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

	)	EVIDENTIARY
	)	HEARING
	)	
Application of Pacific Gas and	)	
Electric Company for Authority,	)	
Among Other Things, to Increase	)	Application
Rates and Charges for Electric and	)	18-12-009
Gas Service Effective on January 1,	)	
2020. (U39M)	)	
	)	

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I N D E X

SAN FRANCISCO, CALIFORNIA

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

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ADMINISTRATIVE LAW JUDGE LIRAG: Let's go on the record. Good morning, everyone.

This is the continuance of the evidentiary hearings in A.18-12-009, which is PG&E's 20 -- Test Year 2020 General Rate Case.

Today we have the IGP panel of Mr. Nakayama, Mr. Petrakis and Mr. Strasburger. I may have pronounced one or more of those names wrong, but, all right. Good enough.

So today it looks like we have close to a full day, so we'll try to do things a little more quickly. So I may move cross-examination and other things along. But we'll see how today goes. We'll also try and time the lunch break at an appropriate time.

Anyway, let's go ahead with the three witnesses.

All three of you please raise your right hand.

MARTIN STRASBURGER, called as a witness by Pacific Gas and Electric Company, having been sworn, testified as follows:

QUINN NAKAYAMA, called as a witness by Pacific Gas and Electric Company, having been sworn, testified as follows:

NICK PETRAKIS, called as a witness by Pacific Gas and Electric Company, having been sworn, testified as follows:

ALJ LIRAG: One at a time.

WITNESS STRASBURGER: I do.

WITNESS NAKAYAMA: I do.

WITNESS PETRAKIS: I do.

ALJ LIRAG: Starting from Mr. Strasburger, please state your name, spell your last name and provide a business address.

WITNESS STRASBURGER: Martin Strasburger, S-t-r-a-s-b-u-r-g-e-r, 77 Beale Street, San Francisco, California 945 -- 94105.

ALJ LIRAG: Thank you.

WITNESS NAKAYAMA: Quinn Nakayama, N-a-k-a-y-a-m-a, 77 Beale Street, San Francisco California, 94105.

WITNESS PETRAKIS: Nick Petrakis, P-e-t-r-a-k-i-s. Also 77 Beale Street, San Francisco.

ALJ LIRAG: Thank you.

Mr. Gallo, I have two exhibits that are being purported as confidential. First what are these -- I guess these correspond --

I will let Ms. Kim handle it. Then I guess these correspond to exhibits that were already submitted or identified; is that right?

MR. KIM: That is correct. My name is Ann Kim, Counsel for PG&E.

We have provided a document called Prepared Testimony, Shared Services and Information Technology Confidential Version. That is the confidential version of what was previously marked as Exhibit 66.

ALJ LIRAG: All right. So we'll identify this right now as Exhibit 66-C. This will be the document as you had described and we'll go into whether this will be treated confidential in a little bit.

Let's take care of the other exhibits first.

(Exhibit No. 66-C was marked for identification.)

MR. KIM: So, the other exhibit is Workpapers of Shared Services and Information Technology Chapters 5 to 9, Confidential Version, which had previously -- the public version had been marked as Exhibit 74.

ALJ LIRAG: So, I will identify this as Exhibit 74-C and it is the document that Ms. Kim had just described.

(Exhibit No. 74-C was marked for identification.)

ALJ LIRAG: Can you briefly describe why these documents -- these two documents, two exhibits rather, Exhibit 66-C and 74-C, why are they confidential or at least the confidential portion?

MR. KIM: Yes. So both of those documents contain cybersecurity-sensitive information that our witness Martin Strasburger is sponsoring.

ALJ LIRAG: Cybersecurity information such as? Can you be a little bit more specific?

MR. KIM: Such as programs and projects that we are planning to protect our infrastructure from cyber attack.

ALJ LIRAG: All right. So both documents contained this information.

MR. KIM: That is correct.

ALJ LIRAG: Any objection from any of the parties to having these treated as confidential?

MS. SHEK: Your Honor, the Public Advocates Office just has a question on this.

ALJ LIRAG: Yes.

MR. ROBERTS: Are those supplemental original Exhibits 66 and 74 or just portions

of them are confidential?

ALJ LIRAG: I believe portions of them are confidential. They're the information pertaining to cybersecurity information described by Ms. Kim. So the public version would probably contain redacted versions.

MR. ROBERTS: So it's the actual confidential portions that were redacted in the public version?

ALJ LIRAG: Correct.

MR. ROBERTS: Thank you.

ALJ LIRAG: All right. So no objections. Off the record.

(Off the record.)

ALJ LIRAG: All right. Let's go back on the record.

So having heard the explanation from Ms. Kim, and the clarification from Mr. Roberts, the Commission has no issues treating these two exhibits as confidential. So these are Exhibits 66-C and 74-C at least the confidential portions.

All right. Let's identify more exhibits.

So, first, and these exhibits pertain to the panel that we have. First is Exhibit 113. These are materials supporting Cal PA's Cross-Examination Grid Modernization

Panel, Part 1.

(Exhibit No. 113 was marked for identification.)

ALJ LIRAG: Exhibit 114 is the same document, the same heading except it's for Part 2.

(Exhibit No. 114 was marked for identification.)

ALJ LIRAG: Exhibit 115, same heading, Part 3.

(Exhibit No. 115 was marked for identification.)

ALJ LIRAG: Exhibit 116, again, the same heading, Part 4 this time.

(Exhibit No. 116 was marked for identification.)

ALJ LIRAG: And then Exhibit 117, same heading, Part 5.

(Exhibit No. 117 was marked for identification.)

ALJ LIRAG: Next is Exhibit 118. This is the PG&E Data Responses to TURN Data Request 23, 53 and 85. So that's Exhibit 118.

(Exhibit No. 118 was marked for identification.)

ALJ LIRAG: Next is Exhibit 119. This is an, I believe it's either a portion or a

copy of advice letter 5640-E. The subject matter is Information Only Submittal Regarding Net Energy Metering Costs.

(Exhibit No. 119 was marked for identification.)

ALJ LIRAG: Exhibit 120, or one, two zero, again, it looks like an excerpt from Advice Letter 5642-E. The subject is Information Only Voltage Complaint Reports for May 2019 through August 2019. So that's Exhibit one, two, zero.

(Exhibit No. 120 was marked for identification.)

ALJ LIRAG: Yes, Mr. Hawiger.

MR. HAWIGER: Your Honor, may I just add for the clarity of the record, both of these exhibits 119 and 120 contain just the first cover page of the advice letter and then also the first page of the attachment included in each advice letter.

ALJ LIRAG: All right. So they are excerpts from the advice letters.

MR. HAWIGER: Yes, your Honor.

ALJ LIRAG: Describing the document, including one attachment each.

MS. GALLO: And excuse me, your Honor. When they were passing out copies, I received two copies of 119 and not one copy of 120.

So if you have an additional copy, I would appreciate it.

ALJ LIRAG: Let's go off the record.

(Off the record.)

ALJ LIRAG: All right. Let's go back on the record.

Exhibit 121 is the PG&E Response to the Joint CCAs' Data Request 15, Question 17.

(Exhibit No. 121 was marked for identification.)

ALJ LIRAG: Exhibit 122 is PG&E's Data Response to the Joint CCAs' Data Request 17, Question 7.

(Exhibit No. 122 was marked for identification.)

ALJ LIRAG: And then finally, Exhibit 123 is a document entitled MIT Energy Initiative, Utility of the Future.

(Exhibit No. 123 was marked for identification.)

ALJ LIRAG: Mr. Schlesinger, could you describe this document a little bit more so we know what it is?

MR. SCHLESINGER: Yes, your Honor.

This is a document that Mr. Nakayama referenced in several responses to discovery to JCCA responses, the two that you just marked, 121 and 122.

ALJ LIRAG: All right. Thank you for that information. And then we also have several reference exhibits which we shall use.

Also, Mr. Hawiger informed us that he will be using or he will be referring to a document that has not yet been identified and this is one of TURN's exhibits for one of its witnesses. So just refer to it as however you call it, whether it's the testimony of "Mr. X" and as long as the witnesses can follow, that should be fine.

All right. Let's turn it over. I think it's Mr. Gallo.

MS. GALLO: I will be reading in Mr. Nakayama and Ms. Kim will be reading in Mr. Strasburger and Mr. Petrakis.

ALJ LIRAG: All right. Just let me know. If I point to someone, if I address someone and it is the wrong person, the other person can just go. All right. Thank you.

MS. GALLO: Thank you. I'll start, Your Honor. Thank you.

DIRECT EXAMINATION

BY MR. GALLO:

Q Good morning, Mr. Nakayama.

A Good morning.

Q I would like you to confirm

testimony that you're sponsoring in this proceeding in what has been marked -- or sorry. In Hearing Exhibit 17, which was formerly PG&E 4 Volume 2, are you sponsoring all of Chapter 19 and Attachments A, A-1, A-2, A-3 and A-4, the Integrated Grid Platform Program and Grid Modernization Plan?

A Yes, I am.

Q And in Hearing Exhibit 19, formerly Exhibit PG&E 4 Workpapers for Chapters 11 through 19, are you sponsoring the workpapers for chapter 19?

A Yes, I am.

Q And in what have been marked as Hearing Exhibit 20 and Hearing Exhibit 21, which formerly were Volumes 1 and 2 of PG&E's Exhibit 18 and Hearing Exhibit 39-B, which was formerly Exhibit PG&E-28, are you sponsoring a portion of Hearing Exhibit 20, Chapter 19 called Rebuttal Testimony on Integrated Grid Platform Program and Grid Modernization Plan?

A Yes, I am.

Q And in Hearing Exhibit 21, are you sponsoring the documents in Appendix A that relate to your sponsored exhibit PG&E-18 Rebuttal Testimony?

A Yes, I am.

Q And in Hearing Exhibit 22, are you sponsoring a portion of the workpapers for PG&E Exhibit 18, Volume 1?
A Yes, I am.
Q In Hearing Exhibit 39-C, are you sponsoring a portion of the documents in PG&E Exhibit 28-Confidential entitled Confidential Documents Discovery?
A Yes, I am.
Q And in that same Hearing Exhibit 39-C, are you also sponsoring a portion of the confidential workpapers presented in Exhibit PG&E-28?
A Yes, I am.
Q And in what have been marked as Hearing Exhibit 26 and Hearing Exhibit 27, which is two volumes of PG&E's errata, are you sponsoring pages 14-214 to 14-215 and pages 29-93 to 29-29 (sic)?
A Yes, I am.
Q I'm sorry. 99. Excuse me. 29-93 to 29-99?]
A Yes, I am.
Q And finally, in Hearing Exhibit 52, are you sponsoring your statement of qualifications?
A Yes, I am.
Q And were these materials prepared

by you or under your supervision?

A I was not the witness at the time of the application, so the opening testimony and some workpapers for Chapter 19 were not prepared by me or under my supervision. However, I reviewed and support that testimony and those workpapers. The rebuttal testimony and workpapers were prepared by me or under my supervision.

Q Do you have any changes or corrections or additions to make at this time?

A No, there are not.

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

A Yes, they are.

Q Do the opinions expressed therein represent your best professional judgment?

A Yes, they do.

MR. GALLO: Thank you.

Your Honor, Mr. Nakayama is available for cross-examination.

ALJ LIRAG: Okay. A couple of guidelines for the panel. Since all three are males, at some point in time one of the reporters will have her back turned to the witnesses. And so if the counsel doing the

cross mentions a specific name, and that person is the one -- that witness is the one that answers, there is no need to state your name. But if the question is directed towards the panel and you decide to speak, just say who you are or just say your last name, just so the reporter can take note of who is talking without having to see the witness. All right? Let's try it that way.

Let's turn over to Ms. Kim.

MS. KIM: Thank you, your Honor.

DIRECT EXAMINATION

BY MS. KIM:

Q Mr. Martin Strasburger, I would like to confirm the testimony you are sponsoring in this proceeding. First, with respect to the costs forecasts for the Cyber and Corporate Security Organization, in Exhibit PG&E-7 previously marked as Exhibit 66, Prepared Testimony, Shared Services and Information Technology, Public Version, are you sponsoring Chapter 9, Cyber and Corporate Security?

A Yes, I am.

Q In Exhibit PG&E-7, now marked as Exhibit 66-C, Prepared Testimony, Shared Services and Information Technology, Confidential Version, are you sponsoring

Chapter 9, Cyber and Corporate Security?

A Yes, I am.

Q In Workpapers to Exhibit PG&E-7, previously marked as Exhibit 74, Workpapers of Shared Services and Information Technology Chapters 5 through 9, are you sponsoring Chapter 9, Cyber and Corporate Security?

A Yes, I am.

Q In Workpapers to Exhibit PG&E-7, now marked as Exhibit 74-C, Workpapers of Shared Services and Information Technology Chapters 5 through 9, Confidential Version, are you sponsoring Chapter 9, Cyber and Corporate Security?

A Yes, I am.

Q In Exhibit PG&E-21, previously marked as Exhibit 68, Rebuttal Testimony, Shared Services and Information Technology, are you sponsoring Chapter 9, Cyber and Corporate Security?

A Yes, I am.

Q In Exhibit PG&E-14, previously marked as Exhibit 26 PG&E Errata, are you sponsoring pages 14-296 to 14-300?

A Yes, I am.

Q In Exhibit PG&E-27, previously marked as Exhibit 52, Rebuttal Testimony, Statement of Qualifications, are you

sponsoring your statement of qualifications?

A Yes, I am.

Q Second, with respect to the topic of today's hearing, the Integrated Grid Platform Program in Exhibit PG&E-18, previously marked as Exhibit 20, Electric Distribution Chapter 1 through Chapter 19 Volume 1 of 2, are you sponsoring the portion of Chapter 19 Rebuttal Testimony on Integrated Grid Platform Program and Grid Modernization Plan related to cybersecurity?

A Yes, I am.

Q In Exhibit PG&E-18, previously marked as Exhibit 21, Electric Distribution Appendix A, Volume 2 of 2, are you sponsoring the documents that relate to your sponsored Exhibit PG&E-18 Rebuttal Testimony?

A Yes, I am.

Q In Workpapers to Exhibit PG&E-18, previously marked as Exhibit 22, Electric Distribution Workpapers Supporting Rebuttal Testimony Chapters 7, 16 and 19, are you sponsoring a portion of the workpapers that relate to your sponsored Exhibit PG&E-18 Rebuttal Testimony?

A Yes, I am.

Q And in Exhibit PG&E-28, previously marked as Exhibit 39-C, confidential

documents from various exhibits, are you sponsoring the documents that relate to your sponsored Exhibit PG&E-18 Rebuttal Testimony?

A Yes, I am.

Q Recognizing that you were brought in as a witness during the rebuttal phase, and not with the initial testimony, were these materials prepared by you or under your supervision?

A Yes, they were.

Q Do you have any changes, corrections or additions to make at this time?

A No, I do not.

Q Are the facts contained therein true and correct to the best of your knowledge?

A Yes, they are.

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

A Yes, they do.

Q Thank you. Mr. Strasburger is now available for cross-examination.

Mr. Petrakis, I would like to confirm the testimony that you are sponsoring in this proceeding. First, with respect to the costs forecast for the Information

Technology Organization in Exhibit PG&E-7, previously marked as Exhibit 66, Prepared Testimony, Shared Services and Information Technology, Public Version, are you sponsoring Chapter 8, Information Technology?

WITNESS PETRAKIS: Yes, I am.

Q In workpapers to Exhibit PG&E-7, previously marked as Exhibit 74, Workpapers of Shared Services and Information Technology Chapters 5 through 9, are you sponsoring Chapter 8, Information Technology?

A Yes, I am.

Q In Exhibit PG&E-21, previously marked as Exhibit 68, Rebuttal Testimony, Shared Services and Information Technology, are you sponsoring Chapter 8, Information Technology?

A Yes, I am.

Q In Exhibit PG&E-27 previously marked as Exhibit 52, Rebuttal Testimony, Statement of Qualifications, are you sponsoring your statement of qualifications?

A Yes, I am.

Q In Exhibit PG&E-14, previously marked as Exhibit 26 Errata, are you sponsoring the errata related to your testimony?

A Yes.

Q Second, with respect to the topic of today's hearing, the Integrated Grid Platform Program in Exhibit PG&E-18, previously marked as Exhibit 20, Electric Distribution Chapters 1 through Chapter 19 Volume 1 of 2, are you sponsoring the portion of Chapter 19 Rebuttal Testimony on Integrated Grid Platform Program and Grade Modernization Plan relating to information technology costs?

A Yes, I am.

Q In Exhibit PG&E-18, previously marked as Exhibit 21, Electric Distribution Appendix A Volume 2 of 2, are you sponsoring the documents that relate to your sponsored PG&E-18 rebuttal testimony?

A Yes, I am.

Q In workpapers to Exhibit PG&E-18, previously marked as Exhibit 22, Electric Distribution Workpapers Supporting Rebuttal Testimony Chapter 7, 16 and 19, are you sponsoring a portion of the workpapers that relate to your sponsored Exhibit PG&E-18 Rebuttal Testimony?

A Yes, I am.

Q In Exhibit PG&E-28, previously marked as Exhibit 39-C, confidential documents from various exhibits, are you

sponsoring the documents that relate to your sponsored Exhibit PG&E-24 Rebuttal Testimony?

A Yes, I am.

MS. KIM: Your Honor, may we go off the record for a moment?

ALJ LIRAG: All right. Off the record.

(Off the record.)

ALJ LIRAG: Back on the record.

BY MS. KIM:

Q Understanding that you were brought in during the rebuttal phase, and not during the preparation of the original testimony, were these materials prepared by you or under your supervision?

A Yes.

Q Do you have any changes, corrections or additions to make at this time?

A No, I don't.

Q Are you facts contained therein true and correct to the best of your knowledge?

A Yes, they are.

Q Do the opinions expressed therein represent your best professional judgment?

A Yes, they are.

MS. KIM: Your Honor, Mr. Petrakis is now available for cross-examination.

ALJ LIRAG: Let's go off the record for a while.

(Off the record.)

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

Let's start the cross-examination. We will begin with Ms. Liotta.

CROSS-EXAMINATION

BY MS. LIOTTA:

Q Good morning, gentlemen. Actually, my questions are only for Mr. Nakayama.

Mr. Nakayama, if I could refer you to page 68 of your rebuttal, beginning at line 16.

WITNESS NAKAYAMA: Can you repeat the page, please?

Q Yes, page 68 of your rebuttal.

A Line number?

Q Beginning at line 16.

You state: Therefore, the entirety of PG&E's expense forecast is composed of nonrecurring costs; is that correct?

A That is correct.

Q And if I could have you turn to page 69 of your rebuttal. Beginning at line 24, you state: Expenses, forecasts for 2020 are for costlier implementation stage project activities. Then you go on to list

those project activities.

Do you know if costs for these project activities would decrease after the implementation stage?

A For the actual statement, in lines 25 through 27 for detailed process design, data conversion and change management, there will be -- I'm sorry. Can you repeat your question again?

Q Sure. Do you know if the cost for these project activities would decrease after the implementation stage?

A Yes, they will.

Q Thank you.

And then on page 70 of your rebuttal on line 16, beginning on line 16, you state that: Although the implementation will be nonrecurring, PG&E will continue to engage in similar activities.

Do you know if costs for continuing these similar activities will be less than the cost for the implementation phase?

A As it refers to costs that are outside of the GRC period, I do not have information on that at this time.

Q Okay. On -- in your direct testimony, page 29, there is a chart. And I just wanted to confirm what the 2020 forecast

expense is. It is 10.178 million, correct?
A Can you repeat the page number?
Q Page 29 of your direct testimony.
A Okay. Yes.
Q That is correct?
A That is correct.
Q Do you know the amount the company has forecasted for the Integrated Grid Platform Program for 2021?
A For expense?
Q Yes, for expense?
A I do not.
Q Do you know for 2022?
A I do not.
Q Last question I was going to ask: So if PG&E were to obtain the amount it has requested for the 2020 test year, do you know if this amount will be collected from ratepayers each subsequent year until rates are reset in the next GRC?
A I'm not sure I understand that question.
Q So if -- let me ask again.
Do you know if the amount, if the amount is approved for the 2020 test year for this program, do you know if this amount will be collected from ratepayers each subsequent year until the next GRC? Is it the same

amount that will be collected?

A I don't know the answer to that question.

MS. LIOTTA: Okay. I have no further questions for this witness. Thank you.

ALJ LIRAG: All right. Let's see if there is any redirect of Ms. Liotta's cross, that way Ms. Liotta is free.

MR. GALLO: No, your Honor. Thank you.

ALJ LIRAG: All right. Let's move on to Cal PA. So I see a total of 2-1/2 hours of cross. Is that still fairly accurate at this point?

MS. SHEK: Right now, yes.

CROSS-EXAMINATION

BY MS. SHEK:

Q Good morning, Mr. Nakayama, Mr. Strasburger, Mr. Petrakis. I am Selina Shek with the Public Advocates Office. I will be assisting Mr. Tom Roberts, who is next to me, on his cross-examination and addressing procedural issues. But he will be addressing you with his cross-examination questions.]

MR. ROBERTS: Good morning, your Honor.

ALJ LIRAG: Good morning.

CROSS-EXAMINATION

BY MR. ROBERTS:

Q Good morning, Mr. Nakayama, Mr.

Petrakis and Mr. Strasburger. My name is Tom Roberts, and I'm a senior utility engineer with the Public Advocates Office. I'm going to be asking questions about grid modernization.

Do you have the five cross-exhibits marked 113 through 117 that we distributed this morning?

WITNESS NAKAYAMA: Yes, we do.

Q And also a reference exhibit that includes both PG&E responses to data requests and excerpts from CPUC decisions and resolutions?

A Yes, we do.

Q Thank you. Have each of you sponsored rebuttal testimony that related to prepared testimony from other witnesses? Correct?

A That is correct.

Q And each of you is now the sole sponsor of the prepared testimony and discovery responses of your predecessors, correct?

A That is correct.

Q But taken together now, you all sponsor the entirety of PG&E's integrated grid platform, or IGP, proposal including the information technology and cybersecurity

portions of that platform that were originally in Exhibit PG&E-07; is that correct?

A That is correct.

Q Okay. Thank you. You've had a chance to see each of the six -- five exhibits and one reference document that were distributed yesterday?

A Yes.

Q Regarding the first exhibit, which is 113, these are all PG&E responses to data requests. Have you seen all these requests?

A Yes.

Q You're familiar with them?

A Yes.

Q If at any point you don't agree with a response when we're asking questions about them, please let us know at that time.

Now, Cal Advocates originally requested that we have this discussion of grid modernization as a panel to ensure that if there was any cross-linkage between the three of your subject areas that we wouldn't get in a situation where we had to call back a witness. So we appreciate that you are able to accommodate that. As already mentioned, our total time is for the panel as a whole, but the questions that we're going

to ask have been structured to elicit "yes," "no" answers. And we're going to ask that where possible you do that, first.

And then second, we expect that most of our questions will -- Mr. Nakayama would be the correct person to answer them. And we understand that Mr. Strasburger and Mr. Petrakis may be able to expand beyond Mr. Nakayama's response due to their different areas of expertise. We want to ask that if it's a "yes" or "no" question that the person who's asked answer that question and that the other witnesses not layer on additional responses unless the original answer was incorrect.

Is that understood? Is that acceptable?

ALJ LIRAG: Let's see how that goes. So we'll go with that directive -- with that recommendation.

MR. ROBERTS: Thank you.

Q Mr. Nakayama, parties in the distribution resource plan or DRP proceeding R.14-08-013 were very familiar with PG&E's original witness for the IGP, which was Mr. Esguerra, because he and his team were present at multiple workshops, meetings and conferences on distributed energy resources,

or DERs.

Can you please describe your working relationship with the DRP proceeding and Mr. Esguearra's team from 2014 until Mr. Esguerra moved away from this program?

A I am familiar with the proceeding. Mr. Esguerra and I have had multiple conversations regarding the use of distributed energy resources, such as solar and battery storage and being able to potentially defer or eliminate capital investment projects for capacity and reliability.

Q Were you a part of his team during that time period?

A No, I was not.

Q Did you directly work on the DRP proceeding?

A Not during those times.

Q Thank you. In your current role, you'll be leading PG&E's efforts from -- based on reading your statement of qualifications; is that correct?

A That is correct.

Q Will you be leading PG&E's efforts related to the following DER proceedings, the DRP proceeding?

A That's correct.

Q The Rule 21 proceeding, R.17-07-007?
A That is correct.
Q Electric vehicles, there's one OIR and multiple applications. Will that be within your area of leadership?
A You would need to define exactly which proceeding for the electrical vehicles that you are referring to.
Q We'll just say the OIR R.18-12-006.
A I don't know the exact numbering schemes, but I can tell you that the vehicle grid integration section of electric vehicles is under my purview.
Q So, for example, you might be responsible for the infrastructure side of electric vehicles but not the development of rate tariffs.
A I will not be responsible for the infrastructure side of electric vehicles.
Q You will not be?
A No.
Q How about energy storage proceedings?
A Yes.
Q Energy efficiency?
A No.
Q Demand response?

A Yes.
Q Can you briefly summarize -- first of all, when did you take on this new role?
A I believe it was May of this year.
Q And prior to that, did you directly work on any of the DER programs we just listed and discussed?
A Not the ones that you discussed, no.
Q Thank you. Can you please turn to the reference document exhibit. And page 1, this is the decision which established the CPUC requirements for grid modernization plans; is that correct?
A I'm sorry. Which document are you referring to?
Q The title says Cross-Examination Reference Documents. It's the one of the six that doesn't have a number on the cover.
A I see this.
Q So the first page of this package is a CPUC decision, and I ask if this is the decision that established the requirements for grid modernization plans?
A Yes, it is.
Q Thank you. Going to page 3 of this package, Appendix A is the grid modernization submission requirements, correct?

A That is correct.
Q And you're familiar with those?
A Yes, I am.
Q Thank you. If you could please turn to what is Exhibit 17, the direct testimony, and page 19, Attachment A-1.
A Yes.
Q Sorry. I should have had it -- okay. Chapter 19, including its attachments and two tables that are at the end of your workpapers, which is Exhibit 19, constitute the whole of the grid modernization plan; is that correct?
A It does not.
Q Could you explain what other portions of direct testimony describe the grid modernization plan?
A If you take a look at the grid modernization plan, I'll refer you to 19-Attachment A-14.
Q Exhibit 19 is the original workpapers, correct?
A It is the original testimony Attachment A, page 14. The 10-year grid modernization vision, Attachment A that we referred to, page 14.
Q That would be Exhibit 17 then, correct? The workpapers are 19. The

testimony is 17.

MS. SHEK: Is it the workpapers you're referring to or the original --

WITNESS NAKAYAMA: The testimony.

BY MR. ROBERTS:

Q The testimony. Okay. I'm sorry. So Attachment A, page 14?

A Yes.

Q Right. So what I had asked is from Exhibit 17, Chapter 19 and all four attachments plus the two pages at the end of the workpapers, which is Exhibit 19, that constitutes the grid modernization plan, correct?

A For the grid modernization, as it's defined in what we are requesting in the testimony, yes.

Q Thank you. Can you tell us where in the grid modernization plan PG&E describes its plans for adding or supplementing automated devices on distribution circuits?

A I'd have to refer you to the mapping exercise that was performed against the grid modernization plan. For the grid modernization classification table located in workpapers 19-46 and -- I apologize -- 19-48.

ALJ LIRAG: Let's go off the record.

(Off the record.)

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

Let's continue, Mr. Nakayama. You had an answer?

WITNESS NAKAYAMA: So as an example, you will have fault locations isolation system restoration, which also includes remote intelligent switches, automatic remote control switches, automatic reclosers. Is that what you're referring to?

Q That's a good example, yes. Thank you. And if you look in that row, which is on page 19-49, there's a reference to Chapter 9 of Exhibit 4, correct?

A That is correct.

Q So in this example, the description of PG&E's plan is located in a chapter other than 19, correct?

A That is correct.

Q And is that true for other elements that are supportive of the IGP or part of the grid modernization plan that -- the description of PG&E's strategies is elsewhere in -- is outside of Chapter 19?

A So within the actual grid modernization -- the grid modernization request by the CPUC, the grid modernization classification table was designed to point to

all the locations that are classified underneath grid modernization as defined by the CPUC. And those are located in other chapters outside of Chapter 19 for everything that is defined as grid modernization.

Q Okay. I appreciate that clarification, but the grid modernization plan in Chapter 19 that describes your strategy on multiple elements of the IGP, that discussion doesn't cover issues such as how you strategically plan to automate devices on distribution circuits or substations. I just want to clarify that that discussion in that specific instance is in Chapter 9 and that there are other elements of the grid modernization plan which are described in other chapters.

A That is correct. The integrated grid platform is for a subset of the grid modernization that is required under the grid modernization table for the ADMS, OMS and SCADA implementation upgrades that we are looking to achieve.

Q Okay. Thank you.

The cost -- the -- PG&E's forecast for the IGP, to my knowledge, isn't provided in one table anywhere in the testimony. So is it correct that to get the total cost for

IGP you need to combine costs from Exhibit PG&E-04 and Exhibit PG&E-07?

A If you're referring to cybersecurity portions of IGP as well as its communication infrastructure, that would be true.

Q Are those portions required to perform the IGP program?]

A I believe so.

Q And is there any place in the testimony where estimated costs between 2020 are provided?

A Beyond the rate case cycle?

Q Correct.

A No.

Q Does PG&E internally when they make a decision to approve a project or not, do they consider the full costs and benefits over the lifetime of a project or do they only look at those costs and benefits within the GRC period?

MS. GALLO: Objection. Overbroad.

ALJ LIRAG: I will allow it.

WITNESS NAKAYAMA: Can you repeat the question?

BY MR. ROBERTS:

Q Sure. Even if the CPUC approves funding for a project, the project won't be

internally authorized until PG&E authorizes funding, correct?

WITNESS NAKAYAMA: Until PG&E authorizes funding.

Q Yes. For example, if you proposed a program, senior management would have to authorize the actual expenditure of funds on that program?

A That is correct.

Q And when they make that decision, do they look at the total costs and benefits over the lifetime of a project or do they only look at the cost and benefits for a given GRC period?

A They look at the total costs.

Q Okay. Thank you. Okay.

Mr. Nakayama, would you agree that the IGP is a central element of PG&E's Grid Mode Plan?

A Yes, it is.

Q And within the IGP, there's a request for an Advanced Distribution Management System or ADMS; is that correct?

A That is correct.

Q And the program also includes a Converged Compute Platform; is that correct?

A That is correct.

Q And also an IGP cybersecurity

project, correct?

A That is correct.

Q All right. I would like to go over some terminology so that we -- and this is -- I'm going to focus on ADMS for a little while so that we can understand some of the components.

If you can go to reference exhibit that you looked at once before, page 8, let us know when you're there.

A I'm not sure which document you're referring to but if it's this page.

Q Yes.

A Okay.

Q And I will refer to that as the reference documents.

MS. GALLO: But, your Honor, I think it would facilitate the cross and the briefing if Mr. Roberts could actually refer to the particular DR response that is on page 8 as he's doing his questioning.

ALJ LIRAG: All right. Let's do that, Mr. Roberts.

MR. ROBERTS: Okay. Thank you. Sorry.

Q On page 7 of this package, PG&E's Response to Public Advocates' Data Request 93, Question 2 is provided, correct?

A Yes.

Q And that continues on to page 8 of the handout?
A Yes.
Q The redacted portion, which is the big black box on this page, did provide a requested SCADA diagram, correct?
A Yes.
Q In response to discovery, PG&E provided a number of informative diagrams of IGP which is a complicated system involving hardware and software, also specifically for ADMS, but to my knowledge, each of those diagrams was deemed confidential by PG&E; is that correct, to your knowledge?
A To my knowledge, yes.
Q Is there anyplace in any of the confidential documents that you've provided so far that would provide parties with access to that confidential information, a visual representation of the IGP or the ADMS?
A I'm not sure how to answer that question. Can you please clarify?
Q Yeah. The Public Advocates Office hasn't put any confidential information into the record and doesn't plan to, but this morning we understood that there was some confidential versions of documents read into the record and there were previously

confidential documents.

So I'm just wondering if, and we can -- you can come back to us later if there is, but it would just be really helpful that if we knew in the record somewhere there were diagrams to help people understand what IGP is and ADMS is; if you don't know at this point, if you could possibly come back after a break and let us know?

A Are you asking for a full network diagram of all the components of the interfaces between every system that we interface with an ADMS protocol?

Q That would be one thing that would be good to see. Also this diagram that was blacked out that I referenced on page 8 was a very simple diagram. So understanding that there can be diagrams that are very high level and simple and very complicated drawings with hundreds of linkages, from that scale, any type of a diagram.

MR. GALLO: Your Honor, I think we should address that after the break.

ALJ LIRAG: All right. Let's have Mr. Roberts and PG&E confer sometime during one of the breaks and then let's see what needs to get on the record.

MS. GALLO: Thank you, your Honor.

ALJ LIRAG: All right. Let's proceed.
BY MR. ROBERTS:
Q If you can please go to Exhibit 17 -- excuse me, Exhibit 19, page WP-19-16.
MR. HAWIGER: 1960 did you say?
MR. ROBERTS: 19-16.
WITNESS NAKAYAMA: I'm there.
Q Okay. This page and the pages that follow provide a project summary for the ADMS system, correct?
A That is correct.
Q And these describe the scope and costs of a project or program to implement ADMS; is that correct?
A That is correct.
Q I'm going to use the term "ADMS project" to discuss what is in this section of workpapers.
A I understand.
Q Okay. Thank you. And one function of this project is to install new hardware and software that will allow grid operators to monitor and control supervisory control and data acquisition or SCADA, S-C-A-D-A, equipment in substations and on distribution circuits; is that correct?
A That is correct.
Q And once implemented this system

will allow grid operators to open a computer program or application that may be called ADMS on their control stations in the distribution control centers or DCCs; is that correct?

A That is correct.

Q So, I will try to be clear, but there's both ADMS as a project and I will try to use ADMS application to refer more narrowly to the software.

A I understand.

Q So the ADMS application is software that PG&E seeks to purchase; is that correct?

A That is correct.

Q Is this an off-the-shelf software package like Microsoft Excel?

A It is a software package that will be procured by an ADMS vendor.

"Off-the-shelf" is a vague term that I don't know how you would define exactly what "off-the-shelf" means.

Q I would take it literally that I could go -- I used to be able to go to many different stores, but know I have to go to Best Buy and pick up a box off-the-shelf that has Microsoft Excel. I don't believe I can go there to buy ADMS.

A That is true. You cannot go to

Best Buy to buy ADMS.

Q Okay. Thank you. So it's a complicated piece of software that is being developed to PG&E specifications; is that correct?

A That is correct.

Q Now, if you can go to Exhibit 113, page 1, we just discussed the ADMS application, which is software, and that will reside on computer hardware; is that correct?

A That is correct.

Q Where will this hardware be located?

A For that information I may have to turn that over to Mr. Petrakis, who can talk a little bit more about potentially the infrastructure and where it might be located.

Q Okay.

WITNESS PETRAKIS: This system is going to be located at the DCCs.

Q And there are three DCCs, correct?

A That's correct.

Q Will the hardware be located exclusively in those three DCCs or will there be some portion of ADMS hardware that's elsewhere?

A It's all planned at the DCCs.

Q Okay. And this is hardware that

PG&E seeks to purchase, correct?

A That's correct.

Q I'm going to use another analogy, if I can, because I use MS Excel a lot.

To run that program well, you have to have adequate computer hardware. It could run on a slow computer, but to run best it needs to be a computer that is appropriately-sized and specified; is that correct?

A That's correct.

Q And is ADMS hardware -- does that analogy hold for ADMS hardware? That it's relatively generic computing hardware that has been specified by PG&E and the ADMS vendor to adequately support that software?

A The software, yes, absolutely. It has to have enough horsepower -- sorry. The hardware has to have enough horsepower to run all the functions of ADMS.

Q Okay. And does the ADMS hardware at each of the three DCCs have the same computing and storage capabilities?

A Yes, it would.

Q I'm sorry. "Would."

Maybe I should ask if I can, what is the status of the procurement of ADMS software? Start -- I've spent some time with

Mr. Petrakis. Let's start with hardware.

MR. GALLO: Your Honor, can I just caution the witness and Mr. Roberts that the vendor of ADMS we have redacted the name of it in discovery, so I just want to make sure that nobody mentions it casually. Thank you.

ALJ LIRAG: All right.

MR. ROBERTS: Just to clarify, is that also true for the hardware?

MS. GALLO: I don't think so.

WITNESS PETRAKIS: I don't think so.

BY MR. ROBERTS:

Q Who is the vendor for the ADMS hardware?

WITNESS PETRAKIS: That would be specified by our -- once they go through the design of the ADMS, they're going to look at the performance required by the hardware and it would -- potentially don't know yet, an RFP or a quote to see who can provide us that server hardware at that time.

Q Okay. So the specification of the ADMS software would proceed the specification of ADMS hardware?

A That is correct.

Q So let me go back to Mr. Nakayama then and ask what's the status of ADMS software procurement process?

WITNESS NAKAYAMA: I'm actually not on the ADMS implementation team, so I'm not aware of the status of where we are on the implementation today.

Q Mr. Petrakis, do you know the answer to that?

MR. PETRAKIS: No. I don't.

Q But you three are the panel that was put up by PG&E to support this request; is that correct?

A That is correct.

Q And I can't point to an exact data response number at this time, but I know that PG&E has provided the status of ADMS procurement.

A For software and hardware. I believe you have the -- I can't remember exactly which data request it was, but one was provided. I believe it's quotes.

Q So I think that given that you're sponsoring the data requests supporting this topic, that it's a reasonable question to ask what the status of ADMS software procurement is. And if you don't know the answer, then I guess that is the answer.

MR. NAKAYAMA: There's a difference between those who sponsor the testimony for the business case and the reasonings behind

the case versus those who are actually implementing the actual software program and the hardware programs that have a better-specialized function to be able to do so.

Q Just to clarify, you can't tell us if you issued an RFP, you got responses to the RFP or how the development of -- how the procurement of ADMS has progressed so we can understand the status of the ADMS hardware specification?

A I am familiar that a quote was received that was then sent over as a part of the data request over to you as requested, but I am not currently knowledgeable about where they are in the current design implementation process of ADMS specifically.

Q So you have developed an ADMS specification and gone out for bid and received at least one quote?

A For the software, that is. We went through an RFP process to identify the best-fit solution to select out of the various ADMS vendors and have selected a vendor for ADMS software.

Q Okay. So you have selected a vendor but not engaged in a contract with them?

A I can't speak to where the status of the actual contract is.

Q Okay. Thank you.

Then, Mr. Petrakis, given that discussion of the ADMS software, has that yet informed the ADMS hardware process to the point where you have issued an RFQ, Request for Quote?

WITNESS PETRAKIS: Not yet.

Q Thank you. Where are the SCADA database servers located now?

A For that question, I will refer over to Mr. Petrakis.

WITNESS PETRAKIS: The today's SCADA system, the RT-SCADA system, is a distributed application with head-ends in various locations in the fields.

Q So I was specifically asking about a SCADA database. Is that the same as a head-end?

A That's correct.

Q Can you provide a full definition of what a head-end is?

A So the head-end is a server that has the RT-SCADA software running on it. It's in various locations, as I mentioned, in the fields. Its function is to collect the data from the field and therefore process the

data for presentation to the operators.

Q And then it stores the data that is incoming from field devices?

A That is part -- part of the function is also to store the data, yes.

Q And it would also be -- have the network communication to send commands to SCADA operating systems and other equipment?

A That's exactly the interface, yes.

Q And I saw somewhere in your testimony I believe that there might have been 16 locations where these head-ends are located; is that correct?

A That's correct.

Q And are those generally in substations or some other place in PG&E's system?

A Those are in the old distribution control centers.

Q And if -- and also there's a separate system currently that you have called the Distribution Management System or DMS. I suspect that similarly is a software and hardware combination. Where does that system reside physically?

A That system resides in the two PG&E data centers, the IT data centers.

Q Okay. Thank you. And in PG&E's

proposal, these would be replaced by ADMS hardware and software in just the three new DCC locations; is that correct?

A That's correct.

Q Okay. If you can now turn to page 3 of Exhibit 113, just a couple of pages away.

This is PG&E's response to Data Request 100, Question 28.

The ADMS hardware forecast does not include capital expenditures for any SCADA devices or SCADA communication system in the field; is that correct?

MR. NAKAYAMA: That is correct.

Q And that applies to both the capital expenditures on page 3 and expenses on page 4, correct?

A That is correct.

Q That equipment is requested elsewhere in testimony; is that correct?

A The equipment is requested elsewhere. There are currently SCADA field equipment already in existence out in the field. Anything that is in excess of that will be an additional testimony outside of this chapter for new devices.

Q Right. So, for example, we discussed once before Chapter 9 has some

SCADA devices that are being requested?

A For new devices not currently in the system, yes.

Q And, similarly, new communications systems are part of I believe Mr. Petrakis' testimony.

A Yes.

Q Okay. I'm going to continue just a little bit further on the technology and use this analogy of a personal computer again.

Any laptop or desktop computer includes communication hardware to allow it to send information to things like printers and the internet; is that correct?

A My personal laptop has a WiFi.

Q That's a communication mechanism, correct?

A Yes.

Q And so your laptop has a device within it that in the past would have been referred to as a network interface card, but how things are changing, does that term still make sense, network interface card that's inside a computer that allows it to communicate with other devices?

A I'm going to refer the more technical discussions on network infrastructure to Mr. Petrakis.

MR. PETRAKIS: Mr. Roberts, yes. It's an old term. Interface was related to more of a physical cable connecting to a laptop, but today you have air cards or some other means by communicating other than just the wired connection.

Q When we talk about a communication system, that's a generic term that could include WiFi, Bluetooth, satellite, fiber optic, copper. There's multiple physical layers of communication system, but they all require something to format a signal to go to that communication medium, correct?

A That's correct.

Q And so there's got to be a device in this case, and my question is for ADMS, there has to be some device that allows it to send and receive signals from SCADA field devices and to other databases and IT systems within the PG&E enterprise; is that correct?

A That's correct.

Q Are those equivalent of a network interface card part of the ADMS hardware?

A Not labeled that way. The vendors label them as gateways.

Q So when we look at the cost estimate for ADMS hardware, and I'm picturing a server room with all these racks of

computing resources, does that ADMS hardware allow those storage devices and computing devices to receive and send information other places that the DCCs?

A That's correct.

WITNESS NAKAYAMA: Excuse me. I want to understand. Again, you were talking about -- again, we were talking about the ADMS platform versus the ADMS software. The ADMS software itself and the hardware associated with the ADMS software is utilized for the distribution management system side of the ADMS platform. What you're referring to in communications between field devices and to the backhaul network where we can receive those systems is not ADMS. That is from an ADMS application perspective that is D-SCADA.

Q I wasn't referring to the communication path outside of the DCC. What I'm asking is: Does the ADMS hardware, the servers as I think Mr. Petrakis referred to them as, does that -- does the cost request for that component include interfaces that allow signals to be put on to a communication network, whether that communication network allows it to speak to the data centers or the SCADA head-ends?

WITNESS PETRAKIS: That is correct,

Mr. Roberts. It does.

Q Okay. Thank you.

ALJ LIRAG: Let's take a 10-minute break.

Let's go off the record.

(Recess taken.)

ALJ LIRAG: All right. Let's go back on the record.

Let's continue with the cross-exam by Mr. Roberts.

MR. ROBERTS: Thank you, your Honor.

Q We had been talking about communications between the ADMS hardware and other devices. What communication protocol does the current RT-SCADA system use to communicate with field devices?

WITNESS NAKAYAMA: I will refer that question over to Mr. Petrakis.

WITNESS PETRAKIS: There's a couple of protocols it supports. One is the DNP3 protocol and predominantly is the old 2179 protocol.

Q And DMP3 (sic) is the same as IEEE 1850?

A There's a lot of variations of the DNP protocol. I'm not familiar with all of them, but that's one reference, yes.

Q The common term in PG&E is DMP3

(sic)?

A Yes.

Q And would the new ADMS hardware also use the DMP3 (sic) as a communication protocol?

A It would support DNP3; there's no DMP3, as in "Nick," and will support also more modern protocols as well.

Q And will it be able to support IEEE 2030.5?

A Yes, it will.

Q And the ADMS software is also being specified to be able to speak, so-to-speak, IEEE 2030.5; is that correct?

A That's correct.

Q Okay. Thank you. I think this is Exhibit 17, page 19-62. Nope. That is not correct.

I think it is Exhibit 20, the rebuttal, page 1962 -- 19-62. And when you're there, can you please read the lines starting at line 20 and that starts with "they do not invalidate."

WITNESS NAKAYAMA: This is regarding the communication infrastructure. I will refer that over to Mr. Petrakis.

WITNESS PETRAKIS: What's the question, Mr. Roberts, please?

Q If you could just read that last sentence starting with "they do not invalidate."

A They will not invalidate PG&E's prior investments in the DCCs.

ALJ LIRAG: Please use the mic a little bit more.

WITNESS PETRAKIS: Thank you. They will not -- oh, it wasn't on.

They will not invalidate PG&E's prior investments in the DCCs which would largely continue to operate as originally installed.

BY MR. ROBERTS:

Q What are these prior investments that you are referring to here?

A So pertaining to the design of the DCCs when they were built over five years ago, these are the investments that are referred to here.

A lot of the ground work in the networks already went into support the DCC functionality as it was back then.

Q And I guess now I understand that the SCADA servers are not in the DCCs currently. So that isn't part of the prior investment?

A That is correct.

Q But it would include communication systems within those DCCs. Is that part of the prior investments?

A For the operators to work and interface to the data centers and to the field servers, that was back then what was made in the designs of the DCC's network compliance, but going forward it's not enough.]

Q Okay. Now, a little change of topic away from ADMS. PG&E's requesting funding for a program called the Distribution GIS Asset Data Improvement Program, correct?

WITNESS NAKAYAMA: That is correct.

Q Is that to improve data in the EDGIS system?

A That is correct.

Q And this is a database for information about your distribution equipment, correct?

A Contains information about our distribution specifications on --

THE REPORTER: On?

WITNESS NAKAYAMA: Distribution specifications of each equipment.

THE REPORTER: Thank you.

WITNESS NAKAYAMA: Apologies.

BY MR. ROBERTS:

Q Where are the servers for the EDGIS database located?

A That I will refer back to Nick Petrakis.

WITNESS PETRAKIS: Those are located in the IT data centers.

Q There is two data centers, correct?

A That is correct.

Q Still in Exhibit 20, if you can go to page 19-59. I think this line of questioning will be for Mr. Petrakis. Let us know when you are there.

A I'm there.

Q This is a discussion of a different request that is called the "Converged Compute Platform," correct?

A My apologies. I'm on the wrong page. One moment, please.

ALJ LIRAG: Let's go off the record.

(Off the record.)

ALJ LIRAG: Back on the record.

BY MR. ROBERTS:

Q Once again, this section of the rebuttal is addressing a program called the "Converged Compute Platform," correct?

A That is correct.

Q And your answer to -- your answer

to Question 95 provides a description of the scope of this program; is that correct?

A That is correct.

Q What equipment would be replaced by this new platform, if it was successfully piloted?

A So today substations have a lot of functionality that requires compute. It could be SCADA, it could be maintenance type servers for maintaining the equipment, it could be security-related equipment. So each application, or each use case at the substation, previously was bringing its own servers; a server to do this function, another server to do other functions.

So the converged compute is providing a common platform for a lot of functions on common hardware. That is the intent of this piece. That is why they call it "converged compute."

Q I need to try to break this down, I guess. I've been on a number of tours of substations now, and have been inside the blockhouse where the relays are located. My understanding was the computing power was within the relays. And I don't recall there being servers providing computing in any substation I visited.

Is it typical that all PG&E substations have computing power at the substation?

A So to perform the computing power at the substation, those computers are servers.

Q I guess what I'm asking is: My understanding of substations is there is computing that is done to support protection, and that computing is done in the relays; is that correct?

A For protection, I'm not sure what they have. I don't know the architecture there. But the software for RT-SCADA, for example, at a substation, is running on a server.

Q So that would be the client relating to the server that would be in the back office?

A Yes.

Q Okay. And is there generally a server in PG&E's substations?

A If it has -- it depends on the function. It depends on the use case. You have servers for cameras, you have servers for access cards for entry, you have servers for condition-based maintenance protection.

Q It sounds like certainly any

substation that has SCADA devices currently would have a server to have the RT-SCADA software?

A That is correct.

Q Okay. If it is proven, will the converged platform mostly replace existing functionality or will it be adding functionality?

A I would say both, Mr. Roberts. The existing functionality is to lower the cost of replacing all that hardware that I described, the disparate servers. But since it is a converged compute platform, it is very scalable. You can always add power, as needed, for future applications as they may come.

Q But in doing this pilot, are you -- is your goal to simply provide the same level of functionality at a lower price, or are you trying to develop a system with more capabilities that can support future use cases or use cases you know will be happening?

A It will be both again. And the new use cases are going to have to come, as we engage with the business, as we look at future needs, we would then architect it or size it appropriately for what the business

thinks they need.

Q Can you give an example of one new functionality that system might provide or support?

A A lot of our substations don't have, for example, cameras today. That is probably something that will be as part of cybersecurity. And I'm going to stop there, just in case it is confidential.

Q Okay. If you can turn the page to 19-60 lines 3 to 5. There is a reference to -- first of all, the term "POC" is used. Is that proof of concept?

A That is correct.

Q In the same line there is a reference to PG&E guidance. What is the PG&E guidance that is referenced here?

A So the PG&E guidance mentioned here, I believe that any such investment that is put in production will become part of the asset base.

Q But is that -- when you say "guidance," I think of a standard, a controlled standard document. Is this an established and standardized PG&E policy, to your knowledge?

A It is our practice, yes.

Q But do you have a document number

you refer to that you can show us what this guidance is in the same way we can refer to a CPUC decision number?

A I don't have that with me, Mr. Roberts.

Q To your knowledge is there a standard, a standardized document that defines these policy?

A If it does, it probably is going -- the finance department. And I have to, you know, refer you to those folks, please.

Q Okay. Now if I can ask you to turn to one of your cross exhibits, it is No. 3, and it is Exhibit 115. Let me know when you have that.

A Part 3, right?

Q Yes.

A Yup.

Q If you start on page 4, this is the beginning of PG&E's Triennial Electric Program Investment Charge, or EPIC plan. Do you see that?

WITNESS NAKAYAMA: That is correct.

Q If you now turn to page 6. Can you please read the last line of the second paragraph which begins "therefore"?

A Therefore, utility-specific demonstrations, such as a proof of

concept prototype, laboratory or other testing of a particular strategy and/or technology is --

ALJ LIRAG: Please slow down.

WITNESS PETRAKIS: I apologize. Let me start over.

Therefore, utility-specific demonstrations, such as a proof of concept prototype, laboratory or other testing of a particular strategy and/or technology is essential to inform real costs, benefits and feasibility at full deployment.

BY MR. ROBERTS:

Q Thank you.

If you can now turn to page 9, actually, maybe start at 7, just to provide context. This is PG&E's 2018 Energy Storage Procurement and Investment Plan, an excerpt of that. And now if you could go to page 9 of the handout, which is page 2-2 of the storage plan.

Let me know when you are there.

A I'm there.

Q Okay. The last bullet mentions a Browns Valley Project as part of the EPIC program document. Do you see that?

A I do.

Q Does this application seek to utilize the Browns Valley Project as an operational asset?

A I am not aware of the Browns Valley Project, in particular.

Q So is this -- is the Energy Storage Procurement and Investment Plan -- I asked before if storage was part of your area of responsibility. Is this particular plan in the area of your responsibility?

A It may be. But this particular project I am not familiar with, as it was prior to my taking over of the organization.

Q Okay. If we can return to Exhibit 20 page 19-60 lines 17 to 19, discusses the computing availability of the Converged Computer Platform. I just wanted to ask, since a comparison is made to computing power in the data centers, what is the relationship? Are you moving computing power away from the data centers or away from the substations, or are you supplementing the computing power for PG&E distribution as a whole?

WITNESS PETRAKIS: This references its similar architecture. What is used at the data center would be applied at the

substation.

Q Do the data centers utilize cloud computing?

A Yes, they do.

Q If we could now go to Exhibit 19. Those are the workpapers of the original testimony. And we are looking for page WP 19-13. And Mr. Nakayama, let me know when you are there.

WITNESS NAKAYAMA: I am there.

Q This Table 19-13 provides the cost for the ADMS project, which we discussed before, is larger than the ADMS application?

A That is correct.

Q Okay. And this table has the total cost for the ADMS project in this rate case?

A That is correct.

Q Looking at line 12, it appears that point-to-point testing is the largest cost for the ADMS project for this time period; is that correct?

A That is correct.

Q Could you please go to page 19-18.

A I am there.

MR. GALLO: Excuse me, your Honor. WP 19-18, or 19-18 in the rebuttal or 19-18 in the original testimony?

MR. ROBERTS: Sorry. It is still

Exhibit 19 page WP 19-18.

MR. GALLO: Thank you.

WITNESS PETRAKIS: Thank you. I'm there.

BY MR. ROBERTS:

Q The second paragraph under Item 2 describes point-to-point testing as having two components. Do you see that? I'm sorry. That was a statement, not a question.

The first part is described as, for example, point-to-point testing ensures that amps measured as a circuit breaker are correctly populating the field in the SCADA database that corresponds to amps.

WITNESS NAKAYAMA: Yes.

Q And one point in this example is the circuit breaker, correct, which is -- correct?

A Yes.

Q And that is a SCADA-enabled device in a substation?

A It can be.

Q If it weren't a SCADA-enabled device, would it be part of the point-to-point testing?

A No, because it would not be SCADA-enabled.

Q Thank you.

The other point appears to be a SCADA database, correct?

A Yes.

Q And as we previously discussed, the SCADA databases are currently in the 16 DCCs, and they will move, if planned, to the three new DCCs?

A I believe there is a difference between SCADA databases and ADMS. In terms of network architecture, I am going to have to refer you over to Mr. Petrakis.

WITNESS PETRAKIS: Can you please repeat the question, Mr. Roberts?

Q Certainly. The other point in this point-to-point test is the SCADA database. And then I guess I was asking where that SCADA database or SCADA data -- SCADA databases were located?

A So the centralized SCADA databases are going to be at the DCCs.

Q So they are currently at the old DCC locations of which there were 16. And if ADMS is approved, they would be in the three DCCs?

A That is correct.

Q Okay. And then the last sentence in this paragraph refers to an additional verification is needed to ensure that the new

SCADA screen for the circuit breaker properly shows the correct database point?

WITNESS NAKAYAMA: That is correct.

Q And so it wasn't clear to me, within that paragraph there seemed to be two parts of point-to-point testing that are described, the one between the circuit breaker and the database and the second one from the database to the SCADA screen?

A That is correct.

Q Okay. And so that -- both elements are included in the point-to-point testing cost forecast, because they are described as within the scope of the point-to-point testing?

A That is correct.

Q If we can go back to Exhibit 20, your rebuttal page 19-46.

A I am there.

Q Okay. Question 7 asks if you agree with Cal Advocates' position that sampling should be done. Is that an accurate paraphrase?

A I imagine you are referring Question 70 and not Question 7?

Q That is correct.

A Can you repeat the question, please?

Q Yes. I just want to para -- paraphrase that you disagree with Cal Advocates' position that a sampling plan be used. That is the question. And then the answer indicates that it is because you already have a sampling plan; is that correct?

MR. GALLO: Your Honor, misstates the question as written in the rebuttal.

ALJ LIRAG: All right. Sustained.

MR. ROBERTS: Okay.

ALJ LIRAG: You will have to go over it more carefully, Mr. Roberts. Although, I appreciate the paraphrasing.

MR. ROBERTS: Okay.

Q Mr. Nakayama, you are aware that Cal Advocates recommended that the point-to-point testing utilizes sampling point, correct?

WITNESS NAKAYAMA: That is correct.

Q Your answer to this Question 70 says you disagree with Cal Advocates' recommendation, because you already incorporate a sampling plan; is that correct?

A There are two different types of tests, types of tests that are being designated for the SCADA point-to-point testing. One of them is what we would

consider the back office test. The back office test is something that we are recommending 100 percent of all SCADA points be tested. However, the sampling plan you are referring to is actually a field test to inject simulated data at a field device to determine if it is accurately received back into SCADA database and populates correctly onto the SCADA screen. That is the sampling plan we are referring to that is echoed here on 10 percent or 15 percent of SCADA databases -- SCADA devices, as identified on line 4.

Q Okay. Are you aware that in PG&E's opening testimony and workpapers there is no reference to a PG&E sampling plan or back office testing as part of point-to-point testing?

A Can you please refer to the actual document that you are referencing to?

Q That would be Exhibit 17 and 19. I was not able to find any place in those documents where PG&E references a sampling plan or back office-based testing relative to point-to-point testing. If it is there, I missed it. I'm hoping you can point it out.

A I would have to go through in detail and research the exhibits if you

cannot point me to the actual location that you are referring to. To do a cross on determining whether it is there or not, I can't do at this time without some additional time.

Q Could we say that "subject to check" PG&E's opening testimony and workpapers do not reference a sampling plan for back office base testing?

MR. GALLO: Your Honor, I think if we have another break during Mr. Roberts' testimony, we can probably --

ALJ LIRAG: All right. Let's handle that in redirect.

MR. GALLO: Thank you.

BY MR. ROBERTS:

Q If you can now go to Part 5 of our cross exhibits. This is Exhibit 117.

WITNESS NAKAYAMA: I have it.

Q And if you can go to page 5.

A You refer to California Rule 21 Phase 3?

MR. ROBERTS: No. I've taken you to the wrong place.

Can I have a moment off the record?

ALJ LIRAG: Off the record.

(Off the record.)

ALJ LIRAG: Let's go back on the

record.
BY MR. ROBERTS:
Q I'm sorry. That was an incorrect reference. It should be Exhibit 113, which is Part 1 of our cross exhibits.
WITNESS NAKAYAMA: Thank you.
Q Page 5 is PG&E's response to Data Request, Public Advocates 22-5 Question 4.
A That is correct.
Q Okay. This response is cited in Cal Advocates-08 testimony, but was accidentally omitted from the workpapers. So we want to make sure it was discussed here.
If you would please read the answer to that.
A Refer to PG&E's response to Public Advocates, Pub Ad 225-204; all points on all devices will undergo point-to-point testing.
Q Thank you.
Now if you can turn to the reference document's package. Page No. 7 starts --
A Can you hold on for one second?
ALJ LIRAG: Let's go off the record.
(Off the record.)
ALJ LIRAG: Back on the record, please.
BY MR. ROBERTS:

Q This is PG&E's response to Public Advocates Data Request 93-Question 2. And this asks if point-to-point testing requires PG&E to input a signal at each SCADA device in the field to be validated.

Do you see that?

A I do see that.

Q Does your response to this question mention that only 10 to 15 percent of testing will be input -- will involve inputting a signal in the field?

A It does not.

Q Thank you.

If you can please turn to page 9 of the reference documents. This is PG&E's response to Data Request 225 Question 1. You see this response was dated June 19th, excuse me, June 18th, 2019?

A I see that.

Q You are the witness?

A Yes, I am.

Q To my knowledge, this is the first time in this case that the two different flavors of point-to-point testing, one of which is listening and the other is described as simulation below, are discussed.

Are you aware of any other references in this case prior to this

response where the difference between field and back office point-to-point testing was discussed?

A I cannot confirm that without having to review all the documents of all responses that were given, as well as crossing against the actual testimony and workpapers provided, to see if there is any reference to the differentiations between a back office point-to-point testing versus a field point-to-point testing.

Q Okay. So maybe that question that was going to be addressed in redirect could be expanded to incorporate this?

ALJ LIRAG: All right. I think that is fine.

MR. ROBERTS: Thank you.

ALJ LIRAG: If not in redirect, we can also attempt to -- I think we are going to go into our break soon. And if the answer is ready by then, we can also discuss it while your cross is still going on. We will check with Mr. Gallo and yourself once we come back from break.

MR. ROBERTS: Thank you.

Q This response further describes two types of back office testing, the first of which is in bold below, as listen mode.

Do you see that?

WITNESS NAKAYAMA: I do see that.

Q This response states this technique is used to validate analogue signals?

A That is correct.

Q Where are the analogue test signals input to ADMS to report this type of test?

A Into the ADMS? These are distribution SCADA values. So I'm confused as to how -- are you talking about ADMS the platform, ADMS the application or are you referring to distribution SCADA?

Q The point-to-point testing is to validate the entire ADMS project performance. Would that be a correct statement?

A It is to validate the SCADA replacement portion of the ADMS platform.

Q Okay. So in testing that path, your response says that there are analogue signals involved, correct?

A That is correct.

Q I'm asking generally when you are -- if you are testing to validate something can accurately pass an analogue signal, you need to put an analogue signal in to perform a test. I'm asking: Where would that analogue testing be input?

A SCADA devices from the field

provide analogue data on a regular basis. It transmits it in amps and -- amps and other value forms to our distribution SCADA systems on a regular basis.

So what you are referring to as listening mode is to see if the values provided by the field data field devices that are currently in production are going to both databases, the old SCADA database and the new SCADA database, and they are identical.

Q Right. So you are testing that data from the field is correctly read into the databases?

A Is correctly written into the database; that is correct.

Q So there is an input source that you are testing. Where is that signal input?

A From field devices like SCADA line reclosures, for example, that are monitoring telemetry data on the line.

Q In doing a listening mode test you are inserting a test signal at a device recloser?

MR. GALLO: Objection. Mischaracterizes the testimony.

ALJ LIRAG: In what way?

MR. GALLO: In that injecting a signal is not what Mr. Nakayama has been describing.

ALJ LIRAG: All right. You can rephrase or be more specific, Mr. Roberts.
BY MR. ROBERTS:
Q Okay. When we discussed previously the overall discussion of point-to-point testing, point-to-point testing always involves doing something at one end and testing a result at the other.
Is that a correct statement?
A It is an overly broad statement in terms of doing something on one end. There are multiple ways to do something on one end to ensure that they are received on the other.
Q So in this mode the receiving end is the RT-SCADA database; is that correct?
A It will be two databases. One of them, which is the old RT-SCADA database, and new one that is being developed for the new vendor. It will be two databases. The listen mode is to publish that value on both databases and ensure they are the same.]
Q You said "publish the value"?
A In other words, when the field device, such as a line recloser -- let's give an example here. It might be easier to identify with. A line recloser out there is currently monitoring amps on the line. It

sends those values through the net communications network of which then we will then be able to take that value and populate it into two databases, one of which is the old RT-SCADA database, and the other one is the new one that we had purchased for the new SCADA system that we are looking to acquire.

The listening mode test is to take a look at those values that are actually coming from a physical field device in production and see if those values match across the two databases, the old and the new.

Q So in this case, given that example, it sounds like you have -- you're reading an analog amp signal, which is digitized by the field SCADA device and sent via communication back to these two databases?

A That is correct.

Q And then you're looking -- so how do you know what the amp signal is in the field to know that's the correct value in the database?

A For this particular back-office test, what we are testing here is to make sure that a signal is sent from the line recloser and would typically record within

the RT-SCADA database is that same value being populated within the new SCADA base architecture that we're creating for the new SCADA platform.

Q I see. So you're not verifying that the amp number is correct. You're just -- you're verifying that whatever number that is, that same number goes into both databases?

A For the listen-mode test only.

Q But for the listen-mode test only, that is what's being done?

A That is correct.

Q Okay. Your response says that a validation is performed by a PG&E data specialist, correct?

A That is correct.

Q In essence, they are comparing data within two databases?

A Yes.

Q And so the listen-mode testing could be performed by one person for one data point, correct?

A Could be performed by one person for one data point, for that particular SCADA device, for -- that's what they are testing, yes.

Q The SCADA database is not the same

as the display screen at the DCC, correct?
A That is correct.
Q So the listen-mode test does not test from the database to the DCC SCADA screen?
A I believe it does, but I am not entirely sure.
Q Mr. Petrakis, do you know the answer to that question?
WITNESS PETRAKIS: No, I don't.
Q Then at the bottom of this page continues to discuss the second back-office test mode, which is called the simulation mode. Can you briefly summarize how that differs from the listen-mode test?
WITNESS NAKAYAMA: So in the listen-mode test, actual field data coming straight from various SCADA device points out in the field are being streamed and recorded as is. A simulation is to inject random changes into that stream to make sure that they are being captured appropriately in the database. And if you read correctly, it says, "Through forcing random changes in the database, the mode of testing is particularly useful for validation of status or position points which exhibit less frequent rate of change than analog points under typical

circumstances."

Examples of these are like a simulated open or a simulated close command of a line recloser, for example, that you may not be able to see as you're monitoring SCADA points out there in listen mode. So there are like two types of data values: Analog as well as command.

Q So that random -- that random change, as you just described it, it's a change made in the database, not a change in either the analog signal that's being read by the recloser in the digital signal that's sent back from the SCADA device on that recloser?

A I'm not sure of the technical specifications on exactly how they enter in the random signal and exactly at what point it gets entered in and how that gets then recorded in the database.

Q Mr. Petrakis, do you know the answer to that?

WITNESS PETRAKIS: No, I don't.

Q Okay.

ALJ LIRAG: Just a little guidance on your line of questioning, Mr. Roberts. Let's try to focus on the technical aspects that would support ORA's contention or

recommendation or that would detract from PG&E's proposal. We appreciate knowing every little thing that goes on, but I believe the focus is on doing sample testing -- point-to-point testing versus testing every single piece of equipment, as you would call it.

But if the technical aspect does not further that line of argument, then please consider focusing instead on those aspects that relate more to ORA's position.

MR. ROBERTS: I appreciate that, your Honor. And I can promise that the nuances that we're getting into are important. And because point-to-point testing is such a big part of -- a big part of the IGP cost, I think it's worth going to this --

ALJ LIRAG: All right. I assume that you know what you're asking. This is just on my end.

MR. ROBERTS: Okay.

ALJ LIRAG: So it will become apparent.

MR. ROBERTS: I hope so.

ALJ LIRAG: All right. Let's proceed.

BY MR. ROBERTS:

Q Just about done. The simulation-mode description also mentions that this is being done by a SCADA

specialist.

WITNESS NAKAYAMA: That is correct.

Q And that's singular, not plural. So I'm assuming that one person can do this back-office type of test as well?

A One person will do one activity and notice the change of that activity for a single test. There are multiple tests that we are doing for multiple SCADA devices. So there will be multiple SCADA specialists working on something like this simultaneously. You don't want to just do one at a time.

Q Right. But it's very much different than a field-test where you need somebody at the SCADA device in the field to provide an input and then somebody somewhere else to read a signal?

A Yes, that's correct.

Q The simulation mode also appears only to test to the database and not to the SCADA screens on the DCCs?

A I believe it does, but again, like I said, I'm not sure one hundred percent if that is a fact.

Q Okay. Can you please go back to Exhibit 19.

A The reference document?

Q No. This is the workpapers for PG&E-04. And if you can go to page WP 19-14. This is PG&E's initial forecast for point-to-point testing for the -- sorry -- for SCADA point-to-point testing; is that correct?

A That is correct.

Q Note 7 at the very bottom says that PG&E forecasts that 90 percent of devices and RTUs will finish with testing by the end of 2022. Do you see that?

A That is correct.

Q So the implication -- and I believe a response to a data request clarifies that over the course of the IGP program only 90 percent would be tested during the current ratecase, and the remaining 10 percent will be tested subsequently; is that correct?

A That is correct.

Q Thank you. If you can please go to Exhibit 113. This is part one of the cross-exhibits. Go to page 10, please. Let us know when you are there.

A I am here.

Q This is PG&E's response to Public Advocates' Data Request 100, Question 34. In the table, item 3, it appears that you're stating that you'll be able to perform

system-wise power-flow analysis once every 5 to 15 minutes; is that correct?

A In the new ADMS software, yes.

Q What's the relationship between power-flow analysis via ADMS and power flow using your current power-flow software, which is CYME, C-Y-M-E?

A CYME is used to analyze. It is not a realtime software that could be run every 5 to 15 minutes. You have to actually direct it to analyze a particular feeder instance and a particular simulation to understand what the outputs would be, and a distribution operations engineer located at the control center utilizes that for complex searching.

Q So is the difference the frequency of results?

A The difference is what we would consider realtime update frequency where it would be able to perform some of those analyses in almost realtime.

Q And in general, providing realtime calculations is more difficult than doing a calculation on command. There's a lot more computational horsepower, to use Mr. Petrakis's terminology before, required?

Is that your understanding?

A Can you clarify that question

again.

Q I'm going to go somewhere else.

A Okay.

Q Are you familiar with the integrated capacity analysis, or ICA analysis, that's done as a part of the DRP proceeding?

A I am.

Q Can you please turn to page 11 of this same exhibit. This is PG&E's response to Public Advocates' 100, Question 35.

A I'm there.

Q The first line of the second paragraph refers to state estimation.

A That is correct.

Q Isn't state estimation the process of calculating electrical parameters, such as current and voltage at specific points on the grid?

A That is correct.

Q Isn't state estimation the output of a power-flow analysis versus an input, as stated here?

MR. HAWIGER: Excuse me. Can you repeat the page number where you are.

MR. ROBERTS: Page 11 of Exhibit 113.

MR. HAWIGER: Thank you.

WITNESS NAKAYAMA: Where do you see the

word "input"?
BY MR. ROBERTS:
Q I don't see the word "input." The line says, "The ADMS will utilize power flow with state estimation." So I guess I'm interpreting "with" as being combined or an input.
A For a better definition of state estimation, there is a different document that I would refer to that has the definition of what state estimation is and is located in the 10-year business case of the -- of grid modernization.
Do you mind if I turn to that?
Q I would prefer not to, but that was a response to discovery that that was provided?
A It was a part of the our original testimony.
Q Your -- if it's part of the testimony, then yes, we can go there.
ALJ LIRAG: Why don't we take our lunch break right now. Let's come back at 1:15 on that clock. But before you head out, please clarify, Mr. Roberts, with PG&E the information that they were supposed to look for. And -- just so when they head out to lunch they can come back with the

information.

MR. ROBERTS: Okay.

ALJ LIRAG: All right?

MR. GALLO: Your Honor, I just want to be mindful of everybody else's time and making sure that we get the panel off the stand today without them having to be recalled.

ALJ LIRAG: I think Mr. Roberts is 70 percent done with that document --

MR. ROBERTS: I'd have to check.

ALJ LIRAG: -- from the thickness of the pages.

MR. ROBERTS: It's definitely getting smaller, and when we review the time that we've spent versus our allocation, we'll adjust accordingly.

ALJ LIRAG: Let's review the time once when get back from break, and we are counting on Mr. Schlesinger's 30-minute estimate.

All right. Let's go off the record.

(Whereupon, at the hour of 11:52 a.m., a recess was taken until 1:18 p.m.)

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AFTERNOON SESSION - 1:18 P.M.

* * * * *

ALJ LIRAG: Let's go on the record.

We're back from our lunch break. Welcome back, Mr. Nakayama, Mr. Petrakis and Mr. Strasburger. All right. Let's continue with the cross-exam by Mr. Roberts, unless there is some issues you want to address to the record, either PG&E or Ms. Shek or later.

MS. SHEK: We could do it now, if that works. Just about accepting Cross-Exhibits 113 and 114, PG&E has agreed to not object to those cross-exhibits in exchange for us lessening or whittling down our questions for the afternoon. So we are very happy to say they have agreed to do so.

ALJ LIRAG: All right. I think that's a good exchange, and that benefits all of us, especially Mr. Hawiger and Mr. Schlesinger. It adds a little bit more time to their cross -- or we'll see. Anyway, let's take care of that right now.

So is there a move to admit Exhibits 113 and 11 into the record?

MS. SHEK: Yes, your Honor.

ALJ LIRAG: No objection from Mr. Gallo?

MR. GALLO: No, your Honor.

ALJ LIRAG: Exhibits 113 and 114 are received into the record.

(Exhibit Nos. 113 and 114 were received into evidence.)

ALJ LIRAG: Please proceed, Mr. Roberts.

MR. ROBERTS: We also had an open question before the break about a couple of items that I think PG&E was going to get back to us on. Would now be an appropriate time to do that?

ALJ LIRAG: Yes, let's do that.

MR. GALLO: Okay. And that question was specifically with regard to PA-225, Question 1 and whether that was the first time there had been a mention of the back office testing. Is that what you're referring to, Mr. Roberts?

MR. ROBERTS: Correct.

MR. GALLO: Could I do this as redirect, your Honor?

ALJ LIRAG: All right. Let's do it as redirect.

REDIRECT EXAMINATION

BY MR. GALLO:

Q So Mr. Nakayama, can I direct your attention to Public Advocates'

cross-examination reference documents packet and specifically to page 9 of that packet, which is PG&E's response to Public Advocates' 225, Question 1.

Do you see that?

A Yes, I do.

Q And as Mr. Roberts noted earlier, the date sent on that response is June 18, 2019; is that correct?

A That is correct.

Q Okay. So Mr. Roberts asked you earlier if this response was the first time that PG&E had mentioned back-office testing or sampling plan for field testing for the point-to-point testing program for ADMS; is that correct?

A That is correct.

Q And is it correct that this was the first time that it was mentioned?

A Yes, it was.

Q But was the sampling plan for field testing and the back-office testing incorporated into PG&E's forecast for point-to-point testing submitted as part of the original application?

A Yes, it was.

ALJ LIRAG: Any questions off that, Mr. Roberts?

MR. ROBERTS: No, your Honor.

ALJ LIRAG: All right. Let's proceed with the rest of the cross-examination.

MR. ROBERTS: Great. Thank you.

CROSS-EXAMINATION (resumed)

BY MR. ROBERTS:

Q I'd like to start with a question to Mr. Petrakis. During that discussion about point-to-point testing, there was a talk of analog versus digital signals. Can you tell us do any of PG&E's current communication systems related to SCADA send an analog signal between the field device and the back office?

WITNESS PETRAKIS: The communication system passes any protocol so that the analog and digital signals are processed by, let's say, the remote terminal unit, the RTU, that has a communication interface to the back-end application. So the communication does not care what the data is on it. That's a communication between the back end and the RTU.

Q Okay. I understand that the input could be digital or analog. For example, you and I are having a conversation and the signal between us is an analog pressure variation, my understanding is that most

modern communication systems, whether they are IEEE 1815 or 2030.5, are digital. They are sending a digital signal over the media; is that correct?

A That's correct.

Q You are not currently using a communication system that would send an analog signal through the media?

A No. No.

Q If you could turn to Exhibit 117, which is part 5 of our cross-exhibits.

Mr. Nakayama, are you familiar with the process in Rule 21 to develop and implement Smart Inverter functions?

A I am somewhat familiar.

Q Now, this exhibit that starts at page 1 is a Power Point presentation from a secure communications for DER presentation. I'm not asking you to vet the source at all. I am going to be asking you questions about specific items on specific pages.

A Okay.

Q On page 2, is it correct that there are three phases to the Smart Inverter functions that were developed through the Rule 21 proceeding?

A I do not know the answer to that question.

Q So you're not familiar with what the phase functions are, Phase 1?

A I am generally familiar about what is occurring in Rule 21 but not in the specifics.

Q Okay. So you don't know the timing or phasing when specific Smart Inverter functionality needs to be included in DERs that are interconnecting with PG&E's grid; is that correct?

A I'm familiar with the subject but not the timing.

Q If you could please turn to page 6 of the package. This part of the exhibit includes an excerpt from something called the Common Smart Inverter Profile, which, as it says on this page, it implements IEEE 2030.5.

You see that title, correct?

A I do.

Q Are you familiar with this document at all?

A I have briefed over it from what you have submitted last night.

Q Can you turn to page 10 of this exhibit -- I'm sorry -- page 13, which is page 10 of the document itself.

A Okay.

Q At about the middle of the page,

there are two bullets, the second of which says, "Posting monitoring information every five minutes." Do you see that?

A I do.

Q Based on your review, do you understand that that means that DERs need to be able to post certain information every five minutes according to this requirement?

A According to this requirement, yes.

Q Then down at the bottom of this page, there's a section that says "monitoring data."

Do you understand that the data listed in the table at the bottom is the monitoring information to be posted every five minutes?

A I see that table.

Q And do you agree with that conclusion that that is the data that would be posted every five minutes?

A According to this report, yes.

Q The term "posting," do you -- I interpret that as being the same thing as reporting, in other words, that the DER would post or report data every five minutes.

Do you agree with that?

A If you take a look at lines 332 and 333 of this report on page 13, they define

poling versus posting. So if the DER has to post its data in five-minute increments, what I read about this is that we may not need to have to pull the information for 10-minute increments, but they must be in 5-minute increment data allocations.

Q Is your understanding the post is a process where the DER sends the information to a communication system as opposed to the utility pulling that device from the DER?

A It means -- and from my understanding of what I am looking at here, that the resolution of said data must be in five-minute increments regardless of how often the utilities pull the data to pull in back into the systems.

Q Okay. Do you have any idea of when PG&E anticipates being able to read the data that would be posted by DER every five minutes and integrate that data -- I'm sorry. Do you know when I might be able to read that data?

A Currently PG&E has an EPIC-related project 3.03 to be able to create a DER head-end solution that would be able to connect via 2030.5 to DER just directly or through DER aggregators to gather this data.

Q So you're saying that that specific

head-end would be required to read those reports?

A That is correct.

Q Earlier today we had a discussion about a head-end, and I believe it was Mr. Petrakis who stated that a head-end was included with the ADMS hardware. Did I understand correctly?

A That is for SCADA.

Q For SCADA?

A That is correct.

Q So if we go back to the network interface card analogy, the ADMS hardware that's being requested has a network interface that works with SCADA but not with 2030.5?

A I'm sorry. The ADMS platform will be compatible with 2030.5. The Smart Inverter Profile Working Group that you're referring to here is to create a different pathway to get data from DERs and DER aggregators that is -- does not require a direct SCADA input and RTU system for every single DER out there that will be monitored and pulled in this fashion. So it is a different architecture than the traditional SCADA architecture that is being defined here.

Q Okay. And so I understand that SCADA is one system and the IEEE 2030.5 protocol that's being discussed in the Smart Inverter Working Group is a different means of communication; is that correct?

A The IEEE 2030.5 protocol, from a DER perspective, is to enable the secure communication pathway between the utility and the DERs. The DER head-end is a specific EPIC application to look for low-cost telemetry options such that a SCADA-based 2030.5 is not required to each individual unit through an RTU at that location. So it is a part of the low telemetry -- low-cost telemetry procedure from the CPUC.

Q If you can please go to the reference package, page 20. And this is PG&E's response to Public Advocates' 100, Question 5. Actually, on page 21, item 5 says that ADMS shall be able to issue limit active -- limit maximum active power mode.

Do you see that?

A I do.

Q That is a Smart Inverter Working Group Phase 3 function. Do you agree?

A Yes.

Q And so this is saying that the ADMS will be able to send one of these commands?

A Yes.

Q Will it also be able to send the full suite of Phase 3 functions?

A It will be fully compatible with 2030.5 requirements.

Q On the 2030.5 requirements that refer to the communication path, the Phase 3 refers to specific functions?

A Yes, it will.

Q And also the Phase 1 functions?

A Yes, it will.

Q Okay.

MR. GALLO: Your Honor, can I interject for a moment? I note that if everybody else uses up their allotted time there won't be time left for me to do any redirect, and I'm not sure that given this last line of questioning how it actually relates to our forecast.

ALJ LIRAG: All right. Let me check on progress, Mr. Roberts. In terms of percentage or time estimate, how much do you have left?

MR. ROBERTS: I have one major topic and some other topics, but we've worked it into having the hour that we had remaining.

ALJ LIRAG: All right. I'm not sure we had an hour, but let's proceed. And I may

have to do more frequent time checks.

MR. ROBERTS: Okay.

ALJ LIRAG: And the goal is to not have to require the witnesses to be back tomorrow or another day.

MR. GALLO: Yes. It might be very difficult to re-coordinate everyone's schedules to make that possible, your Honor.

ALJ LIRAG: All right. So let's move on. And then -- yes.

MR. ROBERTS: I was going to say I think I can cut one big chunk if PG&E would agree to let another exhibit in.

ALJ LIRAG: Let's go off the record to discuss that.

(Off the record.)]

ALJ LIRAG: With this discussion in mind, let's go back on the record.

MR. ROBERTS: Thanks.

ALJ LIRAG: Why don't you ask questions that pertain directly to those two points and forego questions that pertain to the EPIC report.

MR. ROBERTS: Yes. Okay.

Q So I'll skip the questions about the EPIC report, and go right to page 26 of Exhibit 116. So this was a recent meeting in the DRP proceeding. And, Mr. Nakayama, you

gave the introduction to that workshop; correct?

WITNESS NAKAYAMA: I actually don't think I was here at that workshop.

Q This was held at 77 Beale Street?

A I was -- I remember you being at DPAG meeting that was held a couple weeks ago, but I do not remember actually being present for the ICA meeting that was presented by Mr. Michael Cardi.

Q That is possible.

Let me ask this: Understanding that you are new to this position, and Integration Capacity Analysis is another rather complicated piece of this whole DER process, are you familiar with PG&E's ICA work they've been doing?

A At a high level, yes.

Q Are you aware that ICA was initially intended to go live for the PG&E system July 6, 2018?

A I'm aware.

Q And that was delayed because of IOU concerns about confidentiality?

A I am.

Q And the live date was moved to December 28, 2018?

A That is correct.

Q And if I can have you go to page 26 -- excuse me -- 25 of this package -- actually 23. These are comments from the Interstate Renewable Energy Council or IREC regarding ICA; do you see that?

A I do.

Q And then page 25, the first line under part A says: "The most concerning issue identified by IREC is that PG&E's ICA does not display accurate results;" do you see that?

A I see that.

Q And the workshop that was held at which PG&E gave the presentation starting on page 26, was a direct response to that issue identified by IREC; do you understand that?

A Okay.

Q And if you go to page 27, you can see that the agenda included discussion about data validation efforts; do you see that?

A That is correct.

Q And that was to correct the data that IREC had identified as inaccurate; is that correct?

A You'll notice that this presentation has nothing regarding inaccurate data.

(Reporter clarification.)

WITNESS NAKAYAMA: This presentation talks about data validation, not inaccuracies within the data.

BY MR. ROBERTS:

Q Okay. If I could ask you to please turn to page 34. Let me know when you're there.

A Yes.

Q This is showing a chart of ICA values that changed as a result of validation; is that correct?

A I believe so.

Q And so, I understand that this presentation doesn't specifically mention inaccuracies, but it does show that after you validated the data, your values changed?

A In this instance for the 64 feeders that I am looking at, that is true.

Q Okay. And then if you continue on in the presentation to page 40, this is talking about improvements that resulted from this validation, and it discusses CYME; do you see that?

A Yes.

Q And CYME is the power flow software that was used in the ICA analysis; is that your understanding?

A That's correct.

Q And in ADMS, you'll be performing a similar type of analysis if your ADMS software is approved?

A It performs load-flow analysis and state estimation; that is correct.

Q Then turning to page 41, it talks about opportunities were identified within the EDGIS system?

A That is correct.

Q So there were problems with the asset data in EDGIS that were resolved through these data validation efforts; is that correct?

A I wouldn't qualify these as problems, but improvements have been made to the EDGIS data that better informed some of the load-flow analysis.

Q If they are not errors, then can you explain what those differences might be?

A I'm actually not entirely familiar with all the validations that took place in the ICA as I've only been with this organization for a few months.

Q Okay.

ALJ LIRAG: Let's do another time check.

MR. ROBERTS: I'm about to wrap-up this topic.

ALJ LIRAG: But then you have other topics.

MR. ROBERTS: I have one short one.

ALJ LIRAG: Let's try to wrap up.

BY MR. ROBERTS:

Q I'm not going to get into it in detail, but starting at page 1 is a EPIC 2.14 report excerpt. Do you see that, page 1?

A Yes. I see that.

Q And the point of this EPIC project was to identify algorithms that could be used to identify phasing; is that correct?

A That is correct.

Q Now that that project is complete, what's the status of developing an algorithm for phase ID process at PG&E?

A My understanding is that it is in process.

Q And do you have any idea of the algorithm that has been selected for deployment?

A The algorithm builds upon the EPIC 2.14 algorithm and improves on that algorithm in a more production environment.

Q If in this package, you go to page 12, it mentions that in one place eight methods, and then below five methods, and below again five more methods. There are

more than one algorithm that were tested in this EPIC project?

A That is correct.

Q Was one identified that you're now developing?

A I don't have that level of detail regarding the algorithm -- the exact algorithm or algorithms that are being utilized to enhance what was done in 2.14, but I'm aware they are enhancing the algorithms to make them better.

Q Do you know if any of those algorithms were a vendor-specific product or algorithm that they were going to sell to PG&E?

A I'm not aware of any type of sales of any sort.

Q Okay. I'll move on to the final point, and this question is for Mr. Strasburger. I'm sorry for not addressing you for so long, but if you could turn to Exhibit 20.

ALJ LIRAG: Same document?

MR. ROBERTS: Exhibit 20, page 1965. That is the rebuttal testimony.

ALJ LIRAG: And, please, use the mic.

WITNESS STRASBURGER: Rebuttal testimony on Integrated Group Platform. Got

it.
BY MR. ROBERTS:
Q Page 1965.
A Yes. I'm there.
Q Okay. Starting at line 18, it says: "The only reason PG&E tracks cybersecurity funding and scope separately from the rest of the project scope is to ensure more effective management and oversight of security implementations;" is that correct?
A That is what that says.
Q Okay. Are you able to track the cybersecurity costs for IGP using PG&E's accounting system?
A Yes. We track all costs that we incur on a project; so the answer is yes.
Q So you can differentiate the cybersecurity costs from, say, the other IT costs that Mr. Petrakis' scope might involve?
A With regard to cost tracking regarding -- during early phases of the project, high-level estimates need to be made that aren't able to granularly break out individual components, but as we get into a project and do detailed planning and budget forecasting, then we are better able to break out cost; for example, if we need to spend $3

million to purchase firewalls for a particular environment, those costs can be tracked at that level, and those particular contracts can be allocated to the right cost center. Yes.

Q And so then in hind- -- on an ex post basis, after you've incurred these costs, would the CPUC be able to see how much cybersecurity cost for the IGP program based on an MAT code or an order number?

A That should be possible. If I'm thinking about how we execute projects, charge particular cost-to-order numbers, yes, you could identify the order numbers that were used for the cybersecurity-related costs, yes.

Q PG&E would be able to?

A Yeah.

Q And that would be at the order level?

A I'm not an expert on our financials, but from a leader in the IT department, leader in the cybersecurity department, who sponsors projects and oversees projects, yes, we would typically call that an order, an order number, yes.

ALJ LIRAG: Are you almost done, Mr. Roberts?

MR. ROBERTS: Yes.

Q Could you please turn to Exhibit 117, page 17. This, once again, is a document that I'm not asking you to vet. I'm just going to ask if you're familiar with the IEEE cyber suite that's shown.

A I'm not.

Q Okay. If you go to page 23, there's a conclusion there. Do you agree with that conclusion?

A Page 23, you say?

Q Yes.

A Here we go. I do not have enough technical knowledge about this particular conclusion to make a comment one way or the another.

Q Okay. So you wouldn't be able to comment on if in your professional opinion as a cybersecurity expert, the IEEE 2030.5 communication protocol is secure in your mind or not?

A That's correct.

That would be my architects that I have assigned to this project would have studied these types of aspects in depth and would be able to make an assertion on that.

MR. ROBERTS: That completes my questions.

ALJ LIRAG: All right. Let's move on to Mr. Hawiger and Mr. Schlesinger.

MR. GALLO: Your Honor, I have two redirect questions. Should I do them all in one?

ALJ LIRAG: Is it two?

MR. GALLO: It is literally two.

MR. HAWIGER: I will be covering the same topic of ADMS. I don't know if that changes your --

MR. GALLO: This is purely about things that were a little unclear in the opening testimony.

ALJ LIRAG: All right. Let's have it.

REDIRECT EXAMINATION

BY MR. GALLO:

Q Mr. Nakayama, earlier today Mr. Roberts asked you a question about the status of ADMS hardware and software procurement, and you said you were not sure what stage those efforts were; is that correct?

A That is correct.

Q Can I direct your attention to page 1943 of your rebuttal testimony.

A I'm there.

Q And specifically to Answer 62.

A Yes.

Q And can you review that and let me know if that refreshes your recollection about the status of those efforts.

A Yes, it does. Thank you.

Q Could you tell me what those procurement -- where the procurement efforts are right now?

A Yes. As noted on line 18 through 21: "The final negotiated contract value for software licensing and maintenance from PG&E's chosen ADMS software vendor, and, two, a preliminary hardware price estimate from PG&E's preferred hardware vendor."

Q So there's been a final negotiated contract with the software vendor?

A That is correct.

Q Thank you, Mr. Nakayama.

The second question: Back to the Public Advocates supporting cross-exam exhibit. It's not labeled. It's cross-examination reference documents and in particular starting on page 9, the Response to Public Advocates 225, Question 1. Are you there?

A Yes.

Q Now, this response discusses testing modes for point-to-point testing, and Mr. Roberts earlier on asked you whether the

listen mode and simulation back-office test, tested all the way to the display screen. You said you thought so, but weren't sure earlier today; is that correct?

A That is correct.

Q And would you like to clarify your comments.

A Yes. It does go back to the actual screen. If we go to my rebuttal testimony, 19-45, lines 20 through 23, of the Rebuttal Testimony, PG&E states the following: "PG&E also notes that Cal Advocates' recommendation erroneously assumes that PG&E's SCADA point-to-point testing plan does not already provide for complete end-to-end, point-to-point testing from the field end point to the SCADA display screen. This evidences that our point-to-point testing plan goes all the way to the SCADA display screen."

MR. GALLO: Thank you, Mr. Nakayama. That's all the questions I have.

ALJ LIRAG: Any questions, Mr. Roberts?

MR. ROBERTS: Yes.

RECROSS-EXAMINATION

BY MR. ROBERTS:

Q The first response on page 43, you've clarified that you have a contract for

software.

So, now, I think this is a question to Mr. Petrakis. Does that mean that the hardware estimate you've provided is based on that vendor's cost quote?

WITNESS PETRAKIS: Preliminary estimate. Until we completely size up what is needed to the design phase of the application, there's going to be adjustments to the quote.

Q So the hardware quote we have to date --

A Is preliminary.

Q Thank you.

And then on page 1945, you're saying that Cal Advocates erroneously assumed that point-to-point testing doesn't provide complete end-to-end and then point-to-point testing. Your back office testing is not doing an end-to-end test from the field to the screen - correct - except in the 10 to 15 percent of cases where you're field testing?

WITNESS NAKAYAMA: I'm sorry. Say that one more time.

Q Maybe I can ask it -- to clarify, when you do the 10 to 15 percent of true end-to-end testing, you're testing from the field to the SCADA display screen; correct?

A I would argue that the listen mode also tests from the field in terms of those are actual data points that are coming from field devices to our back office.

The field testing that you are talking about on the point-to-point with the 10 to 15 percent is where a technician will actually go out, create a value at the actual location of the field device, by which it will flow through the communication network back to the SCADA databases for recording.

Q Well, I understand what the end-to-end point test does. I'm still unclear on the simulation mode because you couldn't say where the signal was input, but I wanted to clarify a different point.

It's very clear that an end-to-end test tests from the field to the display screen. And I just wanted to clarify that what I heard in your redirect is that both the listen mode and the simulation-mode, back-office testing, the end point is the SCADA display screen in the DCC?

A That's correct.

ALJ LIRAG: I think -- let's move on to Mr. Hawiger, please.

Mr. Hawiger: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. HAWIGER:

Q Good afternoon, gentlemen. I'm Marcel Hawiger with the Utility Reform Network, and I'll be using some of the same acronyms that Mr. Roberts used. Before we start, may I have a moment off the record?

ALJ LIRAG: Off the record.

(Off the record.)

ALJ LIRAG: Back on the record.

Please proceed.

Mr. Hawiger: Thank you.

Q And for the record the attachments for the prepared testimony of Paul Alvarez and Dennis Stephens have not been identified for the record. So I will refer to this document as the Stephens Attachment for clarity; is that okay?

WITNESS NAKAYAMA: Yes.

Q And these attachments all have a Bates page stamped page number on the bottom, and I'll refer to those pages, not to the pages of any individual document; okay?

A Okay.

Q So let me ask you to turn to page 2 of the Stephens Attachment, and there is a document called: "The Major Project Business Case;" do you see that?

A Yes.

Q Is this an internal business case for the ADMS component of the integrated grid platform?

A It covers both the ADMS project and the communications portion, communications infrastructure portion, of the ADMS, the IDP Chapter we were discussing today.

Q When was this business case document created?

A When?

Q Let me be more specific. On the next page, page 3, there's a date March 28, 2019. Is that the date when this business case was produced?

A I believe so. I was not actually present when this was produced.

Q So this document, this business case document, was prepared after the submission of PG&E's testimony; is that right?

A That's correct.

Q And let me ask you to turn to page 4, which is the first page of the business case. It's -- there's no line numbers. I'll try to point to a specific section if I need you to refer to a particular section of the document.

A Okay.

Q Looking at the first paragraph in Section A, am I correct that this document was presented to the Executive Project Committee in February of 2019?

A As it's stated in the second paragraph.

Q Okay. And in the very bottom part of the document, it states that it will be provided to the board of directors for approval in May 2019. Do you see that?

A That is correct.

Q Did that happen?

A I do not know.

Q Do you know whether the board of directors approved this ADMS, this business case?

A As I was not a part of the business case or the team during that period of time, I do not have the answer to that question.]

Q Do you know whether there's been any approval, internal approval for the IGP Program?

WITNESS NAKAYAMA: I believe there has.

Q Okay. Is it correct that the -- and I'll just IGP for Integrated Grid Platform -- is it correct that IGP consists two major work streams?

A Three.
Q Three. Okay. What are those three work streams?
A It is the ADMS from a software and hardware implementation, the communications network infrastructure as described by Nick Petrakis, as well as the cyber security aspects as described by Martin Strasburger.
Q And let me ask you to turn to page 5, the next page of the business case?
A Okay.
Q And is it correct that that table on top shows the costs forecasts for the ADMS and communications infrastructure portions of the IGP?
A That is correct.
Q And am I correct that the total forecast for the ADMS in the expected case is $291.3 million?
A That is correct.
Q What is the amount requested -- PG&E is requesting toward the ADMS in this rate case?
ALJ LIRAG: Let's go off the record.
(Off the record.)
ALJ LIRAG: Let's go back on the record.
WITNESS NAKAYAMA: Thank you. Okay. I

am there.
BY MR. HAWIGER:
Q What is the approximate total -- is the total being requested for the ADMS in this rate case showing from that Table 19-5 on page 19-19 of Exhibit-17?
A For the ADMS portion, yes.
Q Okay. What is the approximate total for all of those years shown in the table?
A I'd have to do the calculation in terms of the total cost for all of the years.
Q I've added the numbers. Would you agree, subject to check, that the total shown in row 3 for those years is approximately $160 million?
A Subject to check.
Q So approximately $130 million of the expected case to complete ADMS would be spent after the rate case; correct?
A Would be spent after the rate case?
Q Okay. Am I -- do I assume correctly given the business case forecast of $291 million and the request in the rate case of $160 million that the remainder is money that would be spent after this rate case period?
A It could be spent within as well.

Q Okay. Does PG&E expect to include the remaining costs in future rate cases?

A We discussed that, I believe, in testimony approximately 96 percent of the costs will be covered within this rate case of what is expected to be spent, and the remaining will be covered in future rate cases.

Q For the ADMS portion specifically?

A That is correct.

Q So can you explain to me then what -- when you say -- are you saying that 96 percent of that -- 96 percent of the $291 million shown in this business case on page 5 or of some other number?

A It was around the GRC request.

Q So you're saying 96 percent of the those -- the $160 million shown in Table 19-5; correct?

A That is correct.

Q Would you agree that that portion in the rate case does not cover the full work required to complete the ADMS?

A It is covered.

Q The entire ADMS?

A The entire ADMS.

Q Okay. Let me ask you to then turn to -- so I am sorry. What is your

interpretation of that $291.3 million shown in the table on page 5 of the business case?

A In preparation for a business case, when we prepare the GRC at the time of the request, this business case had not been yet developed. This -- what you are looking at is after the actual GRC presentation had been put together. And also follows the methodologies for how to put together a more detailed estimate of the cost including contingencies and risk.

Q So which number is a more accurate forecast of the total cost to actually complete the ADMS so it is used and useful? Is it the 209 -- $291 million in this business case? Or the amounts shown in your Table 19-5?

A The expected case is based upon a certain percentage and is a calculated value based upon risk as well that's also added into this. So the number of dollars that could be spent on this project could be below 291, it could be at 291, it could be above.

Q Let me ask you to turn -- one moment. We'll come back to that.

Let me ask you to turn to page 6 of the business case.

A Okay.

Q And look at towards the -- one moment -- towards the bottom of the document just below the blackouts in the last blackout section?

A Okay.

Q The second bullet point discusses replacing the FLISR, F-L-I-S-R, System. Do you see that?

A Yes, I see that.

Q How old is the FLISR System?

A I believe we state the FLISR age in a different data response. But I do not know the exact age of the FLISR Yukon system, the wire phase system.

Q Okay. Going back for a moment to the table again to page 5 of the business case, what does the communications infrastructure work stream consist of just very generally?

A For that I'll turn that over to Nick Petrakis.

WITNESS PETRAKIS: So the communication infrastructure has roughly four components. One is going to be enabling the ADMS application in the DCCs from a networking perspective. That's one component in making sure that it can -- all that application can integrate with the remaining parts in the

data centers. That's Number 1.

Number 2, it will install and continue the installation on our field area network as a migration from old SCADA networks to this new field area network.

Number 3, it will also go through the entire system and look at a very old -- 20-year old architecture of the old SCADA network and beef up its reliability. There's a lot of points of failure, single points of failure, and more devices are going to be added on. So it's crucial that we improve its reliability.

And the last element looks at the substation as was discussed earlier this morning about a converged infrastructure in the substation which has to do with all of the various applications that come into the substation are not in separate servers. So this will bring in a one common platform to house as many applications as possible on to that platform. These are the four major components of the communication infrastructure.

Q Does one of those components include installation of the Field Area Network, or "FAN," communication system?

A That's correct. That's one of

them.

Q Which part -- which of those four elements consists -- excuse me -- includes installing the FAN network?

A I believe I mentioned it in the first order of the Field Area Network.

Q Okay. Thank you. Is the communications infrastructure required in order for the ADMS to work?

A It is not a direct requirement. It is a reliability dependency. But it does offer the capacity required for future integration of field equipment in it.

Q Can you achieve the benefits of the ADMS without installing the communications infrastructure?

A The benefits of the case are many. I'm not sure which portion of the ADMS you are referring to.

Q Let me ask you to look at specifically page 9 of the business case. And look at the very first sentence at the top of the page that states:

> The full benefits of ADMS are not achievable without the foundational IGP communications infrastructure investments.

A Okay. So what this refers to as I

mentioned in one of the parts of the infracture is the enablement of the ADMS within the DCC, the Distribution Control Center. So that's one aspect.

Other benefits that are required for the system reliability to become better, we have a lot of points of failure out there. It is very advantageous that we start with a clean slate with a reliable network when we upgrade also the back end application.

Q Can you achieve the operational benefit of having automated switching recommendations with the ADMS without the communications infrastructure?

A I'm not sure.

WITNESS NAKAYAMA: The automated switching systems require both the reliable SCADA data and my data, full calculations to be able to automatically create a switching instruction.

Having a stable and reliable SCADA backhaul to bring that information into the ADMS platform is necessary in order for us to achieve the automated switching capabilities, power flow capabilities, data estimation capabilities of the ADMS software.

Q So in that answer, does that mean -- when you say the required backhaul

capabilities are required, does that mean that the communications infrastructure investment as described in this document is required for these capabilities?

A It is needed, yes, to grab the full IGP benefit as designated in this business case.

Q Okay. Let me ask you to turn to page 10 of the business case.

I'm sorry. Before I go there, the business case uses the term "gate." Can you explain what a gate is from a project management perspective?

A So, Nick, maybe you can talk a little bit about the gating process itself from a information technology perspective, and I can talk about it from a business perspective.

WITNESS PETRAKIS: In general you're right. It's a project management, you know, guideline and process that we have. For this -- such a large project, complex project. The gated funding for the gated processes assured that various stages are achieving the result financially, the desired outcome of the project. And once achieved, they can get back to submitting the next gate, if you will, to be reviewed to proceed with the rest

of the parts of the project.

WITNESS NAKAYAMA: From a business perspective, if you'll take a look at the various aspects of the ADMS business case, they actually describe in each section what the gate that is required to accomplish within that particular area to move on to the next gate to get all the way through Gate 4 for a project of this size to be successful.

Q Okay. So let me ask you to look at page 12 of the business case. And there's a table at the bottom with the heading "Project Schedule." Do you see that?

A Yes.

Q Is this the most current schedule for the ADMS project?

A There may be a more up to date schedule carried by the project management office for the ADMS implementation team that is more up to date than what we show here.

Q And is it correct that this business case covers only Gate 1 of the approval and implementation process?

A It approves up to the Gate 1 funding levels for the ADMS business case.

Q Has PG&E completed or sought approval for the Gates 2 through 4?

A If you take a look at the actual

schedule listed in here, Gate 2 is June 2020; Gate 3 is October 21st. Without having looked at the actual project management office schedule that is contained by the project management team, I cannot confirm whether these dates are still holding true or not. But that is what is listed in the business case.

Q Is it correct that much of the work on the ADMS will be done in Gates 2, 3, and 4?

A If you take a look at the funding in terms of the dollar amounts, you'll notice that the majority of the funding for the ADMS business case is represented in Gate 3 for this multiyear project.

Q Okay. And Gate 3 is scheduled for completion -- according to table on the next page 13 -- by March of 2023; correct?

A That is correct.

Q And Gate 4 is scheduled for completion by December 2024; correct?

A That is correct.

Q You know, I don't want to belabor this too much. But I do need to ask you. I'm a little confused about your answer about the costs?

A Absolutely.

Q Are you saying -- is your testimony that the costs for the ADMS Gates 1 through 4 are contained in the forecast in your direct testimony for this rate case?

A Can you say that question again?

Q Is it your testimony that the costs for the full ADMS project Gates 1 through 4 is contained in the -- in its entirety in those costs shown in your table in your direct testimony for the cost forecasted during this rate case?

A Much of that depends on the expected risks on whether they actually occur or not during this -- the actual implementation of the ADMS implementation.

There is also a -- if you take a look at how they're calculated, you'll see that there is also an Ace cost estimate on certainty that's also embedded in those numbers as well.

Q Does the expected costs of $291 million in this document include risk allowances?

A The expected risk allowance.

Q And what does the contingency cover then?

A The contingency covers -- if you take a look at the high case, you will look

at pages Number 16 and beyond, which talks about the risks and the impacts on costs that are therefore contained in the high case. Which also contains a case mechanism to place additional uncertainty of 50 percent on top of the cost.

Q So just to cut to the chase if I ask you to turn to page 23, that table shows total expected risk of $96 million for all the risks identified for various gates in the project; right?

A That is what is shown here, yes.

Q So are you saying that that $96 million does that represent the difference between the costs in your rate case forecast versus the cost in this business case document?

A If you take a look, what this represents best case plus the gate expected risk plus the expected case cost estimate uncertainty. That gets you to the $96 million as documented here in the business case.

Q Let me try a different way. Is it your testimony that the $291 million shown on page 5 of this document that that covers all of the same work that's in your business -- in your testimony, but it includes additional

risk allowances, and that's the only difference?

A As to whether it is only the risk allowances that are bumping up the cost, I cannot speak to. But in terms of the actual scope of the project, the scope of the project contained in the business case is also reflected in the GRC.

Q Through Gates 4 through completion of the project so that it is complete through used and useful?

A Again, the actual business case covers years that are also outside of the actual rate case. Since the rate case only covers up until 2023, this project closeout is not until 2024 expected.

Q Well, that's exactly my question, Mr. Nakayama. Are there costs that are -- will be necessary to complete the project until closeout beyond this rate case?

A We believe that there will be costs associated with the ADMS project into 2024, yes.

Q Okay. And what is the -- so what is the amount of expected costs -- this rate case covers through 2022; is that right? Which rate case am I in now?

A Yes. 2022.

Q What is the expected portion of the costs for 2023 and 2024?

A If you take a look at the difference in Gate 3 for 2021 and Gate 4 on page 4, you will see a total amount on the authorized amount for $107.1 million.

Q Yes.

A So if I read from this business case, that is the authorized amount that will be allowed to spend -- authorized, authorized to spend which is included of the expected case plus the contingency.

Q For Gate 4. So you're saying it's the Gate 4 costs as shown on that table that will be costs in addition to the cost in the rate case?

A Again, it does factor in the $42 million contingency, which PG&E does not believe it will -- which we'll actually have to accumulate every single one of the risk allowances on the risk table to actually hit every single one of the $42.7 million.

Q What is your -- why would not some of the Gate 3 costs be incurred after the rate case since Gate 3 does not complete until March of 2023?

A It is possible that some of those costs will land in 2023.

Q Okay. And if I look at page -- excuse me. If I ask you to turn to -- back to page 23 with the total expected risk costs, I gather that the very bottom of the page there's a sentence that does indicate that as of the date of this document, there was an expectation that there would be additional costs to complete the ADMS into future GRCs. Would you agree with that?

A I see that.

Q Okay. So I think based on what you just testified about the schedule of the project, you would agree with that; is that right?

A We have always stated that the costs of the ADMS project will go past the current GRC forecast.

Q Okay. And I don't want to take too long on this, but just so we understand this risk allowance table, let me ask you just for example to look -- go to the very beginning of this risk allowance table, which is at page 16 and just below the heading of the table it states, "Probability of occurrence, difficulty of time of the detection, impact to scope or schedule." Do you see that?

A I see that.

Q And are those the three metrics by

which each risk is evaluated in the tables?

A That is how we identify the risks that are going to be placed into the table should they have a probability occurrence and impact to scope and schedule. Yes, that is correct.

Q But then under each gate, there is -- there are blocks with numbers. So for example the first one under Gate 1 is people availability during ADMS design. Is it correct that each of those numbers is a risk in that gate?

A Each of those numbers is a risk in the gate that you can actually see how it is calculated based on a cost-impact assumption within each of those risk categories. For example you will see the $5.1 million is calculated based upon a cost impact assumptions that are appointed in each one of those areas.

Q And just to be clear. If I go to the end of the next page in the bottom of that block for their first risk --

A Yes.

Q -- there are three letters "HLH." What is the meaning of those?

A I am sorry. Where are you?

Q Page 17. The very bottom of

that --

A I see.

Q -- first risk. Just above the blackout there are the letters HLH.

A That is correct.

Q What do those indicate?

A Those are based upon the three probability -- the three risks -- underneath the risk allowance table will define the probability of occurrence, the difficulty of timely detection, and the impact to scope and schedule. What type of impacts it will have.

Q They correspond in order to the three risks that are identified at the top of the table?

A That is correct.

Q Okay. Then I believe if you turn to -- forward to page 22, there you explain how -- the probability that is assigned to each of those H, L, or M is the other probability identifier; correct?

A Are you talking about what we have on the 60 percent confidence level?

Q I'm talking about the base case scenario plus the -- just above -- excuse me. Just below the row that says "Total Risk Allowance $289 million." Do you see that?

A Yes. Right here.

Q The $289 million represents the full forecast cost of all the risks for all the gates; correct?

A That is correct.

Q That's not included in your -- any of your cost forecasts in this rate case is it?

A This risk allowance calculation was not a part of the GRC forecast in that it was created specifically for the business case document itself.

Q Okay. So -- and then the business case takes that total $289 million and assigns some probabilities to each risk. And just below that, it explains that there are likelihood factors of 2 -- .2, .5, and .8 used for the low, medium, and high scenarios. Do you see that?

A That is correct.

Q And that's what's done on -- if you go to the next page, page 23, am I correct that in that page it summarizes all of those numbers, the risk numbers, but then discounts them by those likelihoods?

A That is correct.

Q And by the way, what are the bases for these -- the risk numbers themselves? How did you forecast the risk numbers?

A As I wasn't a part of the actual development of the business case, I do not know how the actual risk numbers were associated.

Q Okay.]

Let me ask you -- I'm not going to go through -- I'll stop on that for sake of time. Let me ask you to turn back to page 18 of the business case.

And if you could look at the paragraph just below the heading Gate 3, and the first risk fact in Gate 3 additional cost for SCADA point-to-point testing.

A Yes.

Q Am I correct that that paragraph indicates that the forecast -- base case forecast assumes 12.5 percent of devices will be tested?

A From a field perspective.

Q Is that the basic -- does the 12.5 percent represent the sample plan that you and Mr. Roberts discussed at length?

A It's in line with the 10 to 15 percent cut down the middle.

Q And there is, however, a risk that the date migration in going from RT-SCADA to the new SCADA will introduce more errors and will require greater point-to-point testing,

correct?

A That is a risk identified, yes.

Q In fact, that's kind of the largest risk in terms -- single risk of terms of dollar value; is it not?

A I'd have to subject to confirm. Gate 1 total risk value is at 48.6, but in terms of each individual item, I believe that is true.

Q I'm sorry. Yeah, that table -- I'll withdraw that question anyway.

ALJ LIRAG: Why don't we take a 10-minute break right now, and let's be back at 2:50.

So off the record.

(Off the record.)

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

We were discussing the remaining time, and I think, for our convenience, maybe not Mr. Hawiger's convenience, what -- we've decided that Mr. Schlesinger will do cross now, and then let's check again in the next 30 minutes. And then the idea is to have Mr. Hawiger consume the remaining time for the day.

All right. Let's go, Mr. Schlesinger.

MR. SCHLESINGER: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. SCHLESINGER:

Q Good afternoon, Panel. All of my questions today are for Mr. Nakayama and his rebuttal testimony. So if you could please have that in front of you.

A Okay.

Q In addition, Joint CCAs have marked for admission Hearing Exhibits 121, 122 and 123. So if you could also please have that in front of you.

A If you can refer, again, to 121, 122 and 123 as the data request numbers, that would be helpful for me.

Q Absolutely. 121 is Data Request JCCA 15-17.

A That is 121. Thank you.

Q 122 is 17-17.

A 17 question which number?

Q Joint CCA 17-17 -- or 17-7. Sorry.

A Oh, okay. And that is which number?

Q 122.

A Thank you.

Q And 123 is the MIT report.

A Thank you. That's helpful.

Q Great. So let's just take a minute to ground ourselves here and make sure we all know what we're talking about. We're specifically talking about the cost recovery that the company has requested for investments in advanced distribution management system, or ADMS, which you've been talking about all morning, yes?

A Yes.

Q The Joint CCAs, via the testimony of Mr. Ghidossi, raised ownership issues regarding realtime data that will be available as a result of these ADMS and some of the other IGP investments, right?

A Okay.

Q The Joint CCA proposal, again, just to make sure we're on the same page, is that Mr. Ghidossi suggests that the realtime data should be shared with CCAs and other entities with load serving obligations, right?

A Yes.

Q Mr. Ghidossi essentially suggests two basic reasons to do this: One is to help better cite distributed energy resources, correct?

A Correct.

Q And by that we just mean making sure that there's available capacity on the

distribution system, right?

A Okay.

Q So we're basically talking about hosting capacity analyses?

A That is what the ICA represents.

Q Great. The second reason is to enable more efficient deployment of DERs to meet grid constraints in realtime, right?

A Can you refer to the portion of his testimony that refers to that.

Q Can I refer -- well, how about I do one better. Can you -- well, I'll need to introduce an impeachment exhibit. Do you have Mr. Ghidossi's testimony in front of you?

A I do.

Q Well, then I can't -- that would be at page 6 of Mr. Ghidossi's testimony. Oh, I'm sorry. Page 8. So his Section B is about addressing DER operational constraints of realtime grid modernization data, yes?

A I see that.

Q Okay. That's, again, about enabling DERs to meet grid constraints, right? That's how you refer to a similar concept in your testimony, meaning grid constraints?

A Mr. Ghidossi has four bullet points

as how he defines examples of operational grid constraints. If those are the four bullet points that you are referring to, I read that here.

Q Can you refer me now?

A That is on the same page 8. "What are some examples of DER operational constraints?" Mr. Ghidossi talks about curtailment of DER production for future outages. Do you see what I'm referring to?

Q Yes. And yes. The answer to your question is yes that is what I'm referring to.

A Okay.

Q So you agree with me that is one of the benefits here of ADMS, and in fact, one that you testified to, I believe, on page 19-16 of your testimony generally that investments in the ADMS will lead to benefits and improvements in capabilities on the distribution system including this idea of realtime DER dispatch, right?

A That is correct.

Q So, again, just to be really clear about what we're talking about, we're saying that -- or you're saying that ADMS enables DERs to be dispatched exactly when they are needed, correct?

A In terms of exactly when they are needed, the current process that we have in the distribution resource plan is to create a schedule for the DERs to perform a certain function at a certain time according to a contract that they have that they would then be enabled to reduce the amount of load on a peak feeder to be able to defer a capacity. If that's what you're talking to, that is true.

Q So I think what you're talking about is the way that PG&E envisionings (sic) this market to happen. I'm not asking about contracts or anything like that. I'm just saying that the ADMS system will enable -- and I don't think I asked this quite precisely enough. So let me try again.

The ADMS system will provide the realtime data that is necessary to identify grid constraints like the bullets we just identified so that DERs can respond?

A Grid constraints currently are identified through the capacity planning process in terms of being able to see what type of upgrades are required on the system. That is done on an annual basis.

Q Let me refer you to your testimony at page 19-16.

A Yes.

Q The last bullet point that you have on that page beginning at line 20 -- well, taking one step back. These bullets -- in these bullets, you identify present and future benefits associated with realtime grid modelling capabilities of ADMS. And then the last bullet is realization of value streams associated with the proactive dispatch of DER to mitigate realtime and forecasted grid constraints identified via the ADMS, correct?

A That is correct.

Q So, again, the question I'm asking you is really just to confirm that what this means is that the ADMS will enable the identification in realtime of forecasted -- or of grid constraints?

A That is correct.

Q Okay. And in response to that, somebody could deploy a DER to try to address that grid constraint, right?

A That is currently within the DER proceeding to do so.

Q Again, just asking about what's possible, what's technical -- technically possible. Okay. So in terms of this realization of value streams that you talk about, value streams could be monetary,

right?

A Yes, they can.

Q So there's potentially money to be made out of deploying DERs to address grid constraints, right?

A If they are cost-effective.

Q Okay. And you would agree that that's largely a future benefit, right?

A The current non-wires alternative proceeding within the DRP shows there may be cost-effective solutions on utilizing DERs non-constrained feeders to be able to eliminate or defer capacity projects today.

Q Okay. But wouldn't you agree that a market would need to be established for distribution grid services, one that doesn't currently exist, in order to fully monetize the benefits?

A To fully monetize the benefits. So I want to see if I can gain a little clarity. Distribution grid services through the DRP proceeding is actually possible today. Now, to realize the full IGP 10-year vision, as described in my testimony, future investments will need to be made as well as policy decisions will need to be made at the Commission levels as well as with the entire state, with Joint IOUs to determine what that

marketplace may look like in the future.

Q Okay. So wouldn't you agree with me that the ability to monetize these value streams would be greatly enhanced by the establishment of a market?

A I believe it will be enhanced by the -- by an establishment of a marketplace, yes.

Q Greatly enhanced?

A I don't know what the value of "greatly" means.

MR. SCHLESINGER: Your Honor, may I approach?

ALJ LIRAG: Any objections?

MR. SCHLESINGER: I have an impeachment exhibit.

ALJ LIRAG: All right.

Off the record.

(Off the record.)

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

Mr. Schlesinger handed us an exhibit. I will identify it as Exhibit 124, and this is PG&E's response to the Joint CCAs Data Request 17, Question 1.

(Exhibit No. 124 was marked for identification.)

ALJ LIRAG: And this is being used as

an impeachment document. So it's only being distributed -- you're seeing this for the first time? Is that correct, Mr. Nakayama -- or Mr. Gallo.

MR. GALLO: (Nodding head.)

ALJ LIRAG: Please proceed, Mr. Schlesinger.

BY MR. SCHLESINGER:

Q Mr. Nakayama, what I've handed you is PG&E's response to Joint CCA-17-1. You're the sponsor of this response, correct?

A Yes.

Q So you have seen this before?

A Yes, I have seen this before.

Q Can you please read -- well, Question C asked you to admit or deny that the value streams identified in the section of testimony you and I were just describing can be monetized and if denied to please fully explain why they cannot.

Can you please read your answer into the record.

A Yes. "These value streams can be monetized today through mechanisms such as bilateral contracts between the utility and the DER provider. However, the future ability to monetize these value streams will be greatly enhanced by the establishment of

the market for distribution grid services described in PG&E's 10-year grid modernization vision."

Q Okay. Just before I handed you this exhibit, you said you didn't know what "greatly" meant. What did you mean by greatly?

A I can't put a dollar amount to the word "greatly."

Q Okay.

ALJ LIRAG: All right. Proceed.

BY MR. SCHLESINGER:

Q Moving on. So on -- PG&E's position in response to the Joint CCAs' position about making this data available is that the Commission should not require PG&E to share its realtime data without first considering the benefits and costs and security risks of such a proposal.

A That is correct.

Q And so essentially you're saying that the PUC needs to weigh the costs and benefits of sharing this data?

A I believe that the PUC as well as all California IOUs need to determine exactly what markets they are establishing in the general framework of DERs providing services for both the transmission and the

distribution interfaces of the grid.

Q Mr. Nakayama, most of my questions are "yes" or "no." This will go a lot faster if we just stick to that format. And if there's something that you need to clarify, I'm sure your counsel will be happy to ask you on redirect. So, again, "yes" or "no," you're suggesting --

MR. GALLO: Your Honor, I object to this line of badgering. That question clearly called for clarification, and he gave it. So he's going to answer how he wants to answer.

ALJ LIRAG: I think he's referring to the next set of questions that are answerable by mostly "yes" or "no." So let's see how it goes.

BY MR. SCHLESINGER:

Q It's your position that the Commission should not weigh the costs and benefits of data sharing in this proceeding, right?

A Can you make that question a little more clearer.

Q Do you think the Commission should weigh the costs and benefits in this proceeding?

A No.

Q You stated in discovery that they should wait a few years, right?

A They should wait until it is appropriate.

Q Okay. And -- okay.

ALJ LIRAG: Also, Mr. Nakayama, don't be obligated to answer simply by "yes" or "no" if you feel that the answer is not just a "yes" or "no."

WITNESS NAKAYAMA: Thank you.

ALJ LIRAG: Let's proceed, Mr. Schlesinger.

BY MR. SCHLESINGER:

Q But it is true that the company is seeking a significant amount of cost recovery in this proceeding before making those cost-benefit analyses on data sharing, right?

A This is to create a platform for those future marketplaces that are not yet defined.

Q Okay. Okay. Despite your position that we consider these costs and benefits later, you nevertheless, in your testimony, provide several reasons why you think the benefits of sharing realtime data are questionable, right?

A We do have that in the responses that you gave us questions for, yes.

Q Actually, I'm, again, talking about your rebuttal testimony starting at page 19-20.

A Yes. It was in both.

Q Okay. At line 11, you say, "The benefits of realtime data sharing are questionable." Then you give a list of reasons, and I want to explore some of those with you right now.

A Okay. Can you repeat the page number again so I can refer back.

Q Sure. It's page 19-20.

A Thank you.

Q So the first reason you provide is you say, PG&E already publically shares locational net benefits analysis, integration capacity analysis, or ICA, and grid needs assessments?

A That is correct.

Q You would agree with me that each of those reports or projects relate to the sighting of DERs primarily, right?

A That is correct.

Q Okay. Just so we're all on the same page, the ICA map is a map that is accessible to registered entities and illustrates hosting capacity by feeder, right?

A That is -- not just by feeder but by line location, yes, that's --

Q By line location as well. Okay. And you would agree that the CCA recommendation on this point is that PG&E update these maps on a weekly basis, right?

A I have seen that.

Q Okay. And so we're not requesting that these be updated in realtime, right?

A You are not.

Q When Mr. Ghidossi filed his testimony, the last update to that ICA map had been made on December of 2018?

A That is correct.

Q And has the company updated the ICA map since direct testimony was filed?

A Not yet.

Q Not yet. Okay. So the second reason -- getting back to why the Commission should -- or why the benefits of realtime data sharing are questionable, the second reason you provide is that Joint CCAs' vision for a distribution services market wherein realtime data is shared with numerous entities jointly managing realtime dispatch of DER in response to grid constraints is both impractical and offers no advantages relative to a centrally managed market

featuring DER dispatch governed by optimization algorithms.

A I see that.

Q So that's a bit to unpack here, but let's give it a try. I think what you're saying is that PG&E favors a centrally managed market managed by a single entity for any future distribution services market, right?

A I believe that the California IOUs as well as the CPUC would need to make that determination on what is best for the state.

Q So it is not your -- it's not PG&E's position today that a centrally managed marked is best way to go?

A I believe there needs to be a discussion further between the IOUs, the CPUC, the California ISO and other entities to determine exactly what is the right way to go about whether it is a centralized or a decentralized marketplace.

Q So you would agree with me that the jury is still out on what kind of a market structure California is going to have moving forward?

A I believe that there are research papers out there that dictate that a centralized distribution marketplace is a

preferred method for a marketplace of this nature. I believe that we have had a response to one of your questions that stated many citings externally that spoke to that preference of a centralized distribution marketplace in one single entity as it being advantageous.

Q But you would agree that that is a significant policy question that still has a question mark at the end?

A That is outside of this GRC proceeding.

Q So, yes, that is outside of this GRC proceeding?

A That is correct.

Q And you did just reference some reports, and we, in fact, asked you in discovery whether you had any reports or studies that discussed the relative advantages and disadvantages of centrally managed distribution services markets versus those that are not. And in response, you provided 15-7 -- JCC 15-7 marked as Hearing Exhibit 121.

A Yes, we did.

Q And the first report that you cited to here is this MIT Utility of the Future Report?

A Yes.
Q And that has been premarked as Exhibit 123, and you have that in front of you?
A I do.
Q Great. It's about two-and-a-half inches thick. Pretty long report. Did you read the whole thing?
A I did not read the whole thing.
Q Did you read a lot of it?
A I read portions of it, yes, but I cannot say that I memorized this entire two-and-a-half-inch document.
Q You would agree with me that it addresses many, many topics, right?
A It does.
Q And it doesn't necessarily come down on a recommendation for one particular market model over another?
A It says that further discussion is required, but it also talks through various models of which a centralized market platform is one of them.
Q It talks through various models of markets. I think we'll address in briefs whether they are all centrally managed or not. But do you know whether the report addresses rules that may be necessary to

prevent undue market dominance and exploitation of market power?

A Undue dominance and exploitation of market power. Can you point me to the location where that is explicitly stated.

Q Absolutely. Page 46. Oh. Look at that. It's actually highlighted. That is my highlighting, for the record. I apologize for the version control.

A I see this.

Q So you would you agree with me that the report addresses rules that may be necessary to prevent undue market dominance and exploitation of market power?

A Similar to how their transmission system works, it says here, in specific, "Only if adequate rules are in place to prevent undue market dominance." It does talk about adequate rules to be put into place for that to occur.

Q Okay. And do you know whether the report addresses the need for aggregators of DER resources to compete efficiently with conventional resources?

A I believe it does talk through that. I can't remember exactly which page that's on.

Q For the record, it's page 57, but

we don't need to go there. I'm happy to move on and address it in briefing.

Okay. Let's talk about the competitive advantage concerns that Mr. Ghidossi raised. Would you agree with me that realtime data is necessary to address realtime grid constraints?

A Yes.

Q Would you agree with me that parties in possession of that realtime data would be in the best position to respond to any such grid constraints?

A Define "respond."

Q Deploy a DER.

A We would deploy a request. That doesn't necessarily meaning deploying a specific DER.

Q I'm not asking all about what PG&E would do. I'm specifically asking whether having that realtime data would make it -- is necessary for somebody to deploy a DER?

A Let me see if I can clarify. In my experience as a distribution operator, I would say that we would -- distribution operator would be in the best position to identify grid constraints that would need to be mitigated in realtime. Whether that's done by DERs or whether it's done by

something else, they would identify the need.

Q So I believe you're saying that you think a grid operator would be a great person to do that, and that's fine. But would you agree with me that in order to respond a grid operator or anyone else would need to have the realtime data?

A Yes.

Q And we just talked about the fact that there's a future market and potentially a lot of money to be made on that?

A We talked about a future market. Whether it was cost-effective is still yet to be determined.

Q Well, let me ask you this: If PG&E were the only party in possession of that realtime data, do you think it would have a competitive advantage in some future market?

A No.

Q Okay. And I believe the reason that you're saying no was provided to Joint CCAs in their -- in your response to Question 1707(b), right? Do you recall that?

MR. SCHLESINGER: That's an impeachment exhibit. So may I approach, your Honor?

ALJ LIRAG: All right.

Off the record.

(Off the record.)

ALJ LIRAG: On the record.

So Mr. Schlesinger, how much longer do you think you'll need?

MR. SCHLESINGER: Five, ten minutes, at the most. Ten, at the most.

ALJ LIRAG: All right. Let's proceed.

MR. SCHLESINGER: Am I close to my half hour?

ALJ LIRAG: Close. Eight minutes to that half hour.

MR. SCHLESINGER: Okay. I should be really close to that.

ALJ LIRAG: All right. Let's go.

BY MR. SCHLESINGER:

Q So we are at Exhibit 123, which is PG&E's response to Joint CCA --

ALJ LIRAG: It should be Exhibit 122.

MR. SCHLESINGER: 122. Thank you.

ALJ LIRAG: 123 is the report. All right. Let's proceed.

BY MR. SCHLESINGER:

Q That's response to Joint CCA 17-17, yes?

A 17-07.

Q Mm-hmm. And I had just asked you whether PG&E would have a competitive advantage, which is very similar to the question that you were asked in part B of

this discovery response. Do you agree?

A That -- I agree.

Q And so the answer that you provided is that you don't think, as you just said, that they would have a competitive advantage because market design mechanisms exist to prevent PG&E from being advantaged based upon a possible role in administering a future market. And then you go on to provide an example of a FERC order that requires some procedures to ensure that there's no market manipulation, right?

A That is correct. That exists within PG&E today for the transmission system.

Q So FERC imposed this mechanism via an order through some proceeding?

A FERC has Order No. 17 -- 717 to ensure that that occurs.

Q Do you know whether the CPUC has put in place any market mechanisms that are designed to ensure that PG&E does not manipulate future distribution service markets?

A The market hasn't been designed yet. We haven't had any discussions on these matters at this time.

Q Right. Nevertheless, PG&E is

seeking a significant amount of rate recovery in this proceeding to build out this system?

A The platform by which a market could be created requires an ADMS system to be able to actually facilitate.

Q Mm-hmm. So would you agree with me that essentially the Joint CCAs proposed a market mechanism to address this issue by suggesting that the data be made available to CCAs and other load serving entities?

A You requested realtime data -- I would say that you requested realtime data.

Q Okay. Would you agree with me that CCAs might have an interest in aggregating and deploying DER resources in the future?

A I cannot assume what the CCAs may or may not be interested in.

Q Okay. Would you agree with me, though, that if the CCAs were able to monetize the dispatch of DERs in a distribution service market that that is something that could create revenue streams for CCA customers?

A It is possible.

Q Okay.]

Do you know whether CCAs offer incentive programs today?

A If you are, I'm not familiar.

Q Do you know whether or not CCAs offer DSM, or Demand Response Programs, today?

A I believe they can, but I believe there are rules in place where if you do -- you know what? I'm going to be speaking out of my lane.

Q That's okay.

A There are rules on Demand Response Programs for CCAs.

Q We can address rules and statutes in the briefs for sure.

You would agree with me CCAs are aggregators of generation; right?

A Yes.

Q Do you know whether a CCA today could own a battery and sell ancillary services into the Cal-ISO market?

A They are on the tariff. Yes, they can.

Q One of the last responses that you gave here or rationales here that you gave for denying the Joint CCAs' proposal is that sharing realtime grid data with CCAs and LSCs would raise complex new security and customer privacy issues and would require costly IT integrations with each new entity using realtime data.

So would you say that those are costs that would need to be weighed against any potential benefits of sharing realtime data?

A I believe that that is an accurate depiction.

Q Okay. Would you agree with me that there are generally ways to mitigate any security or cybersecurity issues?

A There are always ways to mitigate cybersecurity issues.

Q And that is, in fact, what Mr. Strasburger does for a living?

A That is what he does for a living.

Q I'm sure he's very busy over at PG&E. Utilities have a lot of data security and cybersecurity issues that they deal with; right?

A I can't speak to how busy or not busy Mr. Strasburger is. I haven't really had a chance to talk to him about that.

WITNESS STRASBURGER: Extremely busy.

MR. SCHLESINGER: Okay. Okay.

Q Would you also agree with me that any costs of integration or cybersecurity costs could potentially be allocated in a way in the future that would keep those costs off of PG&E books?

A I can't speak to cost allocation mechanisms for future proceedings that do not exist today.

Q Do you know whether it's possible to create allocation mechanisms?

A I do not.

MR. SCHLESINGER: You know what? That's all I have for you.

WITNESS NAKAYAMA: Thank you.

ALJ LIRAG: Mr. Gallo, do you have any redirect?

MR. GALLO: I do not, your Honor; however, Mr. Schlesinger introduced two PG&E Data Request Responses to JCCA-17. That question was posed post-rebuttal. There's three additional responses that cover similar questions about policy and the relationship between what JCCA wants and PG&E's responses to their arguments, which I'm hoping to introduce. We can do it another day to save time, but I'd like Mr. Schlesinger to say it's okay, and the three specific responses are JCCA-17-Q3, Q4 and Q5.

MR. SCHLESINGER: Can I take a moment?

ALJ LIRAG: We'll go off the record.

(Off the record.)

ALJ LIRAG: Let's go back on the record. While we were off the record, there

was some discussion about what exhibits will be offered. Let's identify and offer that into evidence during tomorrow's hearing so that we can move on. Let's quickly wrap-up a couple more items. This will take about two minutes.

Mr. Hawiger?

Mr. Hawiger: No problem.

ALJ LIRAG: First, let's have Mr. Schlesinger move the exhibits identified.

So 121 through 124; correct? Unless you don't want 124 because Mr. Nakayama clarified what he means by "greatly enhanced."

MR. SCHLESINGER: At your pleasure, your Honor. I agree. I don't need that.

ALJ LIRAG: So Exhibit 124 is withdrawn.

Any objections to 121, 122 and 123, Mr. Gallo or Ms. Kim, with the caveat that we will identify the three additional exhibits tomorrow.

MR. GALLO: No objections. However, your Honor, I would actually -- no. Never mind. Withdrawn.

ALJ LIRAG: So Exhibits 121, 122 and 123 are received into the record. Let's have Ms. Shek move 115, 116, and 117 into the

record. Is that fine, Ms. Shek?

MS. SHEK: I think we still have an objection to 116.

ALJ LIRAG: Right. We are just moving to have it admitted, and then I'll ask if there are any objections and we'll take that up tomorrow.

MS. SHEK: So 115?

ALJ LIRAG: 115, 116 and 117.

MS. SHEK: Your Honor, may we move those into the record?

ALJ LIRAG: Any objections from PG&E on any of the --

MR. GALLO: I have no objection, after the questioning, on 116; however on 117 --

ALJ LIRAG: Let's not explain.

MR. GALLO: Lacks foundation.

ALJ LIRAG: What about 115?

MR. GALLO: 115 is fine. Thank you.

ALJ LIRAG: Exhibit 115 is received into the record as well as 116.

117 we'll set aside for discussion tomorrow.

What about Exhibit 110, where Mr. Schlesinger had a formula; is there a quick resolution regarding that?

MR. SCHLESINGER: We served that file earlier today and made an Excel format with

all formula intact. So it is now out there. I will bring a CD. We have had a little bit of a hard time tracking down somebody to create that, but I will bring that in in the next few days.

ALJ LIRAG: You'll be back at some other date. So let's take that up during that time. We'll set that aside for now.

MR. SCHLESINGER: Okay. Yeah.

(Exhibit No. 115 was received into evidence.)

(Exhibit No. 116 was received into evidence.)

(Exhibit No. 121 was received into evidence.)

(Exhibit No. 122 was received into evidence.)

(Exhibit No. 123 was received into evidence.)

ALJ LIRAG: Let's go back to Mr. Hawiger. Thank you for accommodating this schedule change.

MR. HAWIGER: No problem.

ALJ LIRAG: We have the remainder of your cross, Mr. Hawiger, and we have until 4:15.

CROSS-EXAMINATION (resumed)

BY MR. HAWIGER:

Q Mr. Nakayama, let me ask you to turn in your rebuttal testimony to

Exhibit 20, page 19-30.

A Okay.

Q Now, in Answer 43, at the bottom of that page, you discuss the issue of the benefits of the ADMS.

A Yes.

Q And there's a dispute. PG&E calculated present value of 717 million for the benefits and TURN calculated the value of 304 million.

A Yes.

Q Before I turn to the benefits, just to close on the costs, if one did a benefit cost analysis, would it be appropriate to look at the present value of the revenue requirements associated with the costs?

A We would look at the present value of the actual cost, not the revenue requirement.

Q And if one looks from a customer perspective, isn't it more appropriate to look at the present value of customer benefits versus present value of revenue requirements?

A Did we not calculate the present value of the customer benefit as a part of question -- the dispute on Question 43?

Q Well, is that 717 million, that's

the net present value?

A That is the present value for the benefit.

Q For the benefits.

And then if you are to compare to the costs, what would you use to compare it to the cost? What cost figure would you use to compare that to?

A Probably the present value of the actual cost of the project itself.

Q And my question is: Why not compare it to the present value of the revenue requirements that customer paid over time?

A I don't have enough understanding of revenue requirements and the costs that are added in for a revenue requirement perspective to be able to answer that sufficiently for your question.

Q So, in terms of the benefits, is it correct that this present value is based on the reliability improvement benefit due to the ADMS?

A That is correct.

Q And if we could go back to the business case in the Stephens Attachments and turn to page 9.

A Okay.

Q I'm sorry. That's at page 10.
A Okay.
Q And so in the box, towards the middle, where it says "IGP Lifetime Financial Benefits," and there's a bullet point labeled "customer," right?
A Yes, I see that.
Q And that's where PG&E explains that it used the SAIDI benefits to calculate the customer benefits; do you see that?
A Per year. Yes.
Q Now, is it correct that PG&E calculated the present value of 717 million by using a term of 20 years for the assets?
A 20 years is how we calculated the financial benefit from 2019 to year 2038.
Q What is the useful life of ADMS software?
A I believe it's 18 years.
Q How old is the DMS software?
A Oh, I don't know. I believe we had a particular data response that talked about when the DMS software was actually installed.
Q Okay.
A But I don't have that year off the top of my head.
Q Is it correct that in order monetize the reliability benefit, PG&E had to

use the results of its Value of Service Study?

A That is correct.

Q And does the Value of Service Study show that the marginal value of lost electric service declines as the outage length increases?

A That is correct.

Q And that's true for all customer classes?

A That is correct.

Q So in order to use the data from the Value of Service Study, PG&E had to quantify their reduction in time for some outages due to the ADMS in some way that corresponds to the numbers in the Value of Service Study?

A That is correct.

Q Okay. This is correct. If you turn to the Stephens Attachments, to page 72.

A Yes. I'm here.

Q Is it correct that this Power Point labeled, "ADMS Customer Reliability Benefits Estimate" explains how PG&E did that -- quantified the reliability benefit in terms of outage reduction?

A In part, I will say that you have to do additional calculations above and

beyond what is presented in here to get to the values that we input into the VOS calculator.

Q Okay. But you take some of the data from here and you input it into the VOS calculator; is that right?

A Additional calculations were made.

Q Okay. Let's come back to that. Let me first understand what you used from this document.

A Okay.

Q This is a very interesting document, but given the time, I won't go through all of it. Let me just ask you to turn to page 76, which is, I think, page 5 of the document.

A Yes.

Q Is it correct that each of those rows shows a step in the process that would result in potential savings due to ADMS; is that right?

A That is correct.

Q And PG&E has two columns: A conservative and a best case savings estimate; correct?

A That is correct.

Q You used the conservative number in your calculations; is that right?

A That is correct.

Q What is the basis for these savings estimates?

A Subject matter expertise from distribution operators as well as distribution operational engineers as well as restoration processes during an outage condition.

Q Did PG&E -- did you -- do you know whether PG&E consulted verbally with subject matter experts? Did they conduct some study and analysis and survey operators? Any idea how it --

A I didn't actually put together this particular analysis; so, therefore, I'm not exactly sure of the exact mechanisms that they went about to create the estimates of each one, whether that was done verbally or through other means.

Q Now, the first step has the highest -- and these numbers -- let me just -- so that we're clear, these numbers in the column of "Savings Estimate," what do the numbers mean?

A "What do the numbers mean," meaning -- I'll give you an example: When we, as operators, create a restoration switch log, the ADMS has the capability to do all

that automatically whereby an operator doesn't have to go into three or four different systems to be able to manually type up a switch log or handwrite a switch log in determining which switching pathways they would take to be able to effectively and quickly restore customers on a distribution outage.

ALJ LIRAG: You got that, Shannon?

WITNESS NAKAYAMA: Sorry. I'll go slower. I apologize.

ALJ LIRAG: No worries. We're trying to hurry you here.

BY MR. HAWIGER:

Q Let me step back. I was asking a more simpler question. Is it correct that each of these minutes represents the potential reduction in the time of an outage due to --

A Yes.

Q And the first row that you just discussed, is it correct that that row actually represents the benefits of the automated switching procedures that would replace the current manual switch logs?

A That one step is true.

Q By the way, regarding the second step, the second step is a reduction in the

time to find a fault; is that correct?

A That is correct.

Q Does PG&E use remote fault indicators?

A In certain instances it does. The remote indicators have to be observed manually by field personnel.

Q Perhaps, we have it. How do you define a "remote fault indicator"?

A A fault indicator is something that is attached to a particular distribution pole, or underground, that actually blinks as far as telling the troubleman which way to go.

Q Is there also an asset called a "remote fault indicator" that actually transmits data of its location using SCADA?

A I believe we have some of those. I'm not entirely familiar with the remote fault indicators. I believe we do have some remote fault indicators in the system.

Q Which chapter would it be where PG&E would discuss the installation of any remote fault indicator assets?

A I'm going to make an assumption here, but it would probably be in the reliability chapter.

Q Okay. So let me ask you now to

turn to page 6, the next page. It's Bates page 77.

A Okay.

Q Is it correct that on the very top row, PG&E used historical data to determine the average unplanned outage duration over the two-year period, 2017 to 2018?

A When you talk the column that says "average duration," that would be the average duration of the total outage, not a calculation of key (phonetic), for example. I just wanted to make sure that's clear. Not all customers experience that long of an outage.

Q Okay. And that's about six hours; correct?

A The average duration of the total outage is about six hours.

Q But PG&E did not use that in its calculation of the ADMS benefits because ADMS provides benefits only for certain types of outages; is that right?

A The benefits that we describe try to exclude ones where ADMS wouldn't provide the benefit because there's no switching operations involved.

Q Right. Thank you.

And so there are, for example,

outages on some feeder off a main line where the troubleman just has to go and fix the outage, but you don't do any switching operations as part of it; correct?

A Yes. As an example, if there's a fuse line that goes nowhere with any ability to pick up anybody on a back tie from the opposite side of that end of line, there would be nothing for the operator to do. That is why those are excluded.

Q And that's why -- so you looked -- you did these filtering, as described on this page, to try to figure out what kind of outages required the type of switching operations that ADMS would actually help with?

A Also, do not overstate the benefit. That is correct.

Q Thank you.

And you found out that ADMS provides benefits into the longer-term outages that, approximately, average 618 minutes or 10 hours?

A Again, that's the total outage time. Again, not all customers experience that total outage time.

Q Now, when you said before that you had to do some other stuff in order to input

this data into the Value of Service calculator, what did you have in mind?

A The reason we do that is because you if take a look at 618 minutes, as an example, many customers are actually restored prior to the 618-minute mark. That just tells you on average those outages from this time that it starts to the time that the, for example, the pole is replaced, wires restrung, circuit breaker or line closure is closed back in and energized, that entire time, the 618 minutes, the customers experiencing that outage tends to be a very small amount that actually exhibits the 618-minute mark when they close out the outage.

That's why we use, more practically, the CMI, or the Customer Minutes Interruption value, which is a part of this -- I mean, the 618 minute is a calculated value for all outages, but the CMI is better representative of the customer impact of those 618 minutes.

Q Okay. And so let me ask you this, doesn't the Value of Service calculator you use to calculate the benefits use financial monetary value that customers place on an outage of a certain duration?

A Yes. That's why the customer minute, CMI, was used to determine the four-and-a-half hour calculation that was used in the VOS tool. I believe it was Scenario 1.

Q So you used outage length of four-and-a-half hours in the Value of Service calculator to determine the benefits of the 717 million?

A Yes. Based upon a CMI of 370 million minutes in totality, yes.

Q Okay. And would you agree that when you discussed the slightly different assumptions, that's because TURN used the Value of Service for a 10-hour outage in the same -- PG&E's Value of Service calculator?

A Yes. It assumes that all customers experience a 10-hour outage of the 29 percent that is calculated with the VOS calculator, which is not quite accurate.

Q Let me ask you to turn back to page 9 of that business case. So it's the Stephens Attachments, page 9. It's back to the business case.

A Okay.

Q Oh, by the way, just to be clear, this page 9, if you turn back one page, page 8, at the very bottom of the page it states:

"Project Benefits." So they're all contained on this table, page 9 through 10; correct?

A Sorry. I'm losing you a little bit.

Q I was just trying to be clear. If you go back to page 8.

A I'm sorry. I'm in the wrong document. Yes. I'm here back with you again. "Project Benefits" section.

Q It starts really at the top of page 9; correct?

A Yes.

Q Let me ask you, there's a section called "Safety Benefits;" do you see that?

A "Safety Benefits." Yes, I see that.

Q Is it correct that there it's discussing their reduction in outages or customer interpretation as a safety benefit?

A Yes.

Q And that's part of the reliability benefit also; correct?

A Well, reliability is more -- I'm not entirely sure of how VOS and all the intrinsic calculators calculate value, but safety is identified as something, if somebody is out of power, for example, a medical baseline customer is out of power,

there are safety benefits for those customers on being back in power that may not be captured within the VOS calculator.

Q Fine. But the underlying benefit is a reduction in customer minutes of interruption, and some of it can be quantified as a reliability benefit, but you're also saying it has safety benefits, that same reduction; correct?

A Any type of reduction in CAIDI performance would stipulate that there is a safety benefit for those customers, especially those who are impacted and need power for medical issues.

Q Now, there's no discussion of any benefit with respect to wildfires here; is there?

A Not on -- we discuss wildfire benefits as a part ADMS business case on the public safety impacts - thank you - on page 8 that talks about some wildfire risk mitigation that the ADMS can provide. I believe it's also in our testimony as well.

Q Isn't that discussion on --

A Yes. Project Benefits. I apologize. There is in the testimony, we do state that there will be some wildfire safety benefits attributed to ADMS. That is true.

Q Okay. But in this document, it does not discuss wildfire benefits aside from, as you said, on page 8, it discusses the fact that there will be no public safety impact because the work being done on ADMS will be performed indoors?

A It does not talk about any wildfire benefits in this particular business case. It does not, but it does in the testimony we provided.

Q Okay. And then in the same page 9, just below "safety," it is discussing distribution operation's benefits.

A Yes.

Q And it discusses the benefit in being able to perform switching operations, right?

A That is correct.

Q And that's a primary benefit of the ADMS, the ability to eliminate manual switch logs and move to automated switching; is that right?

A There are many benefits for the ADMS platform itself. This is just one of many benefits that we have identified for the ADMS platform.

Q So you wouldn't agree that the ability to recommend switching plans is the

primary operational benefit of the ADMS?

A You clarified as "operational benefit." An operational benefit is just a very small subset of the benefits associated with the ADMS platform. So when you talk about operational benefits in that category, then, yes. This does quantify the operational benefit of that category.

Q Okay. I'll come back to switching if we have time.

Let me ask you to turn in your rebuttal to the next page, page 19-31. At the bottom of the page you start Answer 45 regarding TURN's proposal to do only -- replace only the RT-SCADA system, and that goes onto the next page.

Let me ask you first, is replacing all of RT-SCADA part of the ADMS?

A Replacing RT-SCADA is part of ADMS.

Q Is it possible to do only -- replace only the RT-SCADA without doing any of the other parts of the ADMS?

A You can do only an RT-SCADA replacement.

Q Is full point-to-point testing required for the ADMS?

A Are you talking about the application or the platform?

Q I'm talking about the ADMS entire project as described in this business case.

A Yes. Point-to-point testing is required to ensure that the SCADA operates as designed.

Q Okay. And is full point-to-point testing required?

A When you talk about full point-to-point testing, are you talking about both the field testing as well as what we describe as the simulation and listening mode testing as a full point-to-point testing?

Q Well, let me ask you this: When you -- what do you mean in your Answer 45 on page 19-32, where you say that TURN's SCADA-only proposal would require full point-to-point testing and those costs are not included. What do you mean "full point-to-point testing"?

A We mean the entire cost associated with a full point-to-point testing that we identified in the workpapers for the SCADA replacement piece of this ADMS platform IGP project.

Q So does that include doing the 12.5 percent sampling or does that include doing the 100-percent device?

A It is -- okay. We are going to be

testing 100 percent of our devices of which we will do 10 to 15 percent by field testing.

Q And so when you say "full point-to-point testing," does that include 10 to 15 percent of field testing or more?

A 10 to 15 percent. It's the same assumptions that we used in the RT-SCADA portion of our paper.

Q Okay. And so that -- it's the same amount that you say is included in your forecast for ADMS in your testimony?

A That's correct.

Q And, similarly, when you say "requires full SCADA display migration," is that a cost that's also included in your ADMS cost forecast?

A It is.]

Q So you're saying that $75 million of your $160 million ADMS forecast is just for RT-SCADA replacement?

A I would have to go back to the reference of workpaper 19-13, Table 19-13, lines 12 and 15.

Q Hold on one moment, please. Let me get there.

A Let me know when you're there.

Q You said page 19-13?

A Workpaper 19-13.

Q All right. Thank you. Please go on.

A So if you take a look at the cost associated with distribution SCADA point-to-point testing migration as well as the distribution SCADA migrations to total $72 million.

Q Okay. Thank you.

A You're welcome.

Q Let me ask you to turn in the Stevens attachments in the business case to page 24. And there you have a discussion at the bottom of the page of doing the -- only invest in SCADA to address presently known limitations?

A That is correct.

Q And that's the replace RT-SCADA option; correct?

A That is correct.

Q Okay. Now, am I -- if I read those paragraphs at the bottom there, am I correct that the primary concern is that replacing RT-SCADA only would not allow PG&E efficient operation in a high DER-penetration environment?

A It also would not allow the build out of the full distribution marketplace for the future of distribution energy resources

to create the value that was talked about by Mr. Schlesinger.

Q Thank you. If PG&E did only the SCADA replacement, would that preclude moving to an ADMS system in the future?

A It would not.

Q If you replaced RT-SCADA, could you integrate the SCADA with the DMS System?

A Yes, you could.

Q Would that address the cybersecurity concerns in the existing RT-SCADA system?

A I would have to defer to Mr. Strasburger to answer that question.

WITNESS STRASBURGER: If I understand the question correctly, if you replace RT-SCADA but that's the only component you replace, would that address cybersecurity concerns?

It would with the particular RT-SCADA System. But I think you also mentioned the Distribution Management System. So it would not eliminate cybersecurity-related challenges with that system as that would still be an older-legacy system. It wouldn't have the new generation security features that a new system would have.

Q Thank you. Let me ask you some questions about mask load. I'm going to try to speed through this.

WITNESS NAKAYAMA: Certainly.

Q Am I correct that mask load is relevant during switching operations?

A It is relevant during unplanned outage conditions.

Q So it's relevant both during unplanned outages irrespective of whether you do switching or not and also during -- let me break it down. So is it relevant during unplanned outages irrespective of whether PG&E does any switching?

A It is very relevant in unplanned outages. I don't know how to described switching or non-switching since switching is required.

Q And how is it relevant during an unplanned outage?

A What happens is the actual generation that is occurring either through battery, storage, or solar does not immediately come back online to offset some of the load that the customers are using immediately when you close in and reenergize the customers.

What that means is that the

operator is unaware that there may be some load out there that is quote-unquote being masked or invisible to the operator. And when he closes in the breaker for example, it may instantaneously pick up a load that exceeds the relay settings of a protected device and would then, for example in this situation, open up the breaker again because the load exceeds the protective settings of that relay.

Q Let me cut to the chase. Is this a problem if the generation -- distributed generation is only a Net Energy Metering System that offsets or is placed on -- behind the meter?

A It wouldn't matter.

Q Okay. If you only have NEM, Net Energy Metering Systems, isn't the circuit designed to accommodate the full load of the customers?

A This phenomenon doesn't care about the billing impacts of the mechanisms by which a customer's bill is netted out. What it really is about is that because the generation doesn't kick online instantaneously, there's no -- the load -- the full load of that customer is then felt by the distribution circuit until a time of

which the generation can then offset that load and bring the load of the circuit down. That is the irregardless of what type of billing mechanism you may have.

Q And I'm not talking about billing. I'm talking about the actual capacity of the distribution circuit when PG&E does all of its circuit capacity analyses. Doesn't it then take into account the customer load and design the circuit to accommodate the full peek load?

A It also accommodates the generation as well.

Q So you're saying that in the distribution capacity of the -- based on the peek -- circuit peek has been built in it a reduction due to the distributed generation?

A It takes into account both load and generation.

Q Has PG&E experienced any problems due to this issue during unplanned outages?

A I've spoken to operators before in both the southern distribution control center and the central distribution control center personally, and they have told me about experiences where cold load pickup has been a problem on high loaded DER circuits.

Q And when you say high loaded --

well, let me ask you first. Is it correct that PG&E has no records of any outages or voltage problems or thermal problems due to this issue?

A Our integrated logging information system called "ILIS" is where we record all that date. It does not currently have a drop down to identify outage conditions that may be caused by masked load issues. It's not currently a functionality we have to record.

Q But you're saying in your conversations with operators, they've indicated they've had problems due to this?

A They've had problems picking up load on circuits due to distributing energy resources.

Q And what do you mean by "picking up load"? What does that mean?

A So when they're restoring -- let's get back to this. I'm going to give you an example of what this is to try to make this clear.

If we anticipate the peak load of that circuit to be 500 amps because of the fact that when we take a look at our SCADA values for what this circuit normally is, it is at 500 LAMs at peak. That is below the 600 amp overcurrent setting of the circuit

breaker as an example to protect the line.

When the circuit breaker is closed in, it will instantaneously pick up all the load. And there could be 100 plus amps worth of generation that is being masked on that 500 amps. So it's actually exceeding 600 amps on the initial pickup.

And so what ends up happening is the operator will close the breaker, and it will immediately pop back open on overcurrent even though there's no damage on the line.

Q And has that -- what would happen next?

A Next is then we'll need to send a troubleman to try to figure out if there's any damage on the line. That will be the initial assumption from the operator to try to figure out whether there was actually a piece of damage that may have been missed as an example. Or a particular piece of damage may have occurred during the course of a restoration of a separate outage.

Then they will have to go out. And if finding no damage, will then have to do what's called a "sectionalized restoration process" to pick out -- pick up small sections of the circuit at a time. What that will enable you to do is pick up a small

chunk of load, allow the generators to come back online, pick up an additional piece of load, and allow those generators to come back online. Until you can pick up the entire circuit with all of the generators to come back online and reduce the loading of that circuit so that it can carry it.

Q In your discussion, have you explored whether when the operators say this has been a problem on circuits with high penetrations, are they talking specifically about circuits that happen to have wholesale distributed generators connected to the distribution circuits?

A I don't know exactly which circuits they're talking about. They just talk about highly-loaded DERs. Typically in discussions with them is usually due to for example significant amount of PV generation on that particular theater.

But in terms of the actual instance that they're talking about, I have no -- we did not talk about whether it was a wholesale distribution tariff customer or just PV.

Q Has PG&E done any analysis to look at how many theaters -- I am sorry. What do you mean by high loaded?

A I don't necessarily have a -- when

talking to the operators and having that conversation, we didn't necessarily talk about, "Well, how many amps on that circuit is PV?"

They typically see it as we know that there's a lot of interconnected photovoltaic -- as an example -- on this particular theater. And they're aware of it. So that is what they call a highly-loaded PV or DER circuit. Without running a calculation in the mind of what that might quantify or defined as.

Q And do you have any sense of how many such circuits there are that you would say are highly loaded that operators might experience problems?

A I don't.

Q Okay. Would it be relevant to know whether those are circuits with significant wholesale generations rather than just NEM generation?

A I'm trying to understand your line of reasoning. Maybe you can clarify the distinction that you're trying to make here?

Q You know, I'm curious. My distinction is that wholesale generators tend to be 5 to 20 megawatts versus small systems and can cause a much bigger change. And I

don't want to start testifying. I mean, I've seen evidence that problems are associated with potential wholesale generation. So I'm curious.

A Generation is generation. There's plenty of instances where we have megawatts of generation attributed to photovoltaic by itself on a particular theater. We would probably need to do a further analysis to tell you exactly how many megawatts per theater photovoltaic is on a particular line versus wholesale distribution tariff-type of distributed generation resources.

Q And PG&E already has all that data as part of distributed resources planning for the proceeding, doesn't it? Of how much NEM versus wholesale generations is on every circuit?

A We do. I just don't have that information off the top of my head.

Q But have you done any analysis to look at what circuits potentially have had any problems with service restoration because of it?

A I personally have not.

Q And has PG&E -- I'm really curious as to why PG&E hasn't done any analysis to figure out is this a large-scale problem? Or

this just a problem that's very localized?

A Well, so here's how I would answer that question is that irregardless of whether -- regardless of whether it's localized or not today, if you take a look at the PV generation forecasts that are currently in the forecasts that are produced by all of the IOUs, if you take a look at Assembly Bill 100 that is looking to get 100 percent PV -- I'm sorry -- 100 percent renewables for all generation, if you take a look at the total net zero bill that was passed that enforces that all new construction requires that they offset all of their load with PV, it doesn't require a major study to see how this is going to be a problem both now and into the future.

Q In your example you gave of the problem of mask loading and unplanned outages, how would ADMS help in that situation?

A ADMS has the capability by using the nameplate capabilities of the DER to automatically calculate what type of net load -- I am sorry gross load there will be based upon the perceived amount of generation that forecasts all of those nameplate values to be on -- I'll use PV generating as an example --

into the system.

It can then calculate what is the gross load for line sections behind a line closure, behind the circuit breaker, and will inform the operator whether they have potential cold-load pickup issues prior to performing any restoration that will allow them to make better decisions on how to restore that circuit.

ALJ LIRAG: Can you wrap up the questioning on this issue, Mr. Hawiger?

MR. HAWIGER: Yes, sir.

Q So the issue is that you need to know how much generation is located behind each meter, the gross generation, to be able to know what to do for restoration?

A In realtime.

Q And why realtime? Why can't PG&E -- assume you can calculate the amount of loads that would be generated in about 10 minutes?

A In about 10 minutes?

Q Five to ten minutes let's say. Why would that not be sufficient?

A That's what the ADMS System does. It actually calculates the -- that's what it does. It calculates the gross load and the -- I'm confused.

Q Okay. Let me put it this way. I am sorry to speak over you.

PG&E already has a database of all the interconnected generation systems; correct?

A They do.

Q With the nameplate capacity of the system?

A They do.

Q Theoretically let's assume that the distribution operator had access -- well, did the distribution operators have access to that database?

A I'm sorry. Was that a question to me?

Q Yes, sir.

A Okay. The distribution operators do not have access to -- they might. I don't know. We don't necessarily use that.

Q Would it not be possible since -- that database contains information about the location and nameplate capacity of each interconnected system; correct?

A It does.

Q Wouldn't it be possible from the database to quickly calculate at least what would be the maximum generation on whatever feeder is out given the locations of those

systems?

A You could calculate it probably to the circuit breaker level for that entire theater. But to be able to do that by line section or by protected device, the mask load issue isn't only for the entire theater at the circuit breaker level where you would take a look at Silverado 1102 and calculate all of the masked load for that potential for all the way back to the breaker. You would need to take a look at it by line section and, aggregate it up to a particular line closure.

To be able to run that analysis within 5 to 10 minutes would be -- you would need a system to do that. That's exactly why we're asking the ADMS system to do that for us.

ALJ LIRAG: Mr. Gallo. Start thinking of redirect questions.

Maybe a couple more questions, Mr. Hawiger.

BY MR. HAWIGER:

Q Let me ask you to turn in your rebuttal to answer 38. I am sorry. That's not the right answer. Scratch that.

In answer 48 in your testimony, you state that, "ADMS is an industry standard."

Is that correct?

A That is correct.

Q And PG&E has benchmarked ADMS with 26 other utilities; correct?

A Those utilities have been provided in the data request, yeah.

Q What does that mean that it's benchmarked against those other utilities?

A Those utilities were probably discussed with in terms of their ADMS implementation plans. I haven't been a part of the actual benchmarking exercise. I'm not exactly sure what activities were performed when they benchmarked across those 26 utilities to ask them about their ADMS implementation.

Q Do you know how many of those 26 utilities have actually implemented ADMS?

A I don't have that information on the top of my head.

Q You don't know if any of those have actually realized the benefits forecast of ADMS?

A I don't have any of that information.

ALJ LIRAG: I'm going to switch to Mr. Gallo first to let him get off any redirect questions.

REDIRECT EXAMINATION

BY MR. GALLO:

Q I just have a single question, your Honor. Mr. Nakayama, could you turn to page 19-32 of your rebuttal?

WITNESS NAKAYAMA: Okay.

Q Mr. Hawiger was asking you about the cost to replace RT-SCADA and the two things you mentioned in your prior testimony were the SCADA point-to-point testing and SCADA display migration subcomponents of the ADMS project forecast; is that correct?

A That is correct.

Q Could you look at line 9 of your testimony?

A Yes.

Q Do you see where it says that in addition to those two things, you would have to consider part of the SCADA OMS DMS line of the ADMS forecast?

A That's correct.

Q Is that accurate?

A That is accurate.

MR. GALLO: Thank you.

ALJ LIRAG: Mr. Hawiger, a couple more questions. Maybe two more questions. Whether it's re-cross or cross.

MR. HAWIGER: I think there's nothing I

think I could do in two questions, your Honor.

ALJ LIRAG: Is there a move to admit Exhibits 118 through 120 into the record from Mr. Hawiger?

MR. HAWIGER: So moved, your Honor.

ALJ LIRAG: Any objections?

MR. GALLO: No, Your Honor.

ALJ LIRAG: Exhibit 118, 119, and 120 are received into the record.

(Exhibit No. 118 was received into evidence.)

(Exhibit No. 119 was received into evidence.)

(Exhibit No. 120 was received into evidence.)

ALJ LIRAG: Thank you, Mr. Nakayama, Mr. Petrakis, and Mr. Strasburger.

It was probably easier than your very busy cybersecurity job seeing as Mr. Nakayama handled most of the questions.

All right. So tomorrow we'll continue with the witnesses that are listed on board. I won't name them. We'll take a recess and reconvene tomorrow at 9:30. We'll also address some of the pending issues that we have.

Off the record.

(Off the record.)]

(Whereupon, at the hour of 4:13 p.m. this matter having been continued to 9:30 a.m. October 3, 2019 at San Francisco, California, the Commission then adjourned.)

* * * * *

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

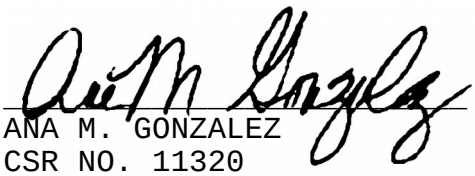
STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, ANA M. GONZALEZ, CERTIFIED SHORTHAND REPORTER NO. 11320, IN AND FOR THE STATE OF CALIFORNIA, DO HEREBY CERTIFY THAT THE PAGES OF THIS TRANSCRIPT PREPARED BY ME COMPRISE A FULL, TRUE, AND CORRECT TRANSCRIPT OF THE TESTIMONY AND PROCEEDINGS HELD IN THIS MATTER ON OCTOBER 2, 2019.

I FURTHER CERTIFY THAT I HAVE NO INTEREST IN THE EVENTS OF THE MATTER OR THE OUTCOME OF THE PROCEEDING.

EXECUTED THIS OCTOBER 09, 2019.



ANA M. GONZALEZ
CSR NO. 11320

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

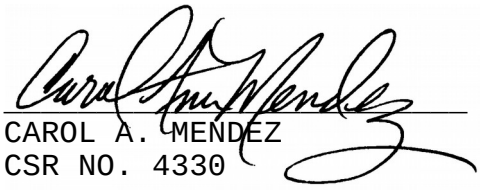
STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, CAROL A. MENDEZ, CERTIFIED SHORTHAND REPORTER NO. 4330, IN AND FOR THE STATE OF CALIFORNIA, DO HEREBY CERTIFY THAT THE PAGES OF THIS TRANSCRIPT PREPARED BY ME COMPRISE A FULL, TRUE, AND CORRECT TRANSCRIPT OF THE TESTIMONY AND PROCEEDINGS HELD IN THIS MATTER ON OCTOBER 2, 2019.

I FURTHER CERTIFY THAT I HAVE NO INTEREST IN THE EVENTS OF THE MATTER OR THE OUTCOME OF THE PROCEEDING.

EXECUTED THIS OCTOBER 09, 2019.



CAROL A. MENDEZ
CSR NO. 4330

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, DORIS HUAMAN, CERTIFIED SHORTHAND REPORTER NO. 10538, IN AND FOR THE STATE OF CALIFORNIA, DO HEREBY CERTIFY THAT THE PAGES OF THIS TRANSCRIPT PREPARED BY ME COMPRISE A FULL, TRUE, AND CORRECT TRANSCRIPT OF THE TESTIMONY AND PROCEEDINGS HELD IN THIS MATTER ON OCTOBER 2, 2019.

I FURTHER CERTIFY THAT I HAVE NO INTEREST IN THE EVENTS OF THE MATTER OR THE OUTCOME OF THE PROCEEDING.

EXECUTED THIS OCTOBER 09, 2019.

DORIS HUAMAN
CSR NO. 10538

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, JASON STACEY, CERTIFIED SHORTHAND REPORTER NO. 14092, IN AND FOR THE STATE OF CALIFORNIA DO HEREBY CERTIFY THAT THE PAGES OF THIS TRANSCRIPT PREPARED BY ME COMPRISE A FULL, TRUE, AND CORRECT TRANSCRIPT OF THE TESTIMONY AND PROCEEDINGS HELD IN THIS MATTER ON OCTOBER 2, 2019.

I FURTHER CERTIFY THAT I HAVE NO INTEREST IN THE EVENTS OF THE MATTER OR THE OUTCOME OF THE PROCEEDING.

EXECUTED THIS OCTOBER 09, 2019.

JASON A. STACEY
CSR NO. 14092

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, SHANNON ROSS, CERTIFIED SHORTHAND REPORTER NO. 8916, IN AND FOR THE STATE OF CALIFORNIA, DO HEREBY CERTIFY THAT THE PAGES OF THIS TRANSCRIPT PREPARED BY ME COMPRISE A FULL, TRUE, AND CORRECT TRANSCRIPT OF THE TESTIMONY AND PROCEEDINGS HELD IN THIS MATTER ON OCTOBER 2, 2019.

I FURTHER CERTIFY THAT I HAVE NO INTEREST IN THE EVENTS OF THE MATTER OR THE OUTCOME OF THE PROCEEDING.

EXECUTED THIS OCTOBER 09, 2019.

SHANNON ROSS
CSR NO. 8916

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