KEVIN DUNCAN, DEVIN PETRY and
13 DANIEL CLARK,
14 called as witnesses, having been previously duly sworn
15 or affirmed by the Chairman to speak the truth and
16 nothing but the truth, were further examined and
17 testified as follows:

18

19 DIRECT EXAMINATION

20 BY MR. DERSTINE:

21 Q. Mr. Duncan, you are sworn. You are under oath.
22 You were introduced to the Committee, it seems like a
23 long time ago. But you were the project manager for the
24 Westwing interconnection project, right?

25 A. BY MR. DUNCAN: That is correct.

1 Q. The last time you were before this Committee you
2 were the project manager for the Biscuit Flats line
3 relocation project for the TSMC semiconductor plant,
4 right?

5 A. BY MR. DUNCAN: Yes, correct.

6 Q. As the project manager for the Biscuit Flats
7 line relocation project, you weren't responsible for
8 selecting the site for the TSMC semiconductor plant?

9 A. BY MR. DUNCAN: No, I was not.

10 Q. And you are not responsible for selecting the
11 site for the AES battery storage project either, are
12 you?

13 A. BY MR. DUNCAN: No, I am not.

14 Q. As the project manager for the AES
15 interconnection project, you are responsible for the
16 planning and the siting of the 230kV gen-tie line,
17 right?

18 A. BY MR. DUNCAN: Yes, that is correct.

19 Q. You are not responsible for the zoning process
20 that was undertaken for the battery storage project?

21 A. BY MR. DUNCAN: No, I was not.

22 Q. You have no responsibility, no involvement with
23 the NEPA process that was led by WAPA for the siting of
24 the battery storage project, right?

25 A. BY MR. DUNCAN: No, I had no involvement.

1 Q. And the CEC application in this case, do you
2 recall when that was filed?

3 A. BY MR. DUNCAN: I am sorry. The date is eluding
4 me, but I know it was in July.

5 Q. July of this year?

6 A. BY MR. DUNCAN: That is correct.

7 Q. So with that, let's talk about the elements of
8 the gen-tie line, the 230kV line.

9 A. BY MR. DUNCAN: Absolutely. Since it has been a
10 little bit since we talked about this, I am just going
11 to take a moment to reorient to what we are talking
12 about here today, and that is the 230kV line
13 interconnection, which we have seen this map repeatedly,
14 but that is the line that is shown here in both green
15 and black for CEC-1 and blue and black for CEC-2,
16 between the Westwing substation here at the south and
17 the proposed AES substation here at the north.

18 So this project is to rebuild a portion of the
19 existing APS owned Calderwood to Westwing 69kV
20 subtransmission line using double circuit capable 230kV
21 structures and adding one 230kV circuit. This circuit
22 will connect the AES substation to the Westwing 230kV
23 portion of the substation.

24 Q. So, Mr. Petry, SWCA was, as the environmental
25 consultant, hired by APS for the transmission line

1 project. SWCA prepared a virtual flyover simulation
2 that the Committee is used to seeing for transmission
3 line siting projects. And you also took some drone
4 footage. And I think you are prepared to show those to
5 the Committee right now?

6 A. BY MR. PETRY: That is correct.

7 Q. Please.

8 A. BY MR. PETRY: So what I would like to do is
9 first start with the drone imagery.

10 And this is a drone image, panoramic photo
11 that's taken from north of the Westwing substation along
12 Happy Valley Road. I am sharing that with you in just a
13 moment. Here we are.

14 This current view, again, is along Happy Valley
15 Road. You can see to the left of your screen here --
16 and I will pan over a bit Happy Valley Road. We are
17 looking east from this location. As I pan to the south,
18 you can see the existing Westwing substation. I will
19 zoom in a bit there.

20 So north of the Westwing substation you can see
21 some of the existing transmission facilities. Those
22 include 500kV lattice structures such as what you see
23 here and here. Those include 230 kilovolt facilities
24 and a 69kV subtransmission line which runs over on the
25 east side of the Westwing substation and extends to the

1 north. And that 69kV line is the line that would be
2 rebuilt as part of this project in order to accommodate
3 the 230kV facilities.

4 I will pan over further to the east. And you
5 can see this RV storage facility that was described
6 yesterday by Mr. Spitzkoff. Those white structures you
7 see here are those shade canopies under which the RVs
8 are placed and stored.

9 Further east of the RV storage facility you can
10 see the residential development that was mentioned. And
11 this particular residential development is the closest
12 to the transmission line project. I will zoom back out
13 a bit and we can look again to the south and to the
14 west.

15 Q. Can you stop there a minute and reorient us.
16 Where you were showing us the residential subdivision,
17 and using your laser pointer or cursor, generally show
18 where the 69kV line is currently located that will be
19 rebuilt with the new 230kV circuit.

20 A. BY MR. PETRY: Yes. So we will look into the
21 central portion of the Westwing substation here where my
22 mouse cursor is located. And that 69kV line I mentioned
23 runs inside the Westwing substation along the east side
24 of the Westwing substation, and extends out of the
25 northern side right about here at this point where my

1 cursor is located close to the southwest corner of the
2 RV storage facility.

3 It then extends to the east, and that's where
4 you can really make out these monopole structures,
5 generally here. You can see where that 69kV line then
6 heads to the north, northeast from this location. You
7 can see it extending along right here through the vacant
8 facility, across Happy Valley Road, and continuing on to
9 the north.

10 So we will zoom in a little more to the Westwing
11 substation again. From this location we are looking
12 nearly due south. And again, you can see the existing
13 substation facilities. You can see some of the existing
14 transmission infrastructure. In the background, you can
15 see the Perkins substation, which is adjacent on the
16 west-southwest side of the Westwing substation. And in
17 the foreground here you can see a cell tower that is
18 located on another private parcel adjacent to the
19 project parcels.

20 I will zoom out a little bit from this location,
21 give you a little more context. You can see much of the
22 vacant land, undeveloped and vacant land in proximity to
23 the project area here to the south and southwest.

24 And then I will extend again over to the east.
25 We are looking east along Happy Valley Road. And on the

1 north side of Happy Valley Road you can see the
2 Coldwater Ranch community. This is the residential
3 development located north of Happy Valley Road that's
4 been described as the closest to the battery project.

5 Q. Can you use your cursor there just to show
6 generally where the parcels that, or the land that will
7 be used to develop the battery storage project.

8 A. BY MR. PETRY: Yes. Right here where my cursor
9 is located you can see the entrance to that residential
10 development. That entrance is roughly the location
11 where parcels on the south side of Happy Valley Road are
12 bifurcated. So right about this location here where my
13 cursor is is where the subject property for the battery
14 storage facility would have its western boundary. So
15 the battery storage facility would generally be located
16 somewhere in this area here as described by my cursor.

17 Q. Thank you.

18 A. BY MR. PETRY: We can from this view also see --
19 I will look a little further over. We are looking to
20 the southeast, east-southeast from this location. And I
21 am going to zoom in again and point out the location of
22 the fire station that is located due east of the
23 Westwing substation. That's the structure you can see
24 right here, the white structure here where my cursor is
25 located.

1 At this point if there are any specific
2 questions from the Committee with regard to the drone
3 imagery, I would be happy to answer them.

4 CHMN. CHENAL: Member Gentles.

5 MEMBER GENTLES: Could you pan back over towards
6 Coldwater.

7 MR. PETRY: Yes. And I can zoom out again, if
8 you like, to give more context, or zoom in.

9 MEMBER GENTLES: So the AES notification of the
10 27 households, were they in that development there?
11 Ms. Grabel?

12 MS. GRABEL: I am so sorry. I was doing
13 something else. Can you ask again?

14 MEMBER GENTLES: The 27 households that AES
15 communicated with, were they in that Coldwater
16 development, or where were they?

17 MS. GRABEL: Mr. Kumar, are you still on?

18 MR. KUMAR: Yes.

19 MS. GRABEL: Can you answer that question? We
20 are looking at the virtual tour.

21 MR. KUMAR: Sure.

22 MS. GRABEL: Thank you.

23 MR. KUMAR: Yes. I think there are some houses
24 that are within the 300 feet in the Coldwater Ranch
25 community that were notified.

1 MEMBER GENTLES: So the 300 feet are from
2 basically where Mr. Devin pointed out where the
3 development starts on the other side of Happy Valley
4 there. So the 300 feet extends, what, if I am looking
5 at the picture, extends over into Coldwater Creek, and
6 then how many of those houses over there would have been
7 hit? Is it just those first -- do I just go through and
8 the first 27 I see going north are the ones, or how
9 would that work?

10 MR. KUMAR: Yeah. We have the exact list of
11 addresses maybe we could share.

12 MEMBER GENTLES: Well, I am just trying to get a
13 good understanding of this 27 households of 700 that
14 were in the AES notification.

15 MS. RAMAKER: To clarify, it was 27 landowners.
16 It may not be all homes. It is landowners within that
17 300-foot radius.

18 MEMBER GENTLES: Okay, so 27 landowners. So
19 that could or could not include, say, those first three
20 or four rows of homes?

21 MS. GRABEL: That's correct. We will follow up
22 with their zoning attorney and figure out exactly which
23 homeowners were notified.

24 MEMBER GENTLES: Any idea -- sorry to -- sorry,
25 Mr. Chairman.

1 But can you zoom in on that screen there, the
2 right screen? Keep going.

3 MR. PETRY: That's as far as I can go.

4 MEMBER GENTLES: Yeah, that line of houses right
5 there, the front line, were they part of that 27?

6 MS. GRABEL: So we know from the previous
7 exhibit that the closest home, which is the one in the
8 front line to the right, was 288 feet away from the
9 storage project. And so we know that that would be
10 within the 300 feet. So just, I am speculating, but I
11 would assume that that row of homes would probably have
12 been included. I would need to confirm that with the
13 zoning attorney.

14 MEMBER GENTLES: So let me ask again. So that
15 row of houses is how many feet from the property line?

16 MS. GRABEL: From the closest cube is 288 feet.

17 MEMBER GENTLES: Okay. So then are you telling
18 me that the only houses that would have been notified in
19 Coldwater Creek, based on what you just said, are maybe
20 those houses there in that front row?

21 MS. GRABEL: That would be true for the zoning
22 proceedings. That would not be true for the WAPA
23 outreach, which is a half mile.

24 MEMBER GENTLES: What about the AES outreach?

25 MS. GRABEL: The AES outreach was with respect

1 to the zoning. That would be that 300 feet --

2 MEMBER GENTLES: Okay.

3 MS. GRABEL: -- so that first row of homes.

4 MEMBER GENTLES: So it may or may not have
5 included those first row of houses?

6 MS. GRABEL: It likely did include that first
7 row of houses.

8 MEMBER GENTLES: Okay. But you are not sure?

9 MS. GRABEL: Right. I need to confirm that with
10 the zoning attorney. I wasn't a part of that
11 proceeding.

12 MEMBER GENTLES: So potentially, when we say
13 that Coldwater Creek was notified by AES, the extent of
14 the notification may have been fairly minimal based on
15 what you are saying.

16 MS. GRABEL: It was to the homeowners
17 associations. So it depends on whether or not the
18 associations then conveyed.

19 MEMBER GENTLES: Okay. So it wasn't to those
20 houses directly.

21 MS. GRABEL: It was connected to those houses
22 directly because they were within the 300 feet. And
23 then the AES additionally reached out to the homeowners
24 association boards and gave them the information.

25 MEMBER GENTLES: Okay. Thank you.

1 MR. PETRY: If there are any other questions on
2 the drone image, I would be happy to answer them.

3 CHMN. CHENAL: Any further questions from the
4 Committee?

5 (No response.)

6 CHMN. CHENAL: Appears not.

7 MR. PETRY: One last thing I think maybe I can
8 point out.

9 In this image would be, in the foreground -- I
10 will pan over to it, right where my cursor is located --
11 you can see a public notice sign right there on the
12 south side of Happy Valley Road. This drone imagery was
13 taken two weeks ago, a little less than two weeks ago on
14 August 12th. And you can see in this image the public
15 notice sign that was provided, one of the public notice
16 signs that were providing notice of this hearing itself.
17 And that's what that sign right there in this image is.

18 BY MR. DERSTINE:

19 Q. That's the sign for this hearing seeking a CEC
20 for the 230kV gen-tie line that's before the Committee
21 today, is that right?

22 A. BY MR. PETRY: Yes, seeking two CECs.

23 Q. Okay, thanks.

24 A. BY MR. PETRY: With no further questions about
25 the drone image, I would be happy to share our virtual

1 tour.

2 MS. KANE: Chairman, can I ask some questions?

3 CHMN. CHENAL: Yes, Ms. Kane.

4 MS. KANE: Is there a sidewalk or any way of
5 someone walking on that side of the road that could view
6 the notice?

7 MR. PETRY: There is no sidewalk on that side of
8 the road. The intention of this particular notice was
9 to allow for residents in the area or travelers around
10 the area to be provided notice and allow for them, if
11 desired, to stop and look more closely at that signage.

12 We identified this particular location because
13 of its proximity to the entrance/exit for this community
14 to the north. We wanted to make sure that we put it in
15 a location where those residents to the north could see
16 it. There is a sidewalk and accessibility from the
17 north side. But again, the sign is on the south side,
18 consistent with the location of the project.

19 At this point, what I can do is I will take down
20 this image and just share the virtual tour.

21 And Mr. Chairman, per your request, we have
22 worked hard to make this a robust virtual tour. I hope
23 that you find it that.

24 CHMN. CHENAL: Thank you.

25 MR. PETRY: Jason, I can just share this from my

1 computer at this point, too.

2 And before I start this, what I would request of
3 the Committee, stop me if there are any particular
4 questions you have as we go through here. I do intend
5 to pause the video at various times just to point out
6 some of the facilities and features we are showing. But
7 again, please feel free to stop me at any point.

8 So we would like to start by again just
9 orienting the Committee with the project location. What
10 you can see here in the center of your screen is the
11 existing Westwing substation. You can see the existing
12 utility infrastructure, including the numerous high
13 voltage transmission lines that enter and exit out of
14 the north side of the Westwing substation from the north
15 and then heading west, as well as the numerous lines
16 that extend to the east of the Westwing substation.

17 To the north of the substation, of course, is
18 the Happy Valley Road with Loop 303 on the east and
19 south side. And indicated in green in the center of the
20 screen here is the proposed project route, as well as
21 the proposed corridor. The green swath you see here is
22 that variable width corridor.

23 Again, from this aerial perspective, there are
24 some elements that you can see where the aerial imagery
25 is slightly out of date as compared to what we saw on

1 the drone imagery or some of our other mapping products.
2 In those instances what we have done is try to model
3 what is actually existing on the landscape now.

4 So an example of that would be the RV storage
5 facility, as well as the residential development
6 immediately east in these locations here. As we get
7 closer to those areas, you see that those are some
8 modeled buildings and structures that we completed as
9 part of this virtual tour, again, just in order to
10 provide a more full context of what is on the landscape
11 now.

12 In addition to that, you will find that we have
13 added some three-dimensional elements related to the
14 substation, the existing transmission facilities, in
15 addition to the simulations that we have completed for
16 the project itself.

17 One thing that I will point out during this
18 flyover will be the visual simulations that we completed
19 from three locations around the project. I will provide
20 much more detail on those simulations as my testimony
21 goes on. But again, as we show these visual simulations
22 that are static and embedded into this video, I would be
23 happy to answer any questions that the Committee may
24 have.

25 I would also note right here on the northeast

1 side of the substation we have a north arrow added just
2 to provide some context for our location. As we zoom in
3 that will be much more visible.

4 In the upper right-hand corner of your screen I
5 want to point out our legend. This identifies the
6 alignments of both the project features, including CEC-1
7 and CEC-2, as well as the existing transmission
8 facilities. So you will see some red, purple, blue,
9 yellow, and light blue lines that represent the
10 transmission facilities, as well as the natural gas
11 pipeline that runs through the project area.

12 We are going to zoom down in. We have still a
13 north-facing view from this location. This provides us
14 with an overview of the proposed corridor. This is a
15 variable width corridor from 100 to 400 feet. As
16 Mr. Derstine pointed out yesterday, I believe, this
17 corridor varies in width in order to avoid extending
18 onto adjacent properties. 400 foot width is in the
19 southern portion that is largely contained within the
20 Westwing substation. And that width is constricted in
21 various locations as we extend to the north.

22 So we can --

23 CHMN. CHENAL: Member Gentles.

24 MEMBER GENTLES: Is that an existing utility
25 corridor?

1 MR. PETRY: The corridor itself is not existing;
2 the 69kV transmission line that this project will be
3 collocated onto it.

4 MEMBER GENTLES: Okay. Thank you.

5 MR. PETRY: So, again, from this view we are
6 looking to the northwest, and this is the location of
7 the RV storage facility. This is the location of the
8 residential development nearest to the transmission line
9 project. And over here on the right side of your screen
10 you can see the fire station, existing fire station.

11 CHMN. CHENAL: Member Noland.

12 MEMBER NOLAND: We keep referring to the
13 residential area to the east of the storage facility.
14 Are those apartments or are they houses?

15 MR. PETRY: Those are duplexes.

16 MEMBER NOLAND: Duplexes, thank you.

17 MR. PETRY: You are welcome.

18 In addition, to the west of the RV storage
19 facility you can see the existing natural gas pipeline
20 pump station.

21 We are panning around to a view again looking to
22 the northwest of what we will point out here is the
23 point of demarcation. It is the point from which CEC-1
24 and CEC-2 separate. You can also see the proposed
25 battery storage facility and project substation, battery

1 storage facility substation.

2 Now we are extending over to the north side of
3 Happy Valley Road. Our view is panning to the south.
4 After we complete the circuit around the substation, we
5 will pan back to the north and we will show you the
6 views from some of the key observation points or visual
7 simulations that we have developed for the project. I
8 will again provide more testimony on how we identify
9 those key observation points and the simulations
10 themselves. But again, please, if there is any
11 question, I would be happy to answer them as well.

12 The first key observation point is KOP-1 located
13 north of the project here. And we will take a view at
14 that simulation.

15 So what you see in this simulation is in the
16 upper portion of the image a photograph of the existing
17 condition from near the residential development at this
18 location.

19 In the upper right corner of your screen you can
20 see a map image which provides an overview of the
21 viewing location at this spot. What you see in the
22 screen is a red dot which provides the KOP-1 location,
23 the point from which this photo was taken, as well as a
24 blue cone which provides you with an understanding of
25 the extent of view. The areas within blue represent the

1 areas that are visible within the photo to the left.

2 Below that map are some descriptions of the
3 simulated structures used as part of the project, as
4 well as an example of an existing structure located
5 within the project area in the foreground of this image.

6 In the lower image, you can see the same
7 existing conditions photo with some of the project
8 elements added in visually simulated. And in this image
9 you can maybe make out what would be some of the
10 monopole structures located south of Happy Valley Road
11 as they extend along the north side of the Westwing
12 substation and then travel north, connecting into the
13 customer proposed project substation.

14 We will now pan over to key observation point 2,
15 or KOP-2. And this is representing a simulation from,
16 again, the closest residential development to the
17 project. Similar to the previous image, we show the map
18 in the upper right-hand corner provides an indication of
19 where the photo was taken at KOP-2, which is the red dot
20 you see. And again, the area within the blue cone
21 represents the field of view from this location.

22 In the upper image we see the existing
23 conditions. And this is actually a small playground or
24 pocket park that's contained within the Christopher Todd
25 community. And you can see the grassy area here where

1 that park is located. Beyond that you can see some of
2 the existing residences located within the community.
3 In the background of this image you can see the Westwing
4 substation along with some of the existing
5 infrastructure coming and going from that substation.

6 In the lower image you can see those same
7 conditions with project facilities simulated. And the
8 primary difference you see are the monopole structures
9 that are still located within the Westwing substation at
10 this location and extend north toward the battery
11 facility.

12 We will now head west and view the visual
13 simulation completed from KOP-3. KOP-3 is a key
14 observation point that represents what we call travel
15 route viewers, one of the identified sensitive viewer
16 types that we use in our visual resource analyses.

17 I will get into more detail on this, but this
18 particular KOP represents a view from travelers along
19 Happy Valley Road. We selected this location because we
20 wanted a view that was unobstructed from the travel
21 route. We wanted to ensure that we were placing the KOP
22 in a location where, you know, various types of, you
23 know, existing development or vegetative features didn't
24 block the view. We wanted to make sure we identified a
25 wide open view to illustrate those sort of worst case

1 scenarios.

2 And what you can see from this simulation is
3 again the map in the upper right-hand corner illustrates
4 the field of view, the key observation point, or KOP,
5 location, as well as some of the existing
6 infrastructure.

7 The upper-left image is the existing condition
8 photograph. In the foreground you can see Happy Valley
9 Road as well as a wash underpass that travels below
10 Happy Valley Road. You can also see in the simulated
11 image below those same conditions, and perhaps make out
12 some of the transmission line facilities proposed as
13 part of this project. There is, I think, maybe one
14 monopole structure that stands out as visible from this
15 location.

16 MEMBER GRINNELL: Mr. Chairman.

17 CHMN. CHENAL: Member Grinnell.

18 MEMBER GRINNELL: Just real quick, is any of
19 this in a floodplain zone?

20 MR. PETRY: Member Grinnell, I am not sure about
21 whether this location is in the floodplain zone. That's
22 something we can follow up and get back to you on.

23 MEMBER GRINNELL: Thank you.

24 MR. PETRY: We will now give just another aerial
25 overview perspective, and I would be happy to answer any

1 questions that the Committee may have.

2 CHMN. CHENAL: Member Gentles.

3 MEMBER GENTLES: Can you just zoom in a little
4 bit. Is that -- are those -- can you zoom in a little?

5 MR. PETRY: I can't. This is a video file. I
6 can show the drone image if you would like.

7 MEMBER GENTLES: Yes.

8 MR. PETRY: One moment.

9 MEMBER GENTLES: Is that the proposed battery
10 storage facility --

11 MR. PETRY: Yes.

12 MEMBER GENTLES: -- depicted there? Okay. I
13 just wanted to use the pointer. So thank you.

14 MR. PETRY: And this effectively concludes our
15 virtual tour. Again, if there are any other questions,
16 I would be happy to address them.

17 CHMN. CHENAL: Any questions from the Committee?

18 (No response.)

19 MR. PETRY: Thank you.

20 MEMBER GENTLES: That was very helpful.

21 CHMN. CHENAL: Very helpful. It was a very good
22 presentation. Thank you.

23 MR. PETRY: Thank you.

24 CHMN. CHENAL: Mr. Derstine, what is your
25 preference at this point?

1 MR. DERSTINE: Well, it is 5:10. My preference
2 would be to adjourn for the day and take up with
3 Mr. Duncan tomorrow and finish his presentation on the
4 planning and the further elements and description of the
5 right-of-way, et cetera, for the project, get into the
6 statutory requirements in terms of the CEC application,
7 et cetera, and then we will move on to Mr. Petry after
8 Mr. Duncan, and he will cover all of the environmental
9 impact issues for the project.

10 CHMN. CHENAL: Okay. Well, we will see where we
11 are when we finish at that point, whether we want to
12 take on the deliberation. You know, it is never my
13 preference to do that in the afternoon, but depending
14 when we finish, we can make that determination. And so
15 we may finish up tomorrow, we may finish up Thursday
16 morning, but doesn't look like later than Thursday
17 morning.

18 MR. DERSTINE: And we will have a draft of the
19 two CECs with the map and the corridor description. The
20 actual call out, the narrative for the corridor
21 description is contained in the CEC itself, or in the
22 CECs themselves, and then the map attached as the
23 description of the corridor. So we will have that for
24 the Committee to review and to chew on a bit so we will
25 be ready when we get to deliberation.

1 CHMN. CHENAL: All right. Good.

2 Anything else we need to talk about before we
3 adjourn?

4 MS. GRABEL: Mr. Chairman, if I may.

5 CHMN. CHENAL: Yes.

6 MS. GRABEL: The environmental assessment on the
7 AES project is actually already in the record. It is
8 attached as Exhibit J to APS Exhibit 1, the CEC
9 application.

10 CHMN. CHENAL: And that would include the
11 comments, the 18 comments?

12 MS. GRABEL: Exactly, yes. The portion that I
13 read from the EA is already in --

14 CHMN. CHENAL: Very good. Maybe tomorrow you
15 can help direct us where that is --

16 MS. GRABEL: Certainly.

17 CHMN. CHENAL: -- in the record for people that
18 wanted to take a look at it.

19 MS. GRABEL: I will.

20 CHMN. CHENAL: That's helpful.

21 Okay. If there is nothing else, we will
22 adjourn. We will see everyone tomorrow at 9:00 a.m.
23 Thank you.

24 (The hearing recessed at 5:14 p.m.)

25

1 STATE OF ARIZONA)
2 COUNTY OF MARICOPA)

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

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

12 I CERTIFY that I have complied with the
13 ethical obligations set forth in ACJA 7-206(F)(3) and
14 ACJA 7-206 (J)(1)(g)(1) and (2). Dated at Phoenix,
15 Arizona, this 28th day of August, 2021.

16 

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18 COLETTE E. ROSS
19 Certified Reporter
20 Certificate No. 50658

21 I CERTIFY that Coash & Coash, Inc., has complied
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