

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE
STATE OF CALIFORNIA



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ADMINISTRATIVE LAW JUDGES RAFAEL L. LIRAG and
ELAINE LAU, co-presiding

Application of Pacific Gas and
Electric Company for Authority,
Among Other Things, to Increase
Rates and Charges for Electric and
Gas Service Effective on January 1,
2020. (U39M)

) EVIDENTIARY
) HEARING
)
)
)
) Application
) 18-12-009
)
)
)

REPORTER'S TRANSCRIPT
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Reported by: Ana M. Gonzalez, CSR No. 11320
Doris Huaman, CSR No. 10538
Carol A. Mendez, CSR No. 4330

I N D E X

WITNESSES:

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STEVE CALVERT

SUMEET SINGH

MATTHEW PENDER

Direct Examination By Mr. Middlekauff 1981

Cross-Examination By Ms. Schaefer 1987

Cross-Examination By Mr. Hawiger 1994

Examination By ALJ Lau 2020

Cross-Examination (Resumed) By Mr. 2022

Hawiger

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Exhibits:

Iden.

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131 1976

132 1976

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135 to 138 2057

131, 132, 133, 134 2148

and 142

1 SAN FRANCISCO, CALIFORNIA

2 OCTOBER 4, 2019 - 9:35 A.M.

3 * * * * *

4 ADMINISTRATIVE LAW JUDGE LAU: Let's go
5 on the record.

6 We are back from recess from
7 yesterday. This is now 9:35.

8 We are going to identify some
9 exhibits first. The next few set of exhibits
10 are Cross Exhibit 131 to 134, are
11 cross-examination exhibits from TURN.

12 So the first one I am going to
13 identify is Exhibit 131, TURN
14 cross-examination exhibit pertaining to
15 documents from US Direct -- US District
16 Court. It's PG&E's Response to Order
17 Regarding July 26th Report and Setting
18 Hearing September 3, 2019. It's the Monitor
19 Report Regarding Vegetation Management Field
20 Inspections.

21 (Exhibit No. 131 was marked for
22 identification.)

23 ALJ LAU: Exhibit 132 is TURN
24 Cross-Examination Exhibit, Excerpt from CPUC
25 Policy and Planning Division Program Review
26 of the Rule 20A Program for 2011 to 2015,
27 November 23rd, 2016.

28 (Exhibit No. 132 was marked for
identification.)

1 ALJ LAU: The next exhibit, also a
2 cross-examination exhibit from TURN is
3 Exhibit 133, PG&E Responses to TURN Data
4 Request 035-01, 079-01, 081-07 and 08,
5 088-07. This pertains to Vegetation
6 Management.

7 (Exhibit No. 133 was marked for
8 identification.)

9 ALJ LAU: Cross-examination
10 Exhibit 134, also a cross-examination exhibit
11 from TURN. This pertains to grid hardening.
12 It is PG&E Responses to TURN Data Request
13 081-05-0 -- cross that. Data Request
14 081-01-05, 88-01-04, 06 and 08.

15 (Exhibit No. 134 was marked for
16 identification.)

17 ALJ LAU: The next exhibit is actually
18 a direct testimony exhibit submitted by the
19 Federal Executive Agencies. This is
20 Exhibit 135 Direct Testimony and
21 Qualifications of Ralph C. Smith, CPA, on
22 behalf of the Federal Executive Agencies
23 dated July 26, 2019.

24 (Exhibit No. 135 was marked for
25 identification.)

26 ALJ LAU: The next three -- the next
27 two exhibits are cross-examination exhibits
28 -- correction, are exhibits in lieu of

1 cross-examination of the witnesses for today.

2 So the first is Exhibit 136, FEA
3 Data Request 05, Question 1, in Lieu of
4 Cross-Examination for PG&E Witness Satvir
5 Nagra.

6 (Exhibit No. 136 was marked for
7 identification.)

8 ALJ LAU: The next exhibit is
9 Exhibit 137, also an FEA Data Request in Lieu
10 of Cross-Examination for PG&E Witness Greg
11 Mulnar. And that is FEA Data Request 4,
12 Questions 1 through 3.

13 (Exhibit No. 137 was marked for
14 identification.)

15 ALJ LAU: And also another
16 cross-examination -- another exhibit in lieu
17 of cross for PG&E. This is Exhibit 138, FEA
18 Data Request 3, Questions 1 to 2. And this
19 is in Lieu of Cross for PG&E Witness Lisa
20 Laanisto.

21 (Exhibit No. 138 was marked for
22 identification.)

23 ALJ LAU: The next three exhibits are
24 cross-examination exhibits by FEA for today's
25 witnesses.

26 First is Exhibit 139, cross-exhibit
27 for PG&E Witness Matthew Pender Response to
28 Public Advocates Office Data Request No. 213,

1 Question 1, with workpaper Table 7-7.

2 (Exhibit No. 139 was marked for
3 identification.)

4 ALJ LAU: Next is Exhibit 140. This is
5 also cross-examination exhibit from FEA for
6 today's witnesses. It's titled PG&E Response
7 to FEA Data Request 1, Question 34.

8 (Exhibit No. 140 was marked for
9 identification.)

10 ALJ LAU: Next exhibit is 141, also a
11 cross-examination exhibit from FEA, PG&E
12 Response to FEA Data Request, Question 1 --
13 cross that. PG&E Response to FEA Data
14 Request 1, Question 35, for cross of PG&E
15 witness Steve Calvert.

16 (Exhibit No. 141 was marked for
17 identification.)

18 ALJ LIRAG: So on the stand today we
19 have three witnesses. This is the panel for
20 the Community Wildfire Safety Program. The
21 panel consists of Mr. Sumeet Singh,
22 Mr. Matthew Pender and Mr. Steve Calvert.

23 So, sirs, if you can all raise your
24 right hand and I will ask you to answer me
25 one at a time.

26 STEVE CALVERT, called as a witness
27 by Pacific Gas and Electric Company,
28 having been sworn, testified as
follows:

///
///

1 SUMEET SINGH, called as a witness by
2 Pacific Gas and Electric Company,
3 having been sworn, testified as
4 follows:

5 MATTHEW PENDER, called as a witness
6 by Pacific Gas and Electric Company,
7 having been sworn, testified as
8 follows:

9 WITNESS CALVERT: I do.

10 ALJ LIRAG: So that's Mr. Calvert.

11 ALJ LAU: Announce your name, too,
12 please.

13 WITNESS CALVERT: Yes. This is Steve
14 Calvert and, yes, I do.

15 WITNESS SINGH: This is Sumeet Singh
16 and, yes, I do.

17 WITNESS PENDER: This is Matt Pender.
18 I do.

19 ALJ LAU: You may both -- you may all
20 lower your right hand. Please, one at a
21 time, state your name for the record,
22 spelling your last name and give us your
23 business address.

24 WITNESS CALVERT: My name is Steve
25 Calvert. The last name is C-a-l-v-e-r-t.
26 Business address is the PG&E Office at 303
27 Carlson Street, in Vallejo, California,
28 94590.

29 WITNESS SINGH: My name is Sumeet
30 Singh. Last name S-i-n-g-h. First name

1 Sumeet, S-u-m-e-e-t. Business address is
2 6121 Bollinger Canyon Road in San Ramon,
3 California.

4 WITNESS PENDER: And this is Matthew
5 Pender. Last name is spelled P-e-n-d-e-r.
6 Business address is 77 Beale Street,
7 San Francisco, California.

8 ALJ LAU: PG&E, you may begin your
9 direct.

10 MR. MIDDLEKAUFF: Good morning, your
11 Honor. I believe Mr. Calvert has already
12 given his direct and then I will do a direct
13 for Mr. Singh and Mr. Pender.

14 ALJ LAU: Okay.

15 DIRECT EXAMINATION

16 BY MR. MIDDLEKAUFF:

17 Q Mr. Singh, good morning. I would
18 like to confirm the testimony that you're
19 sponsoring in this proceeding and what has
20 been marked for identification as Exhibit 16,
21 which was originally filed as PG&E-4.

22 ALJ LAU: Mr. Middlekauff, can you use
23 the microphone, please? Thank you. And you
24 also need to turn it on.

25 BY MR. MIDDLEKAUFF:

26 Q Are you sponsoring all of
27 Chapter 2A?

28 ALJ LIRAG: Let's go off the record for

1 a while.

2 (Off the record.)

3 ALJ LAU: Back on the record.

4 BY MR. MIDDLEKAUFF:

5 Q Mr. Singh, are you sponsoring
6 Chapter 2 and what has been marked as
7 Exhibit 16?

8 WITNESS SINGH: Good morning. And,
9 yes, I am.

10 Q And what has been marked for
11 identification as Exhibit 18 which was filed
12 as Exhibit PG&E-4 workpapers, are you also
13 sponsoring the workpapers for Chapter 2A?

14 A Yes, I am.

15 Q And what has been marked as
16 Exhibit 20, which was filed as Exhibit PG&E
17 Exhibit 18 rebuttal testimony, are you
18 sponsoring all of Chapter 2A, as well as
19 Attachment A to that chapter?

20 A Yes, I am.

21 Q And what has been marked as
22 Exhibit 21, which was filed as Exhibit
23 PG&E-18, Appendix A, are you sponsoring the
24 documents in Appendix A that relate to your
25 rebuttal testimony?

26 A Yes, I am.

27 Q And what has been marked as
28 Exhibit 27, which was filed as Exhibit

1 PG&E-29, PG&E's errata, are you sponsoring
2 pages 29-63 and 29-64?

3 A Yes, I am.

4 Q And what has been marked as
5 Exhibit 96, which was filed as Exhibit
6 PG&E-30, PG&E supplemental and revised
7 testimony, are you sponsoring Chapter 2A?

8 A Yes, I am.

9 Q And, finally, in Exhibit 51, which
10 was filed as Exhibit PG&E-13, are you
11 sponsoring your Statement of Qualifications?

12 A Yes, I am.

13 Q Are there any corrections that you
14 would like to make to your Statement of
15 Qualifications?

16 A Yes. There is one update to my
17 title. In addition to the responsibility for
18 PG&E's Community Wildfire Safety Program, I
19 also now have responsibility for the Asset
20 and Risk Management function for Electric
21 Operations.

22 Q Mr. Singh, were the materials that
23 we've just described prepared by you or under
24 your supervision?

25 A Yes, they were.

26 Q Do you have any changes,
27 corrections or additions that you would like
28 to make at this time to those materials?

1 A No. I do not.

2 Q Are the facts contained in these
3 exhibits true and correct to the best of your
4 knowledge?

5 A Yes, they are.

6 Q And do the opinions expressed
7 represent your best professional judgment?

8 A Yes, they do.

9 Q Thank you.

10 And now, Mr. Pender, good morning.

11 WITNESS PENDER: Good morning.

12 Q Mr. Pender, I want to go through
13 the same exercise of your testimony as well
14 in what has been marked as Exhibit 16 which
15 is PG&E's prepared testimony and was
16 originally filed as PG&E-4, are you
17 sponsoring Chapter 7?

18 A Yes, I am.

19 Q And what has been marked for
20 identification as Exhibit 18, which was filed
21 as Exhibit PG&E-4 workpapers, are you
22 sponsoring the workpapers related to
23 Chapter 7?

24 A Yes, I am.

25 Q And what has been marked as Exhibit
26 20, which was filed Exhibit PG&E-18, the
27 rebuttal testimony, are you also sponsoring
28 Chapter 7?

1 A Yes, I am.

2 Q And what has been marked as
3 Exhibit 21 which was originally filed as
4 Exhibit PG&E-18, Appendix A, are you
5 sponsoring the documents in that appendix
6 which relate to your rebuttal testimony?

7 A Yes, I am.

8 Q And what has been marked as Exhibit
9 22, which was filed as Exhibit PG&E-18
10 workpapers, are you sponsoring the workpapers
11 related to Chapter 7?

12 A Yes. Yes, I am.

13 Q And what has been marked as
14 Exhibit 70, which was filed as Exhibit
15 PG&E-26, are you sponsoring Chapter 15 of
16 that?

17 A Yes, I am.

18 Q And finally, Mr. Pender, in
19 Exhibit 51, which was filed as Exhibit
20 PG&E-13, are you sponsoring your Statement of
21 Qualifications?

22 A Yes, I am.

23 Q Do you have any changes or
24 corrections to make at this time to the
25 testimony being described?

26 A Yes, as it relates to my Statement
27 of Qualifications, my title at PG&E has
28 changed. Since February of this year, my

1 title has changed from the Vegetation
2 Management Strategy and Planning position
3 that described in my testimony to my current
4 title which is the Director of the Program
5 Management Office for the Community Wildfire
6 Safety Program, which includes the Vegetation
7 Management Program.

8 Q And were the materials described
9 prepared by you or under your supervision?

10 A Yes, there were.

11 Q Are the facts contained in these
12 exhibits true and correct, to the best of
13 your knowledge?

14 A Yes, they are.

15 Q And do the opinions expressed
16 represent your best professional judgment?

17 A Yes, they do.

18 MR. MIDDLEKAUFF: Thank you,
19 Mr. Pender.

20 Your Honor, Mr. Calvert, Mr. Singh
21 and Mr. Pender are ready for
22 cross-examination.

23 ALJ LAU: Let's go off the record.

24 (Off the record.)

25 ALJ LAU: Let's go back on the record.

26 Ms. Schaefer, would you like to
27 begin your cross from OSA?

28 MS. SCHAFER: Yes, I am probably going

1 to have issues with this microphone again. I
2 think it's on.

3 CROSS-EXAMINATION

4 BY MS. SCHAEFER:

5 Q Okay. My name is Michelle
6 Schaefer, S-c-h-a-e-f-e-r and I am
7 representing the Office of Safety Advocates.

8 Good morning, Panelists.

9 And, Mr. Singh, I have a few
10 questions for you.

11 WITNESS SINGH: Good morning.

12 Q First, if you could turn to
13 page 2A-33 of PG&E-18 which is now listed as
14 PG&E-20, it would be your rebuttal testimony?

15 A I am there.

16 Q If you could look at line 10, you
17 say:

18 It is my understanding that
19 PG&E recently received an
20 update from a relay
21 manufacturer about a small
22 utility's use of their
23 high-impedance fault
24 detection method in their
25 4-wire distribution system.
26 Is that correct?

27 A That is correct. That is what is
28 stated on lines 10 through 12.

1 Q Hmm?

2 A That is correct. That is what is
3 stated on lines 10 through 12.

4 Q I was just making sure nothing
5 changed. Which relay manufacturer are you
6 referring to in this situation?

7 A I do not have that specific
8 information offhand.

9 Q Okay. Thank you. Is PG&E using
10 these relays currently?

11 A My understanding is yes, subject to
12 confirmation.

13 Q Okay. Thank you. How many relays
14 are installed on the 3-wire uni-ground and
15 primary distribution facilities?

16 A I do not have that information
17 offhand.

18 Q Okay. Thank you. If we could stay
19 on 2A-33 and move down to line 19, you state
20 that:

21 3-wire systems have no
22 unbalanced load current
23 flowing in the ground so
24 they can use relay settings
25 that are much more
26 sensitive to ground faults
27 resulting in fewer high
28 impedance ground faults

1 that remain unclear.

2	Correct?]
---	----------	---

3 A Correct. I think you are reading
4 from lines 1 through 22?

5	Q	Yes.
---	---	------

6	A Yes.
---	--------

7 Q Is PG&E setting their relays
8 currently to more sensitive levels to reduce
9 uncleared ground faults?

10 A That is part of the process that
11 our operations teams typically evaluate.

12 Q Okay. Is this being done on 3-wire
13 undergrounded primary circuits?

14 A That is my understanding.

15 Q Thank you. If we could continue on
16 the same 2A-33 of your rebuttal testimony.
17 You state: While 3-wire uni-grounded
18 distribution systems are not commonly used in
19 North America, they are common in use with
20 many utilities in California, parts of
21 Australia and parts of Britain.

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22         Why are 3-wire uni-grounded systems
23 not commonly used in North America?
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24 A I don't have that specific
25 information. I would be speculating.

26 My understanding is our system
27 historically has had a 3-wire system.
28 Subject to confirmation, it is anywhere from

1 50 to 60 percent of our distribution system.

2 Q And I apologize if this is
3 speculation, but are you aware of any other
4 utilities outside of California upgrading
5 their 3-wire systems with 4-wire systems?

6 A I am not. I am aware that some of
7 the utility operators in Australia also have
8 a 3-wire system. And as you may know, they
9 also have a challenge in regards to what they
10 call "bush fires" or "wildfires." And based
11 on the benchmarking that I've done and our
12 team has done, they are not necessarily
13 replacing the wire system. They have a
14 technology that they have implemented and are
15 in the process of implementing, called a
16 "Rapid Earth Fault Current Limiter." And
17 that basically is a mechanism by which
18 prevents potential ignition starts from a
19 3-wire system.

20 Q Are you saying the 3-wire
21 uni-grounded distribution system in Australia
22 and Britain are equivalent to 3-wire
23 uni-grounded distribution system used by
24 PG&E, to your knowledge?

25 A That is not the claim I was making.
26 I haven't -- we haven't studied the specific
27 details and designs of the 3-wire system in
28 those respective countries. I'm speaking

1 about a general discussion we've had in
2 regards to similarities of the system itself.
3 I'm aware that some of the operators,
4 specifically in the state of Victoria, do
5 have a 3-wire system.

6 Q Okay. On 2A-32 you state that OSA,
7 which stands for Office of Safety Advocate,
8 recommendation is based on 2013 report
9 prepared by the Liberty Consulting Group,
10 which is called the "Liberty report." The
11 Liberty report implies that 3-wire solid
12 grounding uni-grounded systems are safety
13 hazards, because this type of equipment in a
14 wires-down situation, which is a broken wire
15 in the -- in connection with the
16 transformers. This is not the only cause of
17 wires-down situation where lines are being
18 energized. You also state that the Liberty
19 report ignores the other causes of partially
20 energized wires.

21 Are you saying that 3-wire
22 configuration is not a significant factor in
23 PG&E's wires remaining energized?

24 A That is not what it is stating. It
25 is correlating the 3-wire design of a
26 distribution system to a potential fire
27 ignition start. The claim or the statement
28 there is that by the sheer fact, if it is a

1 3-wire system as opposed to the 4-wire
2 system, which we also have in our electrical
3 system, it does not mean that the 4-wire
4 system does not potentially have a likelihood
5 of a fire ignition start. That is what it is
6 basically stating.

7 Q Thank you.

8 How many high incident ground
9 faults is PG&E experiencing every year?

10 A I don't have that information
11 offhand.

12 Q Do you know if we could provide
13 this information to the Commission if we
14 submitted a data request?

15 A I am not certain of that.

16 Q Okay. Have any of these faults led
17 to the ignition of a fire?

18 A I can't specifically correlate the
19 fault to the ignition and how many faults
20 have led to the ignition. But as we look at
21 our ignition dataset from June of 2014 to end
22 of 2018, about 55 percent of the ignitions
23 were attributed to a 3-wire system.

24 Q Thank you.

25 Does PG&E have any studies or
26 investigations under way that seek to
27 evaluate why there is a 3-wire uni-grounded
28 primary distribution circuit, are problematic

1 in wires-down situations?

2 A I am not aware of a specific study
3 focused on that topic.

4 Q Thank you.

5 Has PG&E converted any of these
6 circuits to make them safer?

7 A As part of our Community Wildfire
8 Safety Program, we are not just targeting the
9 3-wire system. We are also targeting a
10 4-wire system, which is all part of our
11 overhead electric primary distribution
12 system. And we also have a focused effort on
13 our secondary open wire system as well. And
14 many of the risk reduction measures that are
15 outlined in the Community Wildfire Safety
16 Program, specifically around system hardening
17 and advanced management, address those risk
18 reduction measures.

19 Q Thank you.

20 Do you know how many have been
21 converted so far? Is there a number of
22 conversions?

23 A Can you maybe be a little bit more
24 specific for clarification? Conversion of a
25 3-wire system, can you clarify your question,
26 please?

27 Q Conversions of 3-wire systems?

28 A I don't have that information

1 offhand.

2 MS. SCHAEFER: Thank you. That
3 concludes our questioning of Mr. Singh.

4 ALJ LAU: Let's go off the record.
5 (Off the record.)

6 ALJ LAU: On the record.

7 TURN, Mr. Hawiger, you may begin
8 your cross.

9 MR. HAWIGER: Thank you very much, your
10 Honor.

11 CROSS-EXAMINATION

12 BY MR. HAWIGER:

13 Q Good morning, gentlemen.

14 WITNESS SINGH: Good morning.

15 Q I am Marcel Hawiger with The
16 Utility Reform Network. I have had the
17 pleasure of meeting Mr. Singh. I don't
18 believe we've met before, gentlemen.

19 ALJ LAU: Mr. Hawiger, can you please
20 use the microphone?

21 MR. HAWIGER: Absolutely.

22 ALJ LIRAG: Also, Mr. Hawiger, is this
23 the 20-minute cross on wildfire risk or is
24 this the entire cross?

25 MR. HAWIGER: It is the entire cross,
26 your Honor.

27 ALJ LIRAG: All right. 210 minutes.

28 MR. HAWIGER: I certainly hope to have

1 less than that. I will probably have a
2 little more cross for Mr. Singh and less for
3 Mr. Calvert.

4 ALJ LIRAG: We are looking at all three
5 of those?

6 MR. HAWIGER: Yes. If your Honors
7 don't mind, if okay with counsel, I have a
8 few high-level questions for Mr. Singh, then
9 I would like to go to Mr. Calvert and Mr.
10 Pender, and come back for questions for Mr.
11 Singh later.

12 ALJ LAU: That sounds good.

13 MR. HAWIGER: Thank you.

14 Q Mr. Singh, is PG&E -- PG&E made
15 some changes in the forecast for its
16 community safety wildfire program in rebuttal
17 testimony, correct?

18 A That is correct.

19 Q And by the way, can I refer to that
20 as your -- the "wildfire program" the CSWP?
21 Would that be acceptable?

22 A That would be acceptable. It is
23 CSWP.

24 Q Sorry. I'll refer to it as the
25 "wildfire program," okay?

26 A Understood.

27 Q Is PG&E requesting that the
28 Commission set the 2020 revenue requirement

1 based on its revised forecast of costs for
2 the wildfire program?

3 A That is correct. That was stated
4 in my rebuttal testimony.

5 Q Okay. And let me just ask you to
6 turn in your rebuttal testimony to
7 page 2A-15?

8 A I'm there.

9 Q And is it correct that this is the
10 revised forecast for the capital costs for
11 the grid hardening component?

12 A That is correct, Line Item No. 2 on
13 Table 2 Alpha 3, that is -- provides proposal
14 for the system hardening program.

15 Q Does the test year revenue
16 requirement increase or decrease as a result
17 of the changes made in your rebuttal
18 testimony?

19 A Can you please restate your
20 question? I was not following.

21 Q Does the test year revenue
22 requirement for 2020 request increase or
23 decrease as a result of the changes made in
24 rebuttal testimony for the forecast of the
25 wildfire program?

26 A What is outlined here is the
27 forecast on a year-over-year basis, which
28 includes additional scope of work, as well as

1 inflation. I'm probably not the appropriate
2 person to correlate this forecast to the
3 revenue requirement.

4 Q Let me just, in this -- this
5 forecast shows that just for the grid
6 hardening component there is a reduced
7 capital forecast for 2020, correct?

8 A That is correct.

9 Q My question is more generally
10 looking at the entire wildfire program. Do
11 you know whether all of the changes PG&E has
12 made in the rebuttal increase or decrease
13 their revenue requirement being requested in
14 this case for the test year?

15 A I do not have that information
16 offhand, because this is only a subset of the
17 overall revenue requirement. So I would be
18 speculating.

19 Q Do you know whether the total cost
20 for just the wildfire program including --
21 well, let me just back up a second. The
22 wildfire -- can you describe the main
23 components of the wildfire program?

24 A What I could attest to is when we
25 look at the 2020 time period, the Community
26 Wildfire Safety Program was forecasted at
27 4.1 billion for both capital and expense as
28 part of the original filing. Then as part of

1 the rebuttal that was revised to 4.2 billion.

2 Q Is that just for 2020?

3 A That is correct.

4 Q Okay. And that is the total of
5 both capital and expenses for the wildfire
6 program; is that right?

7 A That is correct.

8 Q And just one other question. I'm
9 sorry, this is not a high-level question.
10 This is a follow-up to some of your
11 discussion with the Office of Safety
12 Advocates.

13 Does the installation of cost
14 conductor increase the risk of a high
15 impedance ground fault during the a
16 wires-down event?

17 A That is one of the concerns that
18 has been highlighted by both ourselves, as
19 well as some of the other IOUs within the
20 state of California, is my understanding.
21 And our design protection teams are
22 evaluating protection schemes to further
23 mitigate that potential risk.]

24 Q Thank you. Let me turn to Mr.
25 Calvert, please.

26 WITNESS CALVERT: Sure.

27 Q In your rebuttal, I believe you
28 testified that the forecast unit cost for the

1 overhead system hardening program has
2 increased from 1.15 million per mile to 1.5
3 million per mile; is that correct?

4 A That is correct.

5 Q And so your -- has PG&E modified
6 its cost request for the test year -- well,
7 for the entire rate case -- excuse me -- for
8 system -- for overhead system hardening based
9 on this new estimate?

10 A Yes. I believe those adjustments
11 were built into the numbers that Mr. Singh
12 just shared.

13 Q Thank you. I believe you explained
14 that that increase is based on the cost of
15 some recent grid hardening projects; is that
16 right?

17 A That's correct. The actual
18 projects that we've constructed.

19 Q Those were projects -- grid
20 hardening projects completed in 2019; is that
21 right?

22 A That is correct.

23 Q And about how many miles did you
24 do?

25 A I'd have to reference the data
26 response. I want to say about 10 miles.
27 That's subject to check.

28 Q Is it correct that the grid

1 hardening projects includes several
2 activities in addition to replacing conductor
3 with covered conductor?

4 A Yes. I've outlined that in my
5 workpapers.

6 Q Can you just at a high-level
7 identify the main activities associated with
8 overhead grid hardening?

9 A Sure. Well, certainly replacing
10 the bare primary conductor -- that's the
11 high-voltage conductor -- with covered
12 conductors is one large aspect. Another is
13 replacing the support structures, which are
14 the wood poles, whether they are non-wood or
15 stronger poles, relocating those poles, in
16 many cases, or relocating the lines.

17 We're also proposing to replace
18 non-exempt equipment, such as open-link
19 fuses, universal fuses, et cetera,
20 transformers that are more than six years
21 old. They don't have the more recent fire
22 protection installation that the newer
23 transformers do.

24 And I don't want to leave off the
25 secondary. We're replacing the open-wire
26 secondary, which is the lower voltage on the
27 poles with insulated conductors as well.

28 Q Did PG&E separately track the costs

1 for those different activities as part of
2 their costs for their grid hardening
3 projects?

4 A Each job has costs associated with
5 each of those components. However, they are
6 not aggregated currently. We have overall
7 job costs.

8 Q Did PG&E keep track of what
9 percentage of poles had to be replaced along
10 the circuits as part of the projects?

11 A No. Not centrally. However, if
12 you were to look at every job, site specific
13 work locations, you could determine whether a
14 pole was replaced or not or was required or
15 not.

16 Q Do you have any information on
17 whether any of the particular activities or
18 components of the grid hardening project were
19 primarily responsible for the increase in
20 forecast costs or increase in actual costs
21 above your original forecast?

22 A Yes. The primary driver of the
23 cost increase was electric overhead labor.
24 So that would touch on a number of
25 components. Electric crews install the
26 overhead high-voltage poles secondary, all
27 the components I just described.

28 Q I'm going to come back a little

1 later to the pole issue. But let's -- for
2 now, I'd like to ask you some questions about
3 undergrounding.

4 A Sure.

5 Q This is a new -- is it correct that
6 PG&E intends to underground 153 circuit miles
7 during the rate case period as part the
8 system hardening program?

9 A Yes. Our latest forecast calls for
10 that over the 2020, 2022 period.

11 Q You have not identified the
12 specific circuit miles at this point, have
13 you?

14 A Not all 153. That is correct.

15 Q How many miles of underground
16 projects has PG&E so far finalized the scope
17 of work for?

18 A I would have to check that. I
19 don't have that information with me. They
20 are ongoing projects. Our engineering teams
21 are feverishly working to put the jobs
22 together. So it's a moving target.

23 Q Let me ask you to turn to what has
24 been identified as Exhibit 134, and this
25 exhibit contains data responses related to
26 grid hardening.

27 A Sure.

28 Q The pages are not numbered

1 sequentially, but the data responses are in
2 order of -- sequentially.

3 A Can you give me -- is it like
4 TURN --

5 Q It's the TURN exhibit with -- that
6 says, "PG&E responses to TURN DR" --

7 (Alarm ringing.)

8 ALJ LAU: Off the record.

9 (Off the record.)

10 ALJ LAU: On the record.

11 We'll take a 10-minute recess until
12 10:25.

13 Off the record.

14 (Off the record.)

15 ALJ LIRAG: Back on the record.

16 Mr. Singh, did you want to make a
17 quick correction to your previous statement?

18 MR. MIDDLEKAUFF: Your Honor, for Mr.
19 Singh, earlier Mr. Hawiger asked you about
20 4.2 billion and whether or not it applied to
21 2020. And would you like to correct or
22 revise your testimony?

23 WITNESS SINGH: I would. I
24 inadvertently misstated that the 4.2 was only
25 for 2020, but it's for the 2020 to 2022 time
26 period. And that's actually on the record in
27 my rebuttal testimony on page 2 alpha-17 on Q
28 and A No. 38.

1 MR. MIDDLEKAUFF: Thank you, your
2 Honor.

3 ALJ LAU: Mr. Hawiger.

4 MR. HAWIGER: Thank you very much.

5 Q So Mr. Calvert, before the alarm, I
6 had just asked you to turn in Exhibit 134.
7 Do you have that exhibit now?

8 A I do. To TURN 81?

9 Q To TURN Data Request 88, Question
10 1. So it's about a third of the way in.

11 A Okay.

12 Q Let me know when you have that.

13 A Okay. I'm there.

14 Q In subpart (a), TURN requested a
15 list of the circuits and miles that PG&E
16 intends to underground. Do you see that?

17 A I do.

18 Q And in response A, PG&E said it's
19 providing an attached file that contains a
20 list of all their projects which have
21 currently been field-scoped and the design
22 has been finalized.

23 Do you agree with that?

24 A I do.

25 Q Okay. And let's take -- that list
26 is in the attachment that's contained a
27 couple pages later, correct?

28 A Actually, can I clarify the phrase.

1 You said, "The design has been finalized." I
2 want to clarify that that's -- the
3 engineering design has been finalized.

4 Q Can you explain what the difference
5 is between the engineering design and the
6 design?

7 A Sure. Engineering design is -- we
8 have electrical engineers that do the
9 high-voltage, high-level design. Those
10 projects then go to an estimating team, which
11 gives them the details as to pole loading --
12 all the details of constructing a job, and
13 then there's -- the fielding that takes place
14 all before the job is, quote, "ready for
15 construction."

16 Q Thank you. Let me ask you then to
17 turn to the attached list of underground
18 projects.

19 A Yes.

20 Q On that spreadsheet, there is a
21 column -- well, about the third column that's
22 labeled "OH feet," does that indicate
23 overhead feet?

24 A It does indeed.

25 Q Then there's a column next to it
26 that says "UG feet," and then does that refer
27 to underground?

28 (Alarm ringing.)

1 WITNESS CALVERT: Yes.

2 ALJ LAU: Let's continue.

3 BY MR. HAWIGER:

4 Q I'm sorry. I don't know if you --

5 A Yes.

6 ALJ LAU: Let's go off the record.

7 (Off the record.)

8 ALJ LAU: Back on the record.

9 BY MR. HAWIGER:

10 Q Then there is a column labeled
11 "total feet." And can you just explain -- is
12 the total feet the mileage of the project
13 that is being undergrounded --

14 (Alarm ringing.)

15 ALJ LAU: Let's go off. Let's take
16 another 10-minute recess. We'll be back at
17 10:40.

18 Off the record.

19 (Off the record.)]

20 ALJ LAU: Let's go back on the record.

21 We are not going to take a recess
22 because the fire alarm is now off.

23 Mr. Hawiger, please continue your
24 cross.

25 BY MR. HAWIGER:

26 Q Mr. Calvert, can you explain, are
27 the projects that have no input in the UG-
28 Feet column, are those projects

1 undergrounding projects or not?

2 WITNESS CALVERT: The current scope
3 does not include any undergrounding, which is
4 why there is no number listed there.

5 Q So the projects that have been
6 scoped are the ones that have a number in the
7 column "UG Feet." Is that correct?

8 A Yes. This is a forecast based on
9 the scoping, correct.

10 Q And then that feet is converted to
11 a column that says "Total Miles." Do you see
12 that?

13 A Yes, the total feet column.

14 Q And are the Total Miles the circuit
15 miles of the undergrounding project?

16 A Yes.

17 Q Just to be clear, Mr. Singh in his
18 testimony uses the term "circuit miles" for
19 the 153 miles forecast. And in your portion
20 of the testimony, you used the term "miles."
21 Are those terms the same?

22 A Generally they're the same, yes.
23 Circuit miles typically refers to 3-phase
24 connector and represents the circuit. So
25 sometimes the shorthand is we'll use the term
26 "miles" in say a heading.

27 MR. MIDDLEKAUFF: Your Honor, may I ask
28 just a clarifying question? Because I think

1 again we're going to have confusion in the
2 transcript.

3 ALJ LAU: If it's a short answer.

4 MR. MIDDLEKAUFF: It is.

5 Mr. Calvert, the column "Total
6 Miles" would reflect both undergrounding and
7 overhead, right?

8 WITNESS CALVERT: Correct.

9 MR. MIDDLEKAUFF: I think the question
10 had been: Does that reflect the number of
11 miles of undergrounding?

12 WITNESS CALVERT: Oh. I thought I
13 answered it. It's a conversion of the total
14 feet column to miles. Maybe I didn't.

15 BY MR. HAWIGER:

16 Q So, just to be clear, for example,
17 there are some entries that contain -- there
18 are rows that contain entries in both the OH
19 Feet and UG Feet columns. Do those represent
20 projects where PG&E will underground a
21 portion of some circuit or some -- well, I
22 will stop there.

23 A Yes. For the particular project
24 listed, the scope would include both overhead
25 and underground and the associated footage is
26 listed.

27 Q So, are these projects grid
28 hardening projects so the OH Feet refers to

1 an overhead grid hardening?

2 A Can you restate the question?

3 Q So does that mean that -- are all
4 of these projects -- are all of these, yes,
5 projects that have entries only in the OH
6 Feet but not in the UG Feet columns, are
7 those grid hardening projects where you are
8 doing overhead grid hardening?

9 A Yes. That is correct.

10 Q Okay. Thank you. And would you
11 accept, subject to check, that if you add up
12 all of the feet just in the column UG Feet
13 and convert it to miles, you would get
14 approximately 10 miles?

15 A Subject to check.

16 Q So, that means that at least as of
17 the date of this data response, PG&E had
18 scoped about 10 miles of underground
19 projects, correct?

20 A That's correct. Undergrounding is
21 much more complex than overhead. You have
22 easement issues, rights-of-way. It takes
23 more research and therefore the
24 undergrounding work does often lag the
25 overhead work.

26 Q And is it fair to say that PG&E
27 does not know where the additional 143 miles
28 of projects for the rate case necessarily

1 will be?

2 A I can tell you they're in Tier 1
3 and Tier 3. I don't have the specific
4 locations yet. That's correct.

5 Q What is the basis for the forecast
6 that PG&E will do 153 miles of
7 undergrounding?

8 A The basis was an initial forecast
9 of approximately 15 percent of the scope of
10 work that was proposed. Although that was a
11 forecast and we stated in many locations that
12 that forecast will be revised if we continue
13 to scope projects and learn more about the
14 site-specifics of the job.

15 Q So, is it correct that over the
16 next three years, it is possible that the
17 amount of undergrounding could be materially
18 more or less than the 153 miles?

19 A Can you define "materially?" Is it
20 10 percent, twice?

21 Q How about let's say 50 percent, can
22 be up or down 50 percent from the 153-mile
23 forecast?

24 A I would be speculating, at this
25 point. It's early on the project. There's
26 lots of factors that can impact our ability
27 to underground lines. So, I would rather not
28 speculate.

1 Q When you said 15 percent, that's
2 15 percent of the mileage forecast for the
3 grid hardening program; is that correct?

4 A It was -- the original forecast has
5 been modified multiple times, but initially
6 our forecasts were for say a hundred miles of
7 hardening at approximately 15 percent or
8 15 miles would be undergrounding.

9 Q Well, and let me just sort of
10 follow up. What's the basis for the
11 15-percent figure?

12 A Yeah. The 15 percent was based on
13 a number of factors, including some of the
14 lessons learned from our rebuilding work in
15 Paradise and other areas where we have found
16 locations with extreme winds, dense
17 vegetation, congestion as far as electrical
18 facilities. So undergrounding was deemed to
19 be appropriate in about 15 percent of the
20 mileage subject to revision as we continued
21 to scope the work.

22 Q Let me ask you to turn a couple of
23 pages back again to the first page of Data
24 Request 88, Question 1.

25 Now, in Subpart D, TURN requested
26 that PG&E explain qualitatively and
27 quantitatively why it selected the circuits
28 miles for undergrounding. And is it correct

1 that in the responses, generally I believe
2 you refer to some of your rebuttal testimony
3 concerning the prioritization project and
4 then in Part D you state that the explanation
5 is also provided in a column in the
6 attachments; is that right?

7 A Yeah. I believe it's referencing
8 the Underground Considerations column.

9 Q Okay. So if we could go to that
10 spreadsheet and look at that Underground
11 Considerations column, can you explain a
12 little more; for example, the first row for
13 undergrounding states: Risk Mitigation and
14 Veg Clearance, open parenthesis, (Redwood
15 Trees). What does that mean?

16 A I don't have the specifics on that
17 project, but I would interpret that as
18 meaning that we have some tall redwood trees
19 that -- in the area, let's say 70-foot-tall
20 redwoods or taller, that hardening the system
21 with overhead covered conductor and all would
22 still be subject to tree falling and damaging
23 the facility. So for that particular
24 location, it was deemed to be more prudent to
25 underground the facilities where that
26 condition exists versus building overhead.

27 Q And then further down, there are a
28 few entries that describe Cal Trans crossings

1 were considered for UG, and there's some
2 additional text. Can you explain what that
3 means?

4 A Yes. That's -- typically it's
5 crossing a state highway or -- so, Cal Trans,
6 they would want to underground under the
7 highway to prevent our conductors, say
8 overhead conductors, impeding the roadway in
9 the event of a fire or some type of major
10 event.

11 So undergrounding, this ties back
12 into our comments around egress and
13 protecting egress.

14 Q Are all of these 10 miles of
15 undergrounding projects on this list located
16 or associated with their rebuild of Paradise,
17 of the system in Paradise?

18 A No. We have a description column
19 there that provides more details on the
20 location. I recognize you may not be
21 familiar with some of the substation names
22 that are listed.

23 Q Okay. Thank you.

24 In your rebuttal, let me ask you to
25 turn to your rebuttal testimony for a moment
26 and look at your Answer 22 and let me -- one
27 moment.

28 So this is Exhibit 20, page 9-10,

1 and your Answer 22. You explain that the
2 average cost for some Rule 20A undergrounding
3 projects was 4.4 million per mile but that
4 your forecast is based on a unit cost of
5 6.2 million per mile. And is that per
6 circuit mile?

7 A That's per mile of existing
8 overhead that is converted to underground.

9 Q And how does that differ from the
10 mileage, the circuit miles, miles that we
11 were just looking at in your scope for
12 undergrounding projects?

13 A When you underground overhead
14 facilities, you can't always take a direct
15 route along the existing pole line. You may
16 have to cross the street. You may have to --
17 I don't want to get too technical, but the
18 system -- you will have main line primary, as
19 well as local loop primary serving
20 transformers. So the mileage of
21 undergrounding is typically further.

22 Q I'm sorry. I didn't hear the last
23 part?

24 A You have a greater mileage of
25 circuit miles of underground to replace the
26 amount of original overhead.

27 Q Is that always the case that you
28 have a larger number of miles of

1 undergrounding compared to the overhead
2 miles, circuit miles you are replacing?

3 A I would say generally that's true
4 in the large majority of cases, yes.

5 Q So, I guess I am a little confused.

6 Back to my original question, the
7 153 circuit miles; is that the same measure
8 of miles as the unit cost that you describe
9 here, the 4.4 million per mile?

10 A Yeah. The 4.4 serves as a basis
11 for the undergrounding costs. But, yes, that
12 is per circuit mile.

13 I don't know if it helps, but on
14 overhead systems, you have overhead lines and
15 transformers bolted to a pole. You have a
16 transformer attached to a pole and a service
17 feeding a home. When you underground that,
18 you'll have that same high-voltage primary.
19 Now you have to put the transformer on a pad
20 or underground and run the primary conductor,
21 circuit miles if you will, to that new
22 transformer. So you're introducing further
23 footage. Does that make sense?

24 Q Well, is the undergrounding --
25 presumably when you underground -- actually
26 maybe you could just explain very briefly at
27 a high level, what is the installation
28 process for undergrounding an electric line?

1 A Okay. Well, I thought I just did,
2 but I'll take it slow.

3 If we have an overhead distribution
4 line, we'll say it's a 12 kV high-voltage
5 line on wooden poles on one side of the
6 street, for example, and you have a
7 pole-mounted transformer, which I assume you
8 recognize the transformer below the primary,
9 and let's say we are serving a home that is
10 across the street, you have a service coming
11 off of that transformer to across the street
12 or maybe go to the service pole which
13 maintains the clearance requirements across
14 the roadway and then to the home. If you
15 were to underground that same facility, and I
16 am giving you a very simple example, you
17 would still have the same primary main line
18 typically on the same side of the street. It
19 wouldn't necessarily be in that same
20 location. We have to negotiate
21 rights-of-ways or easements to install that.
22 Now to provide a transformer to serve that
23 home, you no longer have a pole there,
24 correct? So we would typically install a
25 pad-mounted transformer, which is a green box
26 sitting on a concrete pad, close to the
27 facility that it's serving. So it would be
28 across the street, as well, and you would

1 need to bring that high-voltage conductor
2 over to that transformer.

3 Q And I think what I am wondering
4 about is what you very briefly mentioned as
5 you would put in the primary but not in
6 exactly the same location. I am more
7 interested in your replacing a mile of
8 overhead primary circuit. Presumably are you
9 digging a trench somewhere to put in
10 underground conduit and cable to replace that
11 mile of overhead primary conductor?

12 A You may typically be digging more
13 than a mile.

14 Q And so that's my question. You're
15 not digging exactly along the same path
16 necessarily right under the overhead lines?

17 A That's correct. We have to secure
18 easements and rights-of-way and there's other
19 factors that come into consideration.

20 Q And the length of the underground
21 trenching and conduit that you put in, could
22 it be longer or shorter than the overhead
23 miles of conductor you're replacing?

24 A It's longer. My earlier response
25 was it's generally longer.

26 Q Is it pretty much -- so it's
27 generally longer than the overhead miles
28 you're replacing, correct?

1 A I believe I stated "generally."
2 There are cases that take that same example
3 where there is no transformer. We are just
4 taking the system overhead. There's no
5 customers in that area and going underground.
6 Then you would have an equivalent number of
7 underground miles.

8 Q Would it not be true that your cost
9 depends on the number of underground miles
10 that you have to put in?

11 A By cost, we are providing a unit
12 cost. So, yes, the unit cost times the
13 number of units you're installing.

14 Q Is the number of units you're
15 installing, the mileage -- the underground
16 conduit mileage for the underground cable?

17 A It's the circuit miles. I don't
18 want to get too complicated but there's
19 secondary as well which includes conduits.

20 Q Maybe this is -- I don't want
21 belabor this, but by "circuit miles," do you
22 mean the circuit miles of the length of the
23 new underground cable or the length of the
24 old overhead cable that you're replacing?

25 A The unit costs would apply to the
26 circuit miles of new underground cable
27 installed which is generally more, as I
28 mentioned.

1 Q Okay. Thank you. Let me ask you:
2 In your testimony, you say that the -- rather
3 than using the average of \$4.4 million per
4 mile, your forecast is based on 6.2 million
5 per mile -- 6.2 million per mile, correct?

6 A That is correct.

7 Q Would you agree with me that by
8 increasing the unit costs by 1.8 million,
9 that adds about \$275 million to your total
10 forecast for the 153 miles?

11 A Subject to check, but it's
12 40 percent, roughly, increase.

13 Q As you said before, your plan is to
14 target Tier 2 and Tier 3 areas in
15 high-fire-threat district, correct?

16 A That is correct.

17 Q And those tend to be more rural
18 than other areas of the service territory,
19 correct?

20 A They're rural areas, yes.

21 Q And if I understand correctly from
22 your Answer 22, you're testifying that
23 because existing Rule 20A projects tend to be
24 in commercial and/or urban areas, the
25 proposed -- excuse me, the cost of your
26 proposed undergrounding projects in rural
27 locations will be harder because these areas
28 are not developed to support underground

1 facilities; is that generally correct?

2 A That is indeed correct.

3 Q Let me ask you to turn to what has
4 been identified as Exhibit 132 and it is the
5 excerpt from the CPUC Policy and Planning
6 Division 2016 report.

7 ALJ LAU: Before we turn there,
8 Mr. Hawiger, can I ask a quick question of
9 Mr. Pender?

10 EXAMINATION

11 BY ALJ LAU:

12 Q Why is PG&E using a unit cost of
13 \$6.2 million from the average costs of
14 \$4.4 million per mile?

15 Back in your rebuttal testimony in
16 Question 22, it says --

17 WITNESS CALVERT: Excuse me, Judge. I
18 thought you were referencing Mr. Pender. I
19 am Mr. Calvert.

20 Q Mr. Calvert. I'm sorry.

21 So, yes, why is it that PG&E is
22 using a forecast of \$6.2 million per mile
23 when the average cost is \$4.4 million per
24 mile?

25 A Yes, the reason is undergrounding
26 in the rural or foothills or somewhat
27 mountainous areas is far more difficult than
28 undergrounding in city streets where you

1 already have a lot of infrastructure and you
2 have more knowns.

3 In rural areas, we are having to
4 build retaining walls to have enough
5 equipment, room for our equipment on the side
6 of the road. We're having site remediation
7 that has to take place. You have more
8 difficult trenching. Trenching is a huge
9 component as you might imagine with digging
10 and installing conduit. So you end up with
11 rock and difficult conditions that you don't
12 experience in an urban area.

13 Q So is there like a study that PG&E
14 did that decided that \$6.2 million is an
15 appropriate amount?

16 A No. There is not a study. What we
17 have done is brought together a team of
18 subject matter experts on undergrounding, not
19 necessarily all Rule 20, but undergrounding
20 in rural areas and that was our forecast we
21 came up with given the additional challenges
22 of working in these foothill-type areas.

23 Q Is there an historical average that
24 PG&E can gauge that can compare to the
25 \$6.2 million based on expert judgment?

26 A I'm sorry. Can you repeat?

27 Q Is there an historical average of
28 the work that PG&E did to use, instead of

1 using expert judgment?

2 A Sure. I don't have that
3 information now. However, with all the work
4 that we are doing in Butte County right now
5 with undergrounding now, we are getting new
6 costs, if you will, every day and we'll have
7 a history of historical costs to refine this
8 forecast. But the forecast was developed
9 from subject matter experts.

10 ALJ LAU: Okay. Thank you.

11 Thank you, Mr. Hawiger. You may
12 proceed.

13 MR. HAWIGER: Thank you, your Honor.

14 CROSS-EXAMINATION (resumed)

15 BY MR. HAWIGER:

16 Q Continuing on that same issue,
17 could you please turn, in Exhibit 132, and
18 let me ask you first: Are you familiar with
19 this document?

20 WITNESS CALVERT: I want to make sure I
21 have the right -- so this is the program
22 review?

23 Q Of the Rule 20A.

24 A I was not familiar with the
25 document until I received it yesterday. So I
26 read through it and I am familiar with it
27 now.

28 Q Okay. Let me ask you then to turn

1 to page 1 of the actual text. So it's after
2 the Summary and after the Table of Contents.

3 A Yes, I have it.

4 Q Now, there's a section there,
5 Section 2, labeled The Cost of Conversion
6 Projects and it contains a Table 1. Do you
7 see that?

8 A Yes, I do.

9 Q Now, is it correct that the CPUC
10 staff found that based on national data,
11 undergrounding in rural areas is
12 significantly cheaper than in suburban or
13 urban areas?

14 A My understanding is that this
15 reference is an Edison Electrical Institute
16 Study that was dated in 2012 that shows these
17 costs. What I don't know from looking at the
18 table is the age of the projects, when these
19 projects were constructed, but I will
20 acknowledge that there is a table here that
21 shows lower rural costs.

22 Q And, in fact, if you look at the
23 row labeled "Maximum," that even for the
24 maximum costs, it shows a differential
25 between rural projects and urban projects of
26 about 2.5, a factor of 2.5; would you agree?

27 A I would.

28 Q Is it your contention that these

1 numbers do not apply to PG&E's service
2 territory?

3 A No. I wouldn't say they wouldn't
4 apply to some portions of PG&E's service
5 territory. However, rural construction in
6 the Central Valley in Sandy Loam trenching is
7 much easier and much less costly than
8 trenching in the Sierra area where you have
9 many of the challenges I just described.

10 Q Has PG&E conducted any
11 undergrounding projects in those more -- I
12 guess you're describing more mountainous
13 areas, hilly areas; is that right?

14 A Yes. I don't want to paint the
15 wrong picture that we're going up the side of
16 a mountain, but these are -- the soils in
17 these rural areas are quite a challenge, as
18 well as spacing for equipment and the size of
19 those, et cetera.

20 Q Does PG&E have any data on actual
21 trenching or underground construction
22 projects in those areas?

23 A We do. I don't have it with me and
24 as I mentioned, we're gathering that data
25 every day as projects continue to get
26 constructed.

27 Q Do you know whether PG&E has done
28 any underground projects associated with gas

1 line -- gas pipeline replacement in similar
2 areas that are more rural and more hilly?

3 A I can't answer that question. I'm
4 not familiar with the gas work.

5 Q I wonder, Mr. Singh, would you be
6 able to provide any input on this, whether
7 PG&E has conducted any trenching of
8 underground gas pipelines on their
9 distribution or transmission to determine
10 relative costs of underground work?

11 WITNESS SINGH: It may have done some
12 gas distribution transmission work in those
13 areas. It's hard for me to definitively say
14 that in regards to the circuits -- location
15 of our overhead circuits in comparison to the
16 relative location of where the gas work may
17 have been done.

18 Q Isn't it true that in its work on
19 doing gas pipeline replacement PG&E has
20 testified that costs are higher for doing
21 pipeline replacement in urban and suburban
22 areas than in rural areas?

23 A I would be speculating because my
24 focus in this GRC was not on the gas part of
25 our business.

26 Q I am asking about your experience.
27 Isn't it true that you have been an expert
28 for PG&E in the gas transmission and storage

1 rate cases that address issues of pipeline
2 replacement?

3 A I have previously, yes.

4 Q So I am asking, based on your
5 knowledge, previous knowledge, are you aware
6 that PG&E has testified that with respect to
7 gas pipeline replacement, costs are higher in
8 rural areas -- I'm sorry -- are lower in
9 rural areas than in urban or suburban areas?

10 A It's hard for me to specifically
11 speculate on that. I can share from my
12 experience; in some parts of our service
13 territory, the cost to do replacement, for
14 example, for our distribution gas lines in
15 the Central Valley area tends to be lower
16 costs as compared to San Francisco and some
17 of the those types of areas in terms of the
18 density of the infrastructure that exists in
19 the downtown-type of setting. I don't have a
20 specific comparison for the foothill-type
21 area that Mr. Calvert is speaking of and to
22 be able to draw that comparison for you on
23 the gas side.]

24 Q Thank you.

25 ALJ LAU: Sorry. I do have a question,
26 quick question.

27 So Mr. Calvert, PG&E didn't -- for
28 the subject matter experts that PG&E used to

1 get the \$6.2 million per-mile forecast, PG&E
2 didn't work with their subject matter experts
3 that did gas pipeline trenching?

4 A That is correct.

5 One difference I wanted to point
6 out between Rule 20 jobs, and this work is
7 often -- there are other occupants in these
8 trenches. You may have gas, you may have
9 phone, cable, other utilities that are in
10 that trench. In these rural areas, we don't
11 necessarily have gas. The other utilities
12 aren't in the demographics. So the trench is
13 solely for electric and, therefore, the costs
14 are fully burdened by electric.

15 ALJ LAU: Thank you.

16 Mr. Hawiger.

17 BY MR. HAWIGER:

18 Q Let me ask you to turn back to
19 Exhibit 134 that we were looking at before
20 the data responses concerning grid hardening.

21 WITNESS CALVERT: Okay.

22 Q If you could turn towards the end
23 to question and answer -- to Data Request 88
24 Question 4.

25 A Okay.

26 Q Now, this data request asked for
27 the data supporting your 4.4, I'm sorry, your
28 6.2. This asks for the data supporting that

1 data of what the average costs have been for
2 Rule 20A projects, correct?

3 A Correct.

4 Q And in the response PG&E provided a
5 database of settlement Rule 20A projects that
6 were started and ended in -- during the 2013
7 to 2016 time period. Do you see that?

8 A Yes. I have the spreadsheet.

9 Q Okay. First, can you clarify.
10 When you say both "started and ended," does
11 that mean that -- did that both mean -- it is
12 a both or an either? Was every project in
13 this database started sometime between 2013
14 and 2017 and also ended for each -- does that
15 apply to each project, or not?

16 A Yeah. I would have to go back and
17 look at each project. And I believe the
18 title is that projects were constructed in
19 that period or project spend for those
20 five years.

21 Q Okay. And the last sentence of
22 this data response states: These miles
23 represent the geographic distance of the
24 project and may differ from the overall
25 project circuit mileage data.

26 Do you see that sentence?

27 A Yes.

28 Q Can you explain what that means?

1 A Yeah. This gets back to what I
2 brought up earlier around the overhead miles
3 being converted to underground may not
4 necessarily be the same. That is you
5 will generally, as I stated earlier, have
6 fewer overhead miles and more underground
7 miles once it is converted.

8 Q So if I could ask you to turn to
9 that attachment, the database. It is in the
10 next two pages.

11 A Yes.

12 Q And so does that mean that
13 column -- there is a column marked Miles of
14 Overhead Lines Converted to Underground. Do
15 you see that?

16 A I do.

17 Q So is it correct that that is not
18 equivalent to circuit miles in the way you
19 have used that term previously?

20 A That is the circuit miles of
21 overhead conductor?

22 Q It is not the service miles of
23 conductor?

24 A Correct, for the reasons I stated
25 earlier.

26 Q Am I correct in that the column
27 Project Spend Per Mile, the last column, that
28 is taking the project spend dollars and

1 deciding by the miles shown in that -- in
2 this database?

3 A No. That is an average for those
4 projects. It is not a weighted average.

5 Q Okay. Let me -- just for each
6 project, let me start there. For each
7 project you took the project spend in 2013 to
8 2017 and divided by the miles of overhead
9 lines converted to underground, correct?

10 A That is correct.

11 Q And then -- let me just ask you:
12 The column Project Spend in 2013 to 2017,
13 does that represent the entire cost of each
14 project?

15 A No. It is the project spend in
16 that period. As I mentioned earlier,
17 oftentimes with Rule 20 jobs you have credits
18 and other adders. Or I say "adders," they
19 are actually subtracters, if you will, from
20 the cost of the job, credits from the other
21 utilities. So this was used excluding those.
22 This is the cost as if it was electric only.

23 Q So does that mean that the actual
24 cost of the project, the full-in, could have
25 been higher than the numbers here, or I'm a
26 little -- it could be higher or lower or
27 either one?

28 A It could be. That is correct, it

1 could be.

2 Q Could be higher or lower, is that
3 right, or is it just one way?

4 A I don't have the specifics of each
5 job, but this is the cumulated spend during
6 those five years on the project.

7 Q Okay. At the bottom of the second
8 page of this database you show the average
9 cost. So are you saying that that is just
10 the average of all the per-mile cost, but it
11 is not the weighted average based on the
12 mileage?

13 A That is correct. There are some
14 fixed costs as well as variable costs with
15 each job. The weighted average does not vary
16 that much, but there are fixed costs with an
17 undergrounding project.

18 MR. HAWIGER: Can I have a moment off
19 the record, your Honor?

20 ALJ LAU: Let's go off the record.

21 (Off the record.)

22 ALJ LAU: On the record.

23 We are going to take a 10-minute
24 recess. We will be back around 11:18.

25 Off the record.

26 (Recess taken.)

27 ALJ LAU: Let's go back on the record.

28 ALJ LIRAG: We are on the record.

1 MR. HAWIGER: Thank you, your Honors.

2 Q Mr. Calvert, if you could, in
3 Exhibit 134, the same exhibit of data
4 responses, turn to the question that is just
5 before the one we were discussing. It is
6 TURN Data Request 88 Question 3. In that
7 question TURN asked for detailed information
8 regarding costs of Rule 20A undergrounding
9 projects. Do you see that?

10 WITNESS CALVERT: I do.

11 Q Is it correct that your response
12 provided a dataset that is a very similar set
13 of projects, of Rule 20A projects, as shown
14 in the Question 4 response we were just
15 discussing?

16 A Correct.

17 Q In fact, many of the projects, if
18 not most of the projects, are same projects.
19 There are some differences due to dates; is
20 that correct?

21 A There are some differences. There
22 are two different datasets.

23 Q But they contain many of the same
24 projects, correct?

25 A Correct.

26 Q And let me ask you to turn to the
27 actual spreadsheet provided, which is the
28 next page. And I apologize for the font, it

1 is somewhat small. I've seen smaller. There
2 is a column about the seventh column from the
3 left that is labelled Circuit Miles Per FSD.
4 Do you see that?

5 A I do.

6 Q Does this data contain mileage
7 analogous to the circuit miles that you use
8 in your forecast of the 153 circuit miles of
9 undergrounding?

10 A Yes, it does.

11 Q And there is a column before that
12 that is labelled Completed Costs (A). Do you
13 see that?

14 A I do.

15 Q What does that represent?

16 A That is the cost at completion for
17 the particular projects listed.

18 Q So the total project cost when it
19 is complete?

20 A That is correct. These costs would
21 be net costs after the credits are applied
22 from the other joint trench parties. These
23 are completed jobs.

24 Q Okay. So just to be clear, in the
25 projects that PG&E is doing in this case,
26 there will be no credits or anything because
27 they are not Rule 20A projects, correct?

28 A I wouldn't be all inclusive and say

1 there will be none, but there is not likely
2 to be.

3 Q Let me ask you, I know this is a
4 little tricky, but try to compare the costs
5 and mileage of the same projects from these
6 two databases. If you could look, for
7 example, on this spreadsheet for Question 3.
8 The second project is called Meadow Vista.
9 Do you see that?

10 A For --

11 Q In the spreadsheet you were just
12 looking at for response to Question 3.

13 A Maybe I'm looking at the wrong --

14 Q If you look --

15 A Yes.

16 Q -- at the very top of the page is
17 PG&E's identifier that states TURN 88 Q3
18 Attach 01.

19 A I got it.

20 Q Okay. And the second project,
21 second row, is Meadow Vista. Do you see
22 that?

23 A I do.

24 Q It has a completed cost of about
25 5.084 million?

26 A Yes.

27 Q And circuit mileage of
28 1.45 million. Do you see that?

1 A I do.

2 Q If you could now turn to a few
3 pages to the spreadsheet in response to
4 Question 4. And you see that same project is
5 showing the first row?

6 A Yes.

7 Q I will represent to you that the
8 order number is the same for those two
9 projects.

10 A Okay.

11 Q You see that project has the miles
12 of overhead lines converted to underground
13 listed as .55. Do you see that?

14 A I do.

15 Q And that is much shorter than the
16 1.45 circuit miles in the previous project,
17 correct?

18 A It is indeed.

19 Q And is that because of what you
20 were describing before, that the mileage of
21 the undergrounding is oftentimes higher than
22 the miles of overhead line converted to
23 underground?

24 A That is correct. We labelled it as
25 such there.

26 Q And the costs shown on this
27 Question 4 response is quite less than --
28 1.18 million is significantly less than the

1 5.084 million shown in Question 3. Would you
2 agree?

3 A Yes.

4 Q Now, let me sort of cut to the
5 chase. PG&E, the 4.4 million forecast that
6 you use, or the average 4.4 million that you
7 increased it to 6.2 million, was based on the
8 unit cost in this database on Question 4.
9 Why did you not use the Question 3 database
10 that had the circuit miles and higher costs
11 for their completed project?

12 A Well, as I mentioned, the Question
13 3 database has the -- it is the net cost of
14 Rule 20A, which includes the credits from
15 other utilities and other occupants of the
16 trench.

17 We are talking about undergrounding
18 overhead facilities, let's say a mile of
19 overhead, that would be a mile of overhead
20 converted to underground. The utility
21 actually designs the job. I couldn't tell
22 you how much circuit miles that may end up
23 being. Each job is unique. Like I
24 mentioned, if it was overhead primary only,
25 then it can be a one for one. If you have a
26 number of customers on both sides of the
27 street --

28 Q I'm sorry. Are you talking now

1 about mileage or costs or both?

2 A I'm talking about applying a unit
3 cost to a circuit mile of work performed.

4 MR. HAWIGER: And I'm asking -- let's
5 break it down in terms of cost first. Why
6 would it be not more appropriate to use the
7 higher cost -- well, if I may, may I
8 approach? I have an exhibit that might make
9 this a little bit --

10 ALJ LAU: Off the record.

11 (Off the record.)

12 ALJ LAU: Back on the record.

13 While we were off the record TURN
14 served a cross-examination exhibit, so we
15 will now identify it. This is Exhibit 141,
16 TURN cross-examination exhibit titled TURN
17 Excel Calculations Using Data from PG&E
18 Responses to Data Request 88-03 and 88-04.
19 This pertains to Rule 20A project.

20 ALJ LIRAG: A little correction. It
21 should be Exhibit 142. Exhibit 141 is one of
22 Ms. Liotta's cross-examination. Again, that
23 document just mentioned, which Mr. Hawiger
24 just handed, is Exhibit 142. I hope that is
25 clear.

26 (Exhibit No. 142 was marked for
27 identification.)

28 ALJ LAU: Mr. Hawiger, please proceed.

1 MR. HAWIGER: Thank you.

2 Q Just to make things a little easy,
3 I took five projects, somewhat randomly from
4 each database, and listed them together so we
5 can kind of compare. And the first row in
6 each of those five blocks is the response
7 from Question 3, and the second row is the
8 response from Question 4. And it appears to
9 me that in most cases the costs are either
10 similar or they are higher in the Question 3
11 response that showed completed costs.

12 And I understand that there is -- I
13 think you have explained there are various
14 credits, and such. My question is would
15 your -- for purposes for forecasting costs
16 that ratepayers will pay in this rate case,
17 why is it not more appropriate to use the
18 higher costs for completed projects in
19 Question 3?

20 WITNESS CALVERT: I have many reasons
21 why. First, let's start with the Mileage
22 column.

23 Q I'm sorry. Mr. Calvert, I'm going
24 to ask about the mileage. Can we just break
25 it down so it is clear? First the costs.

26 A Sure. Let me answer your question.
27 It is not more appropriate to use the 03,
28 responses from Question 3, because of the

1 credits that I discussed earlier where you
2 have many other occupants in the trench, and
3 they are being performed in other areas. So
4 03 is in the completed circuit miles.

5 Q So in 03 -- in 04 the project cost
6 numbers are often smaller because of the
7 credits from other parties; is that right?

8 A In 04?

9 Q I'm sorry, in 04.

10 A That is not correct.

11 Q Okay. Why are the project -- let
12 me represent to you that as you see here,
13 oftentimes the project costs are lower in
14 Question 4, except for the Belmont Avenue
15 project has higher costs in Question 4. But
16 in total, when I added up Question 3 and
17 Question 4 project costs, they were
18 significantly lower in Question 4, higher in
19 Question 3. I presume that is the impact of
20 the various credits. Would you agree?

21 A You are asking -- when you say
22 "costs," can you define what you are talking
23 about? Are you talking about costs per mile?

24 Q No, no, no. I'm talking about the
25 Costs column that reproduces -- I'm sorry.
26 What I did -- I should explain -- in the cost
27 column, I reproduced what was labelled as in
28 Question 3 the column that is labelled

1 Completed Costs. And I reproduced what is
2 labelled in Question 4 Project Spend in 2013
3 to 2017. Those are the two cost columns we
4 discussed earlier.

5 So my question to you -- and you
6 know more about this database, these
7 databases, than I do. So my question is, all
8 I can tell you is that Question 3 costs are
9 generally higher. And for purposes of what
10 ratepayers will be paying for the projects
11 you are doing here in this -- for the
12 undergrounding work in this case, which costs
13 are more appropriate to use in developing a
14 unit cost number?

15 A At least -- you asked me -- when
16 you say the costs are generally higher, as I
17 look down the list, first project Question 3,
18 is actually cost per miles lower?

19 Q No, the costs. Can we stay just on
20 the cost, project cost, the total project
21 cost. Forget the cost per miles, for the
22 moment.

23 We need to develop the unit cost,
24 they need to take project costs and provide
25 it by project length, correct?

26 A Correct.

27 Q I would like to know first, I would
28 like to go separately for each of those,

1 which database is the more appropriate number
2 to use. So for costs, you told me that
3 Question 3 has the completed costs. Question
4 4 has just the spend in 2013 to 2017, which
5 is sometimes mostly lower, but sometimes not.
6 I'm just curious which database is more
7 appropriate to use as far as the cost of the
8 project?

9 A Yes. Well, we believe that the
10 Question 4, which we just discussed, which
11 has an average cost of 4.4 miles, is the more
12 appropriate cost.

13 Q So for each project the Question 4
14 cost is more appropriate to use?

15 A Without knowing the detail of each
16 project, I wouldn't want to be all
17 encompassing. But generally, we are
18 converting overhead to underground. We don't
19 know what the ultimate circuit miles will be
20 until the job is designed, so yes.

21 Q Okay. Let me ask you about the
22 mileage. When you are looking at these
23 historical projects, because these are both
24 databases of the historical Rule 20A
25 projects. When you look at the same
26 projects, should you look at the actual
27 circuit miles shown in Question 3, or should
28 you look at the miles of overhead lines

1 converted to underground as the appropriate
2 mileage to calculate the unit cost?

3 A We are applying the unit cost to
4 overhead to underground, because without the
5 job being designed, you don't know what the
6 ultimate circuit miles will be for the 6.2
7 applies to the mile of overhead converted to
8 underground.

9 Q I think you did agree with me if
10 you have a job, let's say, that has one mile
11 of overhead lines, if you end up and design
12 the underground project and it turns out, for
13 various reasons, you have to build 1-1/2
14 miles of underground trench, would you agree
15 with me that that would cost more than if you
16 are lucky, and you can build the underground
17 in exactly one mile also? All else being the
18 same, if your unit cost is the same, would
19 you agree that the total project cost will be
20 higher if the length is longer of the
21 underground project?

22 A Yes. It is difficult, because each
23 project is unique. So in the hypothetical
24 situation you presented, yes.

25 Q We are talking here about what your
26 ratepayers -- you are proposing that a
27 balancing account where ratepayers would
28 ultimately pay your actual cost for each

1 project, correct?

2 A That is correct.

3 Q Okay. And the cost for any
4 individual project will ultimately depend on
5 the length of the project, the actual
6 underground circuit miles, will it not?

7 A Length, as well as other factors
8 that come into consideration, but yes.

9 Q And let me just represent to you,
10 if you look at this spreadsheet that --
11 because the circuit mileage from Question 3,
12 as you explain before, is always longer,
13 generally is not always, but usually longer
14 than the miles of overhead conduit that is
15 converted. If you take a cost and divide it
16 by longer mileage, you will get a lower unit
17 cost per mile. And looking at that, it looks
18 to me like almost -- well, in this case in
19 every instance the cost per mile is lower
20 using the Question 3 numbers than the
21 Question 4 numbers. Would you agree?

22 A Yes, they are. But as I said, we
23 are comparing apples to oranges here, as far
24 as the mileage is different miles. One is
25 conversion and the other one is the finished
26 scope of work.

27 Q Right. The Question 4 is mileage
28 based on the overhead line that -- before you

1 know what the actual length will be of your
2 underground project, correct?

3 A Correct.

4 Q But the actual cost of your
5 underground project will be different and may
6 be higher because the actual length is
7 longer?

8 A It could be higher or it could be
9 lower.

10 Q You can do lower?

11 A That's the reason we have a
12 forecast, because there is an uncertainty.

13 Q The Question 3 database gives you
14 the actual cost for the project based on the
15 actual length, circuit length of
16 undergrounding project, correct?

17 A For the dataset we are discussing
18 for Rule 20A projects, yes, that is the cost.

19 Q And would you agree that if you use
20 the actual, the actual cost of the under
21 ground, completed undergrounding project from
22 Question 3, if you calculate -- well, let me
23 ask you to turn to the next page. And that
24 produces the Question 3 dataset. The last
25 page TURN calculated the average weighted
26 unit cost per mile as \$2.35 million per mile.
27 Do you see that?]

28 A I do.

1 Q And that's significantly lower than
2 the 4.4 million based on the -- using just
3 the mileage if you were to convert and not
4 the actual mileage of the underground
5 project?

6 A That's correct. I did the same
7 calculation and came up with the same
8 number. However, that's not applicable to
9 the type of work that we're doing.

10 Q Isn't -- I think we've already
11 covered this ground. Would you agree that if
12 you use a 2.3 million average unit cost that
13 would reduce your capital forecast for
14 undergrounding by almost 600 million dollars?

15 A Subject to check, yes, using the
16 2.3 versus our forecasted 6.2. Yes.

17 Q Do you understand that if PG&E
18 spends more than authorized in this case and
19 capital costs for undergrounding, PG&E gets
20 an opportunity to roll those costs into
21 ratebase in the next rate case cycle?

22 A I am not an expert on how the
23 accounting rolls up into the ratebases.

24 MR. HAWIGER: Can I have a moment off
25 the record, your Honor?

26 ALJ LAU: Let's go off the record.

27 (Off the record.)

28 ALJ LAU: Back on the record.

1 BY MR. HAWIGER:

2 Q All right. Mr. Calvert, I want to
3 turn to pole replacement costs as part of
4 overhead grid hardening now.

5 A Okay.

6 Q Is it true that PG&E's forecast
7 anticipates that it will need to replace
8 virtually all of its poles due to the
9 installation of covered conductor -- on the
10 circuits where they are installing covered
11 conductor?

12 A Sure. That's our current forecast,
13 and that's what's stated in my testimony.

14 Q That's due to the additional weight
15 of the covered conductor, right?

16 A It's due to a number of factors.
17 Weight is one of the factors, yes.

18 Q Is it correct PG&E intends to
19 conduct pole loading studies on the poles
20 during the process of conducting the covered
21 conductor project?

22 A Absolutely. That's part of our --
23 what I described earlier as the estimating
24 process where we go through the details and
25 the requirements of the jobs. So every pole
26 has a pole with a calculation.

27 Q Did PG&E conduct such pole loading
28 studies during its 2019 overhead grid

1 hardening projects?

2 A As I mentioned, I don't have
3 specific knowledge to every project, but
4 every pole replacement job -- or I should say
5 our standards call for every pole replacement
6 job to have that pole loading calculation.
7 So based on that, I would say the answer is
8 yes.

9 Q Did PG&E have to replace all of the
10 poles along the circuits where it put in
11 covered conductor in 2019?

12 A Yeah. I don't have that
13 information. We're not currently tracking
14 it, but we are capturing it for future unit
15 tracking.

16 Q So PG&E, in doing the overhead
17 covered conductor projects in 2019, did not
18 track what portion of poles it had to
19 replace?

20 A Well, I guess. I believe I covered
21 this earlier in testimony as far as tracking.
22 Each job estimate has a detailed description
23 of the work performed. So the information is
24 captured, but the word that I used was
25 "tracked." We don't have it centrally
26 located. You could go through every job and
27 every sketch location or every work location
28 and identify whether that pole was replaced,

1 moved, what it was what it was replaced with,
2 et cetera.

3 Q Would you agree that the cost of
4 pole replacements is a significant component
5 of the cost of the overhead hardening
6 projects?

7 A I would agree. I have those costs
8 in my workpapers.

9 Q Why didn't PG&E keep track of what
10 was the actual percentage of poles that had
11 to be replaced for overhead hardening
12 projects in 2019?

13 A I can't speculate as to all of the
14 metrics that we didn't have in place. The
15 metric we do have in place is to capture the
16 conversion of overhead from bare conductor to
17 hardened conductor. So we are capturing that
18 information, as I mentioned, in the jobs.
19 It's likely we will go back through those
20 jobs and populate a more detailed database to
21 support our costs.

22 Q You're aware that Edison forecasts
23 replacing only about one-third of its poles
24 in doing -- in installing covered conductor;
25 is that correct?

26 A Yes. The exhibit I had -- I
27 believe I looked at it last night -- it's
28 about 12 poles per mile.

1 Q Just to be clear, you understand
2 that that represents between a quarter and a
3 third the poles per mile that Edison believes
4 it will need to replace due to the covered
5 conductor?

6 A I do, for the scope of work they
7 are performing, which is different than what
8 PG&E is performing.

9 Q If you turn to page -- Exhibit 20,
10 page 9-20 --

11 ALJ LAU: I have a couple questions for
12 the witness. So is PG&E currently tracking
13 the poles that it needs to replace while
14 you're doing the covered conductor?

15 Mr. Hawiger said that you were not
16 tracking it for 2019, but are you -- is PG&E
17 currently doing that for 2020 and beyond?

18 WITNESS CALVERT: I don't know that.
19 My recommendation will be certainly to go
20 through those jobs and track more detailed
21 units going forward so that we can have all
22 that support. But every job, as I mentioned,
23 has the level of detail that would answer
24 that question. We would have the number of
25 poles replaced, number of pieces of nonexempt
26 equipment that were replaced, et cetera.
27 It's just not centrally tracked in a
28 database.

1 ALJ LAU: As you mentioned, Edison's
2 work is different from PG&E's work, but we
3 did say that Edison is replacing about only
4 25 to 30 percent of the poles. So can you
5 elaborate what's the difference in the work?

6 WITNESS CALVERT: Sure. Their plan --
7 there are some similarities between the two
8 plans. We have the same objective,
9 obviously, to address wildfire risk, but PG&E
10 goes beyond what Southern California Edison
11 is proposing, at least in the exhibit I was
12 provided.

13 PG&E is replacing non-exempt
14 equipment as part of the work. So we will
15 be -- say, open-link fuses or disconnect
16 switches that could cause some safety issues.
17 We're replacing -- the big difference between
18 the two programs is we're replacing the
19 secondary conductor as well. So we talk a
20 lot about the high voltage at the top of the
21 pole, but there is also lower voltage down
22 below, which -- roughly 240 volts
23 face-to-face that is being replaced with
24 covered conductor as well.

25 We're taking this opportunity to
26 relocate poles and lines further away from
27 the roadway to address other risks, such as
28 car-pole accidents, other ignition

1 possibilities. And in some cases, we are
2 relocating lines more than just a few feet to
3 route the line along a more beneficial route
4 than it's currently located.

5 ALJ LAU: Thank you.

6 Mr. Hawiger.

7 MR. HAWIGER: Thank you, your Honor.

8 BY MR. HAWIGER:

9 Q And if the issues that -- excuse
10 me. The issues you just discussed, am I
11 correct that that's -- you also describe some
12 of those issues in Answer 40 of your
13 testimony on page 9-20.

14 A We're talking about by rebuttal
15 now?

16 Q Yes, sir.

17 A Okay. I do.

18 Q Just to follow-up, is it correct
19 that when PG&E asked for that data on
20 percentage of pole replacements from 2019,
21 PG&E responded, as you said, that that data
22 is contained in some work orders, but it
23 would be too difficult to basically produce
24 that data at this time?

25 A Within the time frame of a data
26 response, yes. It's conceivable that it
27 could be gathered, and I anticipate in the
28 future we will gather it as well as go back

1 to historic jobs.

2 Q In the future, will PG&E, or even
3 with past data, keep track of the poles that
4 need to be replaced strictly due to the
5 additional weight of the covered conductor
6 and pole loading studies versus replacing
7 them for other reasons?

8 A When you do a pole loading
9 calculation, it's more than just -- you're
10 looking at the impacts on that pole
11 structure, not just the covered conductor.
12 So on the primary. To -- the secondary
13 conductor being replaced with insulated
14 conductor also puts forces on the pole.

15 So to answer your question more
16 precisely, there's more factors that come
17 into that pole loading calculation than
18 purely the high-level primary covered
19 conductor.

20 There's guiding issues that have to
21 take place and other stresses on the pole.

22 Q If you replace non-exempt equipment
23 or secondary conductor on a pole, do you have
24 to replace that pole?

25 A Generally, no, because the
26 secondary conductor is further down on the
27 pole. So it's kind of a lever moment, if you
28 will, on the pole, and it doesn't have as

1 much force. But there are cases that you
2 would. With covered conductor at the
3 secondary, you would have to back up that
4 tension with a guy, and you are putting other
5 strain on the pole. So it's possible.

6 Q Is your testimony that, at least,
7 in part, you believe that the difference
8 between PG&E and Edison is that PG&E's poles
9 are generally smaller than Edison's poles and
10 that the conductor is large -- excuse me.
11 Let me just see -- and that PG&E's
12 conductor -- existing conductor is smaller
13 than Edison's existing conductor and that it
14 counts, in part, for the difference in having
15 to replace poles?

16 A That's one factor, yes. If
17 you've -- already have a pole structure
18 that's designed to support large wire, then
19 it's less likely that replacing it with
20 covered large wire would require work.

21 Q Let me ask you to turn in your --
22 ALJ LAU: Mr. Hawiger, we're about to
23 break for lunch. Is this a good --

24 MS. HAWIGER: Your Honor, I'm almost
25 finished with this line of questioning. If
26 we could just finish that then.

27 ALJ LAU: Okay. Maybe five more
28 minutes. Okay. Good.

1 BY MR. HAWIGER:

2 Q Mr. Calvert, could you turn in your
3 rebuttal testimony to your attachments and
4 specifically to page 9-Attach A-4.

5 A For some reason, I don't have a
6 copy of that.

7 MR. MIDDLEKAUFF: It should be after --

8 ALJ LAU: Go off the record.

9 (Off the record.)

10 ALJ LAU: On the record.

11 Mr. Hawiger, please proceed.

12 BY MR. HAWIGER:

13 Q Mr. Calvert, is it -- does it
14 appear from that Edison workpaper that's in
15 your attachments and the table shown on page
16 9-Attach A-4 that Edison did an analysis of a
17 sample of about 600 poles that have not been
18 recently replaced to determine how many of
19 its poles would be overloaded when covered
20 conductor is installed?

21 A Yes.

22 Q And that's -- and they concluded
23 that about one quarter of the poles would be
24 overloaded, correct?

25 A Correct. On their system, yes.

26 Q Has PG&E conducted any such
27 analysis on your system?

28 A We have not, but the fact that we

1 are gathering information on the projects
2 being constructed, we'll be able to provide
3 this information in the future.

4 ALJ LAU: Quick question. When in the
5 future? Can you specify?

6 WITNESS CALVERT: Based on -- as I
7 mentioned, every job has this level of
8 detail. It's a matter of the gleaning it out
9 from the job copy. So we need to determine
10 internally what metrics and what information
11 we're willing to gather, but a study such as
12 this could be performed based on an
13 established data set.

14 ALJ LAU: Earliest -- with the results
15 at the earliest?

16 WITNESS CALVERT: We could perform it
17 based on the work done to date. However,
18 that's a relatively small sample, and I would
19 not want to extrapolate into a 14-year
20 program based on a small number of jobs.

21 ALJ LAU: Mr. Hawiger.

22 MR. HAWIGER: Thank you.

23 BY MR. HAWIGER:

24 Q And just lastly, you mention in
25 your rebuttal testimony -- I should -- I'm
26 sorry -- that's -- I have a short section on
27 unit costs, but we can wait for after lunch
28 for that.

1 ALJ LAU: Let's --

2 ALJ LIRAG: Let me interrupt. This
3 only requires the attention of Mr. Gallo and
4 Ms. Liotta. Has nothing to do with the CSWP
5 panel. It's the four exhibits that are not
6 related to CSWP. I think you're covering
7 these witnesses.

8 MR. GALLO: Yes. Oh. The ones that
9 cross has been waived. Correct. Yes.

10 ALJ LIRAG: Correct. So these are
11 Exhibits 135, 136, 137 and 138. Ms. Liotta,
12 is there a move to have these admitted into
13 the record?

14 MS. LIOTTA: Yes, your Honor. Except I
15 believe that --

16 MS. GANDESBERY: Your Honor, if we
17 could just look at the copies that were
18 provided to you by counsel. We don't have
19 copies. If we can just see --

20 ALJ LIRAG: Let's take 20 seconds to do
21 that. Let's go off the record.

22 (Off the record.)

23 ALJ LIRAG: Let's go back on the
24 record.

25 So there was a move from Ms. Liotta
26 to have Exhibits 135 through 138 admitted
27 into the record. 135 is the testimony of
28 Ralph Smith for which cross has been waived.

1 136 through 138 are, I believe,
2 cross-exhibits for -- these are exhibits in
3 lieu of cross.

4 Any objections from Ms. Gandesbery
5 or Mr. Gallo?

6 MR. GALLO: No, your Honor.

7 MS. GANDESBERY: No, your Honor.

8 ALJ LIRAG: Thank you. Hearing no
9 objections, Exhibits 135 through 138 are
10 received into the record.

11 (Exhibit No. 135 to 138 were
12 received into evidence.)

13 ALJ LIRAG: Sorry for interrupting the
14 CSWP. Our exhibit manager wanted to get
15 these in.

16 So with that, let's break for lunch.
17 Judge Lau will determine the time.

18 ALJ LAU: So we'll be back 1:15.

19 Off the record.

20 (Off the record.)

21 (Whereupon, at the hour of 12:00
22 p.m., a recess was taken until 1:19
p.m.)

23 * * * * *]
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1 AFTERNOON SESSION - 1:19 P.M.

2

3 * * * * *

4 ALJ LAU: Let's go back on the record.

5 We were right in the middle of cross
6 from TURN.

7 Mr. Hawiger, would you like to
8 proceed?

9 MR. HAWIGER: Yes. Thank you, your
10 Honor. I apologize. I appreciate your
11 indulgence, and I apologize to both you and
12 the witnesses. Some of this cross, under
13 normal circumstances, I would rather do in
14 discovery, but there were some changes to
15 PG&E's program in rebuttal. And we could not
16 address all of that in one round of
17 discovery.

18 Q So anyway, Mr. Calvert, let me ask
19 you about pole replacement costs.

20 A Okay.

21 Q Your forecast or overhead grid
22 hardening is based on a pole replacement unit
23 cost of \$20,000 per pole; is that correct?

24 A That's correct. That's what's
25 shown in my workpaper.

26 Q Let me ask you: What is the basis
27 for this \$20,000 unit cost estimate?

28 A That was a forecast at the time,

1 but the forecast basis is non-wood pole at a
2 new location of a certain size, meaning
3 typically Class I. I won't get into the
4 technical strength requirements. But
5 basically the replacement -- placement of a
6 new pole as well as attachment of hardware
7 and including conductor to that pole.

8 Q So is that forecast higher than
9 typical pole replacement cost because you're
10 saying it would be a different type of pole
11 than the traditional poles used for pole
12 replacement?

13 A The material cost is more, non-wood
14 poles. However, for an equivalent pole in
15 the same vicinity, let's say, a rural area,
16 longer travel time, soil conditions, I would
17 say the other factors would be the same.

18 Q So would you agree that the average
19 pole replacement cost in the regular pole
20 replacement program have ranged from about
21 \$9,000 to about \$15,000 per pole from 2013
22 through 2017?

23 A I can't agree to that. I don't
24 know if you're referencing a certain
25 document, but I'm not the pole witness.

26 Q Let me ask you to turn in the
27 workpapers Exhibit, I believe, 19, the
28 workpapers to the PG&E direct testimony and

1 page WP 8-19.

2 A That's Chapter 8?

3 Q Yes, sir.

4 A Yeah. That's -- fortunately I have
5 my chapter, Chapter 9.

6 Q I wonder if PG&E could provide you
7 with a --

8 ALJ LAU: Off the record.

9 (Off the record.)

10 ALJ LAU: On the record.

11 BY MR. HAWIGER:

12 Q Do you have a sense what percentage
13 of the poles you would be replacing would be
14 wood poles versus non-wood poles?

15 A Replacing in general or as part of
16 the hardening effort?

17 Q As part of the hardening program.

18 A Yeah. From 2020 on, our intent is
19 to replace all the poles in the area with
20 non-wood poles. So 100 percent. Now there
21 may be -- that's replacement.

22 Q Let me ask you, on a slightly
23 different topic, while we're waiting, you
24 mention in your rebuttal that you understand
25 that Edison's unit cost estimate for the
26 entire overhead grid hardening is \$450,000
27 per mile for covered conductor.

28 Do you recollect that?

1 A Subject to check.

2 Q I'll point you specifically in
3 answer 42 of your rebuttal testimony at
4 page 9-21 of Exhibit 20.

5 A Okay.

6 Q Do you see there at line 20 through
7 21 and going forward, you cite the cost
8 estimate of \$450,000 per mile?

9 A Yes. Yes.

10 Q Are you aware that in its current
11 rate case Edison has reduced its unit cost
12 forecast for covered conductor to \$421,000
13 per mile?

14 A Yes. I am aware of that.

15 Q Well, I'd like to -- I'm done with
16 you, Mr. Calvert, as soon as we can look at
17 that data.

18 ALJ LAU: Off the record.

19 (Off the record.)

20 ALJ LAU: Let's go back on the record.

21 BY MR. HAWIGER:

22 Q Mr. Calvert, would you agree with
23 me that the unit costs shown on the table
24 from 2013 through 2017 range from
25 approximately \$9,000 to approximately
26 15-and-a-half thousand?

27 A When you say the costs, I presume
28 you're referring to the recorded costs?

1 Q Yes, sir.

2 A And range from \$9,000 -- I'd say
3 some numbers less than that.

4 Q I was rounding.

5 A Okay. I agree.

6 Q That's fine. So was your -- excuse
7 me. I'll leave it at that. Thank you.
8 Thank you very much, Mr. Calvert. I have
9 some questions for Mr. Pender.

10 ALJ LIRAG: Mr. Hawiger, we're looking
11 at around 60 minutes for Mr. Pender as a
12 rough estimate.

13 MR. HAWIGER: You know what, your
14 Honor? That was certainly my estimate a long
15 time ago. I have more. I will certainly
16 stop whenever your Honor needs me to stop.

17 ALJ LIRAG: No. We have time today.
18 It's just for break and other purposes.

19 MR. HAWIGER: Okay.

20 ALJ LIRAG: So we'll let you continue.

21 MR. HAWIGER: Oh, okay.

22 Q Mr. Pender, let me ask you first
23 regarding your qualifications. I gather that
24 you first joined PG&E in 2006; is that right?

25 A That is correct.

26 Q And you are a professional
27 engineer, correct?

28 A Correct.

1 Q And then you worked first as a gas
2 distribution engineer?

3 A That's correct.

4 Q When did you become the director of
5 vegetation management strategy and planning?

6 A I became a director in vegetation
7 management in February of 2018, and my title
8 became that, vegetation management planning
9 strategy, in the second quarter, third
10 quarter of 2018.

11 Q Are you an arborist?

12 A No.

13 Q Have you done work as a tree
14 inspector or arborist?

15 A No. I have not done any fieldwork.
16 Before joining PG&E's electric vegetation
17 management, I was in PG&E's land department,
18 which is responsible for vegetation
19 management of the gas transmission system.
20 So for the two years before that, 2016 to
21 2018, I was also in charge of a vegetation
22 management program for PG&E's gas department.

23 Q You sponsored testimony concerning
24 both your routine vegetation management
25 program and your enhanced vegetation
26 management program, correct?

27 A Correct.

28 Q Let me ask you first just to turn

1 to what I distributed as a reference exhibit.
2 If you could turn -- the first page of that
3 exhibit contains General Order 95.

4 A Yes.

5 Q Are you familiar with General Order
6 95?

7 A Yes.

8 Q And is the second paragraph of the
9 Rule 35 a key paragraph discussing the
10 requirement to prune or remove trees?

11 A I'm sorry. By "second paragraph,"
12 do you mean the second paragraph of the
13 preamble talking about -- which second
14 paragraph are you referring to?

15 Q The Rule 35 paragraph that starts,
16 "When a supply or communication company."

17 A Yes.

18 Q Okay. Is it correct just that
19 this -- as the sentence states, it requires
20 the removal of trees or portions of trees
21 that are, quote, "dead, rotten or diseased,"
22 end quote, and also that, quote, "overhang or
23 lean toward or may fall on to power or
24 communication lines"?

25 A The second stanza of that refers to
26 dead, rotten or diseased portions of
27 otherwise healthy trees overhang or lean
28 toward or may fall into a span of supplier

1 communication line. So the requirement is
2 for dead, rotten or diseased portions that
3 may overhang or lean towards.

4 Q So that basically means you either
5 have to remove a tree or when you remove a
6 portion, that's essentially prune a tree?

7 A Yes.

8 Q And does PG&E use the term "hazard
9 trees" for trees that meet this criteria for
10 pruning or removal?]

11 A Yes. "Hazard tree" generally
12 refers to the tree described here, dead
13 rotten, or diseased, et cetera.

14 Q Is it correct that PG&E has
15 recorded costs for routine vegetation
16 maintenance?

17 A Yes.

18 Q And is it correct that PG&E also
19 has annual recorded data specifying both the
20 number of trees removed and the number of
21 trees pruned under the routine vegetation
22 maintenance program?

23 A Yes.

24 Q Does PG&E separate historical costs
25 for tree removal versus tree pruning in the
26 routine vegetation maintenance program?

27 A No.

28 Q Let me ask you: Why not?

1 A It is operationally infeasible to
2 separate the costs of these two activities.
3 A tree crew will be assigned to go work an
4 area of the line, and there will be some
5 makeup of work there, some trees to remove,
6 some trees to trim, for example, let's say
7 two trees to trim and two trees to remove.
8 It is not feasible for them to split up their
9 time, based on how much time it took to just
10 do this trimming versus removals. There is
11 mobilization time, there is, you know, safety
12 briefing on job sites, et cetera. So we
13 don't ask them to try to parse their time out
14 by whether they spend on the trims only
15 versus the removals only. We just have them
16 charge to our routine budget for doing the
17 work they were assigned, which would be a
18 blend of removals and trims.

19 Q Don't your contracts specify
20 different hourly rates for pruning versus
21 tree removal?

22 A Yes. In many cases, in most cases,
23 we have unit costs, right? So they charge us
24 a unit cost based on certain criteria of that
25 tree.

26 Q So I'm not sure if I understood
27 that answer. Was that yes, they do charge
28 different hourly rates for pruning versus

1 removal?

2 A It is not hourly rates. It is unit
3 rates. So there are a number of ways, based
4 on the complication of the trees that are
5 being worked, that costs are incurred. For a
6 number of the types of work that are
7 performed, we have a unit cost. So this kind
8 of trim they charge us a certain cost, this
9 kind of removal they charge us a certain
10 cost. There are a number of other exception
11 situations where the work is unique where
12 they charge us an hourly rate. That hourly
13 rate is the same whether it is a trim or
14 removal.

15 Q But there is a different rate for
16 tree removal versus a tree trim?

17 A That's right.

18 Q So don't contractors have to keep
19 track of the units of removal versus trim for
20 the cost for submitting bills to PG&E?

21 A Yes. That is consistent with what
22 I said earlier. We do have the numbers of
23 how many were removed and how many were
24 trimmed.

25 Q Don't you actually have the cost
26 that they charge you, different costs for the
27 removing versus trimming?

28 A At an aggregate rate, trying to add

1 together all of the trims, divided by all of
2 the number of trims, is difficult to do
3 because of the number of different units that
4 are baked in there.

5 Q Do they provide you with a bill
6 that says "paper bill" or an "electronic
7 bill"?

8 A They generally provide us with
9 electronic invoices.

10 Q Is it like a spreadsheet?

11 A Often it is in spreadsheet form,
12 yes.

13 Q If there are different units for
14 removal versus pruning, why would it be
15 difficult to aggregate all the removals to
16 determine the cost just for tree removal
17 versus other activities?

18 A For the normal unitized work it is
19 more feasible to do that. But over the
20 course of a year or course of any extended
21 period of time, there will be a number of
22 those exception trees, again, where they are
23 charging us time and materials for what was
24 required to perform the work in question. So
25 on a small sample size or a specific area, we
26 could do that. But on an aggregate level,
27 what was our trim-only unit cost for a whole
28 year, it is difficult to separate those

1 costs.

2 Q Let me ask you to turn to what has
3 been identified as Exhibit 133, and please
4 look at the response to the first question
5 TURN Data Request 35 Question 1. And in the
6 response to Subpart B PG&E provided a tool
7 that is described as the Hazard Tree Rating
8 System. Excuse me. Let me -- in response to
9 Part A, PG&E says it attached the Hazard Tree
10 Rating System to the response, correct?

11 A Correct.

12 Q If I could just ask you to turn to
13 the first page after the text, which is --
14 has some small print, which has the label on
15 top the Hazard Tree Rating System 1/25/18.
16 Do you see that?

17 A Yes.

18 Q Are you familiar with this tool?

19 A Yes.

20 Q Is it correct at a high level --
21 well, is this the tool that PG&E used to
22 determine whether a tree is a hazardous tree?

23 A Yes. This is the primary tool that
24 PG&E arborists use in the field to evaluate
25 the condition of trees.

26 Q And is it correct at a high level
27 that the evaluation is based on three
28 elements specified on this page, namely that

1 the strike likelihood, the failure likelihood
2 and the impact?

3 A That is correct.

4 Q Now, you said the arborists use
5 this tool. Is this tool used just by
6 arborists in the field?

7 A Generally this tool is used by our
8 pre-inspectors, who are arborists. Their job
9 is to identify what trees need to be worked
10 adjacent to or around our power lines. Our
11 tree crews then come through and do the work
12 that was identified by the pre-inspectors.
13 This tool is familiar to the tree crews also,
14 who generally have arborists on their crews,
15 and they can use the tool also.

16 Yes, this is used primarily by our
17 tree pre-inspectors.

18 Q Are all the tree inspectors
19 arborists?

20 A Yes.

21 Q And then at some point PG&E
22 implemented this Enhanced Vegetation
23 Management Program, correct?

24 A Yes.

25 Q When was that implemented?

26 A The title Enhanced Vegetation
27 Management was applied to the program in
28 December of 2018. We had begun a Wildfire

1 Risk Reduction Vegetation Management Program
2 earlier in 2018, around about end of first
3 quarter of 2018. So it begun a program, and
4 the label Enhanced Vegetation Management
5 Program became in late 2018.

6 Q Is it correct that you started
7 segregating costs for the different program
8 earlier in 2018, correct?

9 A Yes. Around early -- around first
10 quarter of 2018 we began a separate program
11 under a memorandum account.

12 Q Okay. Part of that program was the
13 targeted tree species component, correct?

14 A Correct.

15 Q Am I correct that PG&E, under that
16 program in 2018, PG&E would evaluate any tree
17 that was one of 10 listed species, but only
18 using the strike likelihood element of the
19 Hazard Tree Rating System?

20 A That is correct. That is the --
21 that is the portion of this tool that was
22 used for the high-risk species scope within
23 what is now the Enhanced Vegetation
24 Management Program.

25 Q So the condition of the tree would
26 not be considered in a decision whether to
27 prune or remove the tree?

28 A For that program, under that scope,

1 it is correct, we just use this portion.

2 Q So what would be the -- how would
3 an arborist determine, based on the strike
4 likelihood, whether to prune or remove a tree
5 that is one of the 10 hazard species?

6 A The arborist would use this strike
7 likelihood section and create a score from
8 that to see how that is done, based on each
9 criteria. Then the score for each tree was
10 applied to a rubric based on the tree
11 species. So some tree species if the score
12 was over a certain number, we would identify
13 that for a removal, below that number we
14 would not.

15 Q Okay. And was the option to either
16 prune or remove, or was the option limited to
17 removing the tree if it failed at the
18 threshold?

19 A The criteria was to take the
20 appropriate action, prune or remove to make
21 the tree safe, according to this criteria.
22 So if you could remove, prune -- if you could
23 prune a portion of the tree, and that
24 would --

25 ALJ LAU: Mr. Pender, you may want to
26 slow down your response. Thank you. Repeat
27 that.

28 WITNESS PENDER: If you could prune a

1 portion of the tree such that the score would
2 then be below the threshold, below the
3 target, that would be an acceptable way to
4 mitigate the risk. So pruning was an option,
5 and removal was also a common option.

6 BY MR. HAWIGER:

7 Q Did PG&E keep track of how many
8 trees were pruned versus removed as part of
9 the targeted tree species program in 2018?

10 A Yes. This is similar to previous
11 conversation about pole replacement. If we
12 assess the data that came back in, we could
13 count that. It wasn't tracked as a
14 stand-alone metric. You know, it wasn't
15 centrally used as measured.

16 Q Let me ask you to turn a couple
17 more pages in this Exhibit 133, and there is
18 a page that on top states Enhanced Vegetation
19 Management Scope. Do you see that?

20 A Yes.

21 Q It was Attachment 2 to that data
22 response. This is a bulletin dated March
23 22nd, 2019.

24 Is it correct that this bulletin
25 represented a change in the procedures for
26 the targeted tree species program?

27 A Yes.

28 Q And if you turn in that document

1 further to page 4 of 5 in that document, it
2 discusses the high-risk species program at
3 the top. And is it correct that the primary
4 change was the directive for the contractors
5 to remove any -- what was the primary change?
6 Sorry. I'll let you describe it.

7 A As described in the beginning of
8 page 4, the directive of this bulletin was to
9 instruct the tall trees within this list of
10 species that are tall enough to strike
11 electric assets and are not far enough way or
12 to be identified for removal.

13 Q Does that mean that when -- an
14 arborist would not even consider the strike
15 likelihood component of the Hazard Tree
16 Rating System and just if the tree was tall
17 enough it got removed?

18 A That was the direction of this
19 bulletin, yes.

20 Q Now, is it correct that subsequent
21 to this directive at the end of May 2019 the
22 Commission voted out its wildfire management
23 plan decisions?

24 A The Wildfire Mitigation Plan
25 decision, correct.

26 Q Thank you.

27 If I could ask you to look at the
28 reference exhibit again. And I'm sorry, the

1 pages are not numbered sequentially. But the
2 last document is an excerpt from one of
3 the -- from Decision 19-05-037. Actually, if
4 you can just turn to the very last page of
5 this exhibit. And there is a highlighted
6 Conclusion Of Law 22. Do you see that?

7 A Yes.

8 Q And in your testimony, in your
9 rebuttal testimony, you actually explain that
10 there was some directions provided by the
11 Commission to PG&E in the Wildfire Mitigation
12 Plan decisions. And is this the direction
13 you were referring to?

14 A Yes.

15 Q And the decision indicated that
16 PG&E should only remove healthy trees if the
17 utility has evidence that those trees pose a
18 risk to utility electric facilities under
19 wildfire ignition conditions based on the
20 opinion of a certified arborist. How did
21 PG&E incorporate that direction into its
22 targeted tree species program?

23 A PG&E adjusted its scope, similar to
24 the adjustment that was made in March, as was
25 previously referenced in our conversation
26 around that bulletin. And adjusted the scope
27 to reincorporate the hazard tree ratings
28 system into the field assessment for healthy

1 trees. So the trees were -- even in the top
2 end, species were satisfied for their
3 condition before being identified for removal
4 or pruning.

5 Q Would they be assessed for just one
6 of the elements of the -- I'm going to use
7 the acronym -- HTRS hazard tree removals?
8 Would they be assessed for all three
9 elements, or just one element or what?

10 A We are using the entire HTRS, all
11 the elements of it, to assess trees at this
12 point. So yes, coming out of that direction
13 from the CPUC, we expanded to incorporate the
14 broader HTRS tool.

15 Q So does that -- and that is the
16 tools used to assess for any hazard tree,
17 correct?

18 A Yes.

19 Q So what is the difference now? I
20 guess, what is the high-risk species or
21 targeted tree species now? Is it any
22 different from the routine vegetation
23 maintenance program identifying hazard trees?

24 A The assessments being performed
25 through the enhanced vegetation management
26 are very similar to what is being performed
27 and is using a similar tool. We continue to
28 look to refine that tool into a new tool.

1 Where we discussed -- we proposed and we
2 responded to a data request related to the
3 Tree Assessment Tool, the TAT. But at this
4 point, the assessment is very similar.

5 Q Okay. When you say "very similar,"
6 are there any differences, or do you use
7 exactly the same tool and exactly the same
8 assessment for all trees?

9 A The decision about to prune or
10 remove a tree uses the same criteria under
11 both programs at this time. We are gathering
12 additional information under the enhanced
13 vegetation management program, and recording
14 data about trees, even if they don't meet the
15 threshold of requiring work. So we are
16 gathering additional information to help us
17 further assess the risk to our lines from the
18 vegetation.

19 Q And does that essentially mean if a
20 tree is one of the targeted species, but it
21 does not fail the HTRS rank in evaluation,
22 then it is somehow tagged in your system but
23 it is not removed?

24 A At this time.

25 Q Am I correct that, if you look at
26 this same Exhibit 133, the very last page
27 shows another spreadsheet that at the top is
28 entitled EVM Tree Assessment Tool Past Draft

1 8/14/19. Is that what you just mentioned in
2 your testimony?

3 A Yes. This is the tool that we
4 were -- is under development right now to be
5 the new tool for our enhanced vegetation
6 management program.

7 Q But the same tool is being used for
8 routine vegetation maintenance also, correct?

9 A The Tree Assessment Tool as shown
10 on this page is not in use right now. It is
11 under development and is primarily focused on
12 our Enhanced Vegetation Management Program.

13 Q But at the moment you are using the
14 older version for both, for assessment of all
15 the trees, correct?

16 A Yes.

17 Q Is it your intent to use this new
18 tool just for the high-risk species and not
19 for other trees?

20 A I think that -- my understanding is
21 that this tool, which again is still under
22 development, but not all decisions have been
23 made, is that this tool would be used for all
24 trees that are tall enough to strike. And
25 the high-risk species, the 10 species on that
26 list, may have a different score or different
27 criteria in regards to what outcomes may
28 result in action.

1 Q And who determines the threshold
2 score that would result in an action?

3 A We have got a cross, not cross
4 functional, a diverse team that includes
5 internal arborists, as well as external
6 arborists, or arboricultural experts that
7 have contributed to the development of this
8 tool, which includes the criteria for what
9 would spur action from this tool.

10 MR. HAWIGER: Can I have a moment off
11 the record, your Honor?

12 EXAMINATION

13 BY ALJ LAU:

14 Q I have a couple of questions. The
15 arborists that PG&E hires, are they -- some
16 are internal and some are external. How does
17 PG&E know what are the qualifications of
18 arborists that are determining whether to
19 remove a healthy tree whether a tree is
20 healthy, or not?

21 WITNESS PENDER: One hundred percent of
22 the arborists who are performing inspections
23 in the field are contractors at this point
24 for PG&E, hired through contracting
25 companies. There is a very specific set of
26 criteria and experience and knowledge for
27 different seniority levels within that
28 population of pre-inspectors.

1 So an entry level pre-inspector is
2 expected to have two years of experience in
3 the arboricultural field, right? They can't
4 move to another level of seniority, which
5 would also include a pay raise, until they
6 meet certain criteria. And to move to the
7 third level of seniority, and again another
8 pay raise, requires them to become a
9 certified arborist to get certification from
10 an international arboricultural association.

11 Q So when does PG&E use their own
12 internal arborists and what is their role?

13 A We have a staff of vegetation
14 program managers, as well as supervisors,
15 managers, many of whom have come up through
16 those ranks, through that process. And a
17 number of them are certified arborists, or
18 just experienced arborists, even if they are
19 not certified. We use them to supervise the
20 work, to provide direction, to make decisions
21 when there is potential conflicts or conflict
22 of professional judgment. So our PG&E
23 employees oversee this process, and those
24 contract employees and are the final arbiters
25 as necessary.

26 Q Including auditing the work of the
27 external arborists --

28 A We have -- sorry.

1 Q -- randomly?

2 A We have a -- we have quality
3 control programs. We also have quality
4 assurance programs, which you are referring
5 to as sort of randomly sampling. We would
6 refer to as our quality insurance program.
7 And the work in the field is performed,
8 again, by contractors, who also have
9 qualification expectations, but is also
10 overseen by PG&E staff. So we have dedicated
11 PG&E staff whose only job is to manage our
12 quality programs and to direct the
13 contractors who go out and perform the
14 quality control or quality insurance
15 inspections evaluations.

16 ALJ LAU: Thank you. Mr. Hawiger.

17 MR. HAWIGER: Thank you. May I still
18 have a moment off the record?

19 ALJ LAU: Off the record.

20 (Off the record.)

21 ALJ LAU: Back on the record.

22 BY MR. HAWIGER:

23 Q One follow-up. I understood from
24 you that there is internal records of under
25 the Enhanced Vegetation Management Program,
26 trees that were pruned versus removed but it
27 is not tracked and aggregated for easily. Do
28 you have any sort of ballpark sense of what

1 percentage of trees were pruned versus
2 removed under that program in 2018?

3 A So the software package that we use
4 to manage this work has evolved from 2018
5 into 2019. Our ability to track that
6 specific information is much better in 2019
7 than it was in 2018.

8 But to answer your question, there
9 are two primary scopes in the enhanced
10 vegetation program, the overhang clearing,
11 which is almost all pruning, with a minority
12 of removals because the pruning required it,
13 and then the high-risk tree species.

14 It would be speculation for me to
15 identify an exact number. It is well over
16 50 percent of the targeted tree species work
17 that resulted in removals. So the majority
18 of that was removals, but it was not
19 100 percent.

20 Q Thank you.

21 Let me ask you some questions about
22 your cost forecast for the Enhanced
23 Vegetation Management Program. Looking at
24 page -- Exhibit 19 of your workpapers for the
25 direct testimony, page WP 7-12 that contains
26 Table 7-11.

27 Is it correct that your forecast is
28 based entirely on an assumed number of tree

1 removals per circuit mile?

2 A Tree removals and tree trims per
3 mile, yes.

4 Q Well, okay. Isn't the -- if I look
5 at the -- let me be more clear. Well,
6 looking first at the overhang clearing
7 section that's sort of lines 1 through 14.
8 I'm sorry. Hold on just a moment, please.

9 ALJ LAU: Off the record.

10 (Off the record.)

11 ALJ LAU: Back on the record.

12 BY MR. HAWIGER:

13 Q Let me ask you specifically with
14 respect to the targeted tree species, is it
15 correct that this cost forecast for that
16 element of the program is based on a specific
17 income of tree removals per mile?

18 A That is correct.

19 Q But that does not imply that you
20 plan to remove every tree. That was just
21 what was used for cost forecasting; is that
22 right?

23 A Yes. That was our best estimate
24 for forward-looking cost forecast.

25 Q And looking at the Notes 11 and 13,
26 am I correct that for the targeted tree
27 species program, both the number of trees
28 forecast to be removed and the cost per tree

1 were based on historical data from the EEVM
2 program?

3 A That is accurate.

4 Q Now, did the EEVM program involve
5 the same work as the routine vegetation
6 maintenance program?

7 A No. Both the EEVM, which was the
8 legacy program, as well as now the EVM,
9 involves scopes that go beyond what the
10 routine vegetation management program focuses
11 on.

12 Q And how was the EEVM Program
13 different from the routine vegetation
14 management program?

15 A The EEVM Program, which is for
16 enhanced electrical vegetation management
17 program -- no, Expanded Electrical Vegetation
18 Management Program, was focused on
19 reliability and public safety. In the sense
20 that we looked at areas of our system
21 circuits that had the highest historical
22 outages because of vegetation content. And
23 we went to those areas, which were generally
24 small segments, and removed overhangs and
25 identified trees that might be a fallen
26 potential. So in that sense, the two focus
27 areas of the EEVM, removing overhangs and
28 fallen potential trees, was similar to the

1 scope of the EVM program that we're now
2 doing.

3 So both of those two things,
4 overhangs and at-risk fallen trees, are
5 generally above and beyond what our routine
6 program is focused on, which is compliance
7 radial clearance.

8 Q And the EEVM also includes tree
9 removal?

10 A Yes. For at-risk fallen trees, it
11 has similar concept as EVM.

12 Q Did PG&E keep track of trees that
13 were pruned versus trees that were removed,
14 the number of trees in the EEVM program?

15 A I can't say with 100 percent
16 certainty. I believe so.

17 Q Just to get to the bottom line,
18 this in Row 17 of this workpaper, you
19 forecast approximately -- almost 50 tree
20 removals per mile. Is that per circuit mile?
21 I presume that is circuit mile?]

22 A Yes, circuit mile.

23 Q So was that based on some actual
24 recorded number of trees removed under the
25 EEVM program?

26 A It was informed by the history we
27 had from the EEVM program, yes.

28 Q Well -- and not to belabor it, but

1 when you say, "informed by the history," did
2 PG&E actually have some data that you
3 crunched and picked an average, or was it
4 that you talked to people and this was sort
5 of their memory but you didn't have actual
6 data?

7 A We had actual data. We had data
8 for a wide variety of geographic areas. And
9 we assessed that data with subject matter
10 expertise to assess what is a reasonable
11 estimate as it relates to this program, the
12 enhanced vegetation management. So we
13 leveraged the data we had as well as subject
14 matter expertise to create the best estimate
15 we could create.

16 Q But the EEVM program was looking at
17 any trees that posed a hazard irrespective of
18 the species of the tree, correct?

19 A Generally correct. It did not have
20 the same top 10 species criteria.

21 Q So wouldn't the number removed
22 under that program include a whole bunch of
23 trees that might be otherwise removed as
24 hazard trees under their routine vegetation
25 maintenance program?

26 A The EEVM and the enhanced
27 vegetation management program, as described
28 in my testimony, had a lower bar for removing

1 at-risk trees than the dead, diseased and
2 decaying criteria that's in the routine
3 compliance regulations. So we were going
4 further than simply meeting that regulatory
5 requirement to remove dead, diseased trees.

6 MR. HAWIGER: Can I have another moment
7 off the record, your Honor.

8 ALJ LAU: Off the record.

9 (Off the record.)

10 ALJ LAU: Back on the record.

11 BY MR. HAWIGER:

12 Q Mr. Pender, let me ask you to
13 switch gears and turn to the topic -- well,
14 not switch gears -- turn to the topic of
15 overhead clearing. So in this table, a
16 portion of the overhang clearing program and
17 specifically about the maintenance costs.

18 Now, if I understand correctly,
19 your testimony is that PG&E will need to do
20 follow-up vegetation maintenance work on
21 sections that have been previously cleared of
22 overhangs; is that right?

23 A That's correct.

24 Q And line 7, 8 and 9 sort of discuss
25 the maintenance costs for this program. Is
26 it correct, looking at line 9, that PG&E
27 expects to trim or remove for maintenance 85
28 percent of the trees that PG&E did overhang

1 clearing on?

2 A Approximately. So the mileage
3 reflected on line 7 is two years delay from
4 when it was originally trimmed. So the
5 estimate is after two years we would need to
6 trim again 85 percent of the trees that we
7 initially visited through this program.

8 Q And so the assumption is that
9 approximately two years after the overhang
10 clearing work is done you would come back and
11 do maintenance that would be equivalent to
12 about 85 percent of the original work?

13 A That's correct.

14 Q What is the basis for the
15 assumption that you'll have to prune and
16 remove about 85 percent of the same trees
17 that you did before?

18 A Yeah. The 85 percent number is a
19 subject matter expert estimate for how many
20 trees would have grown back enough that they
21 would need to be trimmed again to maintain
22 the cleared overhangs -- clearance of
23 overhangs.

24 Q Just to sort of -- I'm sorry --
25 backtrack a moment. Your cost estimate for
26 this program assumes that there would be per
27 mile about almost 8 trees removed and almost
28 70 trees cleared -- trimmed, correct?

1 A Correct.

2 Q So I guess I understand the need to
3 trim trees that have grown back. But the
4 removal costs are a significant component of
5 this program because that costs about three
6 times as much as tree pruning, correct?

7 A Yes. Our estimate is three times
8 as much.

9 Q With a tree that's been removed two
10 years ago, it wouldn't need to be removed
11 again, would it?

12 A No. Clearly not the same tree.
13 Two factors: It's possible that the trimming
14 of the overhanging branches could harm the
15 health of the tree, right? That's not our
16 goal, but that does happen. So two years
17 later that tree may need to be removed
18 because the health may have deteriorated,
19 possibly contributed to by the initial
20 pruning work that we did.

21 Additionally, I believe the 85
22 percent more or less takes into account the
23 fact that eight of the trees that we
24 initially trimmed are no longer in the --
25 eight of the trees that were removed are no
26 longer in the population.

27 Q Now, PG&E could have done a
28 slightly more detailed cost forecast for

1 maintenance by assuming maintenance of some
2 number of trees that were previously pruned
3 or cleared for overhangs and a much smaller
4 percentage of removals of trees. Would that
5 make -- in theory, be possible?

6 A I believe I understand in theory
7 that a more detailed forecast could have
8 estimated how many trees would need to be
9 removed and how many trees would need to be
10 trimmed in the future. We didn't have
11 visibility or confidence in an estimate of
12 that level of specificity.

13 Q Why would that be any different
14 from assuming 85 percent for both versus
15 assuming a much lower percentage of tree
16 removals and some percentage for tree
17 re-prunings?

18 A The more assumptions you need to
19 make, the more risks you're taking in any
20 estimate. So creating approximately four
21 estimates, as you outlined, instead of two,
22 how many trees and what percentage of them,
23 which is what we used. So that was the
24 approach we took based on the fact that we've
25 never done quite this work before in terms of
26 maintaining long-term overhang clearing of a
27 large section of our service territory.

28 Q Okay. Let me switch topics and ask

1 you about tree removal of trees that are --
2 that is booked to the Catastrophic Emergency
3 Memorandum Account or CEMA, C-E-M-A. If you
4 could turn back to the reference exhibit.
5 And there's some excerpts from Resolution
6 ESRB-4, dated June 2014. Is it correct that
7 the Commission issued this resolution in 2014
8 to address wildfire danger due to drought
9 conditions?

10 A That's generally accurate. As it
11 mentions at the top, it's also related to the
12 bark beetle tree mortality crisis.

13 Q I should have asked first. Are you
14 familiar with this resolution?

15 A Yes.

16 Q And if I ask you to turn in this
17 document a few pages further to the ordering
18 paragraphs that start at page 14 of the
19 resolution, and looking at the ordering
20 paragraph two, is it correct that the
21 Commission ordered the utilities to remove,
22 quote, "hazardous, dead and sick trees and
23 other vegetation near power lines"?

24 A That's accurate.

25 Q PG&E removes trees pursuant to this
26 order and records work in the CEMA balancing
27 account; is that correct?

28 A That's correct.

1 Q Is that work conducted by the same
2 staff and division that does routine
3 vegetation maintenance?

4 A Generally speaking, it's the same
5 kind of employees and the same kind of
6 contractors who performed this work.

7 Q Yes. I'm sorry. You contracted
8 the two to do vegetation management
9 maintenance work, correct?

10 A Right.

11 Q Does PG&E contract separately to do
12 work to remove the healthy, dead and sick
13 trees that's booked to CEMA versus to remove
14 the hazard trees under routine vegetation
15 maintenance -- management?

16 A Historically, there have been
17 different contracts with different rates for
18 dead, dying, diseased trees, as would be
19 addressed here, versus the routine program.
20 And we have merged those together in the last
21 year or so so that, generally speaking, it's
22 the same contractors working under the same
23 contract doing both kinds of work.

24 Q Does PG&E at all attempt to
25 distinguish between hazard trees for removal
26 versus trees that are removed and the costs
27 are booked to CEMA?

28 A Sorry. I didn't fully understand

1 the distinction.

2 Q I'm sorry. My question -- how
3 does -- does PG&E attempt to distinguish
4 trees that are either hazard trees for --
5 that are removed because they are hazard
6 trees or trees that are removed because they
7 are hazardous, dead or sick and where the
8 costs are booked to CEMA?

9 A So -- no. Generally speaking,
10 there's no distinction between the two kinds
11 of trees you sort of outlined there, which is
12 dead, dying, diseased, hazard tree could be
13 identified through our routine program or
14 through the additional patrols, the extra
15 inspections we do as part of our CEMA
16 program.

17 Some number of our removals are
18 booked to our routine program aligned with
19 our historical averages and norms there, and
20 then the increase -- the rest of the dead,
21 dying, diseased trees are booked to our CEMA
22 account.

23 Q So when -- so how does PG&E
24 determine whether to book the cost of
25 removing a tree to routine vegetation
26 maintenance versus a CEMA account?

27 A If it's a dead, dying, diseased
28 tree, there's a baseline volume of those that

1 we anticipate to be part of our routine
2 program based on history before the tree
3 mortality crisis kicked in. So that
4 volume -- and I don't have specific numbers
5 with me, but -- is booked to the routine
6 program. And the rest of the dead, dying
7 trees that are removed are booked to the CEMA
8 account.

9 Q Are most of those trees booked to
10 the CEMA account trees that are actually
11 removed, or are some of them pruned?

12 A Very few of them are pruned because
13 they are dead, dying or diseased. It is
14 occasionally possible to prune the diseased
15 part off of a tree. But the vast majority of
16 what we're talking about here, in terms of
17 hazard trees, are removed.

18 Q Would information from the CEMA
19 account on costs and numbers of trees removed
20 be useful in forecasting the removal costs of
21 either hazard trees or targeted trees, tree
22 species trees?

23 A The unit cost of removing a hazard
24 tree is and was an informative input into the
25 cost of removing a tree under the at-risk
26 tree species scope. The unit cost of
27 removing a tree is a helpful reference point.

28 Q Would you agree, though, that PG&E

1 refused, in this case, to provide to TURN
2 information regarding costs in the CEMA
3 account because it said they were not
4 relevant?

5 A I don't recall that.

6 Q Okay. Let me ask you to turn in
7 this exhibit we were looking at, which I
8 misplaced --

9 ALJ LAU: Mr. Hawiger, do you think you
10 can finish this line of questions in 5 to 10
11 minutes?

12 MR. HAWIGER: Yes. Absolutely.

13 ALJ LAU: Okay.

14 BY MR. HAWIGER:

15 Q In Exhibit 133, if you could look
16 to -- it's not in there -- scratch that. I
17 forgot to put that one in.

18 ALJ LAU: Off the record.

19 (Off the record.)

20 ALJ LAU: Back on the record. We will
21 take a recess until 2:30.

22 Off the record.

23 (Off the record.)

24 ALJ LAU: Let's go back on the record.

25 Mr. Hawiger, you may continue your
26 cross.

27 MR. HAWIGER: Thank you, your Honor.

28 Q Mr. Pender, I believe you testified

1 earlier that at the moment PG&E is using the
2 same hazard tree rating system tool to
3 evaluate trees and not distinguishing between
4 the high-risk species trees and any other
5 tree; is that correct?

6 A That's correct.

7 Q And is PG&E intending to change
8 that practice in the next three years?

9 A Yes. So the tree assessment tool
10 that we discussed briefly that was in the
11 data response in your exhibit is the tool
12 that we're developing to apply to the
13 enhanced vegetation management program, and
14 that tree -- I'm sorry -- that tree
15 assessment tool may have different
16 criteria -- different scores for different
17 tree species going forward.

18 Q What would be the sort of -- do you
19 have a sense of what the major difference
20 would be in the evaluation using that TAT
21 tool versus the existing tool?

22 A I don't have a summary of the major
23 differences. The tree assessment tool
24 started with what we already have built on
25 the history, which is the hazard tree rating
26 system. But we gathered feedback and input
27 from outside arboricultural experts. We
28 revisited our data and information that we

1 gathered in the past throughout tree failures
2 to refresh it and in some cases rewrite it,
3 right? So there are some different criteria
4 spelled out on that tree assessment tool,
5 some questions that aren't on our hazard tree
6 rating system. So it is different in a
7 number of ways.

8 Q Is it correct, however, that it
9 will still, to some extent, consider the
10 health or condition of the tree in
11 determining whether to remove the tree?

12 A Yes. It will consider a number of
13 factors about the health and condition of the
14 tree.

15 Q Given that, would you expect that
16 there would be fewer trees removed than when
17 you were using the prior tool, let's say,
18 prior to March 2019 that considered only the
19 strike likelihood?

20 A There are so many changes between
21 the HTRS and the TAT, the tree assessment
22 tool, as well as the tree assessment tool is
23 not finalized yet. So it would be very much
24 speculation to presuppose how many -- how
25 much it would impact the number of trees to
26 be worked. So it will have differences from
27 one span to the next in which trees are
28 identified for work. But I can't say whether

1 it would increase or decrease the number of
2 trees to be worked overall.

3 Q I'd like to just explore that a
4 little bit more. Isn't -- are you
5 envisioning that the strike likelihood --
6 well, I guess -- I don't know if you want to
7 do it. But if we -- you could look at both
8 the existing tool and the new draft tab in
9 Exhibit 133. And is the strike likelihood
10 and preliminary strike assessments -- do you
11 envision they would be significantly
12 different in evaluating whether a tree is
13 leaning or has the potential to strike a
14 conductor?

15 A No. So some questions on the tree
16 assessment tool -- the draft tree assessment
17 tool are the same or very similar to the
18 strike likelihood HTRS.

19 Q Given that the new TAT would only
20 add additional criteria that would limit
21 given the tree health or, et cetera, that
22 would limit the potential -- it wouldn't add
23 any trees to be removed, would it? If you --
24 versus just removing every tree that has a
25 strike potential?

26 A That is not accurate. There are
27 questions on here to potentially identify
28 health problems --

1 Q Right.

2 A -- that were not in the previous
3 criteria.

4 Q Okay. The previous criteria for
5 targeted tree species didn't even go down to
6 look at the tree condition, right, prior to
7 March of 2019? You were just looking at the
8 strike likelihood, correct?

9 A That is correct.

10 Q So now -- so a perfectly healthy
11 tree or a tree that had some health
12 conditions, they would both be removed if
13 they had the same strike likelihood before
14 March 2019, correct?

15 A Previously, correct.

16 Q The changes that you anticipate
17 now, would they not result -- they would
18 effectively then evaluate whether there's
19 some health condition that if a tree passes
20 it, even if it has the strike potential, it
21 would not be removed because it has no health
22 conditions?

23 A I don't think I agree because I'm
24 not sure I understand, but if we look at the
25 tree assessment tool on the last page of this
26 exhibit --

27 Q Right.

28 A -- there's three questions for the

1 preliminary strike assessment: Can the tree
2 reach the conductor? Does the tree have an
3 indirect path to the conductor and is the
4 tree leaning? That's a simplified version of
5 the previous strike likelihood, right? And
6 then it goes into tree health score. Is the
7 tree dead? Are there fruiting bodies on
8 tree, et cetera. Those questions are
9 different and new compared to before. The
10 question, like fruiting bodies, which was in
11 our previous, could identify a tree that is
12 tall enough to strike but doesn't have to be
13 leaning, doesn't have to be weighted towards
14 the line and may now be identified to be
15 worked.

16 So this may add trees that would
17 not have necessarily been identified
18 previously, but this tool may also not
19 identify a tree that would have been
20 identified previously.

21 Q If a tree does not pass -- if a
22 tree meets the preliminarily strike
23 assessment, meaning that it could not, for
24 example, reach the conductor, would it --
25 could it still be removed based on its
26 condition?

27 A No. If a tree cannot reach the
28 conductor, which is essentially the first two

1 questions here, right, is it tall enough to
2 reach and does it have any feasible path, if
3 the answer to both of those is no, then it
4 would not be identified for removal.

5 Q I'm sorry. I'm not a logician, but
6 I'm trying to -- let me try to put it a
7 different way. I'm having this logical
8 difficulty. It seems to me that there is a
9 criteria A, the preliminary that -- the
10 strike assessment that is similar in both
11 tools. And it seems to me that if you have
12 this subset of trees that meets the -- that
13 proposes no strike risk -- so they would not
14 be removed -- they are left alone. And it
15 seems to me that logically then we're looking
16 at the subset of trees that fails that strike
17 assessment. And my understanding was that
18 that's the only subset that would be
19 evaluated then for other conditions and that
20 in the original tool back in March, you would
21 not evaluate for a condition. So those --
22 all the subset of trees, if they fail, would
23 be removed whereas in the new tool they are
24 evaluated. So logically, the only result is
25 that some subset -- some portion of those
26 trees that meet that subset might not be
27 removed because they have no health
28 conditions, no conditions at all.

1 So my -- and correct me if I am
2 wrong. But logically and mathematically, I
3 was assuming that the result could only be
4 that fewer trees could be removed using the
5 new tool than using the old tool in the
6 targeted tree species program only.

7 A So I want to be really clear.
8 We've had three different criteria. At the
9 beginning of this program and up until March,
10 we had the HTRS, the hazard tree rating
11 system, and then that bulletin in March,
12 which we've previously referenced, expanded
13 somewhat and said if it's tall enough to
14 strike and it's in the top 10 tree species,
15 then we're going to remove it. That likely
16 increased the population from the original
17 scope.

18 Q Right.

19 A So we increased. Then we went back
20 to the HTRS after the CPUC's guidance in the
21 wildfire mitigation plan proceeding. So
22 we're probably similar to the original
23 criteria right now. The tree assessment tool
24 is an entirely different criteria. I mean,
25 not entirely but is going to use somewhat
26 different questions and tests.

27 Number one, this isn't finalized.
28 So we don't know exactly how it will play

1 out, and number two, it is different. So
2 your supposition that the same trees that
3 passed the first test will pass the second
4 test and then need to be filtered is not
5 necessarily accurate.

6 The tree assessment tool, has a
7 simplified strike assessment, which means
8 more trees will then be evaluated for health,
9 right? A large population of trees will need
10 to be evaluated for health, and then how that
11 health assessment is performed -- or the
12 results of that health assessment will
13 determine how many of those trees need to be
14 removed.

15 So I know that's complicated, but
16 the punch line is we just don't have any
17 reason to make a speculation about whether it
18 will be more or less trees than what is
19 presented in our forecast at this time.

20 Q All right. So just -- I guess
21 stepping back -- I don't want to -- I'm
22 tempted to look line by line at this strike
23 likelihood versus preliminary strike
24 assessment. But let me just step back. So
25 you're saying that the fact that back in
26 2018, when PG&E was removing any target tree
27 as long as it failed the strike likelihood,
28 but now -- there have been changes since

1 then.

2 But now, given the Commission's
3 directive, it's actually evaluating those
4 same trees for health conditions, so not
5 removing them if they are totally healthy.
6 But your testimony is nevertheless there
7 could be the same number of trees removed.
8 That would not logically reduce the number of
9 trees that could be removed?

10 A Using the full HTRS right now,
11 which is the practice in the field, is likely
12 or may be less trees per mile than the
13 previous criteria, which was just the strike
14 likelihood portion. I don't have data to
15 support that at the moment. But that makes
16 some sense. We are moving to the tree
17 assessment tool. We've been discussing that.
18 And that is a new tool, a new sheet of paper.
19 We don't know what that will mean for the
20 scope of work.

21 Q Okay. Thank you. I'm almost done.
22 I'm sorry.

23 ALJ LIRAG: All right. I'm going to
24 start applying a little bit of time pressure
25 on you, Mr. Hawiger. So you have questions
26 for Mr. Singh?

27 MR. HAWIGER: I do. I have just the
28 five minutes left or less for Mr. Pender

1 on -- I didn't think that would take so long.

2 Q Mr. Pender, could you turn in your
3 rebuttal, please, to page 7-19. There's a
4 table 7-5.

5 A Yes.]

6 Q This table shows that there would
7 be 100 -- you calculated that 134 ignitions
8 were caused by some type of tree that could
9 be considered a healthy tree; is that right?

10 A That is right.

11 Q And if you take that and divide --
12 that is over a period of 4-1/2 years,
13 correct?

14 A I believe that is accurate. It is
15 also only in the high fire threat districts,
16 Tier 2 and Tier 3.

17 Q So this equates to about 32 trees
18 categorized as apparently healthy that caused
19 ignitions per year?

20 A I don't believe that is accurate.
21 Oh, I don't recall the dates of the
22 assessment.

23 Q Okay. Row 3, you were -- specifies
24 that there were apparently trees, but they
25 were found about post-incident review to show
26 signs of disease or decay. Was it routine to
27 inspect trees after an ignition indent?

28 A Yes. That was often our practice.

1 Q And is Row 3 included in Row 5 that
2 has the total of apparently healthy trees
3 associated with ignitions?

4 A Yes.

5 MR. HAWIGER: Okay. Thank you very
6 much, Mr. Pender.

7 ALJ LIRAG: All right. Please proceed
8 to your questions for Mr. Singh. Probably
9 10 minutes of that, and then I'll check.

10 MR. HAWIGER: Okay.

11 Q Mr. Singh, do you happen to have
12 with you what has been previously identified
13 as Exhibit 60? It was a cross-examination
14 exhibit I believe identified during the
15 cross-examination of Ms. Cullings?

16 WITNESS SINGH: Is this related to DR
17 096 and DR 010?

18 Q Yes, sir.

19 A I have that here.

20 Q I'm going to ask you first to turn
21 in your rebuttal testimony Exhibit 20 to
22 page 2A dash, I'm sorry, to page 2A-6. You
23 discuss in Answer 13 the additional 177,000
24 of correction -- corrective actions, correct
25 tags identified in 2018 as part of the WSIP
26 inspections; is that right?

27 A I believe you meant 2019?

28 Q I'm sorry. Yes, I did.

1 A That would be accurate as of that
2 date, which is August 1st, 2019.

3 Q Were those inspections performed
4 across the entire service territory or just
5 in high fire threat district areas?

6 A They were focused on our electrical
7 equipment in the high fire threat districts,
8 as well as in Tier 1, which are the zones
9 that were adjacent to the elevated and
10 extreme wildfire risk. It was not the entire
11 service territory.

12 Q Would you agree that typically PG&E
13 identifies 52,000 corrective actions per year
14 across its entire service territory?

15 A I don't have that specific number
16 in front of me. Are you referring to a
17 specific document?

18 Q It is in another portion of the
19 testimony in this exhibit, but I'm going
20 to -- it is in there, so I'll move on.

21 A Okay.

22 Q Were the WSIP inspections performed
23 on poles that had been previously inspected
24 pursuant to the detailed overhead inspection
25 requirements of GO 165?

26 A Yes, they were, but using the very
27 different methodology and inspection process.

28 Q Moving to page 2A-8, in Answer 15

1 you discuss that PG&E has determined to
2 change the work scope of the system hardening
3 program in part due to the high labor demands
4 associated with the repair work, that it will
5 need to be done to repair those corrective
6 actions; is that correct?

7 A That is correct.

8 Q As a result, you are proposing to
9 do less covered conductor installation and
10 more undergrounding; is that right?

11 A That is not correct. What is being
12 proposed and what -- in response to Question
13 15 is speaking to, is the overall number of
14 miles that we're proposing to do for system
15 hardening. That is reduced, as we've
16 identified from the initial submission as
17 part of this GRC. But it has nothing to do
18 with the determination within the system
19 hardening miles of overhead versus
20 underground.

21 I believe Mr. Calvert spoke at
22 length about the factors that are considered
23 in determining overhead versus underground.

24 Q You are going to do fewer miles,
25 and you are going to do significantly less
26 miles of covered conductor installation, but
27 more miles than originally forecast of
28 undergrounding, correct?

1 A That is correct. If you are just
2 comparing the system hardening programs.

3 Q I guess I'm wondering, the cost is
4 a little higher, overall program costs to the
5 rate case, correct?

6 A So if your statement is the cost
7 for the system hardening program in the
8 rebuttal testimony that I provided, and I
9 think we alluded to earlier in one of the
10 tables, yes, that is higher than the prior
11 costs that were put forward for system
12 hardening proposal in the initial submission.

13 Q Since I'm way over time, let me cut
14 to the chase. I'm a little confused how
15 shifting work so that it results in higher
16 costs, given that I associate costs with
17 labor, how that helps with staffing
18 constraints? So could you just explain how
19 your proposed change in scope reduce -- helps
20 shift -- you to shift staff to do repair
21 work, the repair work?

22 A Yes, sir. So coming into 2019, if
23 you look at the prior two years of the number
24 of corrective repairs that we have made
25 coming out of our inspection program, they
26 have been in the range of 130 to 135,000
27 corrective notifications per year. In 2019
28 and going forward, we are going to see an

1 increase of nearly 30 percent from that
2 number. That 30 percent equates to the same
3 labor resource of qualified skill set that is
4 needed to do the repair coming out of the
5 inspections, as well as the system hardening.
6 It is qualified linemen that are part of a
7 crew, typically two to four people per crew,
8 that do both the repairs, as well as the
9 system hardening. So given the increase in
10 the volume of corrective repairs coming out
11 of inspections, which is on the tune of
12 30 percent compared to historicals, that is
13 what is driving the resource allocation to
14 the repairs from the system hardening.

15 Q So let me ask it a different way.
16 You are doing fewer miles of system
17 hardening, but it costs more because there is
18 a greater portion of undergrounding versus
19 overhead. Are you saying that staffing is
20 correlated strictly to mileage and not to
21 costs?

22 A No. That is not what I stated.
23 What I was stating was, trying to give you a
24 comparison between why the total system
25 hardening miles are reduced because of the
26 resource allocation to do the higher priority
27 repairs coming out of the Wildfire Safety
28 Inspection Program.

1 If you go to the second part of
2 your question regarding the -- why the costs
3 are higher, that is because the unit cost for
4 underground is higher, and some of the skill
5 set and the labor resource that is needed to
6 do undergrounding is different than the skill
7 set that is needed to do the repairs.

8 So an example of that is when a
9 repair is being made on an overhead
10 electrical system, we typically do not
11 require any trenching, unless it were a pole
12 replacement. When we are talking about
13 undergrounding, there is a trenching crew
14 that is needed, and that is additional cost
15 that would be incurred to do that work.

16 Q Let me ask you, looking at your
17 rebuttal testimony, the same page 2A-8, your
18 response to your Answer 16, what is the 2019
19 balance in the wildfire prevention mitigation
20 memorandum account, wildfire program
21 memorandum account, excuse me.

22 A I'm not sure I'm tracking. Are you
23 alluding to line 18 where it is the Wildfire
24 Plan Memorandum Account?

25 Q "Plan," yes, sir.

26 A Understood. It is my understanding
27 that this is the memorandum account that was
28 identified coming out of the May 30th

1 decision by the Commission related to the
2 approach of --

3 Q Mr. Singh, I have very little time.
4 Could you just answer my question, if
5 possible? Do you know the balance in that
6 account?

7 A I do not.

8 Q Do you know when PG&E will seek
9 cost recovery for the balance in that
10 account?

11 A I do not offhand.

12 Q Okay. Do you know whether
13 potential amount or costs of the work
14 necessary to address the corrective actions
15 you identify will be?

16 A Can you be more specific on your
17 question? I'm not sure I'm tracking.

18 Q Do you have any estimate of the
19 potential cost to address the repairs of the
20 177,000 tags or -- that you discuss that will
21 need to be done that caused a change in
22 scope?

23 A We have an estimate for that. I
24 don't have it offhand. That is not subject
25 to specific 2020 GRC proceeding, because we
26 are not asking for cost recovery for the
27 wildfire safety inspection effort as part of
28 this proceeding.

1 Q Right. That will be requested in a
2 memorandum account, correct?

3 A To my understanding.

4 Q Let me ask you to look at
5 Exhibit 60. Perhaps you won't have to refer
6 to it. I'll just ask you questions. If you
7 need some more specific guidance, I'll refer
8 to the specific question in there.

9 Is it correct that PG&E has a
10 database of all ignitions that have occurred
11 from about June 10th, 2014, to the end of
12 2018?

13 A Yes; that is correct. We are
14 tracking the ignitions since that point in
15 time, and that is consistent with the
16 regulatory requirements that were identified
17 at that point in time. Let me be more
18 specific. That ignition database correlates
19 to the ignitions that meet the CPUC
20 reportable requirements. I'm not going to go
21 through the details. I think you know the
22 triggers.

23 Q What is the total of ignitions
24 contained in that database through the end of
25 2018?

26 A I believe it is, subject to check,
27 in the vicinity of 1900 to 2,000.

28 Q And the 414 ignitions that you

1 discuss in your direct testimony for risk
2 analysis is the subset of ignitions that
3 occurred during the years 2015 through 2017
4 in high fire threat district areas; is that
5 right?

6 A That is correct. With the addition
7 of those also meeting the CPUC reportable
8 criteria.

9 Q And just one thing I want to make
10 sure to clarify is a factual -- well, let me
11 ask you this: In this Exhibit 60, there is a
12 discussion about ignitions caused by surge
13 arresters. If you look at the first page,
14 responses to Question 1?

15 A Could you point me to the data
16 request number, please?

17 Q Yes. It is the first Data Request
18 in this exhibit TURN Data Request 96 Question
19 1.

20 A Okay.

21 Q The answers are contained on the
22 next page. If you could just read to
23 yourselves, or to yourself, the responses to
24 B and C, if you need. And my question is:
25 Is it correct that the 20 ignitions mentioned
26 in Part B are ignitions that occurred
27 throughout the service territory, including
28 both the two in the high fire threat district

1 and 18 outside of the high fire threat
2 districts?

3 A That is my understanding.

4 Q Now, in your opinion should PG&E
5 attempt to eliminate all ignitions in its
6 entire service territory with the same
7 prioritization or level of effort?

8 A From my perspective, we are focused
9 on ignition prevention of all potential fire
10 ignition sources from our electrical
11 equipment, because the environment that we
12 are living in today, our assets that we are
13 living in today, is very different than what
14 it was previously. So one ignition, from my
15 perspective, can be that one that manifests
16 itself into a catastrophic wildfire.

17 Q Why in your direct testimony did
18 you present the risks and analysis looking at
19 only the 414 ignitions in the high fire
20 threat district areas?

21 A The reason we looked at the subset
22 of the 414 at that point in time was because
23 we did have the entirety of the 2018 dataset
24 reviewed, because we did the initial filing
25 for the GRC in December of last year. So we
26 had looked at the entirety of a complete
27 dataset for three years, and those fire
28 ignitions pose the highest potential

1 likelihood of being a catastrophic wildfire,
2 given that they are in high fire threat
3 districts.

4 Q Just so I understand, you did have
5 the entire database through the end of 2017,
6 including the high fire threat district areas
7 and the rest of the service territory,
8 correct?

9 A We did.

10 Q And in fact at that point in time
11 were -- there were about 1300 ignitions in
12 total for the three-year period '15 through
13 '17 in the service territory, were there not?

14 A I don't have that number offhand.
15 The only number I can share with you is the
16 one I shared previously, June 10th, 2014, to
17 12/31/2018.

18 Q Well, let me just ask, I think
19 maybe you answered this, but just in case:
20 Did you pick, from the 2015 through 2017, did
21 you pick the 414 ignitions to evaluate
22 because they were in high fire threat
23 districts and, therefore, posed more of a
24 risk than the -- all of the ignitions in the
25 service territory?

26 A Correct. I stated that the reason
27 we picked those was because those have the
28 greatest likelihood of turning into a

1 catastrophic wildfire, given what you just
2 stated.

3 Q So maybe we are agreeing, but just
4 to be clear. Would you agree that it is
5 appropriate to focus, in terms of preventing
6 catastrophic wildfires, it is appropriate to
7 focus on preventing ignitions in high fire
8 threat district areas?

9 A I would concur that that is the
10 place to start, but that is not where we
11 stop. Because what is a high fire threat
12 district today, or what is not a high fire
13 threat district today, may be a high fire
14 threat district tomorrow.

15 ALJ LIRAG: Let's try to wrap up, Mr.
16 Hawiger.

17 MR. HAWIGER: Your Honor, would it be
18 possible for me just to stop now and let
19 other parties cross? And if there is any
20 time left, I have a few questions; if not,
21 that is fine.

22 ALJ LIRAG: We don't have as much time
23 today, it being Friday. It was one of our
24 half day Fridays, which we converted to a
25 full day. The reporters do have some
26 catching up to do at the end of the week.

27 Let's switch gears and let's move to
28 Ms. Liotta.

1 CROSS-EXAMINATION

2 BY MS. LIOTTA:

3 Q Good afternoon, gentlemen. I'm
4 Rita Liotta with FEA. I only have a few
5 questions for Mr. Calvert and Mr. Pender.

6 Mr. Calvert, I was going to start
7 with you, if that is okay?

8 WITNESS CALVERT: Great.

9 Q Could I refer you please to your
10 rebuttal page 28 beginning on line 21.

11 A Yes, I'm there.

12 Q And you see where it says FEA notes
13 PG&E's spending for Major Work Category 08
14 and 49 are fluctuated, that paragraph?

15 A I do.

16 Q Do you agree that spending for this
17 work in prior years has been lower than the
18 amounts authorized by the Commission?

19 A Yes, I do.

20 Q If I could have you turn to page 52
21 of your direct testimony to Table 9-13.

22 A I'm there.

23 Q Okay. This table shows the actual
24 amount spent for distribution overhead system
25 hardening and response, correct?

26 A Hardening and reliability.

27 Q Right. Okay. And if I could have
28 you look at what is marked as Exhibit 141,

1 which is FEA's Data Request 1 Question 35.

2 A Yes, I have that.

3 Q So this exhibit, this data
4 response, shows the amounts authorized by the
5 Commission for distribution overhead system
6 hardening and response, correct?

7 A Yes. The impeded amounts, yes.

8 Q Thank you.

9 Have you Mr. Smith's, FEA's witness
10 Mr. Smith's, direct testimony in front of
11 you? I was going to have you just take a
12 look at the table on page 30 of his direct
13 testimony.

14 ALJ LIRAG: That is Exhibit 135.

15 BY MS. LIOTTA:

16 Q Are you there? Page 30 of
17 Exhibit 135, Mr. Smith's direct testimony,
18 there is a table at the top of the page.

19 ALJ LIRAG: Page 30 of that document.

20 WITNESS CALVERT: Yes.

21 BY MS. LIOTTA:

22 Q This table summarizes the data from
23 your testimony and the amounts authorized
24 that were just provided in the exhibit that
25 we just looked at, Exhibit 141.

26 So this chart, you would agree this
27 chart shows that the company has spent less
28 than authorized in the last five years?

1 A Yes, I would. This appears to be
2 the same information that was provided in our
3 response to FEA 1 Question 35.

4 Q Thank you.

5 And the company has forecasted
6 89.291 million for 2018 for distribution
7 overhead system hardening and response,
8 correct?

9 A That is correct.

10 Q And then in Exhibit 140, which is
11 the data response to FEA Data Request 1
12 Question 34, the company actually spent
13 65.332 million, correct?

14 A That is correct.

15 Q So my last question would be just:
16 Would you agree that it is possible that the
17 full amount requested for test year 2020 may
18 not be spent? Is there a possibility?

19 A Certainly there is the possibility.
20 We have a plan to spend it. However, there
21 is a possibility based on other priorities
22 and changes in our risk profile.

23 MS. LIOTTA: Thank you, Mr. Calvert. I
24 have no further questions for you.

25 I just have a couple of questions
26 for you, Mr. Pender.

27 If I could have you look at page 35
28 of your direct testimony.

1 WITNESS PENDER: Yes, I'm there.

2 Q So this table shows that the
3 company forecasted 329.206 million for 2018
4 for the enhanced vegetation management
5 expenses, correct?

6 A Yes.

7 Q So if I could have you look at the
8 exhibit that was handed out, Exhibit 139,
9 which is Public Advocates Data Request
10 No. 213. And the table attached entitled
11 Workpaper Table 7-7, the highlighted portion,
12 shows what was actually spent in 2018,
13 correct?

14 A Correct.

15 Q So subject to check, would you say
16 that it is approximately 22.794 million less
17 than what was forecasted?

18 A Approximately 22.794, yes.

19 Q Thank you.

20 Can you tell me why so much less
21 was spent than forecasted?

22 A 2018 was the first year of Enhanced
23 Vegetation Management Program, so our
24 forecast was based on our best-available
25 information and perspective on what we would
26 execute on and spend. As it turned out, we
27 spent somewhat less than we forecasted, 22
28 million on 300 million. I don't have a

1 breakdown by category of what things were
2 less than we anticipated. But I would say in
3 the ramp-up of our first year of this
4 program, we spent a little bit less than we
5 anticipated.

6 Q Thank you.

7 Can you give any assurance that the
8 company will spend the amount requested for
9 2020?

10 A The amount forecasted for 2020 is
11 based on our best-available estimate, based
12 on the current scope and the anticipated
13 continued ramp-up of that program. We are
14 experiencing cost pressures in 2019 that we
15 just -- believe we will exceed our 2019
16 forecast for spend. And, therefore, also put
17 pressure in terms of potentially overrunning
18 our forecast in 2020 as a higher risk than
19 underrunning at the point, given the
20 increased labor cost for vegetation
21 management, qualified personnel, et cetera.

22 So there are no guarantees. It is
23 a forecast based on a still ramping up
24 program, but we see more risk of an overrun
25 than an underrun at this time.

26 MS. LIOTTA: Thank you, Mr. Pender. I
27 have no further questions for these
28 witnesses.

1 ALJ LIRAG: Let's try to wrap up all
2 business, and then leave whatever time we
3 have left for Mr. Hawiger. We will get to
4 you, Mr. Lindl.

5 Any redirect?

6 MR. MIDDLEKAUFF: No. But I have
7 redirect on Mr. Hawiger.

8 ALJ LIRAG: Ignore Mr. Hawiger for now.

9 MR. MIDDLEKAUFF: No redirect on that,
10 your Honor.

11 ALJ LIRAG: Let's take care of Ms.
12 Liotta's exhibit. You then move for Exhibits
13 139, 140 and 141 to have these admitted into
14 the record?

15 MS. LIOTTA: Yes, your Honor.

16 ALJ LIRAG: Any objection? Hearing
17 none, Exhibits 139, 140 and 141 are received
18 into the record.

19 (Exhibit No. 139 was received into
20 evidence.)

21 (Exhibit No. 140 was received into
22 evidence.)

23 (Exhibit No. 141 was received into
24 evidence.)

25 ALJ LIRAG: Let's go, Mr. Lindl.

26 MR. LINDL: All right. Thank you, your
27 Honor.

28

1 CROSS-EXAMINATION

2 BY MR. LINDL:

3 Q Good afternoon, gentlemen. My name
4 is Tim Lindl. I'm the attorney for the Joint
5 CCAs. I just have about a dozen questions
6 for you, Mr. Calvert, and then we will be
7 done.

8 WITNESS CALVERT: Okay.

9 Q I want to discuss with you the
10 resilience zones PG&E is proposing in this
11 case as part of the CSWP?

12 A Okay.

13 Q The purpose of these resilient
14 zones is to provide temporary power to
15 shelters and other services supporting the
16 public safety and community during a Public
17 Safety Power Shutoff, or PSPS, correct?

18 A That is correct, to provide
19 localized power.

20 Q And an important part of those
21 resilience zones are what PG&E calls
22 pre-installed interconnection hubs, right?

23 A Definitely, yes.

24 Q And they are called
25 "interconnection hubs" because PG&E would
26 interconnect temporary generation there,
27 right?

28 A That is correct. It consists of

1 facilities that will facilitate that
2 interconnection.]

3 Q Thank you. They'd also include
4 some infrastructure that PG&E has called grid
5 isolation and protective devices; is that
6 right?

7 A Correct. Typically, it's a line
8 recloser, but I believe I have a picture in
9 my testimony that shows there is components.

10 Q Thank you. The purpose of that
11 line recloser is to allow PG&E to separate
12 the targeted load or loads from the rest of
13 the de-energized grid and provide energy to
14 those loads; is that right?

15 A Can you repeat the question.

16 Q Sure. The purpose of that
17 infrastructure, the grid isolation and
18 protective devices or the recloser you
19 mentioned is to separate the targeted load or
20 loads from the rest of the de-energized grid;
21 is that right?

22 A That's not correct, no.

23 Q So what is the purpose of that
24 infrastructure?

25 A The purpose of that infrastructure
26 is to provide protection for the generation
27 that's localized there. So if you were to
28 have the resilient zone energized by that

1 generation stepped up through the
2 transformer, if there was to be a line fault
3 or some sort of problem on the system, that
4 recloser serves to protect the generator and
5 source, much like a breaker would in a
6 substation.

7 Q It's generator-related equipment as
8 opposed to microgrid-related?

9 A No. It's a distribution line
10 recloser. We probably have 7,000 or more
11 across our system. But it's a protective
12 device. It's an overcurrent protective
13 device. It's pole-mounted. I believe you
14 looked at the picture, and you seen it at the
15 top of the pole. But it provides -- it has
16 settings on the controller to isolate
17 downstream faults from the source of power.

18 Q Thanks. So there are three
19 components to each interconnection hub then,
20 correct? And I could just list them for you
21 as the actual question.

22 A Okay.

23 Q The first being the transformer and
24 associated interconnection equipment, the
25 second being the ground grid and the third
26 being the grid isolation and protection
27 devices; is that right?

28 A That's correct.

1 Q Thank you.

2 A Excluding the generator and the
3 switch gear on the generator as well.

4 Q Understood. Thank you. Would you
5 agree that in order to achieve the purpose of
6 the resilient zones, it will be important to
7 know where communities have planned to locate
8 shelters and other public services?

9 A Yes. The program is just now being
10 implemented, and that's certainly one of the
11 inputs to determining where the microgrids
12 are located.

13 Q And as part of that outreach, would
14 you agree that local agencies such as county
15 offices of emergency services should be
16 consulted about where those shelters and
17 public services would be located?

18 A I don't know that I'm in a position
19 to make that judgment. We have folks that
20 work with the various communities and all.
21 So I'm not certain of that answer.

22 Q Okay. Would you agree that putting
23 these resilient zones in a place where people
24 are unlikely to gather during a PSPS would
25 not make sense?

26 A Yes, I would.

27 Q Thanks. And right now PG&E's
28 currently planning to install 40 of these

1 resilient zones; is that right?

2 A I have to consult my workpaper, but
3 that sounds correct.

4 Q How many have been identified to
5 date of those 40?

6 A I would have to check that in the
7 record. I don't want to speculate, but I'm
8 most familiar with the one we have in Angwin
9 up by Calistoga.

10 Q Is that operational, that one in
11 Angwin, as of today?

12 A I can't speak. I say it's not
13 operational today. In other words, we don't
14 have a generator in there. But I believe the
15 plug and play, the riser infrastructure is in
16 place, yes.

17 Q So a generator could be connected
18 today?

19 A Yes. Thank you.

20 MR. LINDL: That's all for me, your
21 Honor. Thank you, Mr. Calvert.

22 ALJ LIRAG: Any redirect off the
23 questions just from Mr. Lindl?

24 REDIRECT EXAMINATION

25 BY MR. MIDDLEKAUFF:

26 Q My only question would be, Mr.
27 Singh, do you have anything to say on the
28 last question?

1 A No. Mr. Calvert addressed that the
2 facility became operational in the Angwin
3 resilience zone last week.

4 MR. MIDDLEKAUFF: Nothing further.

5 ALJ LIRAG: Thank you, Mr. Lindl.

6 EXAMINATION

7 BY ALJ LIRAG:

8 Q Mr. Singh, the wildfire mitigation
9 proposals made in the RAMP report, was it a
10 different team that prepared that to the
11 wildfire mitigations proposed in the GRC?

12 A There were some members that may
13 have been similar, your Honor, but yes, for
14 the most part, it was continuity of the work,
15 but we did have additional members that we
16 brought in to put the CSWP proposal together.

17 Q Was there some coordination between
18 the two teams granted some members are the
19 same persons in transitioning from the RAMP
20 report into the GRC? I suppose so.

21 A Yes, there was. There was
22 consultation on the RAMP models that helped
23 inform the controls that were identified in
24 the RAMP proceeding as well as the continuity
25 of that information consistent with the
26 recommendations that were put forward by the
27 Commission as part of that proceeding itself.

28 Q So very generally there's a few

1 differences between what was proposed in the
2 RAMP report versus what is being proposed in
3 the general rate case. That's fairly
4 accurate?

5 A Yes, your Honor. There's an
6 additional set of mitigations that have been
7 put forward.

8 Q And different dollar amounts
9 perhaps for some of the other mitigations
10 being proposed, programs and projects?

11 A Subject to check, there's
12 differences in costs and absolutely scope.

13 Q What accounts for these differences
14 in -- perhaps for the new proposals on a very
15 general level? You can give an example if
16 you want.

17 A Absolutely. There's several
18 differences. One difference is that we
19 heavily benchmarked --

20 Q I'm not trying to identify the
21 differences. I'm trying to identify what
22 causes the difference in the proposals, the
23 level of mitigation in the GRC versus the
24 RAMP or if there are additional programs
25 proposed in the GRC that were not proposed in
26 the RAMP report, what causes these additions?

27 A That's what I was speaking to, your
28 Honor. So we did benchmarking to assess for

1 best practices that are used and have been
2 implemented in the southern part of the state
3 with San Diego Gas & Electric. We also
4 heavily benchmarked with Australia given the
5 significant bush fire issues that they've had
6 since 2009, and we used that benchmarking
7 coupled with updated fire ignition data from
8 2015 to 2017, the 414 ignitions which we
9 studied in detail to understand what were the
10 cause of those ignitions and what would be
11 the appropriate mitigations to prevent those
12 ignitions.

13 So those are the two key elements
14 that drove the difference between the
15 proposal in the GRC as compared to what was
16 in the RAMP.

17 Q So benchmarking and updated data?

18 A Yes, your Honor.

19 ALJ LIRAG: Mr. Middlekauff, let's do
20 the redirect off the questions asked by Mr.
21 Hawiger thus far.

22 MR. MIDDLEKAUFF: Thank you, your
23 Honor.

24 REDIRECT EXAMINATION

25 BY MR. MIDDLEKAUFF:

26 Q Mr. Calvert, let me start with you
27 and talk about undergrounding a little bit.
28 In your rebuttal testimony on page 9-11 --

1 A Yes.

2 Q -- Question and Answer 22, you
3 explain why the cost of system hardening
4 undergrounding will likely be more expensive
5 than the historical Rule 20A costs? Do you
6 see that?

7 A I do.

8 Q On page 9-11, lines 1 through 3,
9 you indicate the differences between the CSWP
10 undergrounding and Rule 20A are a result of
11 the location; is that correct?

12 A That's correct.

13 Q Are there other reasons, in
14 addition to what you state here about
15 location, that would cause a difference
16 between the historical Rule 20A costs and the
17 system underground -- or the undergrounding
18 costs for system hardening?

19 A Sure. We talked about location.
20 In addition to the items I mentioned, there's
21 site restoration after trenching in rural
22 areas with environmental regulations.
23 There's a lot of coordination with
24 inter-agencies around permits. We may have
25 an overhead line now in easements for that,
26 but securing land rights would be necessary
27 to go underground. So there's those costs
28 right away procuring as well as the

1 negotiations and labor costs could be a
2 factor as well.

3 Q Then if you turn for a minute to
4 TURN Exhibit 142.

5 A Okay.

6 Q And I'll direct your attention to
7 the last page of that document.

8 A Yes, I do. I'm familiar with this
9 document.

10 Q And Mr. Hawiger pointed out to you
11 a calculation that TURN had done of a cost
12 per mile of 23. -- I'm sorry -- 2.3 million
13 miles. Do you remember that?

14 A I do.

15 Q Does the number that is included in
16 that exhibit include the payments and credits
17 that PG&E received from other parties?

18 A Yes.

19 Q So if you removed those payments
20 and credits, that number would be higher; is
21 that right?

22 A It would indeed, yes.

23 Q Are you expecting payments and
24 credits for other parties for the system
25 hardening undergrounding work?

26 A No.

27 Q There was a lot of discussion about
28 two of TURN's questions, Question 3 and

1 Question 4, which are in what was marked as
2 Exhibit 134. For the purpose of estimating
3 system hardening undergrounding costs, which
4 data response do you think is more
5 appropriate to use as a data point for an
6 estimate?

7 A I believe it's the data set for
8 Question 4, which addresses undergrounding
9 based on the existing miles of overhead.

10 Q Mr. Singh, based on your
11 experience, are there any other reasons why
12 PG&E's system hardening program costs would
13 be higher as compared to historical Rule 20A
14 costs?

15 WITNESS SINGH: Yes, they would. We
16 have seen a significant increase in the labor
17 market in California this year given the
18 increase in the volume of work that PG&E is
19 doing as well as our peers in Southern
20 California, and that cost structure has
21 increased by nearly 20 to 30 percent for the
22 same qualified personnel that were able to do
23 the work in prior years.

24 Q So that cost increase would
25 translate into higher costs for -- in 2020,
26 for example, for system undergrounding -- for
27 system hardening undergrounding?

28 A That is correct. It's a simple

1 supply demand of economics.

2 Q Okay. Mr. Calvert, I wanted to
3 talk to you a little bit about the subject of
4 pole replacement. Mr. Hawiger asked about
5 pole replacement that occurred on system
6 hardening projects to date in 2019.
7 Actually, this one is for you, Mr. Singh.

8 So Mr. Hawiger had asked about pole
9 replacements that have occurred on the system
10 hardening projects to date in 2019. Mr.
11 Singh, do you have any information for the
12 2019 projects to date, approximately how many
13 poles were replaced during the overhead
14 system hardening work?

15 A I do. So far, as of the end of
16 September, done about 100 miles of system
17 hardening. And of that, about 64 to 65 miles
18 were the overhead resiliency with the covered
19 conductor and the replacement of the poles.
20 My understanding is nearly all of the poles
21 were replaced as part of that work, and it
22 wasn't just because of the failure of the
23 pole loading calculation, which was the
24 subject of the discussion between Mr. Calvert
25 and Mr. Hawiger, but it's also because wood
26 poles typically are not as fire resilient as
27 compared to non-wood poles, such as a
28 composite pole that's made of fiberglass or a

1 steel pole.

2 Q And this is either for Mr. Singh or
3 for Mr. Calvert. If PG&E determines, as it's
4 doing its system hardening overhead work,
5 that a pole does not need be to be replaced,
6 will it reuse that pole instead?

7 WITNESS CALVERT: Our intent is that,
8 yes, we would do pole loading calculations,
9 and if it passes those calculations and meets
10 the strength requirements, we will, from a
11 loading perspective. There may be other
12 reasons, from a fire threat perspective, that
13 we may want to use a non-wood pole based on a
14 site evaluation.

15 Q Let me finally ask you a little bit
16 about the balancing account. Mr. Calvert, is
17 it your understanding that PG&E is only
18 proposing to recover its actual cost for
19 system hardening?

20 A Yes, that's my understanding.

21 Q So when you were asked earlier
22 about the undergrounding costs, if the actual
23 cost of undergrounding is less than 6.2
24 million dollars per mile, customers would not
25 be billed 6.2 million dollars per mile. They
26 would only be billed the actual cost; is that
27 correct?

28 A That's correct. Our figures were

1 forecasts.

2 Q If -- in the issue of pole
3 replacements, which we've been discussing
4 just a minute an ago, if PG&E only replaces
5 on a specific mile, for example, 50 percent
6 of the poles as a part of its system
7 hardening effort, customers will only pay the
8 actual costs of the poles replaced?

9 A That's accurate.

10 Q I have a question, Mr. Pender, for
11 you. If you could take a look at your
12 rebuttal testimony.

13 ALJ LIRAG: Let's pause for a while,
14 Mr. Middlekauff.

15 Any recross questions off the topics
16 covered thus far? Poles, the balancing
17 account, the Exhibit 142?

18 MR. HAWIGER: Yes, your Honor.

19 ALJ LIRAG: Let's address that now.

20 RECROSS-EXAMINATION

21 BY MR. HAWIGER:

22 Q Mr. Singh, do you have any more
23 quantitative information about what
24 percentage of those wood poles were replaced
25 because -- to use more fire resistant
26 composite poles versus due to pole loading
27 studies?

28 WITNESS SINGH: I do not have that

1 specific breakdown offhand.

2 Q And either one of you, regarding
3 the balancing account, is it correct that if
4 a forecast -- if PG&E spends more than an
5 authorized forecast, it will collect that --
6 if there's a two-way -- assuming there is a
7 two-way balancing account, it would collect
8 that money later?

9 A What we've proposed as part the
10 two-way balancing account is 115 percent
11 threshold similar to what was proposed by one
12 of our peer investor-owned utilities in
13 Southern California.

14 Q So I think that's answering a
15 different question. My question is, if PG&E
16 spends more, let's say, 150 percent more than
17 authorized, is it correct that under a
18 two-way balancing account it has the
19 opportunity to request to recover all of
20 those other costs if found reasonable?

21 ALJ LIRAG: Or is there a cap being
22 proposed to what can be recovered in excess
23 of the forecast?

24 WITNESS SINGH: Your Honor, that's what
25 I was speaking of as the overall cap for the
26 three-year time period for the community
27 wildfire safety program of 4.8 billion is the
28 115 percent of the 4.2. So maybe I'm not

1 tracking your question, so I apologize.

2 BY MR. HAWIGER:

3 Q Well, I'll be a little more --
4 break it down. Your proposal is that
5 anything up to 115 percent is automatically
6 recovered and found to be reasonable,
7 correct?

8 A But that is still subject to a
9 prudence review that, my understanding, is
10 done by the Commission.

11 Q I'm sorry. You're saying that if
12 PG&E spends 115 percent, if the Commission
13 adopts your proposal exactly, balancing
14 account plus 15 percent threshold, PG&E
15 spends 115 percent, under your proposal, does
16 PG&E have to come in for any kind of prudence
17 review?

18 A So, my understanding -- I'm not the
19 regulatory recovery expert, but my
20 understanding is that what we are putting
21 forward is the balancing account is not a
22 blank check. This is my understanding. And
23 we do spend accountability reports that
24 provide transparency in the work volume, the
25 dollars.

26 Q Mr. Singh, if you don't know the
27 answer, please say so. I'm trying to be
28 really specific. If -- is not your

1 proposal -- isn't the 15 percent threshold
2 for reasonableness mean that if PG&E spends
3 115 percent it will recover that money later?
4 It does not have to come in for a
5 reasonableness review. Isn't that what the
6 threshold is, or am I wrong?

7 A Yeah. That is my understanding.

8 Q Thank you. If PG&E spends 150
9 percent, it still can come in and ask to
10 recover all of that cost, but it has to show
11 that additional costs above the 115 percent
12 are reasonable; is that correct?

13 A And that is my understanding of the
14 reasonableness review. And now I'm at the
15 fringes of my core competency on regulatory
16 recovery.

17 Q But it's not the case that PG&E
18 spends 150 percent. Automatically it will
19 not get of any of that additional money.
20 That's not the way ratemaking -- that's not
21 the proposal, is it, for a two-way balancing
22 account? You're not proposing that cap, are
23 you?

24 A That is not my understanding. So
25 the cap is what I've already articulated,
26 sir.

27 Q Thank you. Just last question -- I
28 hope that would clarify, your Honors -- is it

1 not correct that you're asking ratepayers to
2 pay now the full forecast that you're making
3 and if PG&E spends less, it would later
4 refund the money to ratepayers?

5 WITNESS CALVERT: Yeah. I'm not a
6 regulatory expert, but as far as -- I don't
7 know that we would recover it all right now,
8 if I heard your question correctly.

9 Q When Mr. Middlekauff asked you
10 aren't you asking ratepayers to pay just for
11 what you do, isn't there actually a time
12 value of money? There's a whole bunch more
13 complicated issues, right?

14 A Yes.

15 MR. HAWIGER: I'll leave it at that.

16 ALJ LIRAG: Let's continue with the
17 redirect this time, I think, questions to Mr.
18 Pender.

19 MR. MIDDLEKAUFF: Thank you, your
20 Honor. I only have one, I think, or just a
21 few for Mr. Pender.

22 REDIRECT EXAMINATION

23 BY MR. MIDDLEKAUFF:

24 Q Mr. Pender, if you could look at
25 exhibit -- at the rebuttal testimony and page
26 27. So it's 7-27 of what's been marked
27 Exhibit 20.

28 A I'm there.

1 Q So one of the questions Mr. Hawiger
2 asked you earlier was about the number of
3 trees that are being removed and whether it
4 would be more or less than what was
5 originally forecast. I'm focusing here on
6 lines 1 through 3. As PG&E is doing the
7 actual work, what is the finding with regards
8 to the number of trees?

9 A Yeah. I stated here throughout
10 2019, in general, we're finding more trees
11 than originally forecasted, so more trees per
12 mile than was forecasted in the workpaper
13 that we previously discussed that showed a
14 tree per mile estimate.

15 Q When you say "more trees per mile,"
16 would that -- could mean more trees that need
17 to be pruned or more trees that need to be
18 removed?

19 A Yes. More trees combined than we
20 had anticipated previously.

21 MR. MIDDLEKAUFF: Thank you. I have no
22 further questions.

23 ALJ LIRAG: Any questions of that, Mr.
24 Hawiger?

25 RE CROSS-EXAMINATION

26 BY MR. HAWIGER:

27 Q Do you have any -- do you mean more
28 trees pruned or more trees removed or you

1 don't know and it's just more trees combined?

2 A Information that I had seen
3 combined those two numbers and said in total
4 we forecasted a certain number of trees per
5 mile, and what we have seen year-to-date is
6 higher than that. It's, of course, a moving
7 target as we move through the year.

8 MR. HAWIGER: Thank you.

9 ALJ LIRAG: Any questions to Mr. Singh
10 that can be accomplished in three minutes?

11 MR. HAWIGER: Three minutes?

12 ALJ LIRAG: Right.

13 MR. HAWIGER: Thank you, your Honor.
14 I'll try.

15 Q Mr. Singh, does PG&E keep track of
16 which poles are associated with the
17 historical ignitions, if the ignition is
18 caused by any pole-mounted equipment?

19 A In our database, we typically have
20 the date of the ignition, the location and
21 the driver including the type of equipment
22 that may have caused that potential ignition.

23 Q But you do not record which pole
24 that happened on; is that right?

25 A I'm not certain. I don't try to
26 envision the database in my mind. I'm not
27 certain. We may or may not.

28 Q Do you know whether PG&E has done

1 any study of whether there are -- whether any
2 ignitions have occurred on pole-mounted
3 equipment that is located on subject poles?

4 A Let me make sure I'm understanding
5 your question. On subject poles, can you
6 define "subject poles," please.

7 Q I'm using subject poles as used in
8 PG&E's testimony to refer to poles that have
9 to have 10-foot clearance conducted pursuant
10 to Public Resources Code 4292.

11 A Understood. I am not certain. I
12 don't have that information offhand.

13 Q You don't know whether PG&E has
14 ever -- stop -- I'll stop there. Would it be
15 useful to know in terms of whether -- to know
16 whether that clearance required by PRC 4292
17 is effective in preventing ignitions to
18 evaluate whether any ignitions have occurred
19 on subject poles?

20 A That's information that generally,
21 I think, would be useful. And for
22 clarification, we do track all of the poles
23 that are in the scope of the provision of PRC
24 4292 because that is what formulates the
25 basis of that mitigation program.

26 Q Right. Okay. Are you aware there
27 was an exhibit put in earlier that updates a
28 table in exhibit -- in PG&E-01 concerning

1 capital spending that showed that there was
2 approximately 1.2 billion more capital spend
3 for electric distribution in 2019 than
4 authorized approximately?

5 A Do you have a specific document
6 that you're referring to? If you can point
7 me to it, that would be very helpful.

8 MS. HAWIGER: May I approach, your
9 Honor?

10 ALJ LIRAG: Yes.

11 Off the record.

12 (Off the record.)

13 ALJ LIRAG: Let's go back on the
14 record.

15 BY MR. HAWIGER:

16 Q Do I -- in your testimony, you
17 explain that there's a lot of potential that
18 the scope will change and you need
19 flexibility, et cetera. So am I correct that
20 based on PG&E's use of the prioritization
21 model for system hardening the actual scope
22 as between overhead and underground work may
23 change during the course of the rate case?

24 A That is correct.

25 Q So that the specific mileages for
26 overhead versus underground hardening may
27 change, or has -- your forecast has a high
28 degree of uncertainty regarding the mileage

1 for those two components; is that right?

2 A Yeah. The uncertainty is
3 correlated to the uncertainty of the wildfire
4 risk, but what we've put forward is based on
5 the best available information in regards to
6 our forecast.

7 MS. HAWIGER: And, your Honor, I think
8 if we can just get this answer about this --
9 may I ask a question about this exhibit.
10 That will be it for me.

11 ALJ LIRAG: All right.

12 BY MR. HAWIGER:

13 Q So does this refresh your memory --
14 is it generally true, based on that exhibit
15 or whatever knowledge you have in your role,
16 that there was a significant overspending of
17 over a billion dollars for -- in electric
18 distribution and capital in 2019? I think
19 that's the last page the table shows capital.

20 A Yeah. What this table shows is the
21 2018 recorded plus the 2019 budgets. We're
22 still in the middle of 2019. I think you are
23 comparing the 6 billion to the 4.7 billion
24 adopted number. So this is not a data
25 response that I sponsored. I think it's
26 Shilpa Ramaiya.

27 Q Correct.

28 A So I can't speak to the specifics

1 on what's included or what's not included in
2 the numbers on line item 4 correlating to
3 electric distribution.

4 Q Okay. In your role -- what is your
5 role in electric distribution?

6 A It's in electric operations. So
7 it's asset risk management and the community
8 wildfire safety program.

9 Q Do you have any, independent of
10 this exhibit, knowledge of the amount of
11 capital spend for electric distribution -- or
12 the fact that there was a large overspend
13 compared to the adopted number in 2019?

14 A I have not looked into that
15 specific question, but that's basically what
16 this table is showing.

17 Q Do you know whether that capital
18 amount is being requested to be rolled into
19 ratebase in this rate case, or does it
20 represent capital costs that are associated
21 with one of the memorandum accounts you
22 discuss, the wildfire plan memorandum account
23 or one of the other memorandum accounts?

24 A I do not know that, because as I
25 stated, I don't have the double click on
26 what's included in this line item since I
27 didn't sponsor this data response.

28 Q Thank you.

1 MS. HAWIGER: Your Honor, thank you
2 very much for your indulgence.

3 ALJ LIRAG: Mr. Middlekauff, any
4 redirect off the last five-and-a-half minutes
5 of questioning?

6 MR. MIDDLEKAUFF: No, your Honor.

7 ALJ LIRAG: All right. Mr. Hawiger, is
8 there a move to admit Exhibits 131 through
9 134 and Exhibit 142 into the record?

10 MR. HAWIGER: So moved, your Honor.

11 ALJ LIRAG: Any objections from PG&E?

12 MR. MIDDLEKAUFF: No, your Honor.

13 ALJ LIRAG: Hearing none, Exhibits 131,
14 132, 133, 134 and 142 are all received into
15 the record.

16 (Exhibit Nos. 131, 132, 133, 134 and
17 142 were received into evidence.)

18 ALJ LIRAG: Thank you. Mr. Singh, Mr.
19 Pender and Mr. Calvert, for the second time.
20 You're all excused. Have a good weekend.

21 MS. GANDESBERY: Your Honor, we have a
22 motion to admit some of our exhibits into the
23 record.

24 ALJ LIRAG: Let's do it on Monday since
25 we have a shortened day on Monday. I think
26 our reporters need to take care of reporter
27 business. So let's conclude for today.
28 Let's call it a weekend. Let's resume on

1 Monday with the witnesses that we have on
2 that board: Mr. Jones, Mr. Royall and
3 Ms. Maggard, and we'll take care of your
4 exhibits.

5 Mr. Sher.

6 MR. SHER: Sorry, your Honor. Public
7 Advocates also had some exhibits that we had
8 stipulated getting into with Mr. Singh. I
9 assume that can get done on Monday as well.

10 ALJ LIRAG: Let's do that first thing
11 Monday. Let's do the exhibits first thing
12 Monday. Thank you.

13 Off the record.

14 (Off the record.)

15 (Whereupon, at the hour of 3:47
16 p.m., this matter having been continued
17 to 9:30 a.m., October 7, 2019 at
San Francisco, California, the
Commission then adjourned.)

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE
STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

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EXECUTED THIS OCTOBER 11, 2019.


ANA M. GONZALEZ
CSR NO. 11320

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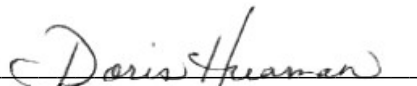
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