

In the Matter Of:

In Re: RMP - Establish Export Credits for Customer Generated Electricity

HEARING, DOCKET NO. 17-035-61

April 17, 2018

Job Number: 438171

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

Application of Rocky)	Docket No. 17-035-61
Mountain Power to)	
Establish Export Credits)	HEARING
for Customer Generated)	
Electricity)	JOB NO. 438171

April 17, 2018
9:08 a.m.

Location: Utah Public Service Commission
160 East 300 South, 4th Floor
Salt Lake City, UT 84111

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I N D E X

Witness	Page
KENNETH LEE ELDER, JR.	
Direct Examination by Ms. Hogle	8
Cross-Examination by Mr. Margolin	17
Cross-Examination by Mr. Mecham	53
Redirect Examination by Ms. Hogle	56
Recross-Examination by Mr. Margolin	62
Examination by Commissioner Clark	66
Examination by Commission LeVar	70
ROBERT A. DAVIS	
Direct Examination by Mr. Jetter	73
Cross-Examination by Ms. Mecham	77
Cross-Examination by Mr. Margolin	89
Redirect Examination by Mr. Jetter	90
Recross-Examination by Mr. Mecham	91
Redirect Examination by Mr. Jetter	92
Examination by Commissioner LeVar	93

		Page 4
1	CHARLES E. PETERSON	
2	Direct Examination by Mr. Jetter	95
3	Cross-Examination by Mr. Margolin	98
4		
5	CHERYL MURRAY	
6	Direct Examination by Mr. Jetter	106
7	Cross-Examination by Ms. Hogle	109
8	Cross-Examination by Mr. Snarr	111
9	Examination by Commissioner White	112
10	Examination by Commissioner Clark	113
11	Examination by Commissioner LeVar	114
12		
13	KATE BOWMAN	
14	Direct Examination by Mr. Holman	117
15	Cross-Examination by Mr. Jetter	129
16	Cross-Examination by Ms. Hogle	140
17	Examination by Commissioner Clark	143
18	Examination by Commissioner White	145
19		
20	CHRISTOPHER WORLEY	
21	Direct Examination by Mr. Mecham	147
22	Cross-Examination by Mr. Jetter	152
23	Cross-Examination by Ms. Hogle	161
24	Redirect Examination by Mr. Mecham	165
25	Recross-Examination by Mr. Jetter	166

1	Examination by Commissioner White	Page 5 169
2	Examination by Commissioner Clark	171
3	Examination by Commissioner LeVar	174
4		
5	RICK GILLIAM	
6	Direct Examination by Mr. Margolin	176
7	Cross-Examination by Jetter	191
8	Cross-Examination by Hogle	203
9	Examination by Commissioner LeVar	208
10		
11	ALBERT J. LEE, Ph.D.	
12	Direct Examination by Mr. Margolin	210
13	Cross-Examination by Mr. Jetter	217
14	Cross-Examination by Ms. Hogle	223
15	Motion to Strike	224
16	Continued Cross-Examination by Ms. Hogle	229
17		
18		
19		
20		
21		
22		
23		
24		
25		

9:08 a.m.

1 April 17, 2018

2 P R O C E E D I N G S

3 COMMISSIONER LEVAR: Okay. Good morning.

4 We're here in Public Service Commission Docket 17-35-61.

5 We apologize for the delay in getting started. Why

6 don't we start with appearances, and we'll start with

7 the utilities.

8 MS. HOGLE: Good morning. Yvonne Hogle on

9 behalf of Rocky Mountain Power. With me here at counsel

10 table is Mr. Lee Elder, and behind me are Joelle Steward

11 and Janna Saba. Ms. Steward is the vice president of

12 regulation for Rocky Mountain Power, and Ms. Saba is the

13 Utah manager of regulation for the state of Utah. Thank

14 you.

15 COMMISSIONER LEVAR: Okay. Thank you.

16 Division of Public Utilities.

17 MR. JETTER: Good morning. I'm Justin Jetter

18 with the Utah Attorney General's Office, and I'm here

19 this morning representing the Utah Division of Public

20 Utilities. With me at counsel table is Robert A. Davis,

21 and Charles Peterson is also here for the division

22 today.

23 COMMISSIONER LEVAR: Okay. Thank you. Office

24 Of Consumer Services?

25 MR. SNARR: Yes. My name is Steven Snarr. I

1 am with the Attorney General's office. I am here
2 representing the Office of Consumer Services. With me
3 today is Ms. Cheryl Murray, who will be testifying on
4 behalf of the office.

5 COMMISSIONER LEVAR: Okay. Thank you. Utah
6 Clean Energy.

7 MR. HOLMAN: I am Hunter Holman. I am here
8 with Utah Clean Energy. Kate Bowman is also with me
9 here today. She has prepared a statement. And Sarah
10 Wright is in the audience today.

11 COMMISSIONER LEVAR: Okay. Make sure I have
12 got your name right. Hunter Holman; is that right?

13 MR. HOLMAN: Hunter Holman.

14 COMMISSIONER LEVAR: Thank you. Vivint?

15 MR. MECHAM: Steve Mecham appearing for Vivint
16 Solar Inc., and with me at counsel table is Christopher
17 Worley, who works at Vivint Solar and will be testifying
18 today.

19 COMMISSIONER LEVAR: Thank you. And Vote
20 Solar.

21 MR. MARGOLIN: Good morning. Joshua Margolin
22 on behalf of Vote Solar. Here on my left is Rick
23 Gilliam. He's from Vote Solar. On my right is
24 Dr. Albert Lee.

25 COMMISSIONER LEVAR: Okay. Thank you. Any

1 other appearances? Okay. Any other preliminary matters
2 before we go to Ms. Hogle? Okay. Ms. Hogle.

3 MS. HOGLE: The company calls Mr. Lee Elder.

4 COMMISSIONER LEVAR: Okay. If would you come
5 up here please. Mr. Elder, do you swear to tell the
6 truth?

7 THE WITNESS: I do.

8 COMMISSIONER LEVAR: Thank you.

9 KENNETH LEE ELDER,
10 called as a witness, having been first duly sworn, was
11 examined and testified as follows:

12 DIRECT EXAMINATION

13 BY MS. HOGLE:

14 Q. Good morning, Mr. Elder. Can you please state
15 and spell your name for the record, and your address.

16 A. My name is -- my name is Kenneth Lee Elder.
17 My work address is 825 Northeast Multmonah Street,
18 Portland, Oregon.

19 Q. And what is your position with Rocky Mountain
20 Power?

21 A. I am the load forecast and load research
22 manager for PacifiCorp.

23 Q. And can you provide some background on your
24 work experience, please.

25 A. Yes. I have been with PacifiCorp for

1 approximately two years, working in the same capacity.
 2 Prior to that time, I worked with a -- as a consultant
 3 for a natural resource consulting firm as an economist
 4 for about eight years. Prior to that time, I worked for
 5 University of Alaska Fairbanks as an economist for
 6 approximately three years. All in all been in this
 7 field for roughly 12 years.

8 COMMISSIONER LEVAR: I am not sure the
 9 microphone's picking you up, and we're streaming this,
 10 so it's important if anybody's relying on that.

11 THE WITNESS: Can you hear me?

12 COMMISSIONER LEVAR: I can, yes.

13 THE WITNESS: Sorry.

14 **Q. (By Ms. Hogle) Mr. Elder, are you familiar**
 15 **with the application that the company filed in December**
 16 **2017 in this case?**

17 A. Yes, I am.

18 **Q. Can you provide some background on that?**

19 A. Yes. The application was to -- set forth to
 20 determine what the export credits are for customer
 21 generated power. And under that and now for this
 22 proceeding, Phase I is to determine what the appropriate
 23 load research study is to determine export value of
 24 exports.

25 **Q. And in support of that application, did you**

1 file direct testimony in Exhibit RMP KLE-1 on February
2 15, 2018, and rebuttal testimony on April 10th, 2018?

3 A. Yes, I did.

4 Q. And do you have any changes that you would
5 like to make at this time to that testimony?

6 A. No, ma'am.

7 Q. So if I were to ask you the questions in those
8 pieces of testimony again here today, would your answers
9 be the same?

10 A. Yes.

11 MS. HOGLE: At this time I move for the
12 admission into the record of Mr. Lee Elder's direct
13 testimony in Exhibit KLE-1 and rebuttal testimony.

14 COMMISSIONER LEVAR: Thank you. Any party
15 objects to that, please indicate to me. I am not seeing
16 any objection, so the motion is granted. Thank you.

17 MS. HOGLE: Thank you.

18 Q. (By Ms. Hogle) Mr. Elder, do you have a
19 summary that you would like to provide today?

20 A. Yes, I do.

21 Q. Please proceed.

22 A. Good morning commissioners. I am here today
23 to discuss the company's proposed load research study
24 for Phase I of the export credit proceeding. There's
25 been two rounds of testimony, one face-to-face workshop,

1 and a teleconference with parties to discuss the
2 company's proposed load research study. As a result of
3 feedback received from these meetings, the company has
4 increased the level of accuracy for the generation
5 sample as originally proposed at the January workshop.

6 The load research study filed on February 15th
7 will provide a robust set of data necessary to achieve
8 the stated objectives of this proceeding. It is
9 comprised of two components. The first is a census of
10 export and delivery data at the point of delivery at the
11 customer site. The second is a sample of production
12 generation output from private generation systems.

13 The study as proposed will obtain export data
14 for all transition customers over the January 1 to
15 December 31st, 2019, time frame. This comprehensive set
16 of data is all that is necessary to calculate the value
17 of export energy from private generation customers.
18 There will be no sampling error associated with the
19 exported energy sample, meaning that the sample error
20 for the export sample is plus or minus zero percent.

21 The study goes above and beyond this required
22 export data to also obtain and make available delivery
23 data for all transition program customers. Again, there
24 would be no sampling error associated with this delivery
25 data.

1 Further, while not necessary to calculate the
2 value of export credits, the proposed load research
3 study also proposes the generation sample in order for
4 parties to calculate the full-requirements usage for
5 transition program customers. The proposed generation
6 sample will achieve a level of accuracy of plus or minus
7 10 percent of the 95 percent confidence level, which
8 exceeds the industry standard.

9 The division expresses general support for the
10 load research study but recommends some conditions on
11 reporting and monitoring during the study period. I
12 find the division's requests are reasonable, and I am
13 willing to report the findings from the load research
14 study on a monthly basis.

15 Other parties continue to dispute various
16 aspects of the generation sample, which will provide a
17 variable of secondary importance to the study.

18 There are five key areas of dispute. First,
19 parties continue to dispute the level of precision to be
20 obtained from the generation sample. Second, the use of
21 nameplate capacity to stratify the generation sample.
22 Third, the use of grandfathered customer production
23 materials to derive the production of profile. Fourth,
24 the use of both residential and nonresidential customers
25 within the generation sample. And fifth, that the load

1 research study should also include a survey of both
2 grandfathered and transition program customers.

3 I will briefly discuss my response to each of
4 these. First, the level of precision to be obtained
5 from the load research study as currently proposed,
6 there will be no sampling error associated with the
7 export and delivery energy collected from transition
8 program population; whereas, a generation sample will
9 achieve a level of precision of plus or minus 10 percent
10 at the 95 percent level.

11 This level of accuracy exceeds industry
12 standards for load research studies, and we find it to
13 be a fair balance between costs and accuracy.

14 Second, regarding the company's decision to
15 use nameplate capacity to stratify the sample, based on
16 the load research study used for the net metering
17 docket, it was found that nameplate capacity exhibit a
18 higher correlation with private generation system
19 generation. And as such, in the absence of private
20 generation system output for the entire population,
21 nameplate should be used to stratify the generation
22 sample.

23 Third, regarding the use of grandfathered
24 customer production meters to derive the production
25 profile, the load research study proposes the use of

1 grandfathered production meters, because I believe that
2 the production of grandfathered private generation
3 systems and transition program systems to not be notably
4 different, and that a sufficient population of
5 transition program private generation systems does not
6 yet exist.

7 Fourth, regarding the company's decision to
8 deny a sample that includes both residential and
9 nonresidential customers, energy production from each
10 individual system within the sample will be used to
11 calculate the shape of the generation curve, and that is
12 what is important to load research study.

13 This is because each site within the sample
14 will be scaled to one kilowatt and then applied to the
15 average system size for all transition program
16 customers, residential and nonresidential alike, to
17 determine the average production profile for Utah
18 private generation customers. Whether a customer is
19 nonresidential or nonresidential, their generation
20 shapes will generally be the same.

21 Fifth, regarding a survey of grandfathered and
22 transitioned program customers, the company does not see
23 how a survey of our private generation customers would
24 add value or meet the purpose of this proceeding,
25 without more clarity on how it would be used to

1 determine the value of exports. It would, however,
2 drive additional costs and intrude on the privacy of our
3 customers.

4 The company's load research studies at a cost
5 of approximately \$79,000 is reasonable and provides
6 comprehensive information necessary to determine the
7 value of export credits from export energy, in
8 particular, when compared to the random sampling
9 approach recommended by other parties in this case,
10 which would require 4,069 generation profile meters, an
11 additional cost of approximately \$9.3 million to achieve
12 the same level of accuracy.

13 For these reasons, I recommend that the
14 commission approve the company's proposed load research
15 study.

16 MS. HOGLE: Thank you, Mr. Elder. Mr. Elder
17 is available for cross-examination.

18 COMMISSIONER LEVAR: Okay. Thank you. And
19 before we go to cross-examine, I'll just note, there are
20 a small handful of numbers in his rebuttal testimony
21 that are marked as confidential. If any
22 cross-examination questions require discussion of any of
23 those confidential numbers, please indicate or please
24 pay attention to that so we might have to entertain
25 motions to close the hearing if that becomes necessary.

1 So I think that's the only testimony we have
2 in that situation today. But with that I'll go to
3 Mr. Jetter for the Division of Public Utilities.

4 MR. JETTER: Thank you. I have no questions.
5 Thank you.

6 COMMISSIONER LEVAR: Okay. Thank you.
7 Mr. Snarr.

8 MR. SNARR: The office has no questions.

9 COMMISSIONER LEVAR: Okay. I think I'll go to
10 Mr. Mecham next.

11 MR. MECHAM: Thank you, Mr. Chair. I actually
12 talked to Mr. Margolin earlier today, and it might be
13 more efficient if he goes first with Mr. Elder.

14 COMMISSIONER LEVAR: And you would like to
15 still reserve your cross-examination?

16 MR. MECHAM: Yeah, if there are any remaining
17 questions.

18 COMMISSIONER LEVAR: Okay. We'll go to
19 Mr. Margolin then.

20 THE WITNESS: Can I request my water? I
21 forgot to grab it on the way up here.

22 COMMISSIONER LEVAR: Absolutely. And if you
23 would just make sure that microphone is pulled as close
24 to you as possible. We can hear you, but the people
25 listening on the stream might not be able to.

1 THE WITNESS: Okay.

2 COMMISSIONER LEVAR: And the same thing for
3 counsel tables. If you'd make sure the microphones are
4 close to you so those listening over the Internet will
5 be able to hear what's going on.

6 MR. HOLMAN: Of course, if you think it's too
7 far away.

8 COMMISSIONER LEVAR: I don't think it's
9 picking you up right now. I can hear you, but I don't
10 think it's picking you up.

11 MR. HOLMAN: The green light is on. Is this
12 better?

13 COMMISSIONER LEVAR: I think that's -- yes.

14 CROSS-EXAMINATION

15 BY MR. MARGOLIN:

16 Q. Good morning, Mr. Elder.

17 A. Good morning.

18 Q. You obtained your undergrad degree in
19 agricultural business, correct?

20 A. Yes. Yes, I did.

21 Q. And you obtained a graduate degree in
22 agriculture and resource economics, correct?

23 A. That is accurate, yes.

24 Q. You don't hold a degree in statistics, right?

25 A. No, I do not. But in that particular school

1 of studies, there's quite a bit of statistics that is
2 taken.

3 Q. Which school of study?

4 A. Economics.

5 Q. So you took a few statistics classes?

6 A. It's more than a few.

7 Q. Did they cover sampling?

8 A. Yes, they did.

9 Q. Have you ever taught statistics?

10 A. I have not.

11 Q. Have you ever taught sampling?

12 A. No, sir.

13 Q. Has any court ever qualified you as an expert
14 in the field of statistics or sampling?

15 A. No.

16 Q. Have you ever testified as an expert in the
17 field outside of court?

18 A. No.

19 Q. What about in deposition?

20 A. No.

21 Q. I believe you mentioned that prior to
22 PacifiCorp, you were an economist for a natural resource
23 consulting firm; is that right?

24 A. That is accurate.

25 Q. Can you say what firm it was?

1 A. Yes. It was with Cardno.

2 Q. Cardno?

3 A. Cardno, yes.

4 Q. And what was your role there?

5 A. I was an economist.

6 Q. Did you design load research studies there?

7 A. No, I can't recall a load research study that
8 I worked on while there.

9 Q. Did you describe sampling studies while you
10 were there?

11 A. There were particular workshops that I was
12 involved with that did have some trade-off questions
13 that was -- so, to answer the question, no. No, I have
14 not.

15 Q. Okay. And I think you said prior to your time
16 at the natural resource consulting firm, you were at the
17 University of Alaska; is that right?

18 A. That is accurate. University of Alaska
19 Fairbanks.

20 Q. Thank you. Your role there was as an
21 economist?

22 A. Yes.

23 Q. And again, did you design load research
24 studies there?

25 A. No, sir.

1 Q. Did you design any sampling protocols there?

2 A. I designed a survey of anglers in Alaska. So
3 it was not a load research study, per se, but did
4 conduct some surveys.

5 Q. Surveys of what in Alaska?

6 A. Anglers.

7 Q. Okay. Here you are proposing to use a sample
8 to determine the generation of grandfathered Section 135
9 customers, correct?

10 A. Yes.

11 Q. And you intend to use that sample to create a
12 full requirement energy for Section 135 and Section 136
13 customers, right?

14 A. Can you restate the question?

15 Q. Sure. You intend to use the data you obtain
16 from the sample of the 135 customers to create a full
17 requirement energy estimate for the Section 135 and 136
18 customers. Is that right?

19 A. 136. For 136 customers. Full requirements
20 for 136 customers.

21 Q. So you don't intend to use the data from the
22 135 customers to create a profile for them; is that
23 right?

24 A. That is accurate.

25 Q. Okay. And you would agree, as a general

1 matter, that a purpose of sampling is to understand the
2 characteristics of a population?

3 A. Yes.

4 Q. And would you agree with me that a sample that
5 pulls disproportionately more from one group of a
6 population needs to be weighted accordingly, or it will
7 produce a biased result?

8 A. Ideally it would be better to have the
9 population for the entire -- to have the sample for the
10 136 customers rather than 135, but we do not have that
11 liberty right now. That information does not exist for
12 these customers, because they do not yet exist. So we
13 are using 135 customers, because we believe that they
14 are a reasonable proxy for the output we would witness
15 from transition program customers.

16 Q. My question was a bit different though.
17 Within the 135 population, you would agree that if a
18 portion of that population was more likely to be pulled
19 into the sample than another portion, you would have to
20 weight your sample accordingly in creating your point
21 estimate; is that right?

22 A. Weight my population? Is that what you said?

23 Q. Yes. Well, to weight each item in your sample
24 in creating your point estimate?

25 A. Yes. We would use the weighting approach in

1 our generation profile sample to create a unique curve,
2 yes.

3 Q. And you would agree if you didn't weight, your
4 results would be biased?

5 A. I don't -- I guess I don't understand the
6 question. Can you repeat the question one more time
7 please?

8 Q. Sure. If a portion of the 70 customers that
9 you intend to use in your sample had a greater weight,
10 greater possibility of being selected than other
11 customers in that sample --

12 A. Yes.

13 Q. -- you need to weight the customers
14 differently in order to create your point estimate; is
15 that right?

16 A. Yeah. We intend to weight the generation
17 profile by the saturation by county. The number of
18 particular samples we have in the county would determine
19 what the weight is to determine the profile curve.

20 Q. But not by the probability of selection?

21 A. No.

22 Q. Okay. And do you understand that if you don't
23 weight by probability of selection, you are introducing
24 some bias into your point estimate?

25 A. I don't believe that's the case.

1 Q. Okay. The overall population of customers you
2 are pulling from is roughly 24,000; is that right?

3 A. For the generation profiles?

4 Q. Yes.

5 A. Yes.

6 Q. And if you wanted to do a simple random sample
7 with 95 percent confidence and a 10 percent margin of
8 error, you'd require 4,069 customers; is that right?

9 A. For a random sample?

10 Q. Yeah, simple random.

11 A. For random, it would be 4,069.

12 Q. And if you wanted to do again a simple random
13 sample at 90 percent confidence, plus minus 10 margin of
14 error, you would need 2,927 customers; is that right?

15 A. That sounds about right. I'd have to check.
16 I don't have that. It sounds about right.

17 Q. Okay. And what you propose is to run a
18 stratified random sample of 70 grandfathered customers
19 and to extrapolate those results to all Schedule 136
20 customers?

21 A. For the generation profile, yes.

22 Q. Yes?

23 A. Yes.

24 Q. And just for everybody's benefit in the room,
25 stratified sample means that you are dividing the

1 population into smaller groups, correct?

2 A. Yes. Based on their variance in their -- the
3 variance, yes.

4 Q. In other words, you hope that by creating
5 smaller groups, you reduce the standard deviation which
6 allows you to sample a smaller set, correct?

7 A. Yes.

8 Q. And here you are stratifying based on
9 nameplate capacity?

10 A. Yes.

11 Q. And you are measuring generation?

12 A. Yes.

13 Q. And your stratification depends on your
14 assumption that nameplate capacity correlates with
15 generation, right?

16 A. That is accurate.

17 Q. And if that assumption proves to be different,
18 then your sample may not generate, I think the 95
19 percent confidence, 10 percent margin of error, that you
20 said it will achieve today; is that right?

21 A. Can you state the question one more time.

22 Q. Sure. If the assumption about generation and
23 nameplate capacity proves to be incorrect, your study
24 may not generate the 95 percent confidence, 10 percent
25 margin of error that you are aiming for; is that right?

1 A. In any study, if that's the case, I mean
2 there's always a chance it might not, but we have done
3 these studies with stratified approaches for load
4 research for approximately 30 years using stratified
5 approach. I have no reason to believe that it would not
6 give us reasonable results this time.

7 **Q. Sorry. Who has done this for 30 years?**

8 A. PacifiCorp.

9 **Q. Okay. Not you?**

10 A. Not myself, no.

11 **Q. Okay. But again, the question is, if the**
12 **correlation is not as you anticipate, the results of**
13 **your study may not meet the benchmarks that it's**
14 **tailored to; is that right?**

15 A. Yes. But the correlation, based on the 130 --
16 or the 135, Schedule 135 customers and the 36 sample
17 that we have for the net metering docket indicates that
18 the correlation is very high between nameplate and
19 generation. 93 percent.

20 **Q. So let's -- I have a few questions now about**
21 **the -- where you are pulling your data from for the**
22 **sample. There is a zero percent chance that a Schedule**
23 **136 customer would have their generation data sampled as**
24 **part of the generation sample; is that right?**

25 A. That is accurate, yes.

1 Q. And again, you intend to use that data to
2 extrapolate generation over all 136 customers; is that
3 correct?

4 A. That's correct.

5 Q. Are you aware that the requirements for
6 extrapolating a statistical sample to a population is
7 that each item in that population had to have a greater
8 than zero chance of being sampled?

9 A. State the question again, please.

10 Q. Are you aware that the requirements of
11 extrapolating a statistical sample to a population is
12 that each item in that population had to have a greater
13 than zero percent chance of being sampled?

14 A. Yes.

15 Q. And so here, you would agree with me that
16 there was a zero percent chance of any transition
17 customers being sampled, correct?

18 A. That is correct.

19 Q. So as a statistical matter, you are violating
20 that rule, correct?

21 A. I am.

22 Q. So mathematically, the sample from the 135
23 customers would not be representative as to the 136
24 customers, correct?

25 A. I am -- no, it is not. That is correct.

1 Q. Sorry. Which is correct?

2 A. You asked if that was correct, right?

3 Q. That would not be representative --

4 A. Yes.

5 Q. -- of the Section 136 customers. You are
6 agreeing with that?

7 A. I agree. It's by nature of design. It's not
8 to represent -- be representative for 136 customers.

9 Q. You testified in your summary today, and it's
10 also in your direct, that you -- and I assume you speak
11 on behalf of the company, that you believe that private
12 generation output will be similar between Section 135
13 and 136 customers. Am I repeating that correctly?

14 A. Yes, sir.

15 Q. Correct that the company hasn't done any
16 comparison of system output between Schedule 135 and 136
17 customers, right?

18 A. It is impossible to make that comparison right
19 now. There is no information available for generation
20 from 136 customers.

21 Q. You have no data that backs up your
22 assumption; is that fair?

23 A. That's fair.

24 Q. You're aware that when the Schedule 135
25 customers installed their systems under the

1 grandfathered rate structure, they had different
2 economic incentives, namely the rate, than the Schedule
3 136 customers; is that right?

4 A. That's correct.

5 Q. And you would agree -- well, sorry. You don't
6 know how these incentives may have impacted either of
7 the groups choice in system design, right?

8 A. I don't know. No. No.

9 Q. So it's possible that there could be some
10 difference in system design between the 136 and the 135.
11 We just don't know.

12 A. Is that a question.

13 Q. Do you agree with that?

14 A. State the question again.

15 Q. We don't know if there is any bias between the
16 Schedule 135 and 136 customers?

17 A. We don't know. We can't test that right now.

18 Q. Your current plan is you are going to combine
19 the 36 existing generation profile meters with 34 new
20 meters, correct?

21 A. Yes, sir.

22 Q. And you understand that the sample of 36 was
23 created using four strata based on billed net energy
24 usage?

25 A. Yes, they were.

1 Q. And your supplemental sample of Schedule 135
2 users was created, again using four strata based on
3 nameplate capacity, correct?

4 A. That's correct.

5 Q. Also right that the prior sample of 36 was
6 pulled from 1,578 customers, correct?

7 A. It sounds about right, yes.

8 Q. And here the population that you are going to
9 use to pull the 34 additional supplemental meters is
10 24,082; is that right?

11 A. Yes.

12 Q. I think we already discussed this, but you
13 don't plan to weight your sample results in any way to
14 account for the different probability of selection that
15 the 36 had versus the 34; is that right?

16 A. No, I do not. I do not.

17 Q. Are you aware that that may introduce some
18 bias into the point estimate that you generate from that
19 group?

20 A. I don't think it will. I'd have to test that
21 theory, though.

22 Q. Are you aware that as a matter of statistics
23 that if you, if your -- the sample that you have
24 generated had different likelihoods of selection, that
25 in order to avoid bias, that you actually need to weight

1 **based upon the probability of selection?**

2 A. Again, I'd have to test that theory. Have to
3 look at the data.

4 Q. I want to read to you. Are you familiar with
5 a book called Sampling Techniques by William Cochran?

6 A. Yes.

7 Q. Pretty well known treatise?

8 A. Yes.

9 Q. One of the things that Mr. Cochran writes is,
10 "In general terms, the consequences of using weights
11 that are in error are as follows." And the first items
12 he lists is one, the sample estimate is biased.

13 So would that suggest to you that you actually
14 do need to be weighting the 36 and the 34 based upon
15 their probability of selection?

16 A. I, again, I would have to test, look at it to
17 see if that situation needs to be taken into
18 consideration.

19 Q. So you are just not familiar with the concept?

20 A. I would have to test the theory to see if it
21 needs to be taken into consideration.

22 Q. You need to test Mr. Cochran's theory?

23 A. The weighting that you are recommending or
24 suggest.

25 Q. You understand that if the items in the sample

1 need to be weighted differently, and you fail to take
2 that into account, that that may -- may impact your
3 margin of error?

4 A. Again, I would have to test this theory. The
5 question is based on the previous assumption that I
6 agree with you about the weighting. I'd have to test
7 it.

8 Q. So again, just for everybody's benefit, that's
9 not something you have taken into account?

10 A. No.

11 Q. And if it's -- if you go back and you test
12 this, and it turns out that what I am saying is correct,
13 and that drives a change in your margin of error, that
14 may impact the reliability of your results, correct?

15 A. It would affect the accuracy perhaps of my
16 sample.

17 Q. And if that was in fact the case and we didn't
18 learn it until the study was over, everybody would have
19 to settle for less accurate data; is that right?

20 A. Yes. But I have proven, using the approach
21 that I have taken, that we do meet the accuracy level
22 that we set out to obtain.

23 Q. You continually refer to the 36 as being
24 randomly selected; is that right?

25 A. Yes.

1 Q. Are you aware that of the 36 customers that
2 currently have -- 36 grandfathered customers that
3 currently have generation meters, that that was actually
4 a subgroup of 52 customers that were selected to have
5 such meters installed?

6 A. We attempted to have generation profile meters
7 put on every one of the 52, but given people's hesitancy
8 to have that installed in their home, we were only able
9 to install 36.

10 Q. And in fact you had to provide an incentive to
11 those 36, right?

12 A. Exactly, yes.

13 Q. And that incentive was a hundred dollars?

14 A. Yes.

15 Q. Are you -- have you considered whether or not
16 there is a bias between the 36 that did decide to
17 install those meters and the 16 that did not?

18 A. Restate the question, please.

19 Q. Have you considered whether there is any
20 differences between the 36 customers that agreed to have
21 the meter installed versus the remainder of the 52 that
22 did not?

23 A. I don't know how we would test that without
24 the other meters, but I did not consider that, no.

25 Q. So it's possible that there may be differences

1 between the 36 homes and the 12 homes. We just don't
2 know? Sorry, 16 homes. We don't know?

3 A. We don't know.

4 Q. And we can't know because there aren't meters
5 in the remaining 52, correct?

6 A. Correct.

7 Q. And are you -- you are also aware that 36
8 meters were installed over four years ago; is that
9 right?

10 A. 2014.

11 Q. So roughly four years ago?

12 A. (Witness nods.)

13 Q. Have you considered whether or not there's any
14 degradation in either the meters installed or the
15 systems which are being measured that might impact the
16 study?

17 A. I am not overly concerned about the
18 degradation for two major reasons. One is the
19 degradation, half a percent a year is some estimates I
20 have read. Loss of output about half a percent. So,
21 yes, it does have a little bit of degradation, but in my
22 mind I don't see that as a huge factor for a variable
23 that's of secondary importance to the study behind
24 exports.

25 And then the other issue, the way we are going

1 to handle -- we are going to create a unity curve for
2 generation profiles is, we're going to take the output,
3 the max output, at any given time, and that's going to
4 be the scale or that's going to be one.

5 So ultimately, we're going to provide a shape
6 from the generation profile, and that shape, regardless
7 of degradation, will be the same because we're scaling
8 it to the max output during the course of the year.

9 **Q. My question is if you considered whether,**
10 **within those 70 customers, there is a bias or a**
11 **difference between the 36 and the 34 that, again, will**
12 **impact your results and your point estimate.**

13 A. Is there a bias? Is that the question? Will
14 you repeat that?

15 **Q. Yeah. Is there a difference that you are**
16 **aware of between the 36 and the 34 that may impact your**
17 **results?**

18 A. I am not aware of an issue that would create
19 bias between 36 and the 34.

20 **Q. But, again, that's something that we can't**
21 **know, so it's possible it can exist?**

22 A. I have committed to, in my rebuttal testimony,
23 to test that theory. The division made a recommendation
24 to test that. And I have made a commitment in my
25 rebuttal testimony to look at that specifically, to see

1 if there is an issue between the 36 and the 34.

2 Q. And if there is an issue between the 36 and
3 the 34, is it -- do you have a contingency plan to draw
4 more grandfathered customers for that sample?

5 A. At this time, no.

6 Q. So you are just going to check the data and
7 report out on it, but there isn't a backup plan if it
8 turns out that there is a bias?

9 A. Not at this time. But we would add additional
10 meters if it was an instance of bias determined, which I
11 don't expect to be the case. But we would add
12 additional meters to supplement the sample.

13 Q. And how would you determine how many
14 additional meters to add?

15 A. Again, I haven't determined an approach to do
16 so right at this time.

17 Q. And so the study is supposed to run, I believe
18 it's designed right now for calendar year 2019, correct?

19 A. Yes.

20 Q. So if you are in March or April or May, or
21 pick a month, and it turns out that you are detecting a
22 bias, whatever additional meters that you install is
23 going to give a less than full view of the study year,
24 that's right?

25 A. In that particular case, we would probably

1 extend the study period to be whatever it need to be to
2 cover an entire year, is my thought right now, is my
3 knee jerk on your question. I would probably extend it
4 to be, test period that would extend another few months
5 to cover the missing data from the particular sample
6 sites that were added.

7 Q. But, again, right now, there is no contingency
8 plan if for any reason more sample sites are needed?

9 A. Not at this time.

10 Q. We discussed a little bit earlier the use of a
11 stratified random sample, right?

12 A. Yes, sir.

13 Q. And you're effectively using a stratified
14 random sample to reduce the population that you need to
15 test from a little over 4,000 down to 70, right? And
16 again, with a 95 percent confidence level, 10 percent
17 margin of error?

18 A. Yes.

19 Q. And again, you're basing your ability to do
20 that on your assumption that nameplate capacity
21 correlates with generation; is that right?

22 A. Yes.

23 Q. And again, if your assumption proves to be
24 incorrect, the standard deviations that you designed
25 your study around may also be incorrect, right?

1 A. There may be, but based on the -- looking at
2 the 36 from the net metering docket and their nameplate
3 capacity and the production that we observed, we have no
4 reason to believe that that would be the case.

5 Q. You say that you looked at the 36
6 grandfathered customers that are already in the study to
7 determine if there is a correlation between nameplate
8 capacity and generation; is that right?

9 A. Yes, sir.

10 Q. And you are referring to rebuttal Table 1 in
11 your rebuttal?

12 A. Yes, Table 1.

13 Q. And in Table 1 you report a correlation
14 between generation nameplate capacity is .93; is that
15 right?

16 A. That is accurate.

17 Q. And you view that as a pretty good
18 correlation?

19 A. They're highly correlated.

20 Q. And at the bottom, you show correlation
21 between generation and full-requirements energy as .63;
22 is that right?

23 A. Yes, sir.

24 Q. And lines 110 to 111, you describe that .6
25 degree, and you say, "Full requirements or total energy

1 is not well correlated with private generation system
2 output." Am I reading that right?

3 A. Yes.

4 Q. And so again, your view is .63 is not well
5 correlated, correct?

6 A. Out of context -- I mean, in the context
7 that's being discussed here, regarding the other
8 comparisons in Table 1, it's not as well correlated.

9 Q. Would you consider in the context here .65
10 being well correlated?

11 A. Relative to the .93, not as well correlated.

12 Q. What about .68?

13 A. Again, not as well correlated as the .93.

14 Q. Are you aware, Mr. Elder, that correlation of
15 the 36 customers that are included in your Table 1, 30
16 of them are strata one customers? Are you aware of
17 that?

18 A. For this -- for this particular proceeding,
19 they are. But not for -- not for a net metering sample.

20 Q. For this proceeding they are all in strata
21 one. 30 to 36, you would agree with that?

22 A. Yes.

23 Q. Would you be surprised if I told you that the
24 correlation for those 30 customers is .68?

25 A. Correlation of what? Nameplate to generation?

1 Q. Yes.

2 A. I would be surprised, yes.

3 Q. I can tell you that we did the math, and it is
4 .68.

5 A. I don't have access to your information.

6 Q. I can tell you, we actually based this off of
7 the data that you provided to us. Did you look into
8 what was driving this .93?

9 A. The correlation between nameplate and
10 generation.

11 Q. Did you look at the specific results for each
12 of the 36 members of the population that helped create
13 this .93?

14 A. No. I simply looked at their nameplate
15 capacity and their generation output and used that to
16 correlate.

17 Q. So if I told you the .93 was driven largely by
18 one large outlier home that was highly correlated, would
19 that change your view of the .93 showing high
20 correlation?

21 A. No. No.

22 Q. So the fact that -- that that 30 of the 36
23 actually have .68 correlation doesn't change your view
24 that the .93 is a fair representation of how correlated
25 generation and nameplate capacity is?

1 MS. HOGLE: Before he proceeds, I'd like to
2 object on the basis that he misrepresents his question
3 in that he states it as a fact, and the company has not
4 seen the information that he is basing his question on,
5 regarding the 30 and the 68 -- .68 correlation
6 coefficient. He has been stating it as a fact, and the
7 company hasn't seen that information.

8 MR. MARGOLIN: I can represent that the data
9 that we used to calculate this is a spreadsheet that I
10 believe Mr. Elder provided himself. If he wants us to
11 take the assumption as a fact for the moment, reserve
12 his rights to disagree with it, that's perfectly fine.
13 I am just asking for if that would change his view on
14 the assumption that I am correct. He can obviously
15 disagree with the calculation if he wants to.

16 COMMISSIONER LEVAR: And since we don't have,
17 at this point, testimony regarding Volt Solar's
18 calculation with respect to the 30 homes versus the 36,
19 let me just ask you to take a shot at rewording the
20 question and see if we still have an objection, with
21 that understanding.

22 Q. (By Mr. Margolin) Mr. Elder, if it turned out
23 that 30 of the 36 homes that you tested had a
24 correlation of .68, would that change your view of the
25 reliability of the .93 correlation that you present?

1 A. Yes, it would.

2 Q. You are aware, Mr. Elder, that the settlement
3 stipulation that created this proceeding states, "That
4 parties may present evidence addressing reasonably
5 quantifiable costs or benefits or other considerations
6 they deem relevant, but the party asserting any position
7 will bear the burden of proving its assertions."

8 Are you familiar with that?

9 A. I am, yes.

10 Q. And so you understand that every party in this
11 proceeding, including the company and including all the
12 intervenors and the commission, bears the burden of
13 proof with respect to the positions that they intend to
14 take?

15 A. Yes.

16 Q. And you are aware that the settlement
17 stipulation also states, "That parties may present
18 evidence addressing the following costs or benefits:
19 Energy value, appropriate measurement intervals,
20 generation capacity, line losses, transmission and
21 distribution capacity and investments, integration and
22 administrative costs, grid and ancillary services, fuel
23 hedging, environmental compliance and other
24 considerations."

25 Are you aware of that?

1 A. Yes.

2 Q. And RMP had taken -- the company here has
3 taken the position that, I believe you said it a few
4 times today, that export data is the primary driver
5 here, and generation data is secondary; is that right?

6 A. It's of secondary importance to the study,
7 yes.

8 Q. It's of secondary importance to the study that
9 RMP plans to conduct, right?

10 A. Yes.

11 Q. You can't assess the importance of the data to
12 any of the intervenors' study that they plan to conduct;
13 is that right?

14 A. That is correct.

15 Q. So you designed, the load research plan to, in
16 your mind satisfy RMP's needs, without considering what
17 others may need for the positions they intend to take;
18 is that right?

19 A. I did take into consideration for other
20 parties' recommendations for higher accuracy. So I have
21 taken into consideration for other parties' input.

22 Q. In terms of the accuracy of the sample that
23 you have designed, right?

24 A. Correct.

25 Q. Not in terms of the collection of any other

1 data or information?

2 A. That is correct.

3 Q. And just to be clear, the company is objecting
4 to much of what the intervenors have asked for in terms
5 of additional data; is that right?

6 A. I am not -- much is a big word. Can you
7 clarify what exactly we are not committing to?

8 Q. Sure. So let's talk about the customer survey
9 that Vote Solar has requested. The company objects to
10 that, correct?

11 A. We do.

12 Q. And you would agree that behind-the-meter
13 usage impacts net exports, right?

14 A. Yes.

15 Q. And you wouldn't disagree with me that that
16 survey could help understand how systems with similar
17 generation capacities produce different exports, right?

18 A. State the question again.

19 Q. Would you agree with me that a survey may
20 provide insight into how systems with the same nameplate
21 capacity could produce different exports?

22 A. I fail to see how that would provide any
23 meaningful data for the export, for the purpose of this
24 proceeding. The exports information will have a
25 complete census on that data. We will know what a

1 particular customer's exporting to the grid, regardless
2 of what their appliances are.

3 Q. My question again was different, which is, you
4 would agree that a survey could help you understand how
5 two homes with the same system capacity can produce
6 different levels of exports, right?

7 A. I don't think so.

8 Q. You don't think there's any value in knowing
9 what appliances one home is running versus another, and
10 that that may provide some learning into how different
11 members of the population will ultimately export energy,
12 which you yourself said is a primary importance here?

13 A. I don't see the value of asking a survey for
14 our customers. I feel like it's an intrusion on their
15 privacy and additional cost for this proceeding. It's
16 unnecessary.

17 Q. But I think the -- just to be clear, you just
18 said that the total cost for this proceeding was going
19 to be \$79,000; is that right?

20 A. Yes.

21 Q. And you estimate that the additional cost for
22 a survey would be roughly 10 to \$20,000?

23 A. Somewhere in that range.

24 Q. If an intervening party was hoping to take a
25 position, based upon how an individual customer's

1 appliances, age, employment status, number of people
2 living in their home impacted exports, they would not be
3 able to do so based upon survey information because RMP
4 is denying that information, correct?

5 A. Yes, that is correct.

6 Q. And in your rebuttal testimony, you actually
7 state that customer's loads can exhibit a very wide
8 level of diversity and are dependent upon individual
9 humans and their sporadic behaviors. Right?

10 A. Yes.

11 Q. And wouldn't a survey capture individual
12 humans and their sporadic behaviors?

13 A. The export data that's coming from a
14 particular house should provide you information on what
15 their export are. A full census of that information.

16 Q. Without any insight into what their generation
17 is, correct?

18 A. Generation is going to be coming from a
19 private -- from a sample -- sample of these homes.

20 Q. So you won't be able to look at two homes and
21 understand what drives differences in export based upon
22 the study that you have designed, right?

23 A. We would not be able to dive into what
24 individual houses have for appliances. But again, we
25 don't see any value of that information. We don't

1 understand how that's going to be used for this
2 proceeding to determine the value of export credits.

3 Q. You actually won't be able to understand what
4 drives difference in exports between different systems
5 at all, because you won't have any of the
6 behind-the-meter data, will you?

7 A. We will have behind-the-meter consumption
8 based on the private generation sample, and we'll have
9 exports, and we'll have deliveries, and we will be able
10 to calculate what the behind-the-meter consumption is.
11 Relative to the survey, no. We will have no information
12 on particular appliance saturations and that sort of
13 thing.

14 Q. And to the extent that Vote Solar has
15 requested a production meter installed on all transition
16 customers, the company also opposes that request, right?

17 A. We do.

18 Q. And again, that sort of information would
19 allow one to look into what drives exports in terms of
20 customer behavior, right?

21 A. We -- I'm sorry. State the question again.

22 Q. The installation of production meters on
23 transition customers, who are already going to have the
24 import/export meters, would allow you to compare
25 different homes and understand how different homes

1 generate different exports, correct?

2 A. We'll be able to do that with the sample as
3 proposed.

4 Q. You will be able to do that by combining
5 different populations, right?

6 A. Yes.

7 Q. You won't be able to look at 10 houses with
8 the same capacity and actually understand what they are
9 importing and exporting. You have to extrapolate that
10 data, right?

11 A. No. We will be able to look at individual
12 houses depending on their nameplate capacity, the
13 information they provided, their application
14 interconnection agreements. We'll be able to look to
15 see, if you have the nameplate capacity of 10 megawatts,
16 we will be able to tell you all the exports for anybody
17 that has a nameplate capacity of that amount. We'll
18 have a census of everyone that's going to be a
19 transition program customer.

20 Q. You're creating a generic generation profile,
21 right?

22 A. Yeah. It's average production profile for the
23 entire state of Utah.

24 Q. And so for each transition customer, I
25 understand you are going to have a census of

1 import/export data, right?

2 A. Yes.

3 Q. But you are not going to have any production
4 data for those customers, will you? You won't have any
5 generation data?

6 A. Not for the 136, no.

7 Q. Likewise, Vote Solar and other intervenors
8 have requested to obtain certain system characteristics,
9 correct?

10 A. Yes.

11 Q. And specifically system capacity, orientation,
12 tilt and zip code information, right?

13 A. Yes, sir.

14 Q. And in your rebuttal, you say that the
15 company's transition program applicants already gather
16 the information for private generation system capacity,
17 orientation, tilt and zip code." Right?

18 A. That information is available from
19 interconnection applications.

20 Q. In your testimony though, you specifically
21 mentioned transition program applicants. Is that
22 information also available for grandfathered customers?

23 A. The information from grandfathered customers
24 was collected starting in July of 2017. So partial --
25 some information available for grandfathered customers.

1 Q. Do you know how many of the 70 grandfathered
2 customers that you intend to have be part of your sample
3 actually have that information?

4 A. Well, that's a -- of our sample of the 70?

5 Q. Yes.

6 A. Yes, I do.

7 Q. You do. How many?

8 A. Well, for orientation. I don't have
9 information on tilt, and some of the other requests from
10 Vote Solar.

11 Q. So how many have information on, you said
12 orientation; is that right?

13 A. Orientation.

14 Q. How many have information on orientation out
15 of that 70?

16 A. What we were able to track down all 70 for
17 orientation. But after reviewing the information we
18 have, we have roughly 10,000 customers out of the 24,000
19 customers that have some characteristics of their
20 systems available. And I don't know how many we were
21 able to obtain from that 10,000 customers that we
22 actually had information for, off the top of my head.

23 But I did look to that first to see if we
24 could get orientation data to provide some information
25 for the rebuttal. So there was some that came from that

1 list.

2 Q. But what matters for interpreting the
3 generation data that you are planning to provide is how
4 many of the 70 have that data, correct?

5 A. State the question again, please.

6 Q. You mention that you may have some portions of
7 data for up to 10,000 grandfathered customers. Am I
8 remembering that right?

9 A. That's true. That's correct.

10 Q. But you are collecting data on generation from
11 70 customers, correct?

12 A. Yes.

13 Q. So in order to make use of the orientation
14 capacity, tilt, et cetera, data, you need to have it for
15 the 70 in order to understand how to apply it for
16 everybody else, right?

17 A. Not necessarily. The sample is not
18 designed -- the sample -- that sort of information
19 should be encapsulated in the sample. It's designed to
20 be representative of the entire population. And in
21 doing so, as I proved in my rebuttal testimony, the
22 saturations for a sample -- orientation, I'm sorry.
23 Orientation for a sample is pretty consistent with what
24 we see for the entire 10,000 that we do have information
25 available for.

1 Q. You -- let's assume you have the orientation
2 data for the 70. You don't know what you have for the
3 remaining -- for tilt and zip code and capacity, right?

4 A. Tilt, not for tilt. Zip code's relatively
5 easy to have or get. We do have zip code for those.
6 Tilt, we have some information available for the 70. I
7 don't know the number off the top of my head what that
8 is.

9 Q. So to the extent somebody wanted to use the
10 generation profile that you are creating to understand
11 how different system characteristics impacted
12 generation, it wouldn't be able to do that based upon
13 the study that you have designed, because that
14 information isn't captured, right?

15 A. The sample is not designed to be, to tease out
16 particular orientation characteristics. So to split out
17 the west facing from the east facing and apply only that
18 production curve to east facing, west facing, it's
19 designed to be representative of the entire state of
20 Utah. So the question is, it's a strange question to
21 answer.

22 Q. Let me see if I can clarify. I am not asking
23 if you designed your sample based upon that data. I am
24 asking if you are collecting that data so that somebody
25 who wanted to take a look at how orientation, tilt,

1 et cetera, impacted generation, could do so. And the
2 answer is, you are not collecting it, right?

3 A. I have -- to some degree, I have some of that
4 information available, but not for all of the aspects
5 that were requested.

6 Q. And sitting here today, we just don't know
7 what we have for any of the 70, other than I believe you
8 said orientation?

9 A. Orientation, zip code, those are the two that
10 come to mind. And some tilt.

11 Q. You discuss a number of times in your rebuttal
12 testimony that one of the reasons not to install
13 additional production meters is because of cost; is that
14 right?

15 A. As I record.

16 Q. And your -- to estimate cost, and I am going
17 to be careful not to go into anything confidential here,
18 you are using 2014 costs; is that right?

19 A. Information that came from, yeah, from the
20 installation in 2014.

21 Q. Has the company done a RFP to see what it
22 would cost to do those installations now?

23 A. We have not, no.

24 Q. Is it the company's view that there were no
25 inefficiencies or cost savings that they could

1 accomplish now based on having done this 36 times four
2 years ago?

3 A. I don't know the answer to that question. The
4 information provided for the cost was what we witnessed
5 or experienced from 2014. Regarding efficiencies, I
6 don't have an answer for that.

7 MR. MARGOLIN: I think I'm through for the
8 moment, thank you.

9 COMMISSIONER LEVAR: I think I'll go to
10 Mr. Holman next. Do you have any cross-examination for
11 this witness?

12 MR. HOLMAN: We don't. Thank you.

13 COMMISSIONER LEVAR: Okay. Mr. Mecham.

14 MR. MECHAM: Thank you, Mr. Chair.

15 CROSS-EXAMINATION

16 BY MR. MECHAM:

17 Q. Mr. Elder, in your summary, and in your
18 testimony just a moment ago, you talked about the fact
19 that the cost of your study that you are proposing, that
20 the company is proposing, is \$79,000.

21 A. Yes, sir.

22 Q. How did you calculate that?

23 A. We used the average cost that I used in the --
24 that's laid out in the rebuttal, my rebuttal testimony.
25 Multiplied that by the 34, since those 34 will be

1 required. Those would be new. The other 36 are already
2 installed.

3 Q. Right. So there's no cost for the 36?

4 A. Correct.

5 Q. What kind of impact would this cost have on
6 all rate payers?

7 A. I am not a -- that's not my expertise. I
8 don't know the answer to that question. I just know
9 that I try to be a good steward -- we try to be good
10 stewards for our customers, not spend money that's
11 unnecessary.

12 Q. Okay. But as Mr. Margolin pointed out, all
13 parties are required to -- we have the burden of proof,
14 if we want to make any sort of claim that there's
15 benefit, correct? That's what we are under? That's the
16 standard we are following here?

17 A. Yes.

18 Q. And if we don't have the information we need
19 in order to do that, who bears that risk? Isn't the
20 company -- the company basically has all the data; is
21 that correct?

22 A. We do not have all the data. We have all the
23 data that -- we are trying to get all the data.

24 Q. You certainly have access to more so than
25 anyone sitting at this table; is that not correct?

1 A. I don't know what information you have at your
2 disposal. I'm sorry. I don't know.

3 Q. Okay. You mentioned that we met together in a
4 workshop on January 9th?

5 A. That sounds about right. January.

6 Q. In January. And we discussed the various
7 things that the parties thought they might need in order
8 to meet their burden of proof; is that correct?

9 A. Yes.

10 Q. And then we had a follow-up call on -- in
11 February, we'll say February 7th, I think was the date.

12 A. Sounds about right.

13 Q. And what changes did the company agree to
14 after our January workshop?

15 A. We increased the accuracy from -- initially it
16 was proposed to be plus or minus 10 percent at the 95
17 percent, which is the standard for load research
18 studies. We increased it to be plus or minus 10 percent
19 to 95 percent level.

20 Q. So that was the one change?

21 A. Yes.

22 Q. No other concerns were addressed that the
23 parties raised in that January workshop, or were they
24 just dismissed?

25 A. That was the -- we incorporated what I just

1 described to the study plan.

2 Q. In your rebuttal, you mentioned that Rocky
3 Mountain Power is willing to consider inverter data
4 where the customers are willing to share; is that
5 correct?

6 A. We are, yes.

7 Q. How would you use that data?

8 A. It would not be used to supplement the sample.
9 It would be used to, a separate study, just to have two
10 parallel studies occurring on generation.

11 Q. So it would be a check? What would it be?

12 A. Yes, a check. That would be a good way to
13 describe it.

14 Q. But it wouldn't supplement your sample in any
15 way?

16 A. No.

17 MR. MECHAM: I think that has covered our
18 grounds. Thank you.

19 COMMISSIONER LEVAR: Okay. Thank you.
20 Ms. Hogle, do you have any redirect?

21 MS. HOGLE: I do, thank you.

22 REDIRECT EXAMINATION

23 BY MS. HOGLE:

24 Q. Mr. Elder, you were asked a series of
25 questions this morning, first related to generation

1 sampling. Do you recall that line of questioning?

2 A. There's been quite a few lines, but yes, yep.

3 Q. Isn't it true that the purpose of this docket
4 is to determine the export credit for exported energy?

5 A. Yes.

6 Q. Isn't it true that the primary and only set of
7 data for establishing export credit for customer
8 exported energy is the exported energy?

9 A. Yes, the exported energy.

10 Q. Is Rocky Mountain Power using sample data to
11 come up with the exported energy from the transition
12 program customers?

13 A. No, ma'am. We are using a census of all
14 transition program customers. A hundred percent.

15 Q. So a sample isn't necessary?

16 A. No, ma'am. We have all data.

17 Q. Okay. Is the generation sample that the
18 company is using from the grandfathered net metering
19 customers necessary to determine the export credit for
20 customer exported energy?

21 A. No, it is not.

22 Q. Why did Rocky Mountain Power include the
23 generation data as a secondary variable in its load
24 research study?

25 A. We provided this for parties to have

1 additional data. We know from the net metering case
2 this was very -- a lot of information -- a lot of
3 information was requested. Although it's not necessary
4 for this docket, we did as a good faith effort for other
5 parties.

6 Q. You also had a series of questions related to
7 collection of data that parties may need or want for
8 their analysis in the next phase of this case. Do you
9 recall that line of questioning?

10 A. I'm sorry. Can you repeat that?

11 Q. Do you recall a series of questions related to
12 the collection of data that parties may need for their
13 analysis to determine the costs and benefits of
14 distributed generation for the second phase of the
15 proceeding? Do you recall that?

16 A. Yes, ma'am.

17 Q. Okay. For example, you were asked about a
18 survey related to appliances that customers may use and
19 how that might help the parties in their analysis; is
20 that correct?

21 A. Yes.

22 Q. Is it your understanding that the export
23 credit for exported energy will vary based on the types
24 of appliances that customer used?

25 A. No, ma'am.

1 Q. Another point of -- or data point that we
2 heard about in the same line of questioning is related
3 to the capacity of the systems. Do you recall that?

4 A. Yes.

5 Q. Is it your understanding that the export
6 credit for exported energy will vary based on the
7 capacity of the system?

8 A. It will not.

9 Q. In addition to that line of questioning, or as
10 part of that line of questioning, you were also asked
11 about orientation, tilt, those sorts of characteristics.
12 Do you recall that?

13 A. Yes.

14 Q. Is it your understanding that the export
15 credit for exported energy will vary based on the
16 orientation of a customer's solar rate?

17 A. It will not.

18 Q. Will it vary based on shading, estimated
19 shading?

20 A. It will not.

21 Q. Will it vary based on any of those
22 characteristics that company -- that parties deem
23 necessary in order for them to perform their analysis?

24 A. It will not.

25 Q. Isn't it true that the load research study

1 that parties propose or recommend comes at a steep cost
2 to customers?

3 A. It's expensive.

4 Q. It is expensive. For example, I believe one
5 line of questioning touched on adding production meters
6 to all transition program customers, or 136 customers,
7 correct?

8 A. That is correct.

9 Q. And can you remind us again what the cost
10 would be for the proposed load research study from
11 parties would be, taken altogether?

12 A. If -- for all transition program customers, if
13 every one of them had a meter installed, I'd have to
14 look at how many actually are installed, but one
15 estimate was that if we did a random sample, it would
16 require 4,000 meters to be -- production meters to be
17 installed. That would constitute about a \$9.3 million
18 cost to install that many.

19 Q. And so if doing that, if the benefit would be
20 to assist parties in the analysis that they deem is
21 necessary in the second phase of this docket, do you
22 think that \$9.3 million is worth the benefit of having
23 that information, given that any -- none of that
24 information, as you have testified, will have an impact
25 on the export credit for the exported energy from

1 customer systems?

2 A. I believe \$9.3 million is exorbitant amount of
3 money for this study for customers to pay.

4 Q. Is it your understanding that in determining
5 the appropriate load research study, the commission must
6 weigh the costs and the benefits and determine whether
7 the benefits of adopting the company's recommendations
8 on the load research study are worth the cost?

9 A. That is my hope. That's my hope.

10 Q. Is the company opposed to providing some of
11 the information that it collects anyway through the
12 interconnection applications related to orientation,
13 those types of characteristics, to the parties in the
14 next phase of this docket?

15 A. We will share that information that comes from
16 interconnection agreements for 136 customers with
17 parties.

18 Q. Does that necessarily have to be -- or does
19 that have to be part of the load research study, which
20 is the purpose of this case, which is to evaluate the
21 appropriateness of the load research study?

22 A. It does not.

23 Q. Okay. So isn't it true that parties can
24 introduce that evidence in the next phase of this
25 proceeding without requiring that type of information to

1 become -- or to be part of the load research study that
2 the company proposes?

3 A. That is true.

4 Q. Okay. Is it your understanding that a lot of
5 the information that you were asked about this morning,
6 really more appropriate for designing rates as opposed
7 to coming up with the appropriate load research study?

8 A. I am not a rate design specialist. I'd have
9 to defer to those experts.

10 Q. Okay.

11 MS. HOGLE: Can I have a moment please? Thank
12 you. I'm done with my redirect. Thank you.

13 COMMISSIONER LEVAR: Okay. Thank you.
14 Mr. Margolin, do you have any recross?

15 MR. MARGOLIN: A few brief questions. Thank
16 you.

17 COMMISSIONER LEVAR: Sure.

18 REXCROSS-EXAMINATION

19 BY MR. MARGOLIN:

20 Q. Mr. Elder, you suggested that the cost of the
21 study is that the intervenors collectively are
22 requesting would be \$9.3 million; is that right?

23 A. I -- that I -- what I had said was that there
24 was some comments about doing a random sample which will
25 require 4,000 -- 4,000 meters installed for the

1 generation profile meter of generation profile sample,
2 doing a random sampling approach, and I provided a cost
3 for that.

4 Q. But I believe you, yourself, predict that by
5 the end of this year, there will be roughly 1,000
6 transition customers; is that correct?

7 A. Nearly 1,100, yes.

8 Q. So your estimate based upon 4,000 is pretty
9 far afield of what it would be, even if anybody here was
10 suggesting -- if that was the recommendation, your
11 recommendation is pretty high?

12 A. We are -- I only provided projections to
13 December, the beginning of the test period. But we will
14 still be installing production meters throughout 2019.
15 They will be part of the study also, to have a hundred
16 percent sample.

17 Q. If we assume a thousand transition customers,
18 all of which have production meters installed, what
19 would your 9.3 million look like then?

20 A. What was the question again?

21 Q. If we assume a thousand transition customers
22 by the end of this year, and we assume that all of them
23 have production meters installed, what does your \$9.3
24 million estimate look like then?

25 A. 2.4 million.

1 Q. And do you know how that 2.4 million would
2 impact individual customers?

3 A. Can you restate the question, please?

4 Q. Sure. What impact would a Utah customer see
5 on their bill because of that 2. -- you said 4 million,
6 2.3?

7 A. I don't have a calculator, but ballpark.

8 Q. What would they see on their bill?

9 A. Again, I am not a rate design specialist. I
10 cannot -- but like I say, we're good stewards of our
11 customers' money.

12 Q. Like you say. Would -- would that 2.3 million
13 be capitalized over time?

14 A. It would be, yes.

15 Q. So it would be an expense that would be slowly
16 billed out to the customers, right?

17 A. I'm sorry. I don't know the answer.

18 Q. I just want to double back on something. You
19 said a number of places that ultimately the export rate
20 will not vary based upon system size, export, et cetera.
21 Is that right?

22 A. Yes.

23 Q. This proceeding is to determine the export
24 rate schedule, correct?

25 A. Yes. Well, the proceeding is Phase I to

1 determine the load research study. That's what I am
2 doing today.

3 Q. But Phase I and 2 together are meant to design
4 the export rate schedule, correct?

5 A. I -- I don't know about Phase II. I am not
6 here to talk about Phase II.

7 Q. So all your testimony about data that you
8 don't believe you need to generate an export credit does
9 not take into account what other parties believe they
10 may need to show the costs and benefits of solar, which
11 was expressly agreed upon in the settlement; is that
12 correct?

13 A. Can you restate the question, please?

14 Q. Sure. Put it simply, you only care about the
15 export data? You have made that clear; is that right?

16 A. It's the most important aspect to the study.
17 I still care about it, or I wouldn't be proposing it for
18 parties, but it's the most important.

19 Q. And you understand that all the parties in
20 this proceeding have the right to present evidence that
21 shows the cost and benefits of solar to help determine
22 the proper export rate; is that right?

23 A. That is my understanding, yes.

24 Q. And the reason that you -- one of the reasons
25 that RMP, the company is saying they don't want to

1 provide the additional meters, the survey, the system
2 characteristics is because the company doesn't believe
3 that that information is relevant in designing an export
4 rate; is that right?

5 A. Yes.

6 Q. But if other parties believe it is relevant,
7 they won't have access to that data; is that correct?

8 A. They will not, no. They will not have access.

9 MR. MARGOLIN: I have no further questions.

10 COMMISSIONER LEVAR: Okay. Thank you.

11 Mr. Mecham, any recross?

12 MR. MECHAM: Nothing.

13 COMMISSIONER LEVAR: Why don't we take a brief
14 break, and then when we return, we'll ask you to still
15 remain on the stand for questions from the three of us.

16 THE WITNESS: Okay.

17 COMMISSIONER LEVAR: So why don't we take 10
18 minutes.

19 (Recess from 10:26 a.m. to 10:40 a.m.)

20 COMMISSIONER LEVAR: Okay. We'll be back on
21 the record. We'll be back on the record, and I will go
22 to Commissioner Clark first. Do you have any questions
23 for Mr. Elder?

24 COMMISSIONER CLARK: I do.

25 EXAMINATION

1 BY COMMISSIONER CLARK:

2 Q. Good morning, Mr. Elder.

3 A. Good morning.

4 Q. My questions are going to relate to your
5 rebuttal testimony on pages 14 and 15, regarding
6 inverter data.

7 A. Okay. I am there, sir.

8 Q. So it's my understanding that inverters that
9 are in common use would provide production data for the
10 customer systems, correct?

11 A. Yes, sir, they would.

12 Q. And I think the principal concern you express
13 is, is just a question about whether or not customers
14 would provide the data?

15 A. That's one aspect of it, yes. And then --

16 Q. Do you have any other concerns? That's my --

17 A. Yeah.

18 Q. -- my first question to you.

19 A. Sorry. I cut you off. Yeah, there's other
20 concerns. Be self selected. If we ask a customer to
21 provide that information, it would introduce bias,
22 because that particular customer would say, I am
23 interested in doing that, yes. I'll provide my
24 information. They are not randomly sampled, and so
25 there would be some bias associated with that sample.

1 Other issue with that is, we have never --
2 load research, PacifiCorp's load research department,
3 has never used inverter data before, so we don't know
4 exactly what we are dealing with. But we're willing to
5 look at it this time and see what exactly it is and how
6 that relates to the revenue grade meters that we
7 typically use.

8 **Q. Do you have any question about the**
9 **trustworthiness of the data itself?**

10 A. Yeah. Some estimates that I have heard is
11 that the margin of error is a bit higher. I don't know
12 if I made it in my rebuttal testimony or not. I do have
13 concerns about it. I don't know exactly what the margin
14 of error is, but I have heard some indication that it
15 might not be as good as what we see from the revenue
16 grade meters.

17 The revenue grade meters' margin of error is
18 like .2 percent. It's very minor. And so going with
19 precedents, we recommend using the revenue grade meters
20 for the load research sample.

21 **Q. The last sentence of your answer that begins**
22 **on line 255 on page 15 suggests to me that the -- the**
23 **company's willingness to consider the information. Has**
24 **the company formulated any plan to seek the information?**

25 A. At this time we have not. I wrote the

1 rebuttal up just the other day, but I would -- I suspect
2 it would be something of the nature of us reaching out
3 to the customer in some form, working with solar
4 providers to see if that information be aggregated from
5 customers or collected from customers.

6 I have not yet put pen to paper and really
7 formulated a plan on that yet. But we're willing to
8 entertain it and try to figure out a way to do it to get
9 that information.

10 **Q. And when you say "solar providers," the**
11 **installers, the sellers of the systems?**

12 A. Yes.

13 **Q. Do they typically have access to the inverter**
14 **data of individual customers?**

15 A. To my knowledge, yes, sir. To my knowledge.
16 But I would defer to them to answer that question. I
17 believe you have to seek permission from the customer to
18 use that data, regardless if it's a solar provider or
19 Rocky Mountain Power requesting that information. It
20 has to be released by the customer for us to use it.
21 That's my understanding.

22 COMMISSIONER CLARK: Those are all the my
23 questions. Thank you.

24 THE WITNESS: You're welcome.

25 COMMISSIONER LEVAR: Commissioner White, do

1 you have any questions?

2 COMMISSION WHITE: I have no further
3 questions, thanks.

4 COMMISSIONER LEVAR: Thank you. I just have
5 one, maybe two questions.

6 EXAMINATION

7 BY COMMISSIONER LEVAR:

8 Q. On your rebuttal on page 14, when you talk
9 about Mr. Gilliam's recommendation with respect to a
10 survey, you have indicated anticipated response rates is
11 in the 6 to 10 percent range, and you have noted the
12 costs. How would you expect that 6 to 10 percent
13 response rate to correlate to your sample size that you
14 are collecting the data on for the load study?

15 A. For the -- so 6, of the generation profile?
16 The 70?

17 Q. Well, if you're surveying, I think
18 Mr. Gilliam's recommended surveying all of the
19 grandfathered and transition program customers, and you
20 are suggesting a probable 6 to 10 percent response rate.
21 How would that 6 to 10 response rate of all
22 grandfathered and transitional customers relate to your
23 sample group?

24 A. So for the -- tough question. So let's just
25 use 10 percent. For the transition program customers,

1 we estimate there would be about 1,100 of those
2 customers. So 10 percent response rate for them would
3 be roughly 110-ish. And then for the 25 -- 25,000, we
4 would look to get about, using 10 percent again, just
5 kind of a rough estimate, you are looking at 2,000-ish.

6 Q. So for the grandfathered group -- for that
7 grandfathered group particularly, is there much
8 likelihood you would get survey responses that are also
9 members of the sample group, or was -- does that even
10 relevant to the usefulness of the survey?

11 A. We would get, yeah, those hundred from the
12 transition program customers I described, would be -- we
13 would have export and delivery data for all them, yes.

14 Q. Right. Right but on the grandfathered
15 customers.

16 A. We perhaps would have those 70. We would
17 perhaps get some responses for them. I suspect it would
18 be pretty low, maybe a handful, seven. Just based on
19 rough calculus, 7 of those 70.

20 Q. Would there need to be some -- for the
21 grandfathered group, would there need to be some
22 relation for the survey information to be useful between
23 survey responses and knowing which, if any, responses
24 were part of your sample group?

25 A. Can you state that one more time? I'm sorry.

1 Q. I guess I am saying, is any of this relevant
2 for the grandfathered group?

3 A. I don't believe it's relevant for the
4 grandfather group, I don't think. I don't believe a
5 survey is really relevant.

6 Q. Right.

7 A. For this proceeding.

8 Q. But then you don't think my question -- or my
9 question is relevant to -- you have told us why you
10 don't believe the survey is relevant, but does this
11 issue on responses from the grandfathered group affect
12 that in any way? You know, making it more or less
13 relevant?

14 A. It would provide information on, depending on
15 appliance saturations from grandfathered customers, that
16 information would be available. I mean, it could be
17 used by parties for whatever purposes that they intend
18 to use it for, although I am still unclear what that
19 purpose is, from parties.

20 Q. Okay. Thank you. I think you have answered
21 my questions. Thank you.

22 A. You're welcome.

23 COMMISSIONER LEVAR: I think we are finished
24 with you then. Thank you, Mr. Elder, for your
25 testimony. Ms. Hogle, do you have anything further?

1 MS. HOGLE: No. Thank you, your Honor.

2 COMMISSIONER LEVAR: Yeah. I'll go to
3 Mr. Jetter next.

4 MR. JETTER: Thank you. The division would
5 like to call and have sworn in Mr. Robert Davis.

6 COMMISSIONER LEVAR: Mr. Davis, do you swear
7 to tell the truth?

8 THE WITNESS: I do.

9 COMMISSIONER LEVAR: Thanks.

10 ROBERT DAVIS,
11 called as a witness, having been first duly sworn, was
12 examined and testified as follows:

13 DIRECT EXAMINATION

14 BY MR. JETTER:

15 Q. Good morning, Mr. Davis. Would you please
16 state your name and occupation for the record.

17 A. My name is Robert Davis, and I'm a utility
18 analyst for the Division of Public Utilities.

19 Q. Thank you. And in the course of your
20 employment with the Utah Division of Public Utilities,
21 did you cause an -- excuse me. Did you create and cause
22 to be filed with the commission direct and rebuttal
23 testimony in this docket?

24 A. Yes, I did.

25 Q. And if you were asked the same questions that

1 are contained in both of those direct and rebuttal
2 testimony filings this morning, would your answers be
3 the same?

4 A. Yes, they would.

5 Q. Do you have any corrections or edits you would
6 like to make to those?

7 A. I do not.

8 Q. Thank you.

9 MR. JETTER: I'd like to move at this time to
10 enter the direct and rebuttal testimony of DPU witness
11 Robert A. Davis into the record.

12 COMMISSIONER LEVAR: If any party objects to
13 that, please indicate your objection. I am not seeing
14 any, so the motion is granted. Thank you.

15 MR. JETTER: Thank you.

16 Q. (By Mr. Jetter) Have you prepared a brief
17 statement summarizing the position of the division?

18 A. Yes, I have.

19 Q. Please go ahead.

20 A. Good morning. The division appreciates Rocky
21 Mountain Powers' efforts in the design of the proposed
22 load research study and other parties' recommendations.
23 The purpose of the export credit docket is to determine
24 a reasonable credit for customer generated energy
25 exported to the grid. The exported energy theoretically

1 avoid costs the utility would otherwise have on a
2 network basis. The exported energy and its timing are
3 reasonable data points to determine the export credit.

4 The energy that should be studied in this
5 docket is the sum of energy produced by customer
6 generation across Rocky Mountain Power's Utah system
7 that is not consumed on-site by those customers, export
8 energy. Export energy is the result of system
9 orientation, azimuth, tilt, shading, age, time of data,
10 and other system characteristics along with attributes
11 of customer energy use.

12 The cost to the utility to meet load varies
13 during the data. It is necessary to know how much
14 exported energy hits the grid and when. Studying
15 customer behavior in the way other parties are
16 suggesting would likely lead to useful information but
17 not aid in the scope of work for this docket, while
18 possibly adding considerable burden to Rocky Mountain
19 Power and costs to its customers.

20 Not knowing the design structure of the export
21 credit makes it difficult to know what data is needed.
22 Trying to design a load research study to collect data
23 over sufficient sample size, as suggested by other
24 parties, for the numerous export credit design
25 possibilities, is challenging. Narrowing the data

1 collection to generated energy, delivery and export data
2 seems reasonable and cost prudent.

3 The division's other witness, Mr. Charles
4 Peterson, will summarize the statistical rigor of the
5 load research study. The commission should approve a
6 robust study that will provide the necessary data to
7 help the parties advocate a reasonable export credit in
8 Phase II of this docket without undue burden to Rocky
9 Mountain Power and costs to its customers.

10 The proposed loads research study data, along
11 with other data available from Rocky Mountain Power and
12 possible supplemental data from customers, should
13 provide interested parties with enough information to
14 design the export credit.

15 Additions to the study could add costs out of
16 proportion to their benefits. The division suggests the
17 parties use the forthcoming workshops to find agreement
18 on the structure of the export credit and the needed
19 data for Phase II of the docket.

20 With the recommendations in its direct and
21 rebuttal testimonies, the division supports Rocky
22 Mountain Power's proposed load research study and
23 suggests the commission approve it.

24 MR. JETTER: Thank you. I have no further
25 questions on direct for Mr. Davis, and he is available

1 for cross from the parties.

2 COMMISSIONER LEVAR: Okay. Ms. Hogle, do you
3 have any cross-examination for Mr. Davis?

4 MS. HOGLE: I don't have any.

5 COMMISSIONER LEVAR: Okay. Mr. Snarr?

6 MR. SNARR: No questions.

7 COMMISSIONER LEVAR: Mr. Margolin?

8 MR. MARGOLIN: Thank you, Your Honor.

9 Mr. Mecham is going to go first if that's okay with the
10 Chair.

11 COMMISSIONER LEVAR: Sure.

12 MR. MECHAM: Thank you.

13 CROSS-EXAMINATION

14 BY MR. MECHAM:

15 Q. Good morning, Mr. Davis.

16 A. Good morning.

17 Q. Mr. Davis, throughout your testimony, you
18 express concern about the cost that may be imposed if
19 Rocky Mountain Power is asked to do more than what they
20 propose. What do you mean? What is your bottom line
21 here?

22 A. What do you mean by bottom line?

23 Q. What is the cost you are worried about? How
24 much?

25 A. We're -- we advocate for the public interest.

1 So any cost that is not needed to customers is not in
2 the public interest.

3 Q. So one dollar beyond 79,000 is not in the
4 public interest?

5 A. I think that's extreme, but we're talking
6 millions of dollars here, so yes.

7 Q. Well, what if we are talking about millions.
8 There was some discussion with Mr. Elder, and he didn't
9 know the answer, but what impact would it have on rate
10 payers if the study cost \$2 million?

11 A. I think if it hit the news that there was
12 going to be a million dollars multi --

13 Q. I didn't ask about the news. I am asking you,
14 what impact would it have on rates and on the customer?

15 A. I am not a rate expert. So I can't answer
16 that.

17 Q. Okay. How does the division intend to use
18 this Phase I in Phase II?

19 A. The export credit is designed to see how much
20 energy that the company would normally have to purchase
21 is offset by customer generation. That's what we intend
22 to pursue in Phase II.

23 Q. So but the solar interests, all the parties,
24 and I'll point directly to the solar interests, were
25 asked, if we were going to propose a benefit, that we be

1 able to quantify it and present it to the commission,
2 with the data we gain from this load research study. Is
3 that not correct?

4 A. That's correct.

5 Q. And based on the testimony you've read, do the
6 parties, other than you and Rocky Mountain Power, feel
7 that they are going to get the data out of this that
8 they need to do that?

9 A. I can only speculate of what the intervening
10 parties and the office are -- or how they are going to
11 use the data to proceed forward in Phase II, but the
12 division only sees the data that's necessary to
13 determine that export, that offset, that's important.

14 Q. But in order to determine that offset, aren't
15 you going to have to know what the benefits of the
16 rooftop solar power are?

17 A. Benefits compared to what?

18 Q. Costs. It's what we are doing. It's costs
19 versus benefits, right?

20 A. Well, the benefits -- we don't know what the
21 benefits the parties are trying to understand and how
22 they are trying to offset the cost to the utility.

23 Q. But rather than enable them to go down the
24 direction -- or take the direction they want, you want
25 to cut it off today?

1 A. I don't know what that direction is.

2 Q. You read the testimony?

3 A. I have.

4 Q. And --

5 A. I don't know what direction they are going in
6 Phase II. I just know they want to know all the
7 characteristics of customer generation, characteristics
8 in usage, system install, et cetera.

9 Q. And you don't think any of that will have an
10 impact on what ultimately the export rate is?

11 A. I think that that is actually included in
12 export energy that the company will be metering. I
13 think it's accounted for.

14 Q. Okay. That's your testimony. So be it. And
15 let me, just for clarification, you have no objection to
16 using the data from inverters?

17 A. No.

18 Q. How would you use it?

19 A. As support.

20 Q. Okay. Let me ask you a couple of questions
21 about your testimony. In your rebuttal testimony on
22 line 93, you say that it makes sense to acquire export,
23 delivery and generation data from the same sample
24 customer, whether it be grandfathered or transition
25 customers.

1 **Is that a correct statement?**

2 A. Give me a second.

3 **Q. Okay.**

4 A. Line 93 was it?

5 **Q. Yeah.**

6 A. Okay. Go ahead.

7 **Q. So you -- I read what I read. It says, "It**
8 **makes sense to acquire export delivery and generation**
9 **data from the same sample customer, whether it be**
10 **grandfathered or transition customers."**

11 A. That's correct.

12 **Q. Is that what the company is proposing to do?**

13 A. The company was basically saying at the time
14 they designed the load research study, there wasn't
15 enough transition customers to do that. So they have to
16 do something different to do a generation study, and
17 that was the 135 customers.

18 **Q. Thank you. Now, but you have seen Mr. Elder's**
19 **rebuttal, correct?**

20 A. Yes.

21 **Q. He says there's 213 transition customers**
22 **today?**

23 A. Today.

24 **Q. And by the end of the year, there will be**
25 **approximately 1,100?**

1 A. Correct.

2 Q. And the study period begins in 2019; is that
3 my -- is my understanding correct?

4 A. Correct.

5 Q. So you could use -- you could do exactly what
6 you said here; is that not correct?

7 A. That's correct.

8 Q. Wouldn't that resolve -- would that make sense
9 as you stated?

10 A. It would make sense, but there's also a cost
11 that goes along with that if we're interested in.

12 Q. But it's sort of an undefined cost. I haven't
13 been able to get you to tell me what -- what is
14 reasonable?

15 A. And I answered, I am not a design expert so I
16 don't know, when you was asking me about the impacts to
17 customers.

18 Q. Yeah. But you are kind of leaving us in a
19 very vague world here. Because you are saying we can't
20 get the data we believe we need to prove to the
21 commission the benefits, but you won't let us get it
22 because it costs too much. But you won't tell me what
23 that cost is.

24 A. I said the costs need to be reasonable.

25 Q. Okay. And just one more time, what is

1 reasonable?

2 A. I don't know.

3 Q. Have you done an independent analysis?

4 A. No.

5 Q. Have you, other than what -- have you analyzed
6 beyond what the company has given you?

7 A. To a degree, yes, from the 114 docket, but
8 mostly from this. From the information in this docket.

9 Q. So if -- if it's now possible to combine all
10 the export, delivery and generation, it's now possible
11 to combine that, wouldn't that -- wouldn't you want to
12 go in that direction?

13 A. That would make sense.

14 Q. Okay. Thank you. I'm going to also point you
15 to your rebuttal testimony on page 10, beginning on line
16 158.

17 A. Okay.

18 Q. You say here that system size, orientation,
19 tilt, azimuth, customer usage, behavior, weather trends,
20 et cetera, ultimately determine the amounts of excess
21 energy put to the grid and when.

22 A. Correct.

23 Q. Are you concerned that we're not getting the
24 data to show all those things?

25 A. Well, I wrote that sentence under the belief

1 that when installers go out and install, that from what
2 we have been told, they consider all of that when they
3 size the system. So the assumption is the export energy
4 covers all of that, at any given time, any data. We're
5 interested in what hits the grid.

6 Q. Well, we're interested in that, too, but there
7 are many factors that affect that, are there not, that
8 would be helpful to know going into Phase II?

9 A. No. We're interested in what hits the grid
10 and when. The export energy that comes off of that
11 system is dependent upon the nameplate capacity, what
12 the system is generating, and customer usage. So
13 whatever the export is, that's what we are concerned
14 about.

15 Q. That is a concern. But you are going to say
16 that's -- there's no other consideration that we have to
17 worry about?

18 A. I don't know what it would be.

19 Q. Okay. Now, just let me ask you as well, you
20 indicated on line 85 of your direct that -- I'm going to
21 the sample of 70, and you talk about the 36 customers
22 that were in a previous study having been randomly
23 selected. Is that your position that they are randomly
24 selected?

25 A. That was line 85 of my direct?

1 Q. Yes. Irrespective of the line, that is your
2 position, isn't it? I mean, the 36 customers that were
3 the subject of a previous study were randomly selected?

4 A. I believe so, yes.

5 Q. Weren't they self selected? I mean, haven't
6 you heard today that -- that they -- that the company
7 wasn't able to get people to agree to it, so they had to
8 pay them?

9 A. I guess. I'm not a statistical expert.

10 Q. I'm not a statistician, but that doesn't sound
11 very random to me.

12 A. That's probably an accurate statement.

13 Q. Okay. I am also interested in your rebuttal
14 beginning lines 149 through 155. I am trying to figure
15 out how this would work. Are -- let's see. Yeah.

16 A. What lines are those?

17 Q. I am looking at 149 of your rebuttal page 9.
18 It says -- well, I'll read it to you. It says, "The
19 customer behavior data sought by the interveners," and
20 this is a point you were making before, "is likely
21 already available in different forms and might be
22 compiled at the conclusion of the LRS," or load research
23 study. How does that work?

24 A. Emphasis on might. I would assume the company
25 has some information on its customers.

1 Q. But you know, several of the other parties
2 have said, you know, this is kind of our one shot deal
3 here. If we don't get Phase I right, we blow it in
4 Phase II. It almost sounds as though the division is
5 trying to supplement -- perhaps supplement what's being
6 studied down the line, but we don't really know what
7 that is. Am I wrong in interpreting it that way?

8 A. Yeah.

9 Q. I am trying to figure out how this works.

10 A. How what works?

11 Q. What you are suggesting here, this other forms
12 that we add to the load research study.

13 A. What I was suggesting there, there's
14 information available outside the load research study
15 that can be brought in. The load research study doesn't
16 necessarily have to look at all of this information.
17 There might be other information that's available that
18 can be compiled along with the load research study data.

19 Q. And what if, when we get to the end of this
20 study and we are now into Phase II, we are not able to
21 carry the burden we have been told we have to carry?

22 A. I believe that's why I wrote in -- also in my
23 summary, that the parties need to understand what that
24 data is, so it can narrow it down more. We still have
25 time. The workshops are going to take place between now

1 and January 1, 2019.

2 Q. But now we've come to the commission. We were
3 supposed to do this collaboratively; isn't that correct?
4 But now we have come to the commission. They are going
5 to have to make some decisions?

6 A. Correct.

7 Q. And there are proposals on the table that you
8 and the company reject; is that correct?

9 A. I wouldn't call them full proposals. That was
10 the problem we had going into this. We couldn't
11 understand what the intervening parties are actually
12 looking for and how it will be used in Phase II.

13 Q. Well, haven't they made recommendations on
14 what needs to happen in Phase I in order to use it in
15 Phase II?

16 A. They made recommendations to collect a lot of
17 data, but there is no substantial support to back up why
18 that data is needed.

19 Q. And you didn't assume that it could affect the
20 ultimate export rate decided in Phase II?

21 A. Making assumptions in our business is
22 dangerous.

23 Q. But you do it all the time; is that right?

24 A. As part of our business, that's correct.

25 Q. So -- so it's your testimony -- I am looking

1 at what the commission ordered in the 114 docket, and in
2 reference to this proceeding, it said, "We are hopeful
3 the additional time and data will better facilitate the
4 parties' ability to support their positions and
5 ultimately allow us to enjoy a high degree of confidence
6 in determining appropriate value for D&D customers'
7 exported energy."

8 There are three parties here, is that not
9 correct, who are saying, no, we are not going to have
10 the data we need? The only ones that will have the data
11 they need are you and the company. Is that correct?

12 A. I'm not in a position to say that.

13 Q. So if I am right, and we can't bear our
14 burden, because this was not done correctly, who
15 bears -- who bears that burden? Who bears that risk or
16 who should?

17 A. I guess everybody involved with this docket.

18 Q. Well, you know, if this study, if this load
19 research study were to cost a million dollars, we'll
20 just put that out as a hypothetical, and we were able to
21 prove a benefit of two million, because we got the data
22 we needed, wouldn't that be worth the million dollars we
23 spent?

24 A. Yes.

25 Q. And if we're unable to do that, all rate

1 **payers suffer as a result; is that correct?**

2 A. Possibly, yes.

3 MR. MECHAM: Okay. Thank you. I have nothing
4 further, Mr. Chair.

5 COMMISSIONER LEVAR: Okay. Thank you.
6 Mr. Margolin, do you have anything for Mr. Davis?

7 MR. MARGOLIN: Yeah, just a few short
8 questions.

9 CROSS-EXAMINATION

10 BY MR. MARGOLIN:

11 **Q. Mr. Davis, can I direct you back to lines 149**
12 **through 151 of your direct testimony, please? I'm**
13 **sorry, rebuttal testimony.**

14 A. 149?

15 **Q. Yes, sir.**

16 A. Okay.

17 **Q. And this is a line where you write, "The**
18 **customer behavior data sought by the intervenors is**
19 **likely already available in different forms and might be**
20 **compiled at the conclusion of the LRS."**

21 I just want to ask you, are you aware of any
22 **source of the customer behavior data at the moment?**

23 A. I don't know. I have never asked for it. I
24 don't know if it exists or not. That's why I said
25 might.

1 Q. And you are not aware of any commitment by the
2 company to provide any such data that might be available
3 as part of this proceeding, correct?

4 A. I am unaware if they have ever been asked for
5 that. I have not asked for that.

6 MR. MARGOLIN: Okay. Thank you. I don't have
7 any more questions.

8 COMMISSIONER LEVAR: Okay. Mr. Holman, do you
9 have any questions for Mr. Davis?

10 MR. HOLMAN: No, Mr. Chair we don't.

11 COMMISSIONER LEVAR: Okay, thank you.

12 Mr. Jetter, any redirect?

13 MR. JETTER: Just a very brief redirect.

14 REDIRECT EXAMINATION

15 BY MR. JETTER:

16 Q. You were asked a question earlier about if the
17 study cost a million dollars but provided \$2 million of
18 benefits to the post-transition customers, would that be
19 a good investment, and you answered yes. Is that
20 correct?

21 A. Uh-huh.

22 Q. Who -- in your answering that question, who
23 were you assuming would pay that \$1 million? Is that
24 the transition customers paying that \$1 million in their
25 rates, or are you assuming that all customers pay that

1 million dollars?

2 A. All customers would pick up that tab.

3 Q. And so with respect to that question, would
4 that then be -- would you consider that a good deal for
5 the non-post-transition customers who are paying
6 presumably the bulk of that million dollars to provide
7 \$2 million of benefits to a small subset of customers?

8 A. No, I would not.

9 MR. JETTER: Okay. I have no further
10 questions. Thank you.

11 COMMISSIONER LEVAR: Thank you. Any recross,
12 Mr. Mecham?

13 MR. MECHAM: Just a slight question here.

14 RE CROSS-EXAMINATION

15 BY MR. MECHAM:

16 Q. If the two million -- Mr. Jetter asked you if
17 non rooftop solar customers would benefit. Did I
18 understand that question correctly? From the \$2 million
19 savings in my hypothetical?

20 A. Who are you asking?

21 MR. JETTER: I'm not sure.

22 Q. (By Mr. Mecham) I'm actually asking you.

23 A. Okay. Say that again please.

24 Q. I was -- I got distracted. But I am trying to
25 remember if Mr. Jetter asked you, if there was a

1 \$2 million savings, would the -- who would benefit from
2 that? I am not sure if that was exactly his question.
3 I could go back and ask the court reporter but --

4 A. He, as I recall the question was, is the
5 \$2 million, would the benefit be worth it to all
6 customers for a small group of customers to benefit. I
7 think was the question.

8 Q. Well, he changed my hypothetical if that was
9 his question. Because if it was a \$2 million savings in
10 revenue requirement, all customers would benefit, would
11 they not? In other words, a reduction in \$2 million,
12 wouldn't all customers benefit? That would be
13 distributed across the various customers?

14 A. Yes.

15 Q. Thank you.

16 MR. JETTER: Can I ask a follow-up to that?

17 COMMISSIONER LEVAR: Sure. Let me just see if
18 Mr. Margolin has any recross first.

19 MR. MARGOLIN: No, sir.

20 COMMISSIONER LEVAR: Okay. Yes, if you have
21 one to follow up.

22 REDIRECT EXAMINATION

23 BY MR. JETTER:

24 Q. If the net metering customers were going to
25 have a \$2 million revenue requirement reduction, would

1 this study have any relevance to that question? To
2 clarify, the \$2 million revenue requirement reduction as
3 a result of the net metering customers, would it be
4 accurate to say that that would occur whether or not the
5 \$2 million were allocated to those customers or
6 allocated to the revenue requirement as well as for all
7 customers?

8 A. So if the revenue requirement for the net
9 metering customers went down \$2 million?

10 Q. No, if there was -- if there was a \$2 million
11 net reduction in revenue requirement, that would occur
12 whether we allocate it to one class or another class?

13 A. Correct.

14 Q. And so the value of the million dollar study
15 would only be relevant to allocating it to one specific
16 class?

17 A. Correct.

18 Q. Okay. Thank you.

19 COMMISSIONER LEVAR: Thank you. Commissioner
20 White, do have any questions for Mr. Davis?

21 COMMISSIONER WHITE: No questions, thank you.

22 COMMISSIONER LEVAR: Commissioner Clark?

23 COMMISSIONER CLARK: No questions.

24 EXAMINATION

25 BY COMMISSIONER LEVAR:

1 Q. Mr. Davis, did you -- were you paying
2 attention when Commissioner Clark was asking Mr. Elder
3 data that was available from the inverters?

4 A. Yes.

5 Q. Does that have any impact on these lines that
6 we have been talking about here in your
7 cross-examination where you discuss customer behavior
8 data sought by the interveners? To what extent would
9 the inverter data meet that description?

10 A. It's basically what Mr. Elder said. It would
11 be support for the generation study. I don't know how
12 we would use that in the division. Taking note of the
13 accuracy of the data, it would be interesting for future
14 matters, I believe, to know that information.

15 COMMISSIONER LEVAR: Okay. Thank you, I
16 appreciate that answer. Okay. That's all we have for
17 you, Mr. Davis, thank you.

18 THE WITNESS: Thank you.

19 COMMISSIONER LEVAR: Mr. Jetter.

20 MR. JETTER: Thank you. The division would
21 like to call its next witness, Mr. Charles Peterson, and
22 have him sworn at this time.

23 COMMISSIONER LEVAR: Mr. Peterson, do you
24 swear to tell the truth?

25 THE WITNESS: Yes.

1 COMMISSIONER LEVAR: Thank you.

2 CHARLES E. PETERSON,
3 called as a witness, having been first duly sworn, was
4 examined and testified as follows:

5 DIRECT EXAMINATION

6 BY MR. JETTER:

7 Q. Good morning, Mr. Peterson. Would you please
8 state your name and occupation for the record.

9 A. Charles E. Peterson, spelled S-O-N. I am a
10 technical consultant with the Division of Public
11 Utilities.

12 Q. Thank you. And in the course of your
13 employment with the division, did you create and cause
14 to be filed with the commission direct and rebuttal
15 testimony in this docket?

16 A. Yes.

17 Q. If you were asked the same questions today
18 that were included in that direct and in your rebuttal
19 prefiled testimony, would your answers remain the same?

20 A. Yes.

21 Q. And are there any corrections or changes that
22 you would like to make today?

23 A. None that I know of.

24 MR. JETTER: Thank you. With that I'd like to
25 move to admit into evidence the direct and rebuttal

1 testimony of Charles E. Peterson.

2 COMMISSIONER LEVAR: Okay. If any party
3 objects to that motion, please indicate to me. Okay.
4 The motion is granted. Thank you.

5 MR. JETTER: Thank you.

6 **Q. (By Mr. Jetter) Mr. Peterson, have you**
7 **prepared a brief statement?**

8 A. Yes, I have.

9 **Q. To summarize your position?**

10 A. Yes, I have.

11 **Q. Please go ahead.**

12 A. Good morning, commissioners. Rocky Mountain
13 Power, in addition to collecting data from transition
14 Schedule 136 customers, is proposing to sample its
15 existing customers that are grandfathered under Schedule
16 135. As you have already heard, the company is
17 projecting that it will have over 1,000 Schedule 136
18 customers online by the end of this year.

19 The purpose of the sample to Schedule 135
20 customers is limited to the development of the average
21 customer, of an average customer generation profile. I
22 have reviewed the company's proposal to determine
23 whether or not the design is generally recognized and
24 that the mathematical formulas are correctly applied.

25 While the mathematical -- let's see. And to

1 the determination of the sample size. Excuse me. The
2 necessary sample size was determined to be 54, but an
3 additional 16 samples will be taken for a total of 70.

4 In approaching this project, the company and
5 other parties need to be cognizant of the trade-offs
6 between a perfect unassailable study, if such a thing
7 exists, and its cost.

8 While the mathematical formulas, I believe,
9 are correctly applied, I noted some concerns in the
10 design that could affect the statistical accuracy of the
11 sample -- sample results. However, I do not at this
12 point consider them serious enough to warrant revamping
13 the company's proposal, relying on the company's
14 experience in performing load research studies for years
15 and its experience specifically with the original study
16 that was done in Docket 14-035-114.

17 My conclusion is that the company's current
18 design for determining a generation profile from it's
19 grandfathered 135 customers is reasonable and should be
20 approved by the commission.

21 MR. JETTER: Thank you. I have no further
22 questions for Mr. Peterson. He is available for cross
23 by the other parties.

24 COMMISSIONER LEVAR: Okay. Thank you.
25 Ms. Hogle, do you have any cross-examination?

1 MS. HOGLE: I have no cross, thank you.

2 COMMISSIONER LEVAR: Thank you. Mr. Snarr?

3 MR. SNARR: We have no questions.

4 COMMISSIONER LEVAR: Okay. Thank you. Is
5 there an agreement who wants to go first?

6 MR. MECHAM: I think Mr. Margolin will go
7 first.

8 COMMISSIONER LEVAR: Okay. Mr. Margolin?

9 MR. MARGOLIN: I'll try to keep this as
10 confusing as possible for everybody.

11 CROSS-EXAMINATION

12 BY MR. MARGOLIN:

13 Q. Good morning, Mr. Peterson. Thank you for
14 coming today.

15 Are you -- you would agree that as a matter of
16 statistics, sir, that the requirements for extrapolating
17 a sample from one population to another is that each
18 item in the population has to have had a greater than
19 zero likelihood of selection?

20 A. Yes and no. As a statistical matter, yes.
21 But as a judgmental policy matter, not necessarily.

22 Q. So you would agree as a statistical matter,
23 the sample study as designed by the company of applying
24 the results of the 135 sample to the 136 customers is
25 statistically improper?

1 A. Well, it's at least statistically suspect.

2 But again, it comes down to a judgment call as to
3 whether it's applicable or not.

4 Q. And the judgment call that you are referring
5 to is whether or not there's sufficient similarities
6 between the generation profiles of the 135 customers
7 versus the 136; is that right?

8 A. That would be generally correct, yes.

9 Q. Have you seen any data to support the
10 company's belief that that is in fact the case?

11 A. Specifically on the transition customers, of
12 course, there is no data. However, the general curve of
13 the data that has been supplied from the 36 customers
14 already surveyed generally conforms to expectations that
15 I have seen from other sources regarding the curves and
16 patterns of solar generation.

17 Q. But you haven't seen any data on actually
18 comparing the generation profiles of the Schedule 135
19 customers versus the Schedule 136; is that correct?

20 A. As I have stated, it doesn't exist. So yes,
21 that's correct.

22 Q. Are you ultimately, in recommending
23 Mr. Elder's study, deferring to what the company says it
24 believes about the generation profiles between these two
25 sets of customers?

1 A. That remains to be seen.

2 Q. Well, I am asking, in terms of what you are
3 relying upon to recommend that Mr. Elder's study be
4 accepted and proceeded with, are you deferring to the
5 company's statement about the similarities between 135
6 and 136?

7 A. I am deferring. I am -- my conclusions are
8 based upon the general study design that the company is
9 proposing and the correct application of the
10 mathematical formula. That was the extent of my review.

11 Q. And when you say mathematical formula, you're
12 excepting from that the obvious flaw that, as a
13 statistical matter, you should not be extrapolating
14 results from the 135 customers to the 136, correct?

15 A. I have already explained that. That is --
16 it's a matter of judgment that ultimately you always
17 have to make in these -- in the studies.

18 Q. Are you aware that as a matter of statistics,
19 if the items in your sample population had a different
20 likelihood of being sampled, you have to weight those
21 items accordingly when extrapolating your results?

22 A. Well, if there's different probabilities of
23 being selected, then that would be a -- you probably
24 would want to do that.

25 Q. Did you hear earlier today when I was speaking

1 with Mr. Elder about this, that right now there is no
2 plan to weight the 36 customers different than the 34
3 that are part of the 70?

4 A. I heard that, yes.

5 Q. And do you understand that that might
6 negatively impact the margin of error for the study?

7 A. I think in my direct testimony I mentioned
8 that there is some concern about the fact the 36
9 customers, the original 36, and the additional 34 are
10 being sampled differently.

11 Q. And again, you are aware that right now there
12 is no plan as part of the study to account for the
13 different potential for being sampled of the 36 and the
14 34 customers, correct?

15 A. If there is a need for that, I understood that
16 there was no plan to do that.

17 Q. Sorry. You understand that there was no plan
18 to do that?

19 A. I understood that there was no plan to do that
20 at the moment, yes.

21 Q. And so despite that, you believe that
22 Mr. Elder's study is the appropriate study to proceed
23 with, even though his results may end up with a larger
24 margin of error and a less confidence level because of
25 that issue?

1 A. It gets back to the judgment call, the issue
2 about whether the study is reasonable for the purpose to
3 which it's being applied to. And my understanding is,
4 the sole purpose of the company's study is to develop a
5 generations profile.

6 Q. And again, not to circle over old grounds, but
7 you haven't seen any data that actually justifies that
8 judgment that the generation profile of the 135
9 customers can be applied to the 136? It's a judgment
10 call in your mind?

11 A. At this point, yes. Until we get actual data.

12 Q. In terms of how Mr. Elder has designed his
13 strata, you are aware that he has designed the strata
14 based upon variations in nameplate capacity, correct?

15 A. Yes.

16 Q. And he is using the strata to reduce the
17 standard deviation so he presumably can sample less of
18 the population; is that right?

19 A. That's the purpose of stratified sampling,
20 yes.

21 Q. And in creating his strata, he is relying on
22 there being a correlation between nameplate capacity and
23 generation, correct?

24 A. Yes. That's -- that's what he says. The main
25 purpose of the stratified sample study, however, is to

1 be representative of the population that's being
2 sampled. And technically the population that's being
3 sampled are only the grandfathered customers.

4 To the extent that there -- the correlation
5 between generation and the nameplate capacity remains
6 reasonably constant, between the sample of the
7 population, then it's appropriate to do that.

8 Q. You would agree with me that if the
9 correlation was not reasonably constant, that the
10 stratification that Mr. Elder has designed may not
11 ultimately produce a result that is 95 percent
12 confidence level with a 10 percent margin of error,
13 correct?

14 A. Yes, that would be correct.

15 Q. And if that --

16 A. It might not be.

17 Q. I didn't mean to step on you.

18 A. No, I -- that is a possibility, that you could
19 get results different than what you were hoping to get.

20 Q. And the assumption that is being made here is
21 that, in fact, there is a relationship between nameplate
22 capacity and generation. Specifically Mr. Elder calls
23 it a correlation, right?

24 A. Yes, at least on average.

25 Q. And again, if that correlation is proved to be

1 untrue, the sample size that the company is proposing
2 may prove to be too small, correct?

3 A. That is a possibility, yes.

4 Q. And you are aware that right now there is no
5 contingency plan to have additional meters installed at
6 all, right?

7 A. As far as I know, that's correct.

8 Q. Can I point you to lines 110 through 112 of
9 your rebuttal, please? Let me know when you're there.

10 A. I am there, yes.

11 Q. Thank you. So you write, "With respect to
12 sample size issues, the division notes that additional
13 information will be gathered from transition customers
14 who sign up this year which will supplement the
15 statistical study of Schedule 135 customers." Did I
16 read that correctly?

17 A. Yes, you did.

18 Q. You understand that the data being gathered
19 from the transition customers is import/export data,
20 correct?

21 A. I believe that's correct.

22 Q. And you understand that the data being
23 gathered from this section -- excuse me, Schedule 135
24 customers is generation data, correct?

25 A. Yes.

1 **Q. So the transition customer import/export data**
2 **cannot supplement the generation data from the Schedule**
3 **135 customers; is that right?**

4 A. I use the word "supplement" in the sense that
5 it is going to be data that will be available for
6 analysis, in concert with any other data that might be
7 collected, again, to make a final judgment about what
8 the proper export credit should be. I did not mean
9 necessarily to imply that it's a statistical
10 supplementation.

11 **Q. In fact, it couldn't be a statistical**
12 **supplemental because it's a totally different category**
13 **of data, right?**

14 A. That's correct.

15 **Q. Give me one second.**

16 MR. MARGOLIN: No further questions,
17 Mr. Peterson. Thank you.

18 COMMISSIONER LEVAR: Mr. Mecham, do you have
19 any questions for Mr. Peterson?

20 MR. MECHAM: I do not. Thank you.

21 COMMISSIONER LEVAR: Mr. Holman?

22 MR. HOLMAN: I do not. Thank you.

23 COMMISSIONER LEVAR: Okay. Thank you.

24 Commissioner Clark? Well, I'm sorry. Mr. Jetter, do
25 you have any redirect?

1 MR. JETTER: I don't have any follow-up
2 questions.

3 COMMISSIONER LEVAR: Okay. Thank you.
4 Commissioner Clark?

5 COMMISSIONER CLARK: No questions. Thank you.

6 COMMISSIONER LEVAR: Commissioner White?

7 COMMISSIONER WHITE: No questions. Thank you.

8 COMMISSIONER LEVAR: And I don't either. So
9 thank you, Mr. Peterson. Mr. Jetter, do you have
10 anything else?

11 MR. JETTER: No, Mr. Chairman. That is all of
12 the witnesses for the division today. Thank you.

13 COMMISSIONER LEVAR: Okay. Thank you.
14 Mr. Snarr.

15 MR. SNARR: Yes. We'd like to present
16 Ms. Cheryl Murray as a witness.

17 COMMISSIONER LEVAR: Ms. Murray, do you swear
18 to tell the truth?

19 THE WITNESS: I do.

20 COMMISSIONER LEVAR: Thank you.

21 CHERYL MURRAY,
22 called as a witness, having been first duly sworn, was
23 examined and testified as follows:

24 DIRECT EXAMINATION

25 BY MR. SNARR:

1 **Q. Could you please state your name, business**
2 **address and for whom you are testifying today.**

3 A. My name is Cheryl Murray. My business address
4 is 1160 East, 300 South, and I am testifying on behalf
5 of the Office Consumer Services.

6 **Q. Did you file rebuttal testimony on April 10th**
7 **of 2018, consisting of six pages?**

8 A. Yes.

9 **Q. Do you have any corrections that you would**
10 **like to make to that testimony?**

11 A. No.

12 MR. SNARR: I'd like to move that testimony be
13 made a part of the record.

14 COMMISSIONER LEVAR: Okay. If any party
15 objects to that motion, please indicate to me. And the
16 motion is granted. Thank you.

17 MR. SNARR: Thank you.

18 **Q. (By Mr. Snarr) Ms. Murray, have you prepared**
19 **a summary of your testimony, summarizing the position of**
20 **the office?**

21 A. Yes, I have.

22 **Q. Would you please present that?**

23 A. Yes. In my testimony, I noted that some
24 participants in this docket have proposed certain
25 modifications to Rocky Mountain Power's proposed load

1 research study methods. I responded to two of those
2 suggested changes, and stated that lack of response to
3 any issue does not indicate either agreement or
4 disagreement with that issue.

5 First, I addressed the issue of collecting
6 data for residential and commercial customers
7 separately, as suggested by Utah Clean Energy and Vote
8 Solar. The office agrees that the differences between
9 residential and commercial solar installations appears
10 to be significant enough to warrant separate study.
11 We're concerned that commingling the data may distort
12 the results, thereby rendering the load research study
13 less useful.

14 Second was the recommendation of parties to
15 collect additional data regarding system
16 characteristics. I stated that the office agrees with
17 Vote Solar that Rocky Mountain Power should take
18 advantage of this opportunity and gather the information
19 for the transition customers, especially since the
20 company must already make a site visit.

21 Over time, this data collection will become
22 more significant and would allow the -- and allow the
23 company and other parties to study the impacts of roof
24 top solar in more detail by better understanding the
25 differences among system designs and locations.

1 In fact, such data might be able to facilitate
2 the development of more specific rate designs to better
3 match costs and benefits of different system designs.
4 Thus this recommended data collection is a relatively
5 low cost method of collecting information likely to have
6 relatively high value in the longer run.

7 In rebuttal testimony, the company stated that
8 some of that information is already being provided on
9 the customer's application. That being the case,
10 collecting the additional requested data should be
11 achievable at a lower cost.

12 In summary the office recommends that the
13 company make the following changes to the load research
14 study. Sample and evaluate residential and small
15 commercial customers separately, and gather additional
16 on-site data about system characteristics that is not
17 currently obtained through customer applications, and
18 verify information provided on the application.

19 That concludes my summary.

20 MR. SNARR: Ms. Murray is available for
21 cross-examination.

22 COMMISSIONER LEVAR: Thank you, Mr. Snarr.
23 Ms. Hogle, do you have any questions for Ms. Murray?

24 MS. HOGLE: Maybe just one.

25 CROSS-EXAMINATION

1 BY MS. HOGLE:

2 Q. I think you closed your summary by saying, or
3 recommending, that the company verify the information
4 from the interconnection applications, correct?

5 A. Correct.

6 Q. And how do you propose that the company do
7 that?

8 A. When they are on-site, they have the
9 application, and you look at it and say, yes, that
10 matches. That's how we would propose that it be done.

11 Q. And do you know precisely what that
12 information in the application requests?

13 A. What it requests?

14 Q. Yes.

15 A. Okay. I don't have Mr. Elder's testimony.
16 But orientation, tilt, zip code, something else, I
17 believe.

18 Q. So would part of that validation or
19 verification require some of the employees of the
20 company to maybe get on the roof and confirm the tilt of
21 the solar arrays for example?

22 A. I don't actually know that.

23 Q. And if that was required in order to validate
24 the information, would you agree that that would
25 potentially pose a safety issue for Rocky Mountain

1 **Power?**

2 A. Well, it -- I suppose that it could.

3 MS. HOGLE: Thank you. No further questions.

4 COMMISSIONER LEVAR: Okay. Thank you.

5 Mr. Jetter, do you have any questions for Ms. Murray?

6 MR. JETTER: I do have a very brief questions.

7 CROSS-EXAMINATION

8 BY MR. JETTER:

9 Q. Good morning.

10 A. Good morning.

11 Q. Are you aware of any rate anywhere, I guess in
12 this the world, that takes into account tilt orientation
13 and shade for rooftop solar?

14 A. I am not.

15 Q. Are you aware of it having been proposed by
16 any party anywhere in the proceeding?

17 A. As --

18 Q. As a basis for a rate design?

19 A. No.

20 MR. JETTER: That's all the questions I have.
21 Thank you.

22 COMMISSIONER LEVAR: Okay. Thanks Mr. Jetter.
23 Is there any agreement of who's going first?
24 Mr. Mecham?

25 MR. MECHAM: I don't have any.

1 COMMISSIONER LEVAR: Mr. Mecham, okay.

2 Mr. Margolin?

3 MR. MARGOLIN: No, sir.

4 COMMISSIONER LEVAR: Mr. Holman?

5 MR. HOLMAN: No, sir.

6 COMMISSIONER LEVAR: Commissioner White, do
7 you have any questions for Ms. Murray? No -- yeah, I
8 think -- no, there was some cross-examination. So
9 Mr. Snarr, do you have any redirect?

10 MR. SNARR: No redirect.

11 COMMISSIONER LEVAR: Okay. Thank you.

12 Commissioner White?

13 EXAMINATION

14 BY COMMISSIONER WHITE:

15 Q. This is comparing the, I guess the suggestions
16 of the division versus the office. Is it the office's
17 position that the current proposal is inadequate, but
18 with these additional two components, these two
19 additional data sets, that you would bring it to the
20 level of adequacy to achieve the purpose of this phase
21 of the docket?

22 A. That is not our position. We are not
23 making -- the only two areas we are discussing are the
24 two I presented in my testimony.

25 Q. And those are in addition, in other words

1 those are tweaks essentially to the company's proposal?

2 A. They are tweaks, but that does not mean that
3 we have -- that we are in complete agreement with
4 everything they have suggested, nor do we disagree. I
5 am not a statistician. So I am not in a position to
6 make that recommendation.

7 Q. And you mentioned this is a -- you know,
8 relative to the potential benefits, it's a low cost
9 limitation or what are -- do we have an idea -- do you
10 have an idea at this point at what potential costs would
11 be associated with these?

12 A. No, I do not.

13 COMMISSIONER WHITE: Okay. That's all the
14 questions I have. Thanks.

15 COMMISSIONER LEVAR: Commissioner Clark?

16 EXAMINATION

17 BY COMMISSIONER CLARK:

18 Q. Yeah, just a question on the very narrow issue
19 of the kinds of data that you would like to see be
20 collected. Mr. Elder addressed shade in particular, and
21 I don't -- I hope I wouldn't mischaracterize his
22 testimony, but my recollection is that one of things he
23 observed is shade changes over time as trees grow, and
24 other factors affect the area surrounding the panels.

25 But so I just wondered, are you -- do you

1 include shade in your recommendation of the kinds of
2 information you want to see collected?

3 A. We -- in my rebuttal testimony, we did include
4 shade, shading. However, on -- in looking at it
5 further, which I did last week, we do -- I do agree with
6 Mr. Elder that there are a lot of things that can impact
7 shading, and it can change over time, due to tree
8 growth, cutting down trees, planting trees, buildings
9 being put up.

10 So I -- I would say from our perspective,
11 shading would be less important because of that. All of
12 it can change over time, but I think shading certainly
13 has that potential.

14 COMMISSIONER CLARK: That concludes my
15 questions. Thank you.

16 COMMISSIONER LEVAR: Thank you.

17 EXAMINATION

18 BY COMMISSIONER LEVAR:

19 Q. In your opinion, for the information that's
20 already provided to Rocky Mountain Power in the
21 interconnection application that you talked about in
22 your second recommendation, for that data to be useful,
23 in your opinion does it need to be verified by the
24 utility through an in-person check to verify what was
25 represented in the application?

1 A. I would say that we wouldn't think that it
2 would be worth the expense -- at least at this point, we
3 wouldn't recommend that it be worth the expense of
4 sending someone out to verify. Our thought was since
5 someone is already there, then they could verify it.

6 I will admit I hadn't considered that they
7 don't get on the roof and they might have to get on the
8 roof. But we also think that information that's
9 provided by customers or even solar installers, there is
10 certainly a potential for the information to either be
11 incorrect or changed after the -- after the application
12 is submitted, and it may be minor or major changes. But
13 that's why we thought if they could do it on-site, it
14 would be a low cost way to verify that information.

15 **Q. Would it be any concern to you that if the**
16 **Schedule 136 customers who have already completed their**
17 **installation, we have had some discussion about them,**
18 **you know, the numbers of those, did not have that**
19 **verified but the ones going forward did?**

20 A. No.

21 **Q. No.**

22 A. I wouldn't -- we might have some concerns, but
23 at this point, until we saw what information came out of
24 it, so let's say that going forward, 136 customers,
25 their information is verified and we found a significant

1 number of variations. Then we would be concerned. If
2 it seemed to be quite consistent, we would certainly
3 have less concern.

4 And then we would have to make the -- you
5 know, it would have to be decided, is it worth the
6 expense of sending someone back to check on that.

7 COMMISSIONER LEVAR: Thank you. That answers
8 all my questions. Thank you, Ms. Murray.

9 THE WITNESS: You're welcome.

10 COMMISSIONER LEVAR: Mr. Snarr, do you have
11 anything further?

12 MR. SNARR: We have nothing further.

13 COMMISSIONER LEVAR: Okay. Thank you. We're
14 a little early for breaking for lunch but it also seems
15 maybe a natural break unless one of the remaining
16 parties would like to go ahead, but if you do, indicate.
17 Otherwise it probably seems like a natural time to take
18 a break.

19 Okay. Why don't we just go ahead and recess
20 until one o'clock. We'll be back here at one.

21 (Recess from 11:44 a.m. to 12:59 p.m.)

22 COMMISSIONER LEVAR: Okay. We're back on the
23 record in Docket 17-35-61, and between Utah Clean
24 Energy, Vivint Solar, Incorporated and Vote Solar is
25 there an agreement on who wants to go first, or I could

1 just pick if there isn't.

2 MR. MARGOLIN: I think we agreed that Utah
3 Clean Energy would go first, Mr. Holman.

4 COMMISSIONER LEVAR: Okay. Mr. Holman?

5 MR. HOLMAN: Calling Kate Bowman to the stand.
6 She needs to be sworn in.

7 COMMISSIONER LEVAR: Ms. Bowman, do you swear
8 to tell the truth?

9 THE WITNESS: I do.

10 COMMISSIONER LEVAR: Thank you.

11 KATE BOWMAN,
12 called as a witness, having been first duly sworn, was
13 examined and testified as follows:

14 DIRECT EXAMINATION

15 BY MR. HOLMAN:

16 Q. Good afternoon, Ms. Bowman.

17 A. Good afternoon.

18 Q. Can you please state your name and business
19 address for the record.

20 A. My name is Kate Bowman. My business address
21 is 1014 Second Avenue, Salt Lake City, Utah.

22 Q. And on whose behalf are you testifying today?

23 A. I am testifying on behalf of Utah Clean
24 Energy.

25 Q. Are you the same Kate Bowman that provided

1 direct testimony on March 22nd, 2018, and rebuttal

2 testimony on April 10th, 2018, in this docket?

3 A. Yes.

4 Q. Do you have any changes to your testimony?

5 A. No, I do not.

6 Q. If I asked you the same questions today as set
7 forth in your rebuttal and direct testimony, would your
8 answers be the same?

9 A. Yes, they would.

10 MR. HOLMAN: I'd like to make a motion to
11 enter Ms. Bowman's direct and rebuttal testimony into
12 the record please.

13 COMMISSIONER LEVAR: If any party objects to
14 that motion, please let me know. The motion is granted.
15 Thank you.

16 Q. (By Mr. Holman) Thank you. Miss Bowman, do
17 you have a statement prepared today?

18 A. Yes, I do.

19 Q. Please proceed.

20 A. Good morning commissioners. Good afternoon.
21 I am the solar project coordinator at Utah Clean Energy,
22 and in that capacity, I've reviewed Rocky Mountain
23 Power's proposed load research study. I have also
24 participated in meetings throughout the development of
25 the company's load research study plan in January and

1 February.

2 And Utah Clean Energy entered in this phase of
3 the docket with hopes that a collaborative approach
4 would allow parties to agree on the types of data that
5 should be collected and on the study design. And
6 unfortunately that's not the case, and so Utah Clean
7 Energy has put forward reasonable recommendations to
8 gather the data we believe is necessary for Phase II.

9 I have prepared the following summary of my --
10 oh, is that better? Sorry. It was off.

11 I have prepared the following summary of my
12 testimony which also addresses the rebuttal testimony of
13 other parties, and I appreciate the opportunity to
14 provide these recommendations.

15 The export credit rates set through this
16 proceeding will affect customers for years to come. It
17 will affect new solar customers directly, and it will
18 also affect where and how customers choose to adopt
19 rooftop solar, which will in turn affect utility
20 investments and utility's grid and the utility's
21 distribution system, and that these changes will
22 ultimately impact all utility customers.

23 The outcome of this docket has the potential
24 to set a course for the future of clean energy in Utah,
25 and we're looking at a changing paradigm. The

1 variability and the controllability of customer loads is
2 changing, and utility plans for the grid and the future
3 will also have to change.

4 So it's essential that we have a complete and
5 nuanced understanding of how customer generation
6 interacts with the utility grid and how the relationship
7 between customer generation, customer load and exports
8 and the utility grid differs between customers.

9 With appropriate foresight and planning, the
10 utility regulators, solar industry representatives and
11 consumer advocates can work collaboratively to
12 understand how the grid of the future can best
13 incorporate renewable energy resources while maintaining
14 reliability and keeping costs low for all customers.

15 We understand that we will have the burden of
16 proof when presenting analysis in Phase II. And for
17 Utah Clean Energy's analysis, it's essential to collect
18 data that provides a full picture of the relationship
19 between generations, exports and loads for specific
20 customers and for diversity of customers in the
21 residential and commercial class.

22 While the company and the division may not
23 need this data for the purpose of their analysis, the
24 settlement stipulation describes a process which allows
25 all parties to present evidence addressing reasonably

1 quantifiable costs or benefits or other considerations
2 they deem relevant.

3 The load research study, the first phase of
4 this docket, is a critical opportunity to gather data we
5 do not currently have from solar customers, namely, data
6 that provides a complete picture of the way solar
7 customer generation and energy use interact with utility
8 grid for specific customers.

9 If the load research study is carried out as
10 proposed by the company, we will still not have a
11 complete picture of how rooftop solar customers are
12 interacting with the grid. And for this reason, it's
13 Utah Clean Energy's position that the load research
14 study as proposed does not gather data sufficient for
15 Phase II and have made recommendations for its
16 improvement.

17 I understand that there's a trade off between
18 on the one hand a perfect study, and on the other hand
19 an affordable study, and with that in mind, in my direct
20 testimony and rebuttal testimony I have endeavored to
21 recommend changes to the load research study that
22 results in the most useful information, while keeping
23 the associated costs reasonable. Our intent is to
24 ensure that the study results in data necessary to
25 inform the second phase of this docket.

1 I recognize that the load research study is
2 not the only opportunity to gather data needed for Phase
3 II, and it doesn't preclude the need for data outside of
4 the load research study. However, it's the most
5 efficient and cost effective opportunity to gather as
6 much data as possible for use in Phase II.

7 With that in mind, I have made the following
8 recommendations. First, the load research study is a
9 critical opportunity to gather the complete data streams
10 from participating customers, and most importantly, the
11 study should gather all three possible data streams
12 relevant to this matter from each solar customer in the
13 study, including solar generation, energy imports and
14 energy exports. Among other information, this will
15 allow for accurate calculation of each participating
16 customer's actual total energy usage.

17 In contrast, the company has proposed
18 gathering customer generation data from one set of
19 customers and gathering energy export and import data
20 from an entirely different set of customers. The
21 company would then use the generation data from one set
22 of customers to estimate generation for the second set
23 of customers. This approach provides generalized data
24 about rooftop solar customers but not actual information
25 about each customer's energy usage.

1 Given the significant expense of installing a
2 production meter, I question whether it's worth the
3 expense unless the meters result in actual information
4 about the interaction between customer generation and
5 exports by gathering all three possible data streams
6 from the same customer.

7 I have also recommended that for each
8 participating customer the study gather information
9 about the orientation, tilt and shading of their solar
10 installation. And I gather that the company is already
11 collecting information about the orientation, and to
12 some extent the tilt of a system from transition
13 customers, and the remainder of the information could be
14 gathered very easily through a check when a company
15 employee arrives at a customer's house to install the
16 meter or visits to read the meter.

17 I have also recommended the study gather
18 information that characterizes a customer's energy usage
19 and significant electrical device. The growing adoption
20 of products like electric vehicles, battery storage and
21 smart thermostats has the potential to have profound
22 impacts on the timing and the magnitude and the control
23 abilities of customer energy load.

24 Understanding the nature of customer loads,
25 how customer loads are changing and the interplay

1 between customer loads and on-site generation will
2 provide important information for the second phase of
3 this docket and beyond.

4 The information I have recommended could be
5 gathered through a simple customer survey and should
6 include, but not necessarily be limited to, information
7 about electrical devices in use, such as air
8 conditioning, evaporative cooling, an electric vehicle,
9 LED lighting, battery storage, smart thermostats and air
10 source and ground source heat pumps.

11 Last I've recommended that the study gather
12 information about a customer's location on the
13 distribution system. And I gather that the company
14 would be able to cross-reference data about each
15 customer's energy imports and exports with the company's
16 matching system, which includes lines transformers,
17 distribution circuits and substation information.

18 My next recommendation pertains to the
19 sampling and stratification proposed by the company. To
20 make this phase of the docket as useful as possible,
21 it's critical the study results in a data set that
22 allows parties to tease out as much useful information
23 as possible. To this end it's important that the load
24 research study stratify and sample customers in a manner
25 that results in a sample population that is

1 representative of the relevant characteristics of solar
2 customers and doesn't obscure important information.

3 I am not necessarily proposed to increase the
4 sample size, although I would appreciate a larger sample
5 size, particularly if there's a way to do so without
6 significantly increasing costs. Rather, I recommended
7 that residential and commercial customers are sampled
8 separately. There are significant differences between
9 the load and generation characteristics of residential
10 and commercial customers.

11 Rocky Mountain Power's current proposal
12 stratifies customers based on solar capacity, which
13 results in sample strata that span a wide variety of
14 system sizes. For example, strata 3 includes just 12
15 customers with systems ranging from 12 to 80 kilowatts.
16 By separating residential and commercial customers, we
17 obtain more useful information about those two customer
18 types, which can be used to inform analysis for Phase
19 II.

20 The majority of customers who are affected by
21 the solar export credit rate are likely to be
22 residential customers. So it's critical to pay
23 appropriate attention to residential customers in the
24 load research study.

25 Next, I recommended that the load research

1 study customer be stratified based on total energy usage
2 rather than capacity as proposed by the company. The
3 company is proposing to stratify the sample based on
4 solar capacity because the company asserts that the
5 purpose of the generation sample is to develop an
6 estimated production profile from a sample of customers.

7 However, as noted by many parties, solar
8 generation is quite predictable and information about
9 solar production profiles is readily available. Instead
10 the generation sample should be used to collect new
11 information that provides a complete picture of customer
12 energy usage, including generation, imports and exports.
13 For this purpose, it's most appropriate to stratify
14 based on a customer's total energy usage as is the case
15 in a regular load research study.

16 The company notes that it's possible to
17 provide monthly energy usage data for customers for the
18 period before they install their solar system so it is
19 straightforward to stratify the sample based on this
20 information.

21 This should not add significant costs to the
22 study. The original solar load research study from 2013
23 stratified customers in a similar fashion, although that
24 stratification was based on net customer usage rather
25 than total customer usage as I propose.

1 Next, we recommend that this study focus on
2 transition customers. While I had concerns that there
3 would be sufficient transition customers to design a
4 load research study in the time frame allotted,
5 according to the company's rebuttal testimony, there are
6 currently at least 213 interconnected transition
7 customers, and according to company projections there
8 will be approximately 1,100 customers interconnected by
9 the end the year. So based on this updated data, it
10 seems reasonable to limit the load research study
11 population to transition customers.

12 Finally, I have a few additional comments. I
13 support the company's proposed level of confidence for
14 the load research study, if applied, in addition to the
15 other changes I have recommended. The company updated
16 their proposal filed in February with a proposed minimum
17 accuracy of plus or minus 10 percent at the 95 percent
18 confidence level, and I appreciate the company's effort
19 to improve the accuracy and precision of the study.

20 I am also supportive of evaluating options for
21 obtaining additional useful information from solar
22 customers, including solar inverter data. To the extent
23 that there are hardware or software solutions that could
24 reduce costs associated with the study as proposed by
25 Vivint and Vote Solar, I support exploring those options

1 further as well.

2 And finally, I appreciate the division's
3 recommendation that the company report on the ongoing
4 results of the study on a monthly basis. And so that if
5 there are any emerging anomalies, the course of action
6 can be decided as early as possible, and I support that
7 recommendation.

8 In conclusion, I believe that the load
9 research study as proposed is not sufficient to gather
10 the data needed by the parties for Phase II and not
11 aligned with the collaborative approach to study design
12 that we anticipated based on the settlement.

13 It's Utah Clean Energy's position that our
14 recommendations will result in a study with reasonable
15 costs that collects as much useful data for analysis in
16 Phase II as is reasonably possible and still will
17 include the data that the company and the division deem
18 necessary for their analysis. That concludes my
19 statement.

20 MR. HOLMAN: Ms. Bowman is available for
21 questions.

22 COMMISSIONER LEVAR: Thank you. Mr. Margolin,
23 do you have any questions for Ms. Bowman?

24 MR. MARGOLIN: I do not.

25 COMMISSIONER LEVAR: Mr. Mecham?

1 MR. MECHAM: No questions.

2 COMMISSIONER LEVAR: Mr. Snarr?

3 MR. SNARR: No questions.

4 COMMISSIONER LEVAR: Mr. Jetter?

5 MR. JETTER: I do have a few questions this
6 afternoon.

7 CROSS-EXAMINATION

8 BY MR. JETTER:

9 Q. I guess let's start with the question of the
10 information that you think may be necessary regarding
11 orientation, tilt and shading. Are you aware of
12 orientation, tilt or shading being used in a rate design
13 anywhere in the United States or in the world?

14 A. I am not an expert on issues outside of Utah,
15 but I believe there's some utility incentives that are
16 designed to account for orientation. But to be clear, I
17 am not proposing a rate that is designed based on
18 orientation, tilt or shading necessarily.

19 Q. Okay. Would you say that -- if there's any
20 probability greater than zero of recommending a rate
21 segregated into different groups based on orientation,
22 tilt or shading?

23 A. I think the information is important to
24 understand how -- the relationship between orientation
25 and the value of the exports. I can't speak as to what

1 parties may want to propose in Phase II.

2 Q. Okay. Let me ask you, let's kind of just talk
3 about each one individually a little bit. As far as
4 orientation, how do you foresee -- what kind of
5 measurement would you expect to have for orientation?

6 A. Based on what I understand, the company
7 already does have some information about orientation.
8 North, south, east or west, most simply from
9 interconnection applications, and I think it would be
10 relatively simple to verify that information during a
11 site visit just by looking at the array, or even by
12 looking at the customer's home on a map and determining
13 which direction that face of their roof orients.

14 Q. And would you expect some sort of a
15 measurement of an angle of zero through 360, or would
16 you categorize them only on the four poles?

17 A. I think I would be open discussing that
18 further with other parties. I think, you know, any
19 information that's verified would be more useful than
20 none.

21 Q. And how would you foresee that happening on
22 the facility where there's multiple different angles and
23 faces? How do you put a number to that?

24 A. It would be more complicated and some homes
25 more complicated than others. I think most homes would

1 have solar on one or at most two different roof aspects,
2 and I think it would be possible to note the number of
3 panels on each aspect for that situation.

4 Q. Okay. And then would you -- would you expect
5 the company to assume that all of the panels have the
6 same kilowatt hours rating or kilowatt nameplate
7 capacity?

8 A. I think that would -- in most cases, the
9 panels on a solar installation, unless -- you know, I'm
10 sure there's a few cases where some panels were added at
11 a later date, and they may have a different rating,
12 kilowatt rating than the original panels. I think in
13 most cases they will be similar, and that's a reasonable
14 assumption. I think in most cases that's likely to be
15 the case.

16 Q. And something like, I don't know if you are
17 familiar with the Tesla solar roof, where maybe one in
18 five of the singles is a solar panel. Would you expect
19 the company to try to make some sort of guess at that or
20 to count them? How would you expect them do that?

21 A. That's a great question. It would be more
22 difficult with a Tesla solar roof. I am not very
23 familiar with that product, and I don't think it's been
24 very widely adopted, at least in Utah yet, and I think
25 that would warrant some further discussion and

1 understanding of how those work.

2 Q. Okay. And in your statistical or numerical
3 analysis of how that angle creates value, I assume, is
4 it correct that you are looking for some value in
5 addition to the generation output and timing?

6 A. We'd like to understand the total picture of
7 how customer decisions to install solar panels impacts
8 the way that they interact with the grid. And since --
9 there's two components really that impact the amount of
10 energy a customer exports. One of those is their total
11 household usage and what they are consuming, and then
12 the other is the generation from the solar panels.

13 So I think, you know, given that those are two
14 factors that, combined, impact the amount and timing and
15 magnitude of energy exported, I think it's important to
16 have as much useful information as possible to
17 understand how those factors vary between different
18 types of customers.

19 Q. And let me ask you about something that you
20 had just mentioned that, the customer interaction with
21 the grid. Are you aware of any other interaction
22 between the customer and the grid, other than the meter
23 electrical connection between the customer's home and
24 the grid?

25 A. That would be the physical point at which the

1 customer interacts with the grid.

2 Q. Okay. And is it fair to say that the
3 interaction with the grid is electricity flowing in and
4 electricity flowing out?

5 A. Yes.

6 Q. And electricity flowing in and electricity
7 flowing out as the time of day and time of use; is that
8 correct?

9 A. I'm not sure I understand the question.

10 Q. The value of the energy flowing in and out to
11 the grid is based on the amount of it and the timing in
12 which that happens; is that correct?

13 A. I think those are two -- certainly two factors
14 that are -- have a large impact on the value of the
15 energy to the grid. But it's up to Phase II of this
16 docket to fully evaluate what other costs or benefits or
17 considerations parties might want to include in that
18 list.

19 Q. Can you explain any other metric of that
20 interaction between that the customer's meter other than
21 the amount of energy and the timing?

22 A. I think location is another important one and
23 location on the distribution system. You know, the
24 location might have an impact, depending on the age and
25 the characteristics of the equipment in that particular

1 location. You know, a customer -- how a customer
2 interacts with the grid at that point is different than
3 how a customer on a point of the distribution system
4 that has different characteristics, those two customers
5 are going to interact, have different impacts on the
6 grid.

7 But I think one of the things that Utah Clean
8 Energy would also like to understand is how that
9 customer interaction with the grid in terms of timing
10 and magnitude is or has the potential to change over
11 time as well.

12 Q. In respect to their location on the grid, do
13 you think that they should be charged different amounts,
14 or pay different amounts, based on their location on the
15 distribution grid?

16 A. I haven't proposed anything. I think that's
17 something that could be considered for Phase II of the
18 analysis, if the data is there and the parties wish to
19 put forward analysis demonstrating that.

20 Q. Okay. And then with respect to the tilt of
21 the solar panels, kind of the same questions. If we
22 already know the magnitude and the timing of the
23 electricity, assuming we know that from my hypothetical,
24 what would the value of knowing the tilt of the solar
25 panel be?

1 A. I think it provides a more complete picture of
2 the customer's generation at that point. And also that,
3 you know, as I have noted, I think there's a balance
4 between getting perfect information and designing an
5 affordable study. And given that someone will be
6 visiting the home already to install the meter, it
7 seems -- and that some of this information is already
8 gathered via the interconnection agreement, it seems
9 relatively simple to at least, you know, approximate the
10 tilt of the panels and get that information.

11 **Q. And can you explain to me a little more about**
12 **how you think it helps your understanding of the**
13 **customer's generation, assuming in my hypothetical we**
14 **already know their interaction with the grid?**

15 A. Could you rephrase that or repeat that?

16 **Q. If we already know their interaction with the**
17 **grid, and by that I mean we know timing and magnitude of**
18 **energy flows in and out, can you help me explain why the**
19 **tilt of the panel would help you understand that**
20 **relationship better?**

21 A. Timing and the magnitude of the energy that
22 the customer's exporting and importing to the grid is an
23 important factor that we like to know more about. But
24 to really have, as I have said, that understanding of
25 the factors that are influencing timing and magnitude of

1 energy, exports and imports to the grid for different
2 times of customers, I think you need more information
3 about the total household energy usage and then about
4 the characteristics of their solar system, and to
5 understand how -- how and why imports and exports might
6 vary among customers with different size loads,
7 different, you know, residential versus commercial, or
8 different orientations or sizes of system, solar
9 installation.

10 **Q. I think I am still not understanding how that**
11 **helps understand the interaction with the grid in a way**
12 **that we would value that.**

13 **A.** I think it's Utah Clean Energy's position that
14 it's not sufficient to understand, that just collect
15 information about the amount of energy exports to the
16 grid, but that to really design an appropriate mechanism
17 for compensating customers for exports to the grid, it's
18 important to understand, to at least gather some
19 information about a topic that we currently have no
20 information about, which is, as I said, how and
21 potentially why, to the extent that we can make -- draw
22 conclusions about that, there are differences between
23 different types of customers, since customers do vary so
24 widely in their -- are going to vary widely in their
25 energy usage profiles and also their import/export

1 profiles.

2 Q. Okay. Let's move on to the question of
3 shading. Kind of the same question I asked you on
4 orientation, but with respect to shading, how would you
5 measure shading?

6 A. I think all of the questions about, you know,
7 how to measure these warrant further discussion to come
8 up with a metric that, you know, reasonable and still
9 gathers useful information. So I think that's something
10 that's worthy of more discussion as well. I don't have
11 a specific proposal.

12 Q. Okay. And with respect to questions about
13 customers' appliances on their premises, are you aware
14 of the utility collecting that information otherwise?

15 A. I am not sure as to the answer to that
16 question.

17 Q. Okay. And would you agree that all of those
18 things that they might track, air conditioners, electric
19 vehicles, light sources, et cetera, are subject to be
20 changed by the customer at any time?

21 A. They could be.

22 Q. Would you propose that the rate be based on
23 the use or nonuse of any of those appliances?

24 A. I am not proposing anything specific related
25 to the rate, but I just requested that data because I

1 think it could be -- it will be useful, and it's
2 information that I think we need to understand the total
3 picture of household energy usage.

4 Q. And you said it will be useful, and can you
5 help me understand what you would use that information
6 for in setting a rate?

7 A. I think we're at a point now where some of
8 these technologies in particular are becoming very
9 popular and much more widely adopted, and the specific
10 technologies I have called out are ones that have the
11 potential to have a really profound impact on the timing
12 and magnitude of customer load.

13 And so I think that to really understand how
14 solar generation and total household energy usage
15 combine to result in exports to the utility, I think
16 it's useful to understand how adoption of these
17 technologies is going to influence that, and likely
18 increase the variability that already exists among
19 different customer types in terms of their load
20 profiles.

21 Q. Now, going back to where I started a little
22 earlier in some questions. Once we actually know the
23 interaction between the customer and the grid, it was my
24 understanding, at least from the earlier dockets on the
25 same matter, that the position was typically that what

1 happens behind the meter is the responsibility of the
2 customer, and that wasn't something we would base rates
3 on. But it seems to be changing.

4 Is that -- do you view it as a different -- a
5 different view of the world than you did a few years
6 ago, a year ago?

7 A. I think I didn't provide any testimony on this
8 when it was discussed a few years ago. I think -- I
9 haven't proposed any specific rates based on that. I do
10 think that, you know, as one of the two components that
11 influences the amount of energy exported to the grid,
12 it's helpful to have information about how customers are
13 using energy behind the meter.

14 Q. Okay. Thank you. And finally, I haven't seen
15 it in your testimony that I am aware of. Have you
16 proposed your own design for a study as far as numbers
17 of sample points and strata or nonuse of strata or
18 random sampling?

19 A. I haven't proposed a specific sample design,
20 and I think I have proposed some recommendations that
21 modify the company's proposed design. I haven't -- I
22 haven't provided a number for a specific sample size
23 that would result from that or that I believe would be
24 appropriate.

25 MR. HOLMAN: Okay. Thank you. Those are all

1 of my questions. Thank you, Ms. Bowman.

2 COMMISSIONER LEVAR: Okay. Thank you.

3 Ms. Hogle?

4 MS. HOGLE: Just a few. Sort of following up
5 from Mr. Jetter's line of questioning.

6 CROSS-EXAMINATION

7 BY MS. HOGLE:

8 Q. Good afternoon, Ms. Bowman.

9 A. Good afternoon.

10 Q. You have testified in response to
11 cross-examination and in your summary that you
12 understood that the commission must balance between
13 getting perfect information with designing an affordable
14 load research study, correct?

15 A. Correct.

16 Q. And on behalf of Utah Clean Energy, you
17 recommend collecting system characteristics and
18 information through a survey on, for example, the types
19 of appliances, electrical devices, EV, LED lights, smart
20 thermostats, et cetera, correct?

21 A. Correct.

22 Q. And then I think you also testified that you
23 believe that this could be done, and you thought that it
24 would be according to reasonable cost, I believe is your
25 choice of word. Is that correct? Your choice of words?

1 A. I don't recall my exact choice of words, but I
2 think that we have proposed collecting that data in a
3 way that results in the most amount of information,
4 useful information that we feel is necessary and
5 possible with, while keeping costs -- with an eye to
6 keeping costs to reasonable.

7 Q. Okay. And so do you know -- knowing that Utah
8 Clean Energy is concerned about getting the most
9 information at reasonable costs, what -- what would be
10 reasonable to you from this collection of information?
11 At what point do you think it would not be reasonable to
12 collect all of this information for purposes of
13 determining the export credit for exported energy?

14 A. I haven't proposed a specific line or cost
15 amount at which it would become unreasonable. I have
16 proposed gathering the information, either through a
17 site visit that would be taking place already, so I
18 haven't proposed new site visits to collect that
19 information, and or via a customer survey to the
20 customers participating in the load research study.

21 And I don't have specific cost information
22 from those, but I don't see that it would result in
23 exorbitant costs, especially compared to the overall
24 cost of the load research study and of installing
25 production meters.

1 Q. Do you agree that collecting all of this
2 information would add complexity to the design phase of
3 this proceeding?

4 A. I think it would -- could you restate the
5 question? I'm not sure I understand.

6 Q. Wouldn't adding this information to a load
7 research study not only be costly, but also add
8 complexity to the way that rates would be designed
9 around all of this information?

10 A. I don't think it would necessarily add
11 complexity around the way that rates will ultimately be
12 designed. I think that the reason we have proposed it
13 is that it would add more information that makes it
14 possible for parties to present more information during
15 Phase II about how rates could be designed, but it
16 ultimately depends on how that information is used.

17 MS. HOGLE: Thank you.

18 COMMISSIONER LEVAR: Okay. Is that all the
19 questions, Ms. Hogle?

20 MS. HOGLE: That is.

21 COMMISSIONER LEVAR: Mr. Holman, do you have
22 any redirect?

23 MR. HOLMAN: I do not. Thank you.

24 COMMISSIONER LEVAR: Okay. Commissioner
25 Clark, do you have any questions for Ms. Bowman?

1 COMMISSIONER CLARK: Yeah.

2 EXAMINATION

3 BY COMMISSIONER CLARK:

4 Q. I am going to ask you a simple one that I hope
5 will shed some light on the areas that Mr. Jetter was
6 questioning you about.

7 Just assume it's 10:00 a.m. and there's two
8 houses, and one of them is running an air conditioner
9 and the other a toaster. And they consume one kilowatt
10 an hour. Should the commission assign a different value
11 to that kilowatt -- the kilowatt hour, one or the other?

12 A. Based solely on that information?

13 Q. Uh-huh.

14 A. I don't know that I have an answer to that
15 question prepared, and I think that that's why we need
16 more information about the ways that, you know, in
17 particular some of the larger electrical devices that
18 are becoming much more common. I think that's why we
19 need more information about the variation between
20 customers, and also how that's changing and expected to
21 change going forward.

22 Q. Let's take the same two homes. One of them
23 has west-facing panels, one of them has east-facing
24 panels, and they each export one kilowatt hour to the
25 grid. Is there a difference in that value -- the value

1 of that kilowatt hour in your mind?

2 A. I think that, you know, given the west-facing
3 panels are going to export energy later into the day,
4 that may be of different value in that they're -- to the
5 utility in that they are producing energy at different
6 times of the day.

7 Q. But I am talking about a kilowatt hour that's
8 produced at the same time of the day, at 10:00 a.m.

9 A. I think two kilowatt hours exported at the
10 same time may ultimately kind of -- when it comes to the
11 question of rate design, that's, you know, that's I
12 think a question that will pertain to -- will pertain to
13 this question of rate design.

14 And I think from that kind of narrow
15 perspective, two kilowatt hours, exported at the same
16 time of day, you know, may be identical in terms of
17 their value to the utility.

18 And the reason we have requested this
19 additional information that characterizes a customer's
20 energy usage isn't necessarily to assign a specific
21 value for it in -- in rate design, but to provide that
22 larger picture of what sorts of energy usage and
23 generation characteristics are beneficial to the grid,
24 and to keeping costs low, and which ones are having
25 impacts, and inform rate design from a larger

1 perspective to think about what sorts of behaviors, and,
2 you know, types of solar array.

3 I mean, I think there's a large list of things
4 we may want to look at to understand which of these are
5 good and which -- or -- and which is it worth
6 discouraging, and then which of these are going to be
7 changing and how regardless.

8 Q. Thanks very much.

9 A. I hope that helps.

10 COMMISSIONER CLARK: That's all my questions.

11 COMMISSIONER LEVAR: Commissioner White?

12 COMMISSIONER WHITE: Yeah.

13 EXAMINATION

14 BY COMMISSIONER WHITE:

15 Q. I just want to make sure I understand a bit of
16 the nomenclature you have been using. So do you draw a
17 distinction between an export credit rate and a rate
18 design? Because I hear a lot of, in terms of the
19 discourse of you and Mr. Jetter, there's a lot of useful
20 information for purposes of a potential mechanism.

21 Is there a distinction between the two or am
22 I --

23 A. I think the export credit rate has yet to be
24 fully defined in terms of whether it has a time of use
25 component. It's, you know, a rate that applies -- I am

1 using it to refer to some sort of rate design that is
2 specific to export credits. And there's a variety of
3 rate design tools and options that, you know, I think
4 could be applied creatively in different ways to an
5 export rating.

6 Q. And then I think I heard you answer this
7 question, but has Utah Clean Energy put an estimate as
8 to the additional data census you are requesting? I
9 know there was some -- you know, this is for another --
10 you know, for additional production, there's anywhere
11 between 2.X million and 9 million and 76,000. Is there
12 any type of ballpark in terms of the additional
13 incremental costs, especially with what the UPC is
14 requesting?

15 A. I don't have that number. We are not
16 proposing putting production meters on a full population
17 of transition or generation customers, and so it would
18 be somewhere in that range. I think, you know, the
19 major changes we propose might have a -- might result in
20 an increased sample size. I don't know. I don't have
21 an actual exact number within that range.

22 COMMISSIONER WHITE: That's all the questions
23 I have. Thanks.

24 COMMISSIONER LEVAR: Okay. I don't have
25 anything. So thank you, Ms. Bowman.

1 THE WITNESS: Thank you.

2 COMMISSIONER LEVAR: Mr. Holman, do you have
3 anything else?

4 MR. HOLMAN: Nothing else. Thank you.

5 COMMISSIONER LEVAR: Okay. Mr. Mecham or
6 Mr. Margolin, do you have a preference? Mr. Mecham?

7 MR. MECHAM: Yeah. We'll call Chris Worley to
8 the stand.

9 COMMISSIONER LEVAR: Okay. Mr. Worley, do you
10 swear to tell the truth?

11 THE WITNESS: Yes.

12 COMMISSIONER LEVAR: Thank you.

13 CHRISTOPHER WORLEY,
14 called as a witness, having been first duly sworn, was
15 examined and testified as follows:

16 DIRECT EXAMINATION

17 BY MR. MECHAM:

18 Q. Mr. Worley, would you state your name, your
19 business address and the party for whom you are
20 appearing for the record, please.

21 A. Yes. Christopher Worley. I am with Vivint
22 Solar. My business address is 1800 West Ashton
23 Boulevard, Lehi, Utah.

24 Q. Thank you. And did you prepare and cause to
25 be filed direct testimony consisting of 14 pages on

1 March 22nd of this year, which has been marked as Vivint
2 Solar 1 Phase I?

3 A. Yes.

4 Q. And did you also prepare and cause to be filed
5 rebuttal testimony on April 10th, which has been marked
6 Vivint Solar 1R Phase I?

7 A. Yes.

8 Q. And would you answer those same questions the
9 same way today?

10 A. Yes.

11 Q. Do you have any corrections you would like to
12 make to that testimony?

13 A. No, I do not.

14 Q. Thank you.

15 MR. MECHAM: We would move the admission of
16 Vivint Solar 1 Phase I, and Vivint Solar 1R Phase I.

17 COMMISSIONER LEVAR: Okay. If any party
18 objects to that motion, please indicate to me. And the
19 motion is granted. Thank you.

20 MR. MECHAM: Thank you very much.

21 Q. (By Mr. Mecham) Mr. Worley, do you have a
22 summary of your testimony to present?

23 A. Yes, I do.

24 Q. Please go ahead.

25 A. I would like to thank the commission for this

1 opportunity to testify today. The parties in this
2 proceeding are here to estimate the benefits and costs
3 of distributed solar generation on Rocky Mountain
4 Power's system so that the commission can determinate
5 just and reasonable export rate for solar DG.

6 To estimate those costs and benefits, the
7 parties need adequate data, data that can demonstrate
8 the volume, the time and the location of DG power
9 generated on the company's distribution system.

10 The methodology proposed by Rocky Mountain
11 Power is inadequate, likely resulting in biased data
12 that will not allow parties to estimate costs and
13 benefits in Phase II of this proceeding. To address the
14 deficiencies in the company's proposal, I have the
15 following recommendation.

16 One, increase the sample to ensure study
17 accuracy of plus or minus 5 percent at the 95 percent
18 confidence level. With a proposed study accuracy
19 currently of 10 percent -- plus or minus 10 percent at
20 the 95 percent confidence level, parties will not be
21 able to test for and estimate the value of costs and
22 benefits. Such a small sample is unlikely to show
23 statistically significant costs and benefit estimates in
24 Phase II.

25 Recommendation 2, utilize simple sampling

1 instead of stratified sampling. Stratified sampling
2 unnecessarily complicates the study, and it drastically
3 reduces the sample to the detriment of the Phase II
4 process.

5 However, if the commission prefers to use
6 stratified sampling, the sample should be stratified on
7 total consumption instead of system capacity, because
8 total consumption is more closely correlated with
9 exports. Also, given differing consumption profiles,
10 residential and commercial customers should be analyzed
11 separately.

12 Recommendation 3, DG systems should be sampled
13 geographically, reflecting a representative sample of
14 Rocky Mountain Power's distribution system. The
15 company's proposed county level sampling is not
16 sufficient to estimate the localized impact of solar
17 exports on the RMP distribution system.

18 Costs and benefits of exported power may vary
19 depending on the amount of DG capacity interconnected
20 with the distribution system. A circuit with many DG
21 systems may perform differently than a distribution
22 circuit with fewer DG systems. Parties need this
23 information for Phase II.

24 Recommendation 4, to increase the increase
25 sample size, Rocky Mountain Power should obtain customer

1 consent and work with solar installers to access data
2 from system converters. To be clear, given the concerns
3 on cost and time needed to install production meters, I
4 am not recommending Rocky Mountain Power install meters
5 for all study participants. Instead, while collecting
6 some data from inverters provides an opportunity to
7 increase the sample at a low cost.

8 While data from inverters is generally less
9 accurate than data from revenue grade production meters,
10 increasing the sample with data from converters will
11 increase the accuracy of the study.

12 Recommendation 5, Rocky Mountain Power should
13 collect generation delivery and export data from each
14 study participant. It is inappropriate to compare
15 delivery and export data from transition customers with
16 generation data from the sample study participants.
17 There may be statistically significant differences
18 between Schedule 135 and 136 customers. Ignoring that
19 difference would bias the study results.

20 Recommendation 6, Rocky Mountain Power should
21 collect information on system orientation, tilt and
22 relative shading for each DG system in the study. These
23 factors materially impact the volume, the time of DG
24 power generated on the company's systems. Rocky
25 Mountain Power already has some of this data for a large

1 pool of customers, so it is likely minimal
2 administrative burden to collect all of that information
3 from sample customers.

4 With these changes, parties will have the best
5 opportunity to fulfill the purpose of this proceeding.
6 Thank you.

7 **Q. Does that conclude your summary?**

8 A. Yes, it does.

9 **Q. Thank you.**

10 MR. MECHAM: He is available for
11 cross-examination.

12 COMMISSIONER LEVAR: Okay. Thank you.
13 Mr. Margolin, do you have any questions for this
14 witness?

15 MR. MARGOLIN: No, sir.

16 COMMISSIONER LEVAR: Mr. Holman, do you have
17 any questions?

18 MR. HOLMAN: No, sir.

19 COMMISSIONER LEVAR: Mr. Snarr?

20 MR. SNARR: No questions.

21 COMMISSIONER LEVAR: Mr. Jetter?

22 MR. JETTER: I do have a few questions. Thank
23 you.

24 CROSS-EXAMINATION

25 BY MR. JETTER:

1 Q. Good afternoon. I guess let's kind of start
2 back with similar questions that I -- what I've asked of
3 Ms. Bowman regarding orientation, tilt and shading. You
4 described in your summary that the purpose of collecting
5 that information was, I believe, is a quote, "Materially
6 impacts the volume and time of the exports." Is that
7 correct?

8 A. Yes.

9 Q. If you already know the volume and the time of
10 the exports, would it make any sense to collect data on
11 a few of many factors that may affect that?

12 A. I think so. And as I was sitting here and
13 listening to the, you know, the previous witness, I got
14 to thinking more about this. And, you know, the rate
15 that customers are put on, that's really -- that's the
16 incentive, or that's the thing that really, you know,
17 dictates customer behavior.

18 Consumers will look at the rate, and they will
19 decide how much power they are going to consume, or some
20 customers may do that more than others. But it's the
21 tool that influences customer behavior. And so if, you
22 know, the commission is really interested in influencing
23 customer behavior, that's the mechanism that they can do
24 that.

25 Establishing that rate will, you know, end up

1 with a, you know, just and reasonable outcome, and it
2 also will impact how customers going forward -- that
3 incentive, that -- that rate that customers are on, is
4 going to impact how customers in the future invest in
5 rooftop solar.

6 So, you know, it could be the case if we
7 ignore tilt and we ignore orientation, if we ignore
8 these factors that might be okay, but we don't know.
9 And we should really test for that, because going
10 forward, if customers are making investments, they will
11 pay attention to those factors.

12 **Q. Is it your understanding that the rate that**
13 **would be set out of this would apply retroactively to**
14 **either grandfathered or transitioned customers?**

15 A. That's not my understanding.

16 **Q. Okay.**

17 A. I mean, my understanding is if they are
18 grandfathered, they are grandfathered.

19 **Q. And so then would it be reasonable then to**
20 **assume that the conditions that they made those**
21 **investments under, under the existing or prior tariffs,**
22 **would give you information into the future choices in**
23 **the rate design that incorporates social engineering as**
24 **you are supposing?**

25 A. Could you repeat that question? You have a

1 lot embedded in there, and I want to make sure I answer
2 it.

3 Q. Yeah. So would you say that customers have
4 made choices under the prior net metering program or the
5 current transition based on the rates that are available
6 to those customers?

7 A. I think that's a fair statement.

8 Q. Do you think that it's reasonable to
9 extrapolate from the -- for example, the Schedule 135
10 customers to post net metering customers on their usage
11 patterns?

12 A. Well, it's something that can be tested.
13 And --

14 Q. Did you explain how you would test that?

15 A. Yeah. You would use -- explain how you would
16 test that?

17 Q. Since we don't have any post-transition
18 customers on a new rate that would have different
19 incentives, how would you test whether a 135 customer
20 acts similarly to a new post-transition customer?

21 A. A new pro-transition --

22 Q. Yes.

23 A. So Schedule 137. I don't know that that's a
24 thing.

25 Q. Yeah.

1 A. You know, forward looking is always difficult
2 to estimate, and so I think you do the best you can,
3 and, you know. I mean, I think the first thing that
4 could be done was to test whether, you know, the
5 incentives for Schedule 135 customers is the same as
6 Schedule 136 customers, and those are under different
7 rates. If those are not materially different, then
8 perhaps in the future it won't be the same. But it's --
9 it's -- I don't have a good answer for you.

10 **Q. Okay. And would you say that the best we**
11 **could do is take data from the customers we have now and**
12 **use that as an estimate of future customer behavior?**

13 A. Yeah. I think that's probably the best that
14 can be done.

15 **Q. Okay. Do you have any reason to believe that**
16 **a Schedule 136 customer looks more like a Schedule 137**
17 **customer than a Schedule 135 customer?**

18 A. I don't know what a Schedule 137 customer will
19 look like, so I, you know, I could only speculate.

20 **Q. Okay. And if you were trying to speculate,**
21 **would it make sense to use the largest pool of available**
22 **customers that appear to be fairly similar?**

23 A. I would say having a large pool is going to
24 benefit your analysis.

25 **Q. Okay. Thank you. With respect to orientation**

1 of the panels, do you have an idea of how you would like
2 to see that measured?

3 A. Yeah. I think it could be done a couple of
4 ways. It could be done by cardinal direction. In some
5 cases you could put a finer point on it and maybe split
6 it up into quadrants of eight. But, you know -- you
7 know, I would be open for discussion on that.

8 I am a little puzzled on just why this would
9 be so difficult. I could imagine, I mean, if we are
10 talking about a sample size of 70, you could hire an
11 intern. You don't even have to hire an intern. There's
12 probably tons of college students or high school
13 students that would love an internship at Rocky Mountain
14 Power, and you could have them go to Google Earth and
15 look at the roof on Google Earth.

16 It's a little puzzling to me just why that
17 would be so difficult, especially for -- you know, with
18 the company's proposing of 70.

19 Q. Do you -- do you think that -- I can't testify
20 to answer your question here -- so your puzzlement about
21 why it's a problem. Do you think that that angle
22 would -- would you propose to restricting access to
23 rates or classifying customers or using that in some
24 type of a design of the export credit?

25 A. I don't know. I haven't testified as to what,

1 you know, Phase II is going to look like.

2 **Q. Can you explain some way that you would factor**
3 **that in mathematically to a rate?**

4 A. I think it would be difficult to factor that
5 into a rate, but, you know, if -- if what we're trying
6 to do is incentivize customers to do something, or to
7 not do something or to be participants of the grid, and
8 if they want to be a participant with the grid, and they
9 want rooftop solar at the same time, then, you know, if
10 there's value to having more west-facing solar, then
11 maybe parties come up with a incentive to make them do
12 more west-facing solar, or encourage that.

13 And I am not social engineering, like maybe
14 you suggest. I am saying just the price mechanism.
15 Price is an important incentive for customers to do
16 things.

17 **Q. And do you think a time-of-day pricing for**
18 **exports would be a more effective measure of doing that**
19 **than a restriction on what angles they can put their**
20 **panels at?**

21 A. I can only speculate, but it's probably
22 cleaner to do it that way.

23 **Q. Okay. Thank you. And I guess similar**
24 **question with shading. Do you have an idea how you**
25 **would measure shading?**

1 A. You know, I think that's an open topic for
2 discussion. I mean, you could have, you know, a binary
3 variable where you have trees or you don't have trees.
4 You could break things up into quadrants. There's lots
5 of ways you can do this.

6 **Q. And do you think that you would use that to**
7 **set rates for the export value?**

8 A. I don't think that -- I mean, setting the
9 export value rate, there's going to be lots of factors
10 that go into the analysis that the commission has to
11 look at and weigh. I don't think that that would be
12 a -- in my mind, I don't think that would be a
13 determinant, like the one thing that sets the rate.

14 **Q. Okay. Do you think it would be part of any**
15 **mathematical formula to set the rate?**

16 A. You know, I don't want to say no, but I find
17 it maybe a little hard to believe, but, you know, not
18 impossible.

19 **Q. Okay. Thank you. And then I'd like to just**
20 **kind of briefly follow up. Kind of asking the same**
21 **questions that one of the commissioners just asked**
22 **Ms. Bowman. Ten a.m., there's two different houses that**
23 **are neighbors. One has panels on the west, one the**
24 **east. They are both exporting one kilowatt during the**
25 **10:00 to 11:00 a.m. hour.**

1 Should they get a different rate for that
2 exported hour -- kilowatt hour?

3 A. So just if I'm -- so just I'm thinking about
4 the rate, so two customers, one has west-facing system,
5 one has an east-facing system, both are generating one
6 kilowatt hour on 10:00 a.m. on an even day?

7 Q. Yeah.

8 A. I find it, you know, probably hard to believe
9 that you would give them a different rate. Again, I
10 don't want to say that's impossible. I think very
11 likely you would give them the same rate.

12 Q. And then the same question for use if you have
13 those same two customers. Each one is -- in this
14 example, they have identical west-facing panels, but
15 during that 10:00 to 11:00 a.m. hour, one of them is
16 using the microwave, and the other one is using an air
17 conditioner, and they draw the same amount of energy
18 from the grid.

19 Should they be charged different rates for
20 that?

21 A. I don't believe so. I'd have to think more
22 about it, but that doesn't seem reasonable to me.

23 MR. JETTER: Okay. I think those are all the
24 questions that I have. Thank you.

25 COMMISSIONER LEVAR: Okay. Thank you,

1 Mr. Jetter. Ms. Hogle?

2 CROSS-EXAMINATION

3 BY MS. HOGLE:

4 Q. Good afternoon, Mr. Worley. I think you
5 started off by saying that in your summary that the
6 purpose of this proceeding is to determine the costs and
7 benefits of distributed generation. Can you --

8 A. I believe so, yes.

9 Q. Isn't it narrower than that? Isn't it to
10 determine the value of the exported energy or the export
11 credit before the export energy?

12 A. Well, I'd have to look at the, you know, the
13 purpose of -- in the filing, but I probably agree with
14 you. To do that, we're going to have to estimate the
15 costs and the benefits.

16 Q. Okay. You also listed a host of
17 recommendations to the commission to incorporate into
18 the company's proposed load research study, correct?

19 A. Yes.

20 Q. Among them simple sampling, for example, and I
21 believe set plus or minus 5 percent of the 95 percent
22 confidence level for the generation sample, correct?

23 A. That's correct.

24 Q. Okay. Do you have any information on what the
25 costs would be of implementing your six to eight

1 **recommendations to the commission?**

2 A. I don't have specific costs. The company has
3 provided some costs on the cost of installing a
4 production meter. And so I am very -- you know, I am
5 cognizant that it's expensive, or at least the company's
6 estimates are it's very expensive to install production
7 meters.

8 And so what I would suggest, or what I have
9 recommended is the company can install, you know, the
10 number of meters that they would like to install, and
11 then to achieve that fuller sample size, use data from
12 inverters, work with customers, get consents and work
13 with solar installers then to collect that data and use
14 it in the study, which would be a cheaper alternative
15 than installing a production meter on, you know, a ton
16 of different customers, or all of the customers in the
17 study.

18 **Q. Is it possible that the data from the**
19 **inverters would be different depending on who the solar**
20 **installer is, for example? And how would you account**
21 **for that?**

22 A. I don't know that I know what you mean. I
23 mean, the data is going to be -- it's like a number of
24 watts, at a given timestamp. And so, I mean, that's
25 going to be the same no matter what installer you get it

1 from.

2 Q. You talked about, in your summary, or perhaps
3 in response to cross-examination, that the company could
4 easily hire an intern, I believe you said, to go to
5 Google Earth, I believe, to get some of the information
6 that you are proposing. Do you know if you can get the
7 tilt and shading through Google Earth?

8 A. I believe you would be able to get tilt.
9 Shading, I think you could estimate that by looking at
10 the number of trees surrounding the house, and whether
11 they, you know, are -- look like they would block the
12 sun.

13 Q. And that would change, correct? I mean, it
14 would change through the years? I mean, it wouldn't be
15 constant?

16 A. What do you mean?

17 Q. The shading aspect of it. For example, I mean
18 that would --

19 A. Well, lots of --

20 Q. It could look one way if you, you know,
21 possibly look at it one day, and then it would look
22 different another day, the next month or whatever.

23 A. I'm a little confused. What do you mean?
24 Like the tree would look different?

25 Q. Well, the estimate of shading, for example.

1 **It varies throughout the -- throughout time.**

2 A. I don't know that I completely follow, you
3 know. If there's a house, and there's a rooftop solar
4 system is oriented south, and there's a giant tree on
5 the south side of the house, I don't know how that
6 necessarily changes over time. The tree is still there.

7 **Q. Would it be there throughout time? Is it**
8 **possible that the tree, that some of the branches could**
9 **be cut off or the tree could be cut, you know, be torn**
10 **down for example?**

11 A. I mean, for this hypothetical example, yes.
12 But lots of things change over time.

13 **Q. Okay.**

14 A. Kids go off to college, and so suddenly
15 there's not enough -- the house doesn't use as much
16 electricity. People buy electric vehicles. There's
17 lots of things that change over time. So getting hung
18 up on whether trees grow or whether they get cut down,
19 that seems sort of not really germane.

20 **Q. So what about your recommendation for a survey**
21 **to determine the appliances that people have. Don't**
22 **those change also? Lots of things change over time for**
23 **example.**

24 A. Did I make that recommendation? Could you
25 point to my testimony where I say that?

1 Q. Well, I mean, do you support a survey?

2 A. I haven't made that recommendation.

3 Q. What about rooftops that have panels that have
4 different tilts? How do you propose that that --

5 A. I haven't made a proposal on that. But, I
6 mean, we can certainly talk about that as a group. We
7 could do some sort of weighted average where, you know,
8 you got some that are -- a weighted average.

9 Q. Okay.

10 A. But again, that's for open discussion. I am
11 just suggesting this right now.

12 MS. HOGLE: Okay. Thank you. No further
13 questions. Thank you.

14 COMMISSIONER LEVAR: Okay. Thank you.
15 Mr. Mecham, any redirect?

16 MR. MECHAM: Just a little.

17 REDIRECT EXAMINATION

18 BY MR. MECHAM:

19 Q. Mr. Worley, as this discussion about
20 orientation, tilt, shading and so on goes on, doesn't
21 that really affect exports and therefore go to what the
22 costs and the benefits of solar energy are, as opposed
23 to setting a rate? I mean, you don't set a rate on
24 tilt, right?

25 A. No. I would suggest not setting a rate on

1 tilt. But again, I don't want to foreclose that option,
2 depending on where the parties are where Phase II goes.
3 But that doesn't seem reasonable in my opinion. But
4 collecting that data would be important for Phase II,
5 because it will impact the amount of exports for a given
6 system.

7 MR. MECHAM: Okay. Thank you. That's it.

8 COMMISSIONER LEVAR: Thank you. Any recross,
9 Mr. Jetter?

10 MR. JETTER: Just one question.

11 RE CROSS-EXAMINATION

12 BY MR. JETTER:

13 Q. Doesn't it make a lot more sense just to
14 measure exports?

15 A. I don't know that I know what you mean.
16 Doesn't what make more sense?

17 Q. We're talking about all these factors and the
18 follow-up redirect regarding these factors that affect
19 exports of electricity from a residential customer to
20 the grid. If we could actually just measure the
21 information we're indirectly trying to guess at by using
22 those factors, wouldn't it make a lot more sense just to
23 measure exports directly and use actual export
24 measurements?

25 A. Like I mentioned earlier, I think there's

1 maybe a limited or sort of a shortsighted way to think
2 about things. I mean, the rates is really about
3 customer incentives. And so customers, they have the
4 incentive to install rooftop solar or they don't have
5 the incentive to do that. And they have the incentive
6 to install it in certain directions or in other
7 directions.

8 So we really need to understand what customer
9 incentives are so that we can -- so that the commission
10 can set the rates to influence those decisions. And so
11 just knowing how much exports at a given time, it's a
12 very limited and shortsighted way, I think, of thinking
13 of the issue.

14 **Q. So your testimony is that time of day and**
15 **volume of transfer is a shortsighted way of setting the**
16 **rate for paying people for the time of day and the**
17 **volume of exports?**

18 A. That's not what I said.

19 **Q. Help me understand the distinction.**

20 A. What I am saying is, we need to -- the
21 commission needs to understand how customers -- what
22 their incentives are and how they decide to use certain
23 power at a certain time of day or not use power, how
24 they decide to make investments in rooftop solar and
25 not. And looking at just how much power you are

1 exporting at a given time of day and volume, that
2 doesn't answer that question at all.

3 Q. Do you think it's the commission's job in this
4 process to evaluate each customer's individual costs and
5 benefits matrix to whether they will install solar and
6 how they will do it?

7 A. I don't think that's their job at all.

8 Q. Okay. As far as the commission's options, do
9 you understand, or do you -- do you -- is it your belief
10 that the commission has more tools available to them to
11 encourage or discourage or change the use of rooftop
12 solar than setting rates and times of rates for the
13 export?

14 A. I haven't thought deeply about it, but I'm
15 assuming the commission has broad authority to do lots
16 of things. So I -- I don't know what you mean in
17 particular.

18 Q. So do you think the commission would have --
19 would you recommend -- let me rephrase that.

20 Would you recommend that the commission use a
21 tool like a class only for west-facing panels?

22 A. You know, again, I haven't made that proposal.
23 I would find that hard to believe, but I don't want to
24 foreclose that option. Because, I mean, quite frankly
25 we don't know what Phase II is going to look like. We

1 don't know what the data looks like, and we don't know
2 where the discussion goes.

3 But I would -- I would find that hard to
4 believe, but, you know, not impossible. Just very low
5 probabilities.

6 MR. JETTER: Okay. Thank you.

7 COMMISSIONER LEVAR: Okay. Ms. Hogle, any
8 recross?

9 MS. HOGLE: No recross.

10 COMMISSIONER LEVAR: Okay. Thank you.

11 Commissioner White, do you have any questions?

12 EXAMINATION

13 BY COMMISSIONER WHITE:

14 Q. Yeah, just a follow-up to something you said
15 earlier on your summary about the recommendation to
16 order RMP to collect, or obtain consent to collect
17 inverter data. Is that something -- would there be any
18 prohibition in another party collecting that data, or is
19 that something you believe would be only Rocky Mountain
20 Power could perform that task?

21 A. I think that that's the most appropriate party
22 to do it, because they are the party whose -- they are
23 the one that's physically deciding -- they are the one
24 that's sampling. They are figuring out which customers
25 should be in the study.

1 And once they have figured out okay, well,
2 here is the group of customers we would like in the
3 study, we're going to collect inverter data from them,
4 then they would go out and get that customer consent.
5 That seems like the order of operations that would be
6 the ideal way to do it.

7 **Q. Does that go to the same for the potentially**
8 **having an intern or someone else collect data? I mean,**
9 **is that Rocky Mountain Power is the same party that**
10 **would be the appropriate or the only party that could**
11 **provide that information in the second phase?**

12 A. In terms of the system characteristics, I
13 would have to think a little more about it. But I
14 think, you know, some of that information could be
15 obtained from the installers themselves. You know,
16 orientation, tilt, you know, I don't want to speak for
17 all of the installers, but I imagine that, you know,
18 Vivint Solar has most of that stuff.

19 **Q. And then just back -- circling back to this**
20 **question. I think at one point, I don't want to**
21 **mischaracterize it if I heard you incorrectly, but you**
22 **talked about some of the tasks or the task of this**
23 **second phase, I guess, of the docket is to evaluate the**
24 **costs and benefits.**

25 And so help me understand what, if you were

1 going to kind of talk about potential costs, what they
2 might look like and how those potential costs correlate
3 to what this load research study would approve would --
4 how they would correlate, I guess. In other words, you
5 are saying and costs and benefits. What kind of -- what
6 do you mean by costs?

7 A. That's a good question. You know, I haven't
8 really gotten quite deep on the Phase II side of things.
9 But you know, there's customers. There's costs to serve
10 customers. There's metering costs. There's, you know,
11 cost of running the line out. There's a cost of making
12 and ensuring that you have service.

13 The most -- I am assuming most of these
14 customers, you know, they are not generating all of
15 their own power so there's going to be a cost to turn on
16 the power plant and, you know, transmit power. So I
17 mean, there's -- there's any number of costs that I am
18 sure will -- you know, the parties are going to look at
19 in Phase II and try and quantify those.

20 COMMISSIONER WHITE: Thank you. I have no
21 further questions.

22 COMMISSIONER LEVAR: Thank you. Commissioner
23 Clark?

24 EXAMINATION

25 BY COMMISSIONER CLARK:

1 Q. Thank you. Good afternoon, Mr. Worley. Does
2 Vivint have production information for the customers
3 that Vivint served in installing systems on their homes
4 or business?

5 A. I am going to say yes. I don't want to say
6 100 percent, like, but generally speaking, we do have
7 that data. If we are in a relationship with a customer,
8 they are a leasing customer, then we're going to be able
9 to track so we can, you know, monitor for the terms of
10 the lease.

11 If we have, you know, if we are doing the
12 financing, if we have sold it and we are paying for the
13 financing, then, yeah, we are going to track that
14 information. That data, that production data, belongs
15 to the customer, and so we can't disclose that with
16 other parties. But that, I would say, you know, with 99
17 percent accuracy, we probably have all of that.

18 Q. Thank you. And regarding the location of
19 customer generation on the distribution system, you said
20 that would be important information for parties to have.
21 And I'd like -- I just want to understand more about
22 that. Why is that going to be important? Or why could
23 it be important?

24 And let me just say too, I infer from that
25 that if you were contemplating a rate design where rates

1 varied on the basis of the cost characteristics of the
2 individual part of the distribution system that you
3 used, I suppose I -- I could see that, but is there
4 anything beyond that?

5 A. I think it is important for parties to -- it's
6 a great question. I think it's important for parties to
7 understand, you know, just how big of an issue is
8 distributed generation for the company. Does the
9 company -- the distribution -- I am not an engineer, and
10 so I don't want to get too far down my depth here,
11 but --

12 Q. Me neither.

13 A. -- but you got a distribution circuit. If
14 there's one customer that has rooftop solar, you know,
15 there might be sometimes when they are going to be
16 exporting power to the grid, but it's not going to be
17 causing a huge problem.

18 It's just going to -- the way electricity
19 works, it's just going to get dumped onto their
20 neighbor, or the guy down the road. And so that's not
21 going to cause a huge problem or huge cost with Rocky
22 Mountain Power's distribution system.

23 Alternatively, if, you know, the way DG is on
24 their system, if there's lots of distribution circuits
25 where they are being overloaded by lots and lots of

1 rooftop solar, that could be a problem.

2 And so parties need to understand, you know,
3 what does it look like right now? Is DG a huge issue
4 for Rocky Mountain Power, or is it not that big of an
5 issue? And so estimating the costs, the cost impact,
6 parties need to be able to understand that.

7 COMMISSIONER WHITE: Thanks very much.

8 COMMISSIONER LEVAR: Thank you.

9 EXAMINATION

10 BY COMMISSIONER LEVAR:

11 Q. Mr. Worley, just a couple follow-up questions
12 on, again, the inverter data that, for example, Vivint
13 Solar has on the costumers for which it performed
14 installations. You refer to that data as belonging to
15 the customer and not being the ability of Vivint to
16 release that data. What about in aggregate form? Does
17 Vivint have the ability to publish and use aggregate
18 inverter data as it sees fit?

19 A. I don't want to volunteer that without, you
20 know, checking with internal counsel on that. I am -- I
21 could imagine a scenario where, you know, we could
22 figure out how to -- depending on how it's sliced or
23 diced or anonymized or aggregated, I think we could do
24 that, but again, I don't want to commit to anything, I
25 guess.

1 Q. Sure. And I assume I'll get the same answer
2 to this question, but about what submitting information
3 or a PSC proceeding under our confidential and highly
4 confidential protections?

5 A. I think it's going to be dependent on the
6 contract we have with customers, on whether we can
7 disclose that or not or under what -- you know, what the
8 terms are. My guess is probably not. But again, you
9 know, subject to check, I'd have to check with internal
10 counsel.

11 COMMISSIONER LEVAR: Thank you. That's all I
12 have. Thank you, Mr. Worley. We appreciate your
13 testimony today. Do you have anything further,
14 Mr. Mecham?

15 MR. MECHAM: Nothing. Thank you.

16 COMMISSIONER LEVAR: Why don't we take a 10
17 minute recess then and reconvene by that clock at 2:30.
18 So 12 minutes, I guess.

19 (Recess from 2:15 p.m. to 2:28 p.m.)

20 COMMISSIONER LEVAR: Okay. We're back on the
21 record. Mr. Mecham, did you have anything else?

22 MR. MECHAM: Nothing further for me, no.

23 COMMISSIONER LEVAR: Okay. Mr. Margolin?

24 MR. MARGOLIN: I'd like to call Rick Gilliam
25 to the stand please.

1 COMMISSIONER LEVAR: Mr. Gilliam, do you swear
2 to tell the truth?

3 THE WITNESS: I do.

4 COMMISSIONER LEVAR: Thank you.

5 RICK GILLIAM,
6 called as a witness, having been first duly sworn, was
7 examined and testified as follows:

8 DIRECT EXAMINATION

9 BY MR. MARGOLIN:

10 Q. Mr. Gilliam, can you please state your name,
11 business address and who you are offering testimony here
12 on behalf of today?

13 A. Yes. My name is Rick Gilliam. My business
14 address is 590 Redstone Drive in Broomfield, Colorado.
15 80020. I am testifying today on behalf of Vote Solar.

16 Q. And are you the same Rick Gilliam that
17 produced direct testimony on March 22nd, 2018, in this
18 docket?

19 A. Yes, I am.

20 Q. Do you have any changes to that testimony,
21 sir?

22 A. I have one correction to make. That is on
23 lines 276 to 278. And I would ask that that sentence be
24 stricken, the sentence starting with "importantly."

25 Q. Other than that change, would you answer all

1 of the questions in your direct testimony the same as if
2 you were asked them today?

3 A. Yes, I would.

4 MR. MARGOLIN: I'd like to move that
5 Mr. Gilliam's direct testimony marked as Vote Solar
6 Exhibit 1 be entered into the record.

7 COMMISSIONER LEVAR: If any party objects to
8 that motion, please let me know. And the motion is
9 granted. Thank you.

10 Q. (By Mr. Margolin) Mr. Gilliam, are you
11 prepared to offer a summary of your testimony today?

12 A. I am.

13 Q. Please proceed.

14 A. Thank you. Good afternoon, commissioners. I
15 really appreciate the opportunity to summarize my
16 testimony before you today. I'd like to begin with a
17 couple of preliminary matters, and then I'll briefly
18 summarize the five points that I make in my testimony.

19 I want to start by saying that this expedited
20 proceeding should never have happened. Each
21 stakeholder, including Rocky Mountain Power, will
22 approach Phase II in their own way, with their own data
23 and recommendations. The company's put together a
24 proposed research -- load research plan that they
25 contend is suitable for their needs; that is, to make

1 the case they presumably want to make in Phase II.

2 However, it is not suitable for our needs.

3 And because we will have the burden of proof in Phase
4 II, which is a high bar, it's critical that we have the
5 data and information we need to make that case. The
6 company's proposal is insufficient for those purposes,
7 and the data needs of intervenors should be respected.
8 This is a critical difference between this case and
9 other proceedings that we've been involved in.

10 To properly value and price net exported
11 generation, the commission must have an understanding of
12 the drivers of net exports, the sizing decision of
13 customers, and how customer consumption may change as
14 the economics of installing solar and other distributed
15 energy resources can change.

16 It's also important that the commission
17 understand that we contend that the proposed plan will
18 also not achieve the goals RMP says it will, and
19 therefore it is not suitable for RMP to use to draw
20 conclusions about residential or commercial solar
21 customers in Utah. Dr. Lee, representing Vote Solar,
22 will address this in his testimony.

23 First issue is the burden of proof, and this
24 is a very, very important issue to Vote Solar. The
25 settlement stipulation paragraph 30 says, and I am going

1 to read it, because I think it's important to hear it
2 again.

3 "Parties may present evidence addressing
4 reasonably quantifiable costs or benefits or other
5 considerations they deem relevant, but the party
6 asserting any position will bear the burden of proving
7 its assertions."

8 Secondly, paragraph 30, says, "Parties may
9 present evidence addressing the following costs or
10 benefits: Energy value, appropriate measurement
11 intervals," and that's the 15 minute interval that's
12 currently in place, "generation capacity, line losses,
13 transmission and distribution capacity and investments,
14 integration and administrative costs, grid and ancillary
15 services, fuel hedging, environmental compliance and
16 other considerations."

17 Phase I of this proceeding will be the only
18 opportunity for intervening parties to identify the
19 customer data needed to fulfill our burden in -- burden
20 of proof in Phase II. Because RMP has sole access to
21 the data and is the proponent of a Phase I load research
22 plan, it's Vote Solar's position that Rocky Mountain
23 Power bears the ultimate risk associated with a
24 technically insufficient or improper sampling and data
25 collection.

1 Phase II of this proceeding should provide the
2 richest possible factual record for the commission.
3 This can only happen if all parties have sufficient
4 information in both quantity and quality to make their
5 cases. Only a robust factual record in this case can
6 ensure that the commission will have a reliable factual
7 basis for its ruling, and can minimize the chance that
8 the commission's decision will be successfully
9 challenged.

10 This is a much higher bar than is typical for
11 intervenors as all data must come from Rocky Mountain
12 Power. Limiting the data collected, and collecting data
13 stratified on the wrong variable per the proposal of the
14 company is inadequate to the analysis of cost and
15 benefits and netting interval.

16 Second point, the variable of interest which
17 is net exports. Rocky Mountain Power's proposal of a
18 research plan does not acquire the data necessary for
19 the analyses Vote Solar intends to perform. Rocky
20 Mountain Power's misunderstanding is encapsulated in
21 their statement, and I quote, "The company's proposed
22 sample is designed to produce a representative
23 generation profile, which is not dependent or related to
24 a customer's load profile."

25 A generation profile may be Rocky Mountain

1 Power's goal for the proceeding, but our goal is a
2 thorough understanding of the net export profile and the
3 primary factors that determine the shape of that net
4 export curve. In other words, we will know what the net
5 exports are from metered data, but we need to know why
6 the exports are what they are, both in terms of
7 magnitude and timing.

8 This understanding requires granular knowledge
9 of the individual customer generation profile and
10 customer load profile, the two elements that comprise
11 net exports. Without both pieces, we cannot develop
12 temporal benefits or understand how net exports may
13 change over time. For example, large and small
14 customers with the same solar -- same capacity solar
15 system will have very different export profiles.

16 Additionally, larger customers tend to have
17 higher load factors, that is flatter loads, and that
18 will have a different impact on net exports than will a
19 smaller customer's load, which is more peaky.

20 Lower export compensation will also likely
21 result in concerted customer effort to shift flexible
22 loads to the middle of the day; for instance, electric
23 vehicle charging or storage, if that's an option for
24 customers, to maximize self consumption of customer
25 generation during times of excess, which would be

1 compensated for at a lower rate. Most benefit
2 categories have a timing element in them, including
3 avoided energy and fuel costs and avoided losses.

4 In rebuttal, RMP acknowledged the value of
5 exported energy and the compensation and the appropriate
6 compensation rate will depend on the volume and timing
7 of exports. Indeed, it notes that while not necessary
8 to develop a historic profile of exported energy, it
9 could be useful; again, quote, it could be useful for
10 understanding the intertemporal relationship between
11 full-requirements energy and rooftop solar production.

12 A static, one-year picture, however, does not
13 capture how loads may change in the future. The longer
14 the time periods over which data is collected, the
15 better load changes can be captured. To be clear, I
16 understand all parties will have access to net export
17 profiles of at least 36 grandfathered customers and
18 several hundred, if not potentially in excess of a
19 thousand transition customers.

20 This doesn't change the fact that both
21 generation and load profiles are needed for each sampled
22 customer to understand the influence of each of these
23 components. Use of a generic solar generation profile,
24 like the one represented in Rocky Mountain Power's
25 rebuttal testimony, will not provide this information.

1 Point 3, the load research plan itself. To
2 capture the customer generation data we need, RMP should
3 collect temporally and locationally consistent delivery,
4 export and production data from individual customers in
5 the two groups; that is, both 135 and 136 customers. In
6 other words, all three streams of data should be
7 collected from as many individual customers as possible.

8 We believe it highly unlikely that the
9 characteristics of 135 customers and those of 136
10 customers are similar in both total consumption of
11 customers and capacity of customer generator installed.
12 However, until we see more details of the total customer
13 loads, individual loads, in the populations to be
14 sampled, it's not possible to say with precision how
15 large the sampling should be for Schedule 135 and 136
16 customers.

17 Load variations can occur for both groups due
18 to life-style, employment, age, number of people in
19 household, as well as the deployment of various
20 appliances and other distributive energy resources. And
21 by that, it's a broad category of some of the new
22 technologies that have become more prevalent recently.

23 For example, more than 6 percent of solar
24 customers have battery storage, and that is likely to
25 increase in the future under the assumption that the

1 cost will continue to come down as they have in recent
2 years. Such technologies can have a significant impact
3 on exported load shape, considerably more than
4 generation profiles, and can affect the value and
5 prospective pricing.

6 The company responded to my suggested
7 gathering of behind-the-meter electrical device data by
8 arguing the documentation of appliance types does not
9 add value to the load research and the survey would be
10 very costly and received by response. Again, this may
11 be true for the analysis that Rocky Mountain Power
12 intends to perform, but it's very important for our
13 analysis.

14 And as I have said, the timing of exports is
15 deeply affected by what's behind the meter, as well as
16 the generation profile. So Vote Solar is interested in
17 individual customer data before it gets highly diluted
18 through averaging either the load data or the generation
19 data.

20 To clarify, we are looking for information
21 from the individual customers being sampled; that is,
22 the three streams of data, and a broad survey of every
23 solar customer would not be appropriate. So the \$10,000
24 survey that we have talked about earlier, I believe that
25 was in reference to surveying all solar customers. What

1 we are interested in is surveying the customers that are
2 part of the sample itself.

3 This information could be collected personally
4 by the RMP representative that does a site visit. If
5 the family or a member of the household is not home at
6 that time, other means can be -- can be developed.
7 We're happy to work with Rocky Mountain Power on both
8 designing that survey and determining ways to do that in
9 the most cost effective manner possible.

10 There are 36 Schedule 135 customers with both
11 production and load profile meters. The three streams
12 of data should continue to be collected from these
13 customers, allowing the parties to access multiple years
14 of information. We also recognize that more Schedule
15 135 data may be needed for a good representation of
16 grandfathered customers.

17 While transition customers are submitting
18 applications at a much slower pace than full NEM
19 customers, those that submitted an application prior to
20 November 15th of 2017, Mr. Elder's testimony, rebuttal
21 testimony, projects metering installation at a pace of
22 roughly a hundred per month, or as we have heard
23 already, about 1,100 by the end of the year. Important
24 to keep in mind that that's a pace that's about 90
25 percent below what the pace was, even excluding the

1 first half of November, under the former net metering
2 regime.

3 Because this group is installing solar under
4 different economic conditions, we believe it's critical
5 to collect the three streams of data for sufficient
6 sample of these customers as well. I believe installing
7 production meters at the same time as billing meter
8 change-out is the most cost effective way to assure that
9 adequate data can be collected.

10 If an adequate sample is obtained prior to
11 December 31st, production meter installation can cease
12 and we won't know -- but we won't know what the right
13 number of samples is until we evaluate the transition
14 population. However, we would like to access all of the
15 data collected from Schedule 136 customers, and that
16 includes data that's being collected currently that is
17 prior to December 31st of this year.

18 The company argues that installing production
19 meters is expensive, which we believe is a potentially
20 debatable assumption. A specific request for proposals
21 for this one-year discrete task could determine if a
22 less costly solution is possible, but this needs to
23 happen very soon, because we are losing time with more
24 and more systems being connected to the grid.

25 Complaints about the cost of intervenor

1 proposals, in particular the cost of installation of
2 these meters, should be tempered by the fact that we
3 have been through three proceedings. This is the third
4 proceeding so far in five years. In other words, we
5 have all spent a lot of time at this, and I think at
6 this point we need to make sure that we get this right,
7 we get all the data that's needed to give you
8 commissioners a good, rich set of evidence from which to
9 make a just and reasonable decision.

10 We have suggested using total consumption as
11 the basis for sampling. Rocky Mountain Power complains
12 that total consumption is unknown for NEM customers,
13 that's 135 customers, and would require a production
14 meter on the entire population. This is incorrect. For
15 those that are on 135, the company should have pre-solar
16 consumption data, and that would be satisfactory for
17 determining the population.

18 Stratification based on customer generation
19 system size would undermine the reliability of the data
20 collected for review and analysis of customer sizing
21 decisions by including customers with a wide variety of
22 consumption levels and patterns in the same strata. The
23 total load of each rooftop solar customer is the
24 appropriate variable to be used for stratification.

25 Just a word about cost, because we have had

1 quite a discussion about that today. The company has
2 suggested that the cost of installing an individual
3 production meter is approximately \$2,500 in round
4 numbers. If there are a thousand, again, in round
5 numbers, customers that would require production meters,
6 we're talking about two and a half million dollars of
7 capital cost.

8 Capital costs, of course, are spread over some
9 number of years, and as a very rough
10 back-of-the-envelope thumbnail, I came up with less than
11 two cents per average residential customers as the
12 potential impact per month for this two and a half
13 million dollars. I think that really pales in
14 comparison to the potential for costs that can be
15 avoided by getting solar price, the export price right.

16 If the price is right, you will get the right
17 amount of similar development throughout Rocky Mountain
18 Power's territory and sized in the appropriate way and
19 facing the appropriate way. So there is high value that
20 would be lost by not getting the sampling and the load
21 research study done right at this time. That's why we
22 are here in Phase I.

23 This, of course, is not to mention the fact
24 that a poor or a not-well-thought-out export price could
25 really damage the solar industry, which is worth

1 hundreds of millions of dollars in Utah. So there are
2 other considerations besides the short-term effect of
3 two and a half million dollars being spent over 20 to 25
4 years.

5 Finally, a couple words about the system
6 characteristics. We've had a lot of discussion on that.
7 We agree that the data collection should include the
8 items that have been talked about, the system capacity,
9 orientation and tilt angle, zip code, and an estimated
10 degree of shading. None of these factors really lead
11 directly to a rate design. And I think this issue has
12 gotten a bit confused in the hearing thus far.

13 Each of these factors impacts one element of
14 the net exports. And it's important to know what those
15 are. The company's proposal for similar generation, the
16 profile to use, is a normalized. And this may get too
17 wonky, but a normalized solar generation curve where 100
18 percent equals the maximum value at any time of the
19 year, and everything is normalized against that for that
20 generation profile.

21 So an east-facing system and a west-facing
22 system are effectively normalized the same way, yet they
23 will impact net exports in a very different way. So the
24 generation details are important to informing how the
25 benefits are calculated, because as I said earlier,

1 many, if not most of these benefits have a time element
2 associated with them.

3 And finally, I do want to support the idea --
4 I have testified in favor of this -- that residential
5 customers and commercial customers be segregated and the
6 type of study we are talking about should be done on
7 each group of customers. Commercial customers have very
8 different load profiles and generally have different
9 groups than residential customers, so the generation
10 profile will look very different as well.

11 And apologize for the length of my summary,
12 but that concludes my summary.

13 MR. MARGOLIN: Mr. Gilliam is available for
14 cross-examination.

15 COMMISSIONER LEVAR: Thank you. I'll go to
16 Mr. Holman first. Do you have any questions for
17 Mr. Gilliam?

18 MR. HOLMAN: Nothing for me. Thank you.

19 COMMISSIONER LEVAR: Mr. Mecham?

20 MR. MECHAM: Nothing, thank you.

21 COMMISSIONER LEVAR: Mr. Snarr?

22 MR. SNARR: Nothing.

23 COMMISSIONER LEVAR: Mr. Jetter?

24 MR. JETTER: I do have some questions. Thank
25 you.

1 CROSS-EXAMINATION

2 BY MR. JETTER:

3 Q. Good afternoon. Let's start with -- change up
4 my order here a little bit. You discussed taking
5 samples from both Schedules 135 and 136, and using those
6 to create a rate for post-136 customers. And I think it
7 may make sense to call them 137, although we don't know
8 that they will actually be in the Schedule 137 already
9 but --

10 A. Post-transition.

11 Q. Post-transition customers. Do you have any
12 reason to believe that Schedule 135 or Schedule 136 is
13 more representative of post-transition customers than
14 the other one?

15 A. No. Grandfathered customers, that is 135,
16 installed their systems under one set of economic
17 conditions. 136 customers are presently installing
18 their systems and deciding to put in systems at all
19 under a different set of economic considerations. As I
20 said in my summary, the reduction in the number of
21 applications I think is indicative of the impact of that
22 change in economics.

23 To the extent that the post-transition
24 customers are subject to a continued reduction in that
25 value of exports, it's going to likely drive a number of

1 different behaviors that could affect system -- well,
2 one is the decision to install a system; two, the size
3 of that system, and then three, and probably most
4 importantly, the installation of other technologies
5 behind the meter.

6 Q. And so as a result of that, how long do you
7 expect the data from this study to be relevant for? Do
8 you expect it to be relevant to set rates five years
9 from now for export credits?

10 A. I think at this point it's impossible to know.

11 Q. But you have -- you have, I guess, made the
12 argument today that the technology is changing and the
13 equipment that people are installing is changing how
14 they interact with the grid; is that correct?

15 A. Yes, that's right. And what we're looking at
16 in terms of gathering data is relatively static. In
17 other words, we will have something on the order of one
18 year, maybe a bit more for grandfathered customers,
19 maybe even a bit more for transition customers, but that
20 is the only data we have to work with today.

21 And in order for -- to predict the future, the
22 granular information that identifies the
23 behind-the-meter electrical devices is really important
24 in order to determine whether or not that will have a
25 significant impact on exports and how that may be

1 further deployed and adopted in the future by future
2 customers.

3 Q. But don't you -- isn't it consistent with what
4 you just said in your summary that those decisions will
5 change in the future as technology, battery, pricing
6 changes?

7 A. Yes. But --

8 Q. And so isn't it --

9 A. The same thing that happens in a rate case,
10 when you set rates. Rates change over time, and, you
11 know, customers respond to those rates in the future.
12 So if five years down the road after Phase II of this
13 proceeding, it was determined that the export rate is
14 too low or too high, then that -- you know, that's
15 something the commission can look at at that time.

16 One possibility is that customers are
17 installing more storage, for instance, in which case,
18 you know, it may be almost irrelevant at that point.

19 Q. And would you agree with me then that it would
20 be reasonably likely that the same parties asking for
21 this study will ask for the same study again in three
22 years or five years when the conditions have changed?

23 A. I can't answer that directly, but we will at
24 least have a starting point, based on the data that we
25 hope will be collected over the next 18 months.

1 Q. And so I guess following up on that, do you
2 think that two and a half million dollars worth of study
3 every three years is reasonable to charge to the general
4 customer class who are not making the decision to
5 install rooftop solar?

6 A. I'm not sure where the every three years comes
7 from. Again --

8 Q. In my hypothetical. Let's just say my
9 hypothetical is accurate, that every three to five years
10 we're going to do the same study again. Would it be
11 reasonable in your opinion to spend two and a half
12 million dollars every three to five years to reset these
13 rates?

14 A. If it has the impact that we're talking about
15 here today, then yes.

16 Q. If --

17 A. If it has --

18 Q. For setting export rates for a thousand
19 customers?

20 MR. MARGOLIN: Can you please let him finish
21 the answer before you step over him? Thank you.

22 A. If it has the impact of making or breaking an
23 entire industry in the state, then yes, I think it
24 should be revisited. Whether or not at that point we'll
25 need the same degree of a population, same number of

1 customers in the population, we don't know.

2 It also may turn out to be far cheaper. There
3 may be many -- much cheaper ways. For instance, the
4 inverter data that Vivint has talked about, to acquire
5 the data that we are seeking in this proceeding. So
6 there may be way cheaper ways to get that information,
7 and it could be something that's done as a matter of
8 course.

9 Q. (By Mr. Jetter) Are you familiar with load
10 research studies that are done to separate the cost of
11 service among the classes of non-net-metering customers?

12 A. Somewhat.

13 Q. Do you think it's reasonable to use a 90 and
14 10 percent confidence level for those studies?

15 A. I am not a statistician, so I am not going to
16 ponder that question.

17 Q. Okay. So let's talk about the generation
18 details as you have described them, which by that, I am
19 talking about things like orientation, tilt, shading.
20 How would you view or how would you propose to measure
21 orientation?

22 A. I think we've heard a number of suggestions
23 today which I think make sense. Google Earth is a way
24 that many solar companies use to determine how to
25 install solar on somebody's roof. So in terms of

1 orientation, I think that can be pretty accurate,
2 although, as I said in my testimony, in my summary, I
3 think it's quite easy for a Rocky Mountain Power
4 representative to be on their site visit with a compass
5 saying, okay, this is not 180 -- 180 degrees. It may be
6 210 or it may be 150.

7 We don't need precision down to the very last
8 degree, but I think the highest level of precision we
9 can get will be helpful to the information that will
10 inform the net exports.

11 **Q. And following up with that, you said that**
12 **those will inform the net exports. Do you mean that the**
13 **net exports then are the core information that you are**
14 **seeking?**

15 A. Well, we know what the net exports will be.

16 **Q. So why --**

17 A. What we don't know is -- thank you. What we
18 don't know is what are the factors that are driving
19 those net exports. And that's really what we are
20 seeking in this docket.

21 **Q. And how does that help set an export rate?**

22 A. The export rate is going to be the --
23 effectively a net -- presumably a net of the cost and
24 benefits of solar based on all these various values that
25 we have talked about. The values that differ depending

1 on orientation, depending on tilt, depending on shading,
2 potentially even depending on zip code, will have an
3 impact on the exports and the timing of those exports.

4 So to the extent that the exports are, you
5 know, more prevalent in the morning, that can provide
6 one value in terms of benefits. If exports are more
7 prevalent in the afternoon, that's a different value.
8 So all of those elements are very important, not as the
9 direct line to rate design, but to inform the
10 determination of the benefits that the system will
11 receive as a result of the installation.

12 Q. Okay. I still don't understand, and I guess
13 we can go through each witness on the same question.
14 You are describing these as informing a number we
15 already know. Why would we want to do more research,
16 spend more money to inform, as you called it, a number
17 that we already know the answer to? Is there -- how
18 does that benefit the other 800,000 customers for
19 example?

20 A. We know what will happen -- we don't know what
21 will happen. We know -- in retrospect, we will know in
22 retrospect what that net export profile looks like for
23 each individual customer. At least that's our goal.
24 From that information, we can determine what the
25 potential benefits are from that particular set of

1 conditions; the electrical devices that are behind the
2 meter, the orientation, the tilt, the degree of shading
3 of the system itself.

4 And that can inform whether or not the
5 commission wants to either encourage potentially some
6 storage in certain locations or encourage systems to be
7 oriented in a certain way. May want to discourage
8 certain types of appliances, like refrigerated air
9 conditioning in favor of, say, swamp coolers.

10 So the information we're going to have will be
11 static. It's like a test year, if you will. There will
12 be one year's worth of information. But what's
13 important is how that may change -- what's also
14 important, is how that may change over time.

15 **Q. And I guess I still don't understand how**
16 **having that information is going to predict how it will**
17 **change over time. You think that knowing whether 25**
18 **percent of the homes have air conditioning units**
19 **predicts whether 25 percent of the homes will have air**
20 **conditioning units 10 years from now, or 35 percent or**
21 **22 percent?**

22 **A. This is Phase I of this proceeding, and this**
23 **is to gather, or to at least determine what data is**
24 **appropriate for parties to have in order make their**
25 **cases. I can't tell you, as I sit here today, what all**

1 the uses of the data will be. But much of the data has
2 to do with the timing of generation and of appliance
3 use. And that again, in turn relates to how many people
4 are in the home, what their life-style choices are,
5 which will have some maybe minimal information on it.

6 But the point is, that data -- this is our
7 only chance to gather that data. If we get to Phase II
8 of this case and that data is not available, and it
9 would have been helpful to help to inform the commission
10 on the driving factors behind the net exports, there's
11 no way to go back and to actually gather that data.

12 So I think it's a relatively low cost ask
13 today to gather that data -- to begin gathering that
14 data now in preparation for the second phase of this
15 proceeding.

16 **Q. Is it a fair summary for me to say that you**
17 **don't know what you are going to use it for? You don't**
18 **have an intention to use it as part of any formula that**
19 **you are going to use mathematically to set rates?**

20 **A. I do not have a formula in mind for setting**
21 **rates, no.**

22 **Q. Thank you. You discussed separating the**
23 **residential and small commercial customers into their**
24 **own study sample populations; is that correct?**

25 **A. Yes.**

1 Q. And is it correct that you recommend that
2 because you think that their load and export profiles
3 are significantly different?

4 A. Yes.

5 Q. Would you suggest that they should be in their
6 own customer classes?

7 A. I believe they are in their own customer
8 classes.

9 Q. And you -- would you suggest, going forward,
10 that you -- the cost and benefits between those customer
11 classes not be intermingled?

12 A. Again, as I sit here today, that sounds
13 logical to me. As data is available and information is
14 developed for Phase II, I want to reserve the right to
15 change that viewpoint. But as of today, that makes
16 sense, yes.

17 Q. Okay. Thank you. And finally, just with
18 respect to the question of shading, do you have a way
19 that you would suggest measuring the shading?

20 A. We're -- I think I said in my summary, but
21 maybe not, we are completely willing to work with you
22 and Rocky Mountain Power to develop a metric for
23 determining shading.

24 Mr. Worley discussed a couple of them. You
25 know, binary, there is some shading, there is no

1 shading. And then secondly, quartiles. There's a
2 variety of ways of doing it, but we are again, more than
3 willing to work with you to come up with a metric.

4 Q. Okay. And I guess I have a -- just one more
5 quick line of questioning that essentially followed up
6 on the same questions from Commissioner Clark earlier.

7 If it's 10:00 a.m. and you have two systems
8 with different facing panels producing the same energy
9 exported to the grid, should they be paid a different
10 amount for that hour's worth of kilowatt hour
11 generation?

12 A. Well, there's not enough information in your
13 question to give a definitive answer. I mean,
14 generally, I would say yes, all things being equal. But
15 if the two houses, assuming they are houses -- you
16 didn't say whether residences or businesses.

17 But assuming the two houses were on the same
18 secondary distribution circuit, and all the factors that
19 could influence cost and benefits are effectively the
20 same, then yes, that's probably a fair assessment.

21 Q. I can actually just clarify the question.
22 Hypothetical, two neighbors that use the same
23 transformer, have houses across the street from each
24 other. Both houses have five kilowatt capacity systems.
25 One faces east, one faces west. They are both tilted at

1 22 degrees. And at 10:00 a.m. they both export one
2 kilowatt hour between 10:00 and 11:00 a.m.

3 Would you pay them the same amount, or would
4 you say that the export credit for that kilowatt hour
5 should be the same?

6 A. Again, at this point in time I think the
7 answer is probably yes. But as more information, and
8 more particularly on the benefits, is developed, I would
9 want to reserve the right to rethink that in the future.

10 Q. Okay. Let me change that hypothetical up a
11 little bit. Everything that I have said remains the
12 same except one of those houses is in, let's say, Price,
13 Utah, and one of them is in Salt Lake valley. Would you
14 think that the commission should have separate rates for
15 those two export credits, or would you suggest that they
16 should have the same rate?

17 A. Again, we don't have enough information today
18 to make that determination, because it could affect the
19 distribution system in very different ways in Price
20 versus Salt Lake valley.

21 Q. Okay. And you are familiar that we don't
22 charge a new customer a different rate because they are
23 additional customer that adds the cost of a new
24 transformer?

25 A. You mean in terms of just simple delivered

1 electricity from the utility?

2 Q. Yes.

3 A. Yes.

4 Q. Okay. And you are suggesting that maybe that
5 should be different for net metering customers?

6 A. I am suggesting it's a possibility that we
7 should think about.

8 MR. JETTER: Okay. Thank you. That's all the
9 questions I have.

10 COMMISSIONER LEVAR: Thank you, Mr. Jetter.
11 Ms. Hogle?

12 MS. HOGLE: I just have a few. Thank you.

13 CROSS-EXAMINATION

14 BY MS. HOGLE:

15 Q. Mr. Gilliam, you say in your direct testimony,
16 and I guess again today, that the only opportunity for
17 intervening parties to identify customer data needed to
18 carry a party's burden of proof is this case -- is this
19 phase; is that correct? Is that what your testimony has
20 been so far?

21 A. Yes.

22 Q. And you testified that Rocky Mountain Power
23 has sole access to the data at least Vote Solar deems
24 necessary to carry out its burden in the second phase,
25 and therefore, that the commission should require Rocky

1 Mountain Power to collect the data, correct?

2 A. To collect the data that intervenors feel that
3 they need to make their cases in Phase II, yes.

4 Q. Were you in the room when I believe both
5 Commissioner White and Chairman LeVar asked Mr. Worley
6 about whether Volar Solar collected system
7 characteristics like orientation, tilt, et cetera.?

8 A. I think you mean Vivint Solar?

9 Q. Vivint Solar, excuse me.

10 A. Yes, I was.

11 Q. Okay. And so some of the data that you are
12 recommending that Rocky Mountain Power be required to
13 provide, and I think that you referenced as Rocky
14 Mountain Power being the sole access to that data,
15 actually is not just within Rocky Mountain Power's
16 access, right? Or control? Or collection? It is also
17 collected by the solar installers; isn't that correct?

18 A. It's collected apparently by Vivint Solar.
19 But as we heard, there are a lot of caveats around that.
20 So one, Vote Solar does not have access to that data.

21 Two, there's a difference in the degree of
22 accuracy of the meters, the inverter-based meters that
23 were mentioned by Mr. Worley, and to the extent that the
24 commission is fine with that difference in degree of
25 accuracy of the meters, then, of course, we would be

1 fine as well.

2 But getting access to that data, I think,
3 might even be more complicated than getting access to
4 the data that Rocky Mountain Power has or could have.

5 **Q. And some of that data that Rocky Mountain**
6 **Power could have actually comes from solar installers;**
7 **isn't that correct?**

8 A. Are you referring to the application data?

9 **Q. Yes.**

10 A. Yeah. That's right. And I asked in my, I
11 think in my summary and in my testimony, that Rocky
12 Mountain Power verify the data that's in the application
13 to assure that things haven't changed over time, since
14 the application was first submitted.

15 **Q. And I guess my next question would be, how do**
16 **you propose that Rocky Mountain Power verify the**
17 **information?**

18 A. As we talked about this morning, Rocky
19 Mountain Power has to make a site visit. An individual
20 with a compass can figure out orientation, if Google
21 Earth is insufficient. I don't think a Rocky Mountain
22 Power employee needs to go up on the roof to measure the
23 tilt angle. I think an approximation is going to be
24 good enough.

25 We don't need to know whether it's 22 degrees

1 or 23 degrees. More precision is better, but what we
2 are really interested in, is it 22 degrees or is it 45
3 degrees. So you know, close -- a relatively narrow band
4 would be close enough for the purposes that we think
5 we'll need in Phase II.

6 Q. So Vote Solar -- is it your position that it's
7 concerned about the precision of data with respect to
8 random sampling, but not necessarily with respect to a
9 self reported interconnection agreement? Or in an
10 interconnection application, excuse me?

11 A. I think that's the best that we can get with
12 an employee on-site looking at the system. I think it
13 was Rocky Mountain Power that raised concerns in the
14 past that the information that was in applications was
15 not maybe a hundred percent accurate, in their review of
16 those applications. And this is in prior cases, not in
17 this proceeding. So that's why a simple verification we
18 feel would be appropriate.

19 Q. So the information that Vote Solar recommends
20 is collected through the survey -- survey, like
21 appliances and the other electric devices, would also
22 fall into the category of data that because it's self
23 reported is good enough. And it wouldn't require the
24 same rigor as a random sample, for example?

25 A. My position is that an employee, Rocky

1 Mountain Power employee, face-to-face with the homeowner
2 can actually gather very good information if that person
3 can talk to the homeowner face-to-face. In other words,
4 you know, do you have a gas water heater? Do you have a
5 gas range? Do you have a swamp cooler or central air?
6 Which they may be able to determine just from a site
7 visit. Do you have an electric vehicle? Do you have a
8 storage system?

9 So there's -- we're not talking about a 50 or
10 a hundred question survey. We're talking about a series
11 of probably 10 questions to get an idea of what the
12 major appliances are on that -- in that home, that
13 residence. We don't need to know how many lights there
14 are. That can be estimated, just the number of rooms or
15 the size of the house. So we're looking for major
16 appliances, things that can really move the needle on
17 net exports.

18 MS. HOGLE: Thank you. I have no further
19 questions.

20 COMMISSIONER LEVAR: Thank you. Mr. Margolin,
21 do you have any redirect?

22 MR. MARGOLIN: One moment. No questions.

23 COMMISSIONER LEVAR: Okay. Thank you.

24 Commissioner Clark, do you have any questions for
25 Mr. Gilliam?

1 COMMISSIONER CLARK: No questions. Thank you.

2 COMMISSIONER LEVAR: Commissioner White?

3 COMMISSIONER WHITE: No questions. Thank you.

4 COMMISSIONER LEVAR: I think I have one or
5 two.

6 EXAMINATION

7 BY COMMISSIONER LEVAR:

8 Q. And this goes to the survey that you are
9 proposing. And I guess it goes to the policy issue of
10 the appropriate role of government. So let me just lay
11 a little background.

12 If this commission issues an order requiring
13 Rocky Mountain Power to survey its customers, then it's
14 basically acting, at least in my view, as an arm of the
15 government. So is it the appropriate role of the
16 government to basically show up at customers' homes and
17 say, "We're with the government. We're here to help
18 figure out what your rates should be. Please tell us
19 what all appliances you use in your house"?

20 A. Well, like this is a free country, and every
21 person who is asked that question can say no. And that
22 may well be what happens, that individual customers,
23 some may say, "Yes, I want to, you know, help Rocky
24 Mountain Power and the state understand the effects of
25 having solar on my house. So yes, here is the

1 information."

2 Other customers may say, "No, that's an
3 intrusion on my privacy, and I am not going to tell you
4 anything about what I do behind my doors."

5 Q. Do you see a difference though? I mean,
6 people get surveys and polls all the time from private
7 organizations. When it's coming under the cover of
8 government authority, does that change that dynamic in
9 any way? Making some people react, well, in different
10 directions?

11 A. I see your point. I think the framework here
12 would not -- it's not the commission itself going to
13 the -- these customers. It's the utility, which is a
14 private company; regulated, but private. So that
15 dynamic may not come into play as much as if it was a
16 census taker or, you know, a government, a direct
17 government employee. But that remains to be seen.

18 COMMISSIONER LEVAR: Thank you. I appreciate
19 your answer. I don't have anything else. Thank you,
20 Mr. Gilliam.

21 THE WITNESS: Thank you.

22 COMMISSIONER LEVAR: Mr. Margolin?

23 MR. MARGOLIN: I'd like to call Dr. Albert Lee
24 to the stand please.

25 COMMISSIONER LEVAR: Dr. Lee, do you swear to

1 tell the truth?

2 THE WITNESS: Yes, I do.

3 COMMISSIONER LEVAR: Thank you.

4 ALBERT LEE,

5 called as a witness, having been first duly sworn, was
6 examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MR. MARGOLIN:

9 Q. Dr. Lee, can you please state your name, your
10 business address and who you are here offering testimony
11 on for the record, please.

12 A. I am Albert Lee. I work for Summit
13 Consulting, which is located at 601 New Jersey Avenue
14 Northwest, Suite 400, Washington, D.C. 20001. I am
15 here to testify on behalf of Vote Solar.

16 Q. Are you the same Dr. Lee that submitted
17 rebuttal testimony on April 10th, 2018?

18 A. Yes.

19 Q. Do you have any changes to that testimony,
20 sir?

21 A. No, I don't.

22 Q. If asked those same questions today, would you
23 answer them in the same way?

24 A. Yes, I will.

25 MR. MARGOLIN: I'd like to move to enter

1 Dr. Lee's testimony into the record as Vote Solar
2 Exhibit 2.

3 COMMISSIONER LEVAR: Okay. If any party
4 objects to that motion, please indicate to me. And the
5 motion is granted. Thank you.

6 **Q. (By Mr. Margolin) Dr. Lee, are you prepared**
7 **to offer a summary of testimony today?**

8 A. Yes.

9 **Q. Please proceed.**

10 A. Thank you. Good afternoon commissioner.
11 Thank you for allowing me to testify on this matter. My
12 name is Albert Lee. I am the founding partner and lead
13 economist at Summit Consulting. I am testifying on
14 behalf of Vote Solar today.

15 After reviewing Mr. Peterson and Mr. Elder's
16 direct testimony, I find that the sampling design of
17 Rocky Mountain Power's load research study fall short of
18 the requirements of statistical sampling. Specifically,
19 I have identified four issues with the design.

20 First, the sample is not drawn from the
21 population of interest. Instead, it is drawn from a
22 subset of the population of interest. Consequently,
23 estimates from this sample cannot be used to make
24 inferences about the full population, which is the
25 essential purpose of selecting a statistical sample.

1 Second, the final sample is a product of two
2 separate samples created using two different sampling
3 designs. Standard estimation formula would fail to
4 account for the commingling of two samples, and no
5 alternatives were provided by either Mr. Peterson or
6 Mr. Elder in their rebuttal testimonies.

7 Third, a number of factors indicate the
8 stratification will not allow for a reduction in sample
9 size, from roughly 4,000 to 54. Therefore, the plan
10 sample size could be far too small to achieve the stated
11 position of plus or minus 10 percent at 95 percent
12 confidence.

13 Finally, the design offers no contingency
14 plans in the event that additional customers are needed
15 for the sample. Neither Mr. Peterson nor Mr. Elder's
16 rebuttal testimony address any -- any of these concerns.
17 I will now briefly address each of these four issues in
18 turn.

19 My first issue with the sampling design
20 concerns the population of interest versus the sampled
21 population. The population of interest comprises two
22 separate group of customers, the grandfather Schedule
23 135 customers, and the transition program Schedule 136
24 customers. However, the sample is selected only from
25 the grandfathered Schedule 135 customer.

1 Excluding Schedule 136 customer from this
2 production metering sample violates a principle of
3 statistical sampling that all elements have a known and
4 greater than zero chance to be selected. The practical
5 result of this design is that no Schedule 136 customer
6 have a chance to be selected, and therefore no
7 statistical inferences can be made about those Schedule
8 136 customers.

9 Mr. Rick Gilliam, in his direct testimony,
10 points out that there are numerous differences between
11 the two customer populations that could result in
12 differences in output, indicating that Mr. Elder's
13 assumption that these two sets of customers are
14 equivalent is a poor one. In the contrary, I have not
15 seen any additional analysis that equate Schedule 135
16 customers to Schedule 136 customers.

17 My second issue with the sampling design is
18 the fact that the company is commingling two separate
19 samples. Thirty-six of the customer included in this
20 research study were selected for a previous study using
21 a different sampling design in which they were
22 stratified by usage, and sample from only 1,578
23 customer. This means that the 70 total sample customers
24 were selected using two separate sample designs.

25 The standard formula for a stratified random

1 sample are inappropriate for the commingling of two
2 samples. The company is automatically selecting all 36
3 customers from the old sample, therefore, spoiling the
4 random nature of this sample. They also are not
5 correcting for this in their formulas, which violate
6 another fundamental principle of statistical sampling,
7 that element needs to be properly weighted using their
8 probability of being selected.

9 Uncorrected, the resulting estimates are
10 wrong. Even corrected, the precision calculation given
11 in Mr. Elder's direct testimony very likely estimate
12 (sic) the margin of error, because it incorrectly
13 assumes the sample are drawn randomly in each strata
14 across a population of approximately 24,000 customers.

15 My third issue with the sample design is the
16 potential overreliance of the stratification variable of
17 nameplate capacity. This sample design relies heavily
18 on the assumption that the stratification of Schedule
19 135 customer by nameplate capacity will substantially
20 reduce the variation and allow for a sample of only 54
21 customers.

22 If the stratification does not work as
23 assumed, the precision of the sample will be worse than
24 estimated, and a larger sample may be necessary to
25 achieve the desired precision of plus or minus 10

1 percent and 95 percent confidence.

2 Mr. Elder states that a sample of 4,069 would
3 be required to achieve precision of plus or minus 10
4 percent and 95 percent confidence if a random sample --
5 if a single random sample rather than a stratified
6 sample is performed. In other words, if the
7 stratification worked exactly as assumed, the sample
8 size would be as low as 54. However, if the variability
9 calculations are correct, but stratification is
10 ineffective, the appropriate sample size could be 4,069
11 customers.

12 The stratification rest on the correlation
13 between capacity and generation. Mr. Elder presents a
14 table in his rebuttal testimony calculating that the
15 correlation between capacity and generation is 0.93, on
16 a scale from negative one to one. And this result
17 appear to indicate that relying on nameplate capacity is
18 reasonable. However, this analysis was done on data
19 from only the 36 customers used in the previous study,
20 and the calculation is for all four strata combined,
21 rather than separately within each strata.

22 I found that 30 of the 36 customers examined
23 fall into the first stratum, and the correlation for
24 these 30 customer is much lower than the reported 0.93.
25 It is 0.68. Therefore, for the vast majority of the

1 customer, capacity is not as highly correlated with
2 generation as Mr. Elder claims. In fact, Mr. Elder,
3 himself, states in his rebuttal testimony that a
4 correlation of 0.63 is weak or not well correlated.

5 Furthermore, stratum 2 has only two customers,
6 stratum 3 has only four customers, and stratum 4 has no
7 customer included in the correlation analysis. These
8 strata do not have sufficient sample size to reliably
9 measure correlation. Therefore, I conclude that there
10 is insufficient evidence showing, by stratum, the strong
11 correlation between capacity and generation.

12 My final issue with the sampling design is the
13 lack of a contingency plan to increase the sample. From
14 the documents I have reviewed in this docket, there is
15 no evidence that a contingency plan is in place to
16 augment the sample if the design fall short of the
17 precision requirement. Such addition to the sample
18 would be especially challenging, using the proposed
19 systematic example where the fixed intervals makes
20 sample enlargement difficult while also maintaining
21 design integrity.

22 In summary, my opinion is that the company
23 sampling design is inappropriate for its stated purpose.
24 There are a number of major issues that makes the sample
25 design unreliable, including, this sample does not

1 include a large portion of the target population, and is
2 not supported by standard statistical sampling text.

3 No. 2, the sample commingles two separate
4 samples of different population. No. 3, the sample size
5 could be too small for the state of precision. And No.
6 4, the sample design lacks a contingency plan if
7 additional sample customer are needed to meet the
8 precision requirement.

9 This concludes my summary of my opinion for
10 this matter.

11 MR. MARGOLIN: Dr. Lee is available for
12 cross-examination.

13 COMMISSIONER LEVAR: Thank you. Mr. Holman,
14 do you have any questions for Dr. Lee?

15 MR. HOLMAN: No, I do not. Thanks.

16 COMMISSIONER LEVAR: Thank you. Mr. Mecham,
17 do you have any questions?

18 MR. MECHAM: I have none. Thank you.

19 COMMISSIONER LEVAR: Mr. Snarr?

20 MR. SNARR: No questions.

21 COMMISSIONER LEVAR: Thank you. Mr. Jetter?

22 MR. JETTER: I do have some questions.

23 CROSS-EXAMINATION

24 BY MR. JETTER:

25 Q. Good afternoon.

1 A. Good afternoon.

2 Q. I guess I'd like to start out with, I am
3 looking at your rebuttal testimony, and I am going to
4 read two sentences from that. And this begins on line
5 61.

6 A. May I get a copy of the rebuttal testimony in
7 front of me? Thank you. Will you direct me to the page
8 number again, please?

9 Q. Yes. This is at the bottom of page 3, and
10 beginning on line 61 and it reads, "As a matter of
11 statistics, the extrapolation of a sample of one
12 population, the Schedule 135 customers to another
13 population, the Schedule 136 customers, is not
14 possible." Period. Did I read that correctly?

15 A. Yes.

16 Q. And is it your understanding that the purpose
17 of this study is to estimate the patterns of actions of
18 the Schedule 136 customers, or is -- I guess, let me ask
19 that as the first question.

20 Is that your understanding, that this is
21 expected to provide information on Schedule 136
22 customer --

23 A. Could you reask your question, please?

24 Q. Yes. Is your understanding of the purpose of
25 the load research study that the outcome would be a

1 prediction of, or a evaluation of the behavior of
2 Schedule 136 customers?

3 A. I understand that there is some information
4 needed from the 136 customers from the load design
5 study, and the samples were selected exclusively from
6 the Schedule 135 customers.

7 Q. Okay. And you said that extrapolation of the
8 sample of one population to another population is not
9 possible; is that correct?

10 A. That's correct.

11 Q. And so would you say then we are all sort of
12 wasting our time trying to extrapolate information from
13 both Schedules 135 and 136 to a new schedule that has
14 not yet been created?

15 A. The design as it's currently stated, you know,
16 present a pretty big hurdle for this objective. I don't
17 know it's a waste of time or not, but I would just say
18 that it's a very big hurdle that you have to overcome.

19 Q. And in your opinion is that it, as a matter of
20 statistics, is not possible to extrapolate a sample from
21 one population for another population. Is that -- am I
22 understanding wrong, that it would be impossible then to
23 extrapolate information from 136 to a new, as of yet
24 uncreated schedule?

25 A. Maybe I misunderstood your question. I

1 thought that 136 customers are not even being sampled.

2 What is being sampled right now is the 135 customers.

3 Q. I believe the proposed study will return 15
4 minute interval data in and out for energy for all 136
5 customers, along with load -- or excuse me, generation
6 profile information for a sample of 135 customers.

7 A. Yes, I understand that.

8 Q. And the purpose of that, as -- I guess my
9 question is, do you understand the purpose of that to be
10 to create a new schedule for new customers that are
11 neither in Schedule 136 or Schedule 135?

12 A. Reviewing Mr. Elder's testimony and
13 Mr. Peterson's testimony, I am not aware of that fact.

14 Q. Okay. And if you were aware of that fact,
15 then is it accurate to say that the population of
16 interest ultimately doesn't exist at this current point?

17 A. Your supposition is Schedule 137 customers,
18 they don't exist right now?

19 Q. Yes. Yes.

20 A. Could you ask the question once more?

21 Q. Would you -- would that be how you would
22 describe it is the population at interest for this study
23 would then be one that does not currently exist?

24 A. Well, in sampling, you need to -- the whole
25 idea about sampling is to select a sample, a subset from

1 a particular population. From -- if that sample is
2 selected properly, that sample, you would be able to
3 extrapolate information from the sample to the
4 population from which the sample were selected to begin
5 with, to extrapolate those information beyond the sample
6 bound -- I mean, the population boundary would be
7 improper.

8 Q. Okay. And so based on that, any information
9 that we would take from Schedules 135 or 136, you would
10 say would be improper to extrapolate that to 137?

11 A. It would be improper to infer, uncorrected,
12 unmodified, you know, to -- to a population that is not
13 a part of the sample.

14 Q. Okay. And that wouldn't matter whether we had
15 70 or 4,000 sample points?

16 A. No.

17 Q. I am going to change gears to a little bit
18 different line of questioning here, and this relates to
19 inverter data use. Would you believe or would you agree
20 with me that if that -- let me set a little background
21 for this. Excuse me.

22 Does it seem reasonable to you that different
23 solar installation companies would have different
24 populations of customers based on how they market and
25 the types of products they sell?

1 A. I am not an energy economist. I don't think
2 that I would be able to opine on that. I am here as a
3 sampling expert. My job is to evaluate the adequacy of
4 the company's sampling plan against the stated
5 objectives.

6 Q. Okay. I was hoping to get an answer from your
7 expertise about whether self-selection bias would also
8 exist in inverter data that was provided by customers
9 who volunteered that information.

10 A. I have not studied that topic in depth.

11 Q. Okay. With respect to the question of whether
12 the nameplate capacity correlates with the generation
13 output, you have calculated a 0.68 correlation with
14 the -- I believe the customer that would have fallen
15 into the first strata; is that correct?

16 A. That's right.

17 Q. What level of correlation do you think would
18 be a reasonable cutoff for determining whether the
19 correlation is sufficient to go forward or not?

20 A. I don't have a very strong opinion about the
21 size of the correlation. There are statistical texts
22 out there that actually speaks to that. But I am
23 primarily relying on Mr. Elder's testimony to judge
24 whether or not when certain correlations are strong or
25 not.

1 Q. Okay. But you don't have your own opinion
2 whether that correlation is strong or not?

3 A. No, I don't.

4 Q. Have you ever used a correlation less strong
5 than that for the same purpose?

6 A. To provide stratification?

7 Q. Yes.

8 A. I typically don't rely on the assumption of
9 correlation in order to perform a sample designs. I
10 would actually let the data speak for itself and augment
11 the sample if necessary.

12 Q. Okay. And by that you mean you would collect
13 the data, and if it appears to not match what you
14 expected, you would review your sample?

15 A. That's right.

16 Q. Okay. Thank you. Just -- let's see. I think
17 those are all my questions actually. Thank you for your
18 time.

19 A. Thank you.

20 COMMISSIONER LEVAR: Okay. Thank you,
21 Mr. Jetter. Ms. Hogle?

22 MS. HOGLE: I just have a couple. Thank you.

23 CROSS-EXAMINATION

24 BY MS. HOGLE:

25 Q. Good afternoon, Dr. Lee.

1 A. Good afternoon.

2 Q. I'd like to take you back to your testimony
3 regarding the lower correlation. I think you testified
4 something to the effect of 30 of the 36 samples had a
5 lower correlation than the .93 in Mr. Elder's table, in
6 his rebuttal testimony, Table 1. Do you recall that?

7 A. Yes, I do.

8 Q. Can you point me to your direct testimony, or
9 your any testimony that you filed, where you testified
10 to that?

11 A. No. I -- if you check the date, I believe
12 that I filed my rebuttal on April 10th, and I think that
13 it was subsequent to the filing of my rebuttal, I
14 received Mr. Elder's rebuttal testimony that contained
15 that particular piece of statistic.

16 Q. Okay. Thank you.

17 MS. HOGLE: At this time I'd like to move to
18 strike Mr. -- excuse me, Dr. Lee's testimony beginning
19 with the summary piece where he starts talking about the
20 30 of the 36 samples correlation being lower than .93
21 percent.

22 The company did not have, and has not had the
23 opportunity to review any work papers or any information
24 related to that testimony, and I have no way to
25 cross-examine him on that, in particular, not having --

1 my witness not having access to that information at this
2 time.

3 If Dr. Lee wishes to put that as a
4 hypothetical, I would be okay for that part of his
5 summary to be included, but at this time I'd like to
6 move to strike because I haven't had an opportunity to
7 review his work.

8 COMMISSIONER LEVAR: Mr. Margolin, would you
9 like to respond to the motion?

10 MR. MARGOLIN: Yes, I would. I think it's
11 inappropriate. Mr. Elder put in his rebuttal, which is
12 dated the same date as Dr. Lee's testimony, this table,
13 which we saw for the first time on that date. There was
14 simply no opportunity for anybody involved in this
15 proceeding to understand how Mr. Elder was planning on
16 using that data at the time, until we saw his testimony.
17 So to say that Dr. Lee somehow should have foreseen this
18 is impossible.

19 I would also add that no other witness who has
20 responded in any manner to any of the rebuttal testimony
21 that anybody filed has had any motion to strike their
22 testimony. So it would seem prejudicial to all of the
23 intervenors' case to strike Dr. Lee's testimony,
24 especially since it exposes what I consider to be a
25 pretty major flaw in Mr. Elder's analysis.

1 If counsel wishes to speak with Dr. Lee about
2 how he arrived at that calculation, she's free to do so.
3 She can ask him anything about how he got there. If
4 Mr. Elder has the data on the 36 homes sampled here, I
5 think it shouldn't take very long for him to look at
6 that, and understand this, and see that presumably
7 Dr. Lee is right. But I think it would be incredibly
8 prejudicial to have all of us come out here, including
9 Dr. Lee, who responded to rebuttal testimony,
10 appropriately so, only to have that stricken.

11 COMMISSIONER LEVAR: Thank you. I think we
12 have this motion to strike before us. Let me just ask
13 my two colleagues if either of them desire a brief
14 recess to deliberate this motion.

15 MS. HOGLE: Can I respond before you
16 deliberate?

17 COMMISSIONER LEVAR: Sure. It's your motion.
18 So yes, that's right.

19 MS. HOGLE: Thank you. I appreciate that.
20 Mr. Elder filed his testimony April 10th. It is April
21 17th. Counsel for Vote Solar had the opportunity to
22 reach out to me and my witness to indicate to us, give
23 us some preview that this was going to be discussed at
24 this time. That would have given Rocky Mountain Power
25 time to review the information and to look at the work

1 papers and the calculations involved. So I don't
2 understand why we were not provided this information.
3 Thank you.

4 MR. MECHAM: May I interject?

5 COMMISSIONER LEVAR: Certainly. If any other
6 party wants to weigh in on this motion, please indicate
7 to me.

8 MR. MECHAM: We did not do a round of prefiled
9 written surrebuttal in this case. It was not designed
10 that way. It is not atypical for a party to respond
11 live to the rebuttal testimony when there hasn't been a
12 surrebuttal, at least has been in the past, when there
13 hasn't been a surrebuttal round. So I agree with
14 Mr. Margolin.

15 COMMISSIONER LEVAR: Okay. Thank you,
16 Mr. Mecham. If any other party wants to weigh on this,
17 I will look for any indication. And I am not seeing
18 any, so let me just ask my colleagues if anybody desires
19 a brief recess.

20 COMMISSIONER CLARK: I'd like to recess for
21 another purpose, in candor.

22 COMMISSIONER LEVAR: Okay. Do you have
23 questions before?

24 COMMISSIONER CLARK: No, I don't. I
25 potentially have a question for counsel though.

1 COMMISSIONER LEVAR: Before recess?

2 COMMISSIONER CLARK: No.

3 COMMISSIONER WHITE: I guess I have maybe one
4 request for Ms. Hogle. Would there be a potential
5 remedy if your witness was allowed to provide -- to come
6 back to the stand and respond to that, since this is the
7 first time he has had the opportunity to respond to that
8 information?

9 MS. HOGLE: I'd like to see some work papers
10 or calculations for him to respond to. I don't have
11 that information.

12 MR. MARGOLIN: May I say one more thing, or
13 are we sort of done on this?

14 COMMISSIONER LEVAR: Yeah. I mean, you know,
15 we could bounce back and forth into infinity, but if you
16 have one more thing to add, I'll give Ms. Hogle an
17 opportunity to respond to it before we go.

18 MR. MARGOLIN: Without beating a dead horse,
19 it seems like she could ask Mr. Lee right now exactly
20 how he calculated it. It is a simple calculation is my
21 understanding. There wasn't any need for a work paper
22 or data. The data is actually all in Mr. Elder's
23 control. She could ask the questions, take a brief
24 recess to let Mr. Elder look through the data, and then
25 we can see what he has to say.

1 COMMISSIONER LEVAR: Do you have anything
2 further, Ms. Hogle?

3 MS. HOGLE: I don't.

4 COMMISSIONER LEVAR: Five minutes.

5 (Recess from 3:45 p.m. to 3:50 p.m.)

6 COMMISSIONER LEVAR: Okay. Back on the
7 record. We deny the motion to strike, and you can
8 continue with your cross-examination. Thank you.

9 CONTINUED CROSS-EXAMINATION

10 BY MS. HOGLE:

11 Q. Dr. Lee, can you please testify on how you
12 calculated your .68 correlation that we have been
13 discussing?

14 A. Yes. If I remember Mr. Elder's stratification
15 design correctly, the first strata is based on
16 capacities between zero and 6 kilowatts. And we used
17 the information that Mr. Elder provided to us, the 36
18 sample customer from the previous study, identified,
19 which 30 belongs to the first stratum, and calculate a
20 correlation statistics based on the 30 customers
21 belonging to the first stratum.

22 Q. Okay. Just a minute. Dr. Lee, did you use
23 the 36 from the old sample in your calculation?

24 A. When you said "old sample," could you identify
25 which are the old samples?

1 **Q. I believe, although I am going to turn to my**
 2 **witness here, the old sample from the net metering**
 3 **docket, which I believe focused onto total energy**
 4 **output, not nameplate capacity.**

5 A. I looked -- maybe I would answer your question
 6 this way.

7 **Q. Okay.**

8 A. I used the same sample which I believe that
 9 Mr. Elder provided, along with his rebuttal testimony,
 10 that supports his calculation of correlation of 0.93.

11 **Q. Did you throw any of the original 36 out,**
 12 **then, I assume to come up with your 30?**

13 A. No. Throwing out probably is not the right
 14 description. We need to check the design into
 15 consideration. So let's put the whole thing back into
 16 context. Mr. Elder provided to us the correlation
 17 statistics in order to justify the design offered by the
 18 company, which is a stratified random sample design
 19 between capacity and generation.

20 **Q. Correct.**

21 A. That design contains stratification of
 22 capacity based on four strata. There are different
 23 strata boundaries, if I am recalling right now.

24 **Q. That's based on the sizes?**

25 A. That's exactly right. From zero to 6, 6 to 12

1 and then there are two more. We studied the
2 correlation, unlike what Mr. Elder did unconditionally.
3 We condition -- we look at how the correlation changed
4 from strata to strata. So we observe two facts. Number
5 one, 30 out of 36 of the sample customers fall into the
6 first strata. That is to say the vast majority of the
7 customer fall into first strata.

8 Secondly, the rest, the balance of the four
9 customers were scantily distributed into the other
10 stratum. I would refer you to my testimony before.
11 Stratum 2 has two customers, stratum 3 has only four
12 customers, and stratum 4 has no customer at all.

13 **Q. You said 34. Are you talking about 36?**

14 **A.** 36. I'm sorry, my apologies.

15 **Q. Now, tell me where in your testimony you use**
16 **this information.**

17 **A.** I just read it. It was my oral testimony.
18 It's in the summary.

19 **Q. Oh.**

20 **A.** Okay. So given the fact that the vast
21 majority actually belongs to the first stratum, and then
22 only very few of them that populate the subsequent
23 stratum, it leads us to look into the correlation from a
24 stratum-to-stratum basis, fearing that what Dr. Elder,
25 or Mr. Elder had observed, could be due to statistical

1 outliers.

2 And in other words, those are particular
3 outliers that actually give rise to a high correlation.
4 And low and behold, we saw that 30 out of the 36 exhibit
5 a far lower correlation statistics than what Mr. Elder
6 had offer in his rebuttal testimony.

7 **Q. So because of these outliers included with the**
8 **30 that you suggested who belong to the -- in the first**
9 **strata, does that make his correlation invalid?**

10 A. Well, so it does not make it invalid, but it
11 begs the question whether or not, if we are relying on
12 that particular piece of assumption to actually make the
13 subsequent sample design. So again, we need to take
14 this particular discussion in a much broader context.
15 The broader context here is, it has been asserted that
16 the stratification can impart a huge reduction of
17 variability.

18 Let's put some of these numbers on the table.
19 If it were a simple random sample, it would required
20 4,000 sample customers to actually get to the same
21 precision. It has been claimed, based on some
22 calculation, that if stratification is imposed to
23 achieve the same level of precision, it would only
24 require a sample of 54.

25 That is a reduction of almost 50 times. That

1 is a dramatic reduction. So that's the reason why that
2 we started to look into the strength of the correlation.

3 If the strength of the correlation itself is
4 suspect, then it lead us to believe that the size of the
5 reduction from 4,000 probably is not to 50. It would be
6 a much larger number than 50, and that is the purpose
7 that we actually look into the correlation to begin
8 with.

9 So it is not that, you know, whether the
10 calculation is correct or not. We stand by the fact
11 that Mr. Elder calculates his correlation correctly.
12 But to derive a high level of confidence from that
13 calculation, based on among other things, 36 customers
14 and only a tiny little handful of them actually give
15 rise to that strong correlation, and I really think
16 that, you know, we should take a pause and appropriately
17 be cautious before we move forward.

18 **Q. Thank you. So okay. You started off by**
19 **saying that it does not make the correlation invalid,**
20 **correct?**

21 A. It makes it not applicable to a vast majority
22 of the customers. It did not make it invalid. It just
23 make it inapplicable to 30 out of 36 of the customers,
24 whatever that percentage happens to be.

25 **Q. Let me see if I have any more questions.**

1 A. Thank you.

2 MS. HOGLE: I have no further questions.

3 Thank you.

4 COMMISSIONER LEVAR: Okay. Thank you,
5 Ms. Hogle. Mr. Margolin, do you have any redirect?

6 MR. MARGOLIN: No. I do not.

7 COMMISSIONER LEVAR: Commissioner White, do
8 you have any questions for Dr. Lee?

9 COMMISSIONER WHITE: No, I don't have any
10 questions. Thank you.

11 COMMISSIONER LEVAR: Commissioner Clark?

12 COMMISSIONER CLARK: No questions. Thank you.

13 COMMISSIONER LEVAR: And I don't either.
14 Thank you, Dr. Lee. We appreciate your testimony today.

15 THE WITNESS: Thank you so much.

16 COMMISSIONER LEVAR: Anything further,
17 Mr. Margolin?

18 MR. MARGOLIN: No, nothing further, sir.

19 COMMISSIONER LEVAR: Anything further from
20 anyone before we adjourn?

21 MR. MECHAM: Are we just submitting this on
22 testimony?

23 COMMISSIONER LEVAR: Are you asking if you
24 want closing arguments or something like that?

25 MR. MECHAM: No, I am just making sure.

1 COMMISSIONER LEVAR: We are not requesting
2 anything further.

3 MR. MECHAM: And will the order in this matter
4 be nonfinal, or will it be final undebatable, or will
5 you indicate that in the final written order?

6 COMMISSIONER LEVAR: I think we can make a
7 commitment to indicate in written order from this
8 hearing whether we view it as a final order. You may
9 disagree with what we think, but we will indicate what
10 we think.

11 MR. MECHAM: Thank you.

12 COMMISSIONER LEVAR: Anything further? Okay.
13 We're adjourned. Thank you.

14 (The hearing concluded at 4:03 p.m.)
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1 C E R T I F I C A T E

2 STATE OF UTAH)

3 COUNTY OF SALT LAKE)

4 THIS IS TO CERTIFY that the foregoing proceedings
5 were taken before me, Teri Hansen Cronenwett, Certified
6 Realtime Reporter, Registered Merit Reporter and Notary
7 Public in and for the State of Utah.

8 That the proceedings were reported by me in
9 Stenotype, and thereafter transcribed by computer under
10 my supervision, and that a full, true, and correct
11 transcription is set forth in the foregoing pages,
12 numbered 6 through 235 inclusive.

13 I further certify that I am not of kin or otherwise
14 associated with any of the parties to said cause of
15 action, and that I am not interested in the event
16 thereof.

17 WITNESS MY HAND and official seal at Salt Lake
18 City, Utah, this 26th day of April, 2018.

19 
20 Teri Hansen Cronenwett, CRR, RMR
21 License No. 91-109812-7801

22 My commission expires:
23 January 19, 2019

24
25

Exhibits	62:22 63:23	12,20,21,25 71:2,4 83:15 103:12 127:17 149:19 175:16 195:14 198:20 207:11 212:11 214:25 215:3	148:5 210:17 224:12 226:20 110 37:24 104:8 110-ish 71:3 111 4:8 37:24 112 4:9 104:8 113 4:10 114 4:11 83:7 88:1 1160 107:4 117 4:14 11:00 159:25 160:15 202:2 11:44 116:21 12 9:7 33:1 125:14,15 175:18 230:25 129 4:15 12:59 116:21	130 25:15 135 20:8,12, 16,17,22 21:10,13,17 25:16 26:22 27:12,16,24 28:10,16 29:1 81:17 96:16, 19 97:19 98:24 99:6,18 100:5,14 102:8 104:15, 23 105:3 151:18 155:9, 19 156:5,17 183:5,9,15 185:10,15 187:13,15 191:5,12,15 212:23,25 213:15 214:19 218:12 219:6, 13 220:2,6,11 221:9 136 20:12,17, 19,20 21:10 23:19 25:23 26:2,23 27:5, 8,13,16,20 28:3,10,16 48:6 60:6 61:16 96:14, 17 98:24 99:7,19 100:6,14 102:9 115:16, 24 151:18 156:6,16
PSC Document 1 177:6	0			
PSC Document 2 211:2	0.63 216:4			
	0.68 215:25 222:13			
#				
#323 2:23	0.93 215:15, 24 230:10	10,000 49:18, 21 50:7,24		
\$	1	100 2:23 172:6 189:17		
\$1 90:23,24	1 11:14 37:10, 12,13 38:8,15 87:1 148:2,16 177:6 224:6	10104 3:3 1014 117:21		
\$10,000 184:23	1,000 63:5 96:17	106 4:6 109 4:7		
\$2 78:10 90:17 91:7,18 92:1,5,9,11, 25 93:2,5,9, 10	1,100 63:7 71:1 81:25 127:8 185:23	10:00 143:7 144:8 159:25 160:6,15 201:7 202:1,2		
\$2,500 188:3	1,578 29:6 213:22	10:26 66:19	12 9:7 33:1 125:14,15 175:18 230:25	
\$20,000 44:22	10 12:7 13:9 23:7,13 24:19,24 36:16 44:22 47:7,15 55:16,18 66:17 70:11,	10:40 66:19 10th 10:2 107:6 118:2	129 4:15	
\$79,000 15:5 44:19 53:20				
\$9.3 15:11 60:17,22 61:2				

183:5,9,15 186:15 191:5, 12,17 212:23 213:1,5,8,16 218:13,18,21 219:2,4,13,23 220:1,4,11 221:9	220:3	174 5:3	20001 210:14	206:2
137 155:23 156:16,18 191:7,8 220:17 221:10	150 196:6	176 5:6	2013 126:22	223 5:13
14 67:5 70:8 147:25	151 89:12	17th 226:21	2014 33:10 52:18,20 53:5	224 5:14
14-035-114 97:16	152 4:22	18 193:25	2017 9:16 48:24 185:20	229 5:15
140 4:16	155 85:14	180 196:5	2018 6:1 10:2 107:7 118:1,2 176:17 210:17	22nd 118:1 148:1 176:17
140857 2:11, 15	158 83:16	1800 147:22	2019 11:15 35:18 63:14 82:2 87:1	23 206:1
143 4:17	15th 11:6 185:20	191 5:7	203 5:8	2300 2:6
145 4:18	16 32:17 33:2 97:3	1R 148:6,16	208 5:9	24,000 23:2 49:18 214:14
147 4:21	160 2:15	2	210 5:11 196:6	24,082 29:10
149 85:14,17 89:11,14	161 4:23	2 64:5 65:3 68:18 149:25 211:2 216:5 217:3 231:11	212 390-9022 3:3	25 71:3 189:3 198:17,19
15 10:2 67:5 68:22 179:11	165 4:24	2,000-ish 71:5	213 81:21 127:6	25,000 71:3
	166 4:25	2,927 23:14	217 5:12	255 68:22
	169 5:1	2.3 64:6,12	22 198:21 202:1 205:25	276 176:23
	17 3:10 6:1	2.4 63:25 64:1	228 175:19	278 176:23
	17-35-61 6:4 116:23	2.X 146:11	2:15 175:19	2:28 175:19
	171 5:2	20 189:3		

2:30 175:17	28:19,22	60:16 62:25	590 176:14	23:18 34:10
2nd 2:19	29:5,15 30:14	63:8 212:9	5th 2:10,15	36:15 49:1,4,
<hr/>	31:23 32:1,2,	221:15	<hr/>	15,16 50:4,
3	9,11,16,20	232:20 233:5	6	11,15 51:2,6
<hr/>	33:1,7 34:11,	4,069 15:10	<hr/>	52:7 70:16
3 125:14	16,19 35:1,2	23:8,11	6 37:24 70:11,	71:16,19
150:12 183:1	37:2,5 38:15,	215:2,10	12,15,20,21	84:21 97:3
216:6 217:4	21 39:12,22	400 210:14	151:20	101:3 157:10,
218:9 231:11	40:18,23 53:1	45 206:2	183:23	18 213:23
30 25:4,7	54:1,3 84:21	4:03 235:14	229:16	73 3:18
38:15,21,24	85:2 99:13	<hr/>	230:25	76,000 146:11
39:22 40:5,	101:2,8,9,13	5	601 210:13	77 3:19
18,23 178:25	182:17	<hr/>	61 218:5,10	79,000 78:3
179:8 215:22,	185:10 214:2	5 149:17	62 3:13	7th 55:11
24 224:4,20	215:19,22	151:12	63 37:21 38:4	<hr/>
229:19,20	224:4,20	161:21	65 38:9	8
230:12 231:5	226:4 229:17,	50 207:9	66 3:14	8 3:9
232:4,8	23 230:11	232:25 233:5,	68 38:12,24	80 125:15
233:23	231:5,13,14	6	39:4,23 40:5,	800,000
300 2:10,15	232:4 233:13,	52 32:4,7,21	24 229:12	197:18
107:4	23	33:5	7	80020 176:15
31st 11:15	360 130:15	53 3:11	<hr/>	801 220-4014
186:11,17	385 222-1618	54 97:2 212:9	7 71:19	2:7
34 28:19 29:9,	2:24	214:20 215:8	70 3:15 22:8	801 363-4046
15 30:14	3:45 229:5	232:24		
34:11,16,19	3:50 229:5	56 3:12		
35:1,3 53:25	<hr/>			
101:2,9,14	4			
231:13	<hr/>			
35 198:20	4 64:5 150:24			
36 25:16	216:6 217:6			
	231:12			
	4,000 36:15			

2:20	92 3:23	123:23	186:14	17:23 18:24
801 366-0335	93 3:24 25:19	ability 36:19	203:23	19:18 20:24
2:12	37:14 38:11,	88:4 174:15,	204:14,16,20	24:16 25:25
801 366-0353	13 39:8,13,	17	205:2,3 225:1	31:19 37:16
2:16	17,19,24	able 16:25	accomplish	85:12 93:4
825 8:17	40:25 80:22	17:5 32:8	53:1	122:15 151:9
84101 2:24	81:4 224:5,20	45:3,20,23	according	194:9 196:1
84103 2:20	95 4:2 12:7	46:3,9 47:2,4,	127:5,7	206:15
84111 2:7	13:10 23:7	7,11,14,16	140:24	220:15
84114-0857	24:18,24	49:16,21	accordingly	achievable
2:11,16	36:16 55:16,	51:12 79:1	21:6,20	109:11
85 84:20,25	19 103:11	82:13 85:7	100:21	achieve 11:7
89 3:20	127:17	86:20 88:20	account	12:6 13:9
9	149:17,20	109:1 124:14	29:14 31:2,9	15:11 24:20
9 85:17	161:21	149:21 163:8	65:9 101:12	112:20
146:11	212:11 215:1,	172:8 174:6	111:12	162:11
9.3 63:19	4	207:6 221:2	129:16	178:18
90 3:21 23:13	98 4:3	222:2	162:20 212:4	212:10
185:24	99 172:16	above 11:21	accounted	214:25 215:3
195:13	9:08 6:1	absence	80:13	232:23
91 3:22	9th 55:4	13:19	accuracy	acknowledge
abilities	A	Absolutely	11:4 12:6	d 182:4
		16:22	13:11,13	acquire 80:22
	a.m. 6:1 66:19	accepted	15:12 31:15,	81:8 180:18
	116:21 143:7	100:4	21 42:20,22	195:4
	144:8 159:22,	access 39:5	55:15 94:13	across 75:6
	25 160:6,15	54:24 66:7,8	97:10 127:17,	92:13 201:23
	201:7 202:1,2	69:13 151:1	19 149:17,18	214:14
		157:22	151:11	acting 208:14
		179:20	172:17	action 128:5
		182:16	204:22,25	actions
		185:13	accurate	

218:17	adding 60:5 75:18 142:6	addressed 55:22 108:5 113:20	adopted 131:24 138:9 193:1	after 49:17 55:14 115:11 193:12 211:15
acts 155:20	addition 59:9 96:13 112:25 127:14 132:5 216:17	addresses 119:12	adopting 61:7	afternoon 117:16,17 118:20 129:6 140:8,9 153:1 161:4 172:1 177:14 191:3 197:7 211:10 217:25 218:1 223:25 224:1
actual 102:11 122:16,24 123:3 146:21 166:23	additional 15:2,11 29:9 35:9,12,14,22 43:5 44:15,21 52:13 58:1 66:1 88:3 97:3 101:9 104:5,12 108:15 109:10,15 112:18,19 127:12,21 144:19 146:8, 10,12 202:23 212:14 213:15 217:7	addressing 41:4,18 120:25 179:3, 9	adoption 123:19 138:16	
actually 16:11 29:25 30:13 32:3 39:6,23 45:6 46:3 47:8 49:3,22 60:14 80:11 87:11 91:22 99:17 102:7 110:22 138:22 166:20 191:8 199:11 201:21 204:15 205:6 207:2 222:22 223:10,17 228:22 231:21 232:3, 12,20 233:7, 14	Additionally 181:16	adds 202:23	advantage 108:18	
add 14:24 35:9,11,14 76:15 86:12 126:21 142:2, 7,10,13 184:9 225:19 228:16	Additions 76:15	adequacy 112:20 222:3	advocate 76:7 77:25	again 10:8 11:23 19:23 23:12 25:11 26:1,9 28:14 29:2 30:2,16 31:4,8 34:11, 20 35:15 36:7,16,19,23 38:4,13 43:18 44:3 45:24 46:18,21 50:5 60:9 63:20 64:9 71:4 91:23 99:2 101:11 102:6 103:25 105:7 160:9 165:10 166:1 168:22 174:12,24 175:8 179:2 182:9 184:10 188:4 193:21 194:7,10 199:3 200:12 201:2 202:6, 17 203:16
added 36:6 131:10	address 8:15, 17 107:2,3 117:19,20 147:19,22 149:13 176:11,14 178:22 210:10 212:16,17	adequate 149:7 186:9, 10	advocates 120:11	
		adjourn 234:20	affect 31:15 72:11 84:7 87:19 97:10 113:24 119:16,17,18, 19 153:11 165:21 166:18 184:4 192:1 202:18	
		adjourned 235:13	affected 125:20 184:15	
		administrativ e 41:22 152:2 179:14	affordable 121:19 135:5 140:13	
		admission 10:12 148:15	afield 63:9	
		admit 95:25 115:6		
		adopt 119:18		

218:8 232:13	agreement 76:17 98:5 108:3 111:23 113:3 116:25 135:8 206:9	7:24 209:23 210:4,12 211:12	162:16 166:17 168:2, 7 170:17 171:14 172:17 175:11 176:25 180:3, 11 182:16 183:6 184:25 186:14 187:5 191:18 196:24 197:8 198:25 201:14,18 203:8 208:19 209:6 213:3 214:2 215:20 219:11 220:4 223:17 225:22 226:8 228:22 231:12	allowed 228:5
against 189:19 222:4		aligned 128:11		allowing 185:13 211:11
age 45:1 75:9 133:24 183:18	agreements 47:14 61:16	alike 14:16		allows 24:6 120:24 124:22
aggregate 174:16,17	agrees 108:8, 16	all 9:6 11:14, 16,23 14:15 23:19 26:2 38:20 41:11 46:5,15 47:16 49:16 52:4 54:6,12,20,22 57:13,16 60:6,12 63:18,22 65:7,19 69:22 70:18,21 71:13 78:23 80:6 83:9,24 84:2,4 86:16 87:23 88:25 90:25 91:2 92:5,10,12 93:6 94:16 104:6 106:11 111:20 113:13 114:11 116:8 119:22 120:14,25 122:11 123:5 131:5 137:6, 17 139:25 141:12 142:1, 9,18 145:10 146:22 151:5 152:2 160:23		almost 86:4 193:18 232:25
aggregated 69:4 174:23	agricultural 17:19			along 75:10 76:10 82:11 86:18 220:5 230:9
ago 33:8,11 53:2,18 139:6,8	agriculture 17:22			already 29:12 37:6 46:23 48:15 54:1 85:21 89:19 96:16 99:14 100:15 108:20 109:8 114:20 115:5, 16 123:10 130:7 134:22 135:6,7,14,16 138:18 141:17 151:25 153:9 185:23 191:8 197:15,17
agree 20:25 21:4,17 22:3 26:15 27:7 28:5,13 31:6 38:21 43:12, 19 44:4 55:13 85:7 98:15,22 103:8 110:24 114:5 119:4 137:17 142:1 161:13 189:7 193:19 221:19 227:13	ahead 74:19 81:6 96:11 116:16,19 148:24		allocate 93:12	
	aid 75:17		allocated 93:5,6	
	aiming 24:25		allocating 93:15	
	air 124:7,9 137:18 143:8 160:16 198:8, 18,19 207:5		allotted 127:4	
	Alaska 9:5 19:17,18 20:2,5		allow 46:19, 24 88:5 108:22 119:4 122:15 149:12 212:8 214:20	also 6:21 7:8 11:22 12:3 13:1 27:10
agreed 32:20 65:11 117:2				
agreeing 27:6	Albert 5:10			

29:5 33:7 36:25 41:17 46:16 48:22 58:6 59:10 63:15 71:8 82:10 83:14 85:13 86:22 115:8 116:14 118:23 119:12,18 120:3 123:7, 17 127:20 134:8 135:2 136:25 140:22 142:7 143:20 148:4 150:9 154:2 161:16 164:22 178:16,18 181:20 185:14 195:2 198:13 204:16 206:21 214:4 216:20 222:7 225:19	196:2 230:1 altogether 60:11 always 25:2 100:16 156:1 among 108:25 122:14 136:6 138:18 161:20 195:11 233:13 amount 47:17 61:2 132:9,14 133:11,21 136:15 139:11 141:3, 15 150:19 160:17 166:5 188:17 201:10 202:3 amounts 83:20 134:13, 14 analyses 180:19 analysis 58:8, 13,19 59:23 60:20 83:3 105:6 120:16, 17,23 125:18 128:15,18	132:3 134:18, 19 156:24 159:10 180:14 184:11,13 187:20 213:15 215:18 216:7 225:25 analyst 73:18 analyzed 83:5 150:10 ancillary 41:22 179:14 angle 130:15 132:3 157:21 189:9 205:23 anglers 20:2, 6 angles 130:22 158:19 anomalies 128:5 anonymized 174:23 another 21:19 36:4 44:9 59:1 93:12	98:17 133:22 146:9 163:22 169:18 214:6 218:12 219:8, 21 227:21 answering 90:22 answers 10:8 74:2 95:19 116:7 118:8 anticipate 25:12 anticipated 70:10 128:12 anybody 47:16 63:9 225:14,21 227:18 anybody's 9:10 anyone 54:25 234:20 anything 52:17 72:25 89:6 106:10 116:11 134:16 137:24 146:25 147:3 173:4 174:24	175:13,21 209:4,19 226:3 229:1 234:16,19 235:2,12 anyway 61:11 anywhere 111:11,16 129:13 146:10 apologies 231:14 apologize 6:5 190:11 apparently 204:18 appear 156:22 215:17 appearances 6:6 8:1 appearing 7:15 147:20 appears 108:9 223:13 appliance 46:12 72:15
--	--	---	--	---

184:8 199:2	127:14 146:4	9:22 41:19	127:8 188:3	arrays 110:21
appliances 44:2,9 45:1, 24 58:18,24 137:13,23 140:19 164:21 183:20 198:8 206:21 207:12,16 208:19	applies 145:25 apply 50:15 51:17 154:13 applying 98:23 appreciate 94:16 119:13 125:4 127:18 128:2 175:12 177:15 209:18 226:19 234:14 appreciates 74:20 approach 15:9 21:25 25:5 31:20 35:15 63:2 119:3 122:23 128:11 177:22 approaches 25:3 approaching 97:4 appropriate	61:5 62:6,7 88:6 101:22 103:7 120:9 125:23 126:13 136:16 139:24 169:21 170:10 179:10 182:5 184:23 187:24 188:18,19 198:24 206:18 208:10,15 215:10 appropriately 226:10 233:16 appropriatene ss 61:21 approve 15:14 76:5,23 171:3 approved 97:20 approximate 135:9 approximatel y 9:1,6 15:5, 11 25:4 81:25	214:14 approximatio n 205:23 April 6:1 10:2 35:20 107:6 118:2 148:5 210:17 224:12 226:20 area 113:24 areas 12:18 112:23 143:5 argues 186:18 arguing 184:8 argument 192:12 arguments 234:24 arm 208:14 around 36:25 142:9,11 204:19 array 130:11 145:2	arrived 226:2 arrives 123:15 Ashton 147:22 aspect 65:16 67:15 131:3 163:17 aspects 12:16 52:4 131:1 asserted 232:15 asserting 41:6 179:6 assertions 41:7 179:7 asserts 126:4 assess 42:11 assessment 201:20 assign 143:10

144:20	27:22 31:5	216:16	184:18	153:2 170:19
assist 60:20	36:20,23	223:10		175:20
	40:11,14 84:3		avoid 29:25	199:11 224:2
Assistant	103:20	authority	75:1	228:6,15
2:10,14	131:14	168:15 209:8		229:6 230:15
	183:25		avoided	
associated	186:20	automatically	182:3 188:15	back-of-the-envelope
11:18,24 13:6	213:13	214:2		188:10
67:25 113:11	214:18 223:8		aware 26:5,10	
121:23	232:12	available	27:24 29:17,	background
127:24	assumptions	11:22 15:17	22 32:1 33:7	8:23 9:18
179:23 190:2	87:21	27:19 48:18,	34:16,18	208:11
	assure 186:8	22,25 49:20	38:14,16	221:20
assume	205:13	50:25 51:6	41:2,16,25	
27:10 51:1		52:4 72:16	89:21 90:1	backs 27:21
63:17,21,22	attempted	76:11,25	100:18	
85:24 87:19	32:6	85:21 86:14,	101:11	backup 35:7
131:5 132:3		17 89:19 90:2	102:13 104:4	
143:7 154:20	attention	94:3 97:22	111:11,15	balance
175:1 230:12	15:24 94:2	105:5 109:20	129:11	13:13 135:3
assumed	125:23	126:9 128:20	132:21	140:12 231:8
214:23 215:7	154:11	152:10 155:5	137:13	
	Attorney	156:21	139:15	ballpark 64:7
assumes	2:10,14,23	168:10	220:13,14	146:12
214:13	6:18 7:1	190:13 199:8	away 17:7	
assuming	attributes	200:13		band 206:3
90:23,25	75:10	217:11	azimuth 75:9	
134:23		Avenue 2:19	83:19	bar 178:4
135:13	atypical	3:2 117:21		180:10
168:15	227:10	210:13	B	
171:13	audience	average		base 139:2
201:15,17	7:10	14:15,17	back 31:11	
assumption	augment	47:22 53:23	64:18 66:20,	based 13:15
24:14,17,22		96:20,21	21 87:17	24:2,8 25:15
		103:24 165:7,	89:11 92:3	28:23 29:2
		8 188:11	102:1 116:6,	30:1,14 31:5
		averaging	20,22 138:21	

37:1 39:6 44:25 45:3,21 46:8 51:12,23 53:1 58:23 59:6,15,18,21 63:8 64:20 71:18 79:5 100:8 102:14 125:12 126:1, 3,14,19,24 127:9 128:12 129:17,21 130:6 133:11 134:14 137:22 139:9 143:12 155:5 187:18 193:24 196:24 221:8, 24 229:15,20 230:22,24 232:21 233:13	123:20 124:9 183:24 193:5 bear 41:7 88:13 179:6 bears 41:12 54:19 88:15 179:23 beating 228:18 become 62:1 108:21 141:15 183:22 becomes 15:25 becoming 138:8 143:18 before 8:2 15:19 40:1 68:3 85:20 126:18 161:11 177:16 184:17 194:21 226:12,15 227:23 228:1, 17 231:10 233:17 234:20	199:13 221:4 233:7 beginning 63:13 83:15 85:14 218:10 224:18 begins 68:21 82:2 218:4 begs 232:11 behalf 6:9 7:4,22 27:11 107:4 117:22, 23 140:16 176:12,15 210:15 211:14 behavior 46:20 75:15 83:19 85:19 89:18,22 94:7 153:17,21,23 156:12 219:1 behaviors 45:9,12 145:1 192:1 behind 6:10 33:23 139:1, 13 184:15 192:5 198:1 199:10 209:4	behind-the-meter 43:12 46:6,7,10 184:7 192:23 behold 232:4 being 22:10 26:8,13,17 31:23 33:15 38:7,10 86:5 100:20,23 101:10,13 102:3,22 103:1,2,20 104:18,22 109:8,9 114:9 129:12 173:25 174:15 184:21 186:16,24 189:3 201:14 204:14 214:8 220:1,2 224:20 belief 83:25 99:10 168:9 believe 14:1 18:21 21:13 22:25 25:5 27:11 35:17 37:4 40:10 42:3 52:7 60:4 61:2 63:4 65:8,9 66:2,6 69:17 72:3,4,10	82:20 85:4 86:22 94:14 97:8 101:21 104:21 110:17 119:8 128:8 129:15 139:23 140:23,24 153:5 156:15 159:17 160:8, 21 161:8,21 163:4,5,8 168:23 169:4, 19 183:8 184:24 186:4, 6,19 191:12 200:7 204:4 220:3 221:19 222:14 224:11 230:1, 3,8 233:4 believes 99:24 belong 232:8 belonging 174:14 229:21 belongs 172:14 229:19 231:21 below 185:25 benchmarks
basically 54:20 81:13 94:10 208:14, 16 basing 36:19 40:4 basis 12:14 40:2 75:2 111:18 128:4 173:1 180:7 187:11 231:24 battery	begin 177:16			

25:13	152:4 156:2, 10,13 206:11	229:16 230:19	33:21 36:10 68:11 130:3 145:15 189:12 191:4 192:18,19 202:11 221:17	boundaries 230:23
beneficial 144:23	better 17:12 21:8 88:3 108:24 109:2 119:10 135:20 182:15 206:1	beyond 11:21 78:3 83:6 124:3 173:4 221:5	block 163:11	boundary 221:6
benefit 23:24 31:8 54:15 60:19,22 78:25 88:21 91:17 92:1,5, 6,10,12 149:23 156:24 182:1 197:18	between 13:13 25:18 27:12,16 28:10,15 32:16,20 33:1 34:11,16,19 35:1,2 37:7, 14,21 39:9 46:4 71:22 86:25 97:6 99:6,24 100:5 102:22 103:5, 6,21 108:8 116:23 120:7, 8,19 121:17 123:4 124:1 125:8 129:24 132:17,22,23 133:20 135:4 136:22 138:23 140:12 143:19 145:17,21 146:11 151:18 178:8 182:10 200:10 202:2 213:10 215:13,15 216:11	bias 22:24 28:15 29:18, 25 32:16 34:10,13,19 35:8,10,22 67:21,25 151:19 222:7	blow 86:3	Bowman 4:13 7:8 117:5,7, 11,16,20,25 118:16 128:20,23 140:1,8 142:25 146:25 153:3 159:22
benefits 41:5, 18 58:13 61:6,7 65:10, 21 76:16 79:15,17,19, 20,21 82:21 90:18 91:7 109:3 113:8 121:1 133:16 149:2,6,13,22 150:18 161:7, 15 165:22 168:5 170:24 171:5 179:4, 10 180:15 181:12 189:25 190:1 196:24 197:6, 10,25 200:10 201:19 202:8		biased 149:11	Board 2:3	Bowman's 118:11
		biassed 21:7 22:4 30:12	book 30:5	Box 2:11,15
		big 43:6 173:7 174:4 219:16,18	both 12:24 13:1 14:8 74:1 159:24 160:5 180:4 181:6,11 182:20 183:5, 10,17 185:7, 10 191:5 201:24,25 202:1 204:4 219:13	branches 164:8
		bill 64:5,8	bottom 37:20 77:20,22 218:9	break 66:14 116:15,18 159:4
		billed 28:23 64:16	Boulevard 147:23	breaking 116:14 194:22
		billing 186:7	bounce 228:15	brief 62:15 66:13 74:16 90:13 96:7 111:6 226:13 227:19 228:23
		binary 159:2 200:25	bound 221:6	
besides 189:2		bit 18:1 21:16		
best 120:12				

briefly 13:3 159:20 177:17 212:17	147:19,22 172:4 176:11, 13 210:10	232:22 233:10,13	188:10	179:12,13 181:14 183:11 189:8 201:24 214:17,19 215:13,15,17 216:1,11 222:12 230:4, 19,22
bring 112:19	businesses 201:16	calculations 215:9 227:1 228:10	can't 19:7 28:17 33:4 34:20 42:11 78:15 82:19 88:13 129:25 157:19 172:15 193:23 198:25	
broad 168:15 183:21 184:22	buy 164:16	calculator 64:7		
	C			capital 188:7, 8
broader 232:14,15	calculate 11:16 12:1,4 14:11 40:9 46:10 53:22 229:19	calculus 71:19	candor 227:21	capitalized 64:13
Broomfield 176:14		calendar 35:18	cannot 64:10 105:2 181:11 211:23	capture 45:11 182:13 183:2
brought 86:15	calculated 189:25 222:13 228:20 229:12	call 55:10 73:5 87:9 94:21 99:2,4 102:1,10 147:7 175:24 191:7 209:23	capacities 43:17 229:16	captured 51:14 182:15
buildings 114:8			capacity 9:1 12:21 13:15, 17 24:9,14,23 29:3 36:20 37:3,8,14 39:15,25 41:20,21 43:21 44:5 47:8,12,15,17 48:11,16 50:14 51:3 59:3,7 84:11 102:14,22 103:5,22 118:22 125:12 126:2, 4 131:7 150:7,19	cardinal 157:4
bulk 91:6	calculates 233:11	called 8:10 30:5 73:11 95:3 106:22 117:12 138:10 147:14 176:6 197:16 210:5		Cardno 19:1, 2,3
burden 41:7, 12 54:13 55:8 75:18 76:8 86:21 88:14, 15 120:15 152:2 178:3, 23 179:6,19 203:18,24	calculating 215:14			care 65:14,17
business 17:19 87:21, 24 107:1,3 117:18,20	calculation 40:15,18 122:15 214:10 215:20 226:2 228:20 229:23 230:10	Calling 117:5		careful 52:17
		calls 8:3 103:22		carried 121:9
		came 49:25 52:19 115:23		carry 86:21 203:18,24
				case 9:16

15:9 22:25 25:1 31:17 35:11,25 37:4 58:1,8 61:20 99:10 109:9 119:6 126:14 131:15 154:6 178:1,5,8 180:5 193:9, 17 199:8 203:18 225:23 227:9	caveats 204:19 cease 186:11 census 11:9 43:25 45:15 47:18,25 57:13 146:8 209:16 central 207:5 cents 188:11 certain 48:8 107:24 167:6, 22,23 198:6, 7,8 222:24 certainly 54:24 114:12 115:10 116:2 133:13 165:6 227:5 cetera 50:14 52:1 64:20 80:8 83:20 137:19 140:20 204:7 Chair 16:11 53:14 77:10 89:4 90:10 Chairman 2:3 106:11 204:5	challenged 180:9 challenging 75:25 216:18 chance 25:2, 22 26:8,13,16 180:7 199:7 213:4,6 change 31:13 39:19,23 40:13,24 55:20 114:7, 12 120:3 134:10 143:21 163:13,14 164:12,17,22 168:11 176:25 178:13,15 181:13 182:13,20 191:3,22 193:5,10 198:13,14,17 200:15 202:10 209:8 221:17 change-out 186:8 changed 92:8 115:11 137:20 193:22 205:13 231:3	changes 10:4 55:13 95:21 108:2 109:13 113:23 115:12 118:4 119:21 121:21 127:15 146:19 152:4 164:6 176:20 182:15 193:6 210:19 changing 119:25 120:2 123:25 139:3 143:20 145:7 192:12,13 characteristic s 21:2 48:8 49:19 51:11, 16 59:11,22 61:13 66:2 75:10 80:7 108:16 109:16 125:1, 9 133:25 134:4 136:4 140:17 144:23 170:12 173:1 183:9 189:6 204:7 characterizes 123:18 144:19 charge 194:3	202:22 charged 134:13 160:19 charging 181:23 Charles 4:1 6:21 76:3 94:21 95:2,9 96:1 cheaper 162:14 195:2, 3,6 check 23:15 35:6 56:11,12 114:24 116:6 123:14 175:9 224:11 230:14 checking 174:20 Cheryl 4:5 7:3 106:16,21 107:3 choice 28:7 140:25 141:1 choices 154:22 155:4 199:4
---	--	---	---	--

choose 119:18	clarify 43:7 51:22 93:2 184:20 201:21	120:17 121:13 128:13 134:7 136:13 140:16 141:8 146:7	189:9 197:2 code's 51:4 coefficient 40:6	119:5 180:12 182:14 183:7 185:3,12 186:9,15,16 187:20 193:25 204:6, 17,18 206:20
Chris 147:7				
Christopher 4:20 7:16 147:13,21	clarity 14:25	cleaner 158:22	cognizant 97:5 162:5	collecting 50:10 51:24 52:2 70:14 96:13 108:5 109:5,10 123:11 137:14 140:17 141:2 142:1 151:5 153:4 166:4 169:18 180:12
circle 102:6	Clark 2:3 3:14 4:10,17 5:2 66:22,24 67:1 69:22 93:22, 23 94:2 105:24 106:4, 5 113:15,17 114:14 142:25 143:1, 3 145:10 171:23,25 201:6 207:24 208:1 227:20, 24 228:2 234:11,12	clear 43:3 44:17 65:15 129:16 151:2 182:15	collaborative 119:3 128:11	
circling 170:19		clock 175:17	collaborativel y 87:3 120:11	
circuit 150:20,22 173:13 201:18		close 15:25 16:23 17:4 206:3,4	colleagues 226:13 227:18	
circuits 124:17 173:24	class 93:12, 16 120:21 168:21 194:4	closed 110:2	collect 75:22 87:16 108:15 120:17 126:10 136:14 141:12,18 151:13,21 152:2 153:10 162:13 169:16 170:3, 8 183:3 186:5 204:1,2 223:12	collection 42:25 58:7,12 76:1 108:21 109:4 141:10 179:25 189:7 204:16
City 2:7,11, 16,20,24 117:21	classes 18:5 195:11 200:6, 8,11	closely 150:8		collectively 62:21
claim 54:14		closing 234:24		collects 61:11 128:15
claimed 232:21	classifying 157:23	Cochran 30:5,9		college 157:12 164:14
claims 216:2	clean 2:18,19 7:6,8 108:7 116:23 117:3, 23 118:21 119:2,6,24	Cochran's 30:22	collected 13:7 48:24 69:5 105:7 113:20 114:2	Colorado
clarification 80:15		code 48:12, 17 51:3,5 52:9 110:16		

176:14	10,16 136:7 150:10 178:20 190:5, 7 199:23	commissione r 3:14,24 4:9, 10,11,17,18 5:1,2,3,9 6:3, 15,23 7:5,11, 14,19,25 8:4, 8 9:8,12 10:14 15:18 16:6,9,14,18, 22 17:2,8,13 40:16 53:9,13 56:19 62:13, 17 66:10,13, 17,20,22,24 67:1 69:22,25 70:4,7 72:23 73:2,6,9 74:12 77:2,5, 7,11 89:5 90:8,11 91:11 92:17,20 93:19,21,22, 23,25 94:2, 15,19,23 95:1 96:2 97:24 98:2,4,8 105:18,21,23, 24 106:3,4,5, 6,7,8,13,17, 20 107:14 109:22 111:4, 22 112:1,4,6, 11,12,14 113:13,15,17 114:14,16,18 116:7,10,13, 22 117:4,7,10 118:13 128:22,25 129:2,4 140:2 142:18,21,24 143:1,3	145:10,11,12, 14 146:22,24 147:2,5,9,12 148:17 152:12,16,19, 21 160:25 165:14 166:8 169:7,10,11, 13 171:20,22, 25 174:7,8,10 175:11,16,20, 23 176:1,4 177:7 190:15, 19,21,23 201:6 203:10 204:5 207:20, 23,24 208:1, 2,3,4,7 209:18,22,25 210:3 211:3, 10 217:13,16, 19,21 223:20 225:8 226:11, 17 227:5,15, 20,22,24 228:1,2,3,14 229:1,4,6 234:4,7,9,11, 12,13,16,19, 23 235:1,6,12	34:24 90:1 235:7 committed 34:22 committing 43:7 common 67:9 143:18 companies 195:24 221:23 company 8:3 9:15 11:3 14:22 27:11, 15 40:3,7 41:11 42:2 43:3,9 46:16 52:21 53:20 54:20 55:13 57:18 59:22 61:10 62:2 65:25 66:2 68:24 78:20 80:12 81:12, 13 83:6 85:6, 24 87:8 88:11 90:2 96:16 97:4 98:23 99:23 100:8 104:1 108:20, 23 109:7,13 110:3,6,20 120:22 121:10 122:17,21
combine 28:18 83:9,11 138:15	commingles 217:3			
combined 132:14 215:20	commingling 108:11 212:4 213:18 214:1			
combining 47:4	commission 3:15 6:4 15:14 41:12 61:5 70:2 73:22 76:5,23 79:1 82:21 87:2,4 88:1 95:14 97:20 140:12 143:10 148:25 149:4 150:5 153:22 159:10 161:17 162:1 167:9,21 168:10,15,18, 20 178:11,16 180:2,6 193:15 198:5 199:9 202:14 203:25 204:24 208:12 209:12			
come 8:4 52:10 57:11 87:2,4 119:16 137:7 158:11 180:11 184:1 201:3 209:15 226:8 228:5 230:12				
comes 60:1 61:15 84:10 99:2 144:10 194:6 205:6				
coming 45:13,18 62:7 98:14 209:7			commissione rs 10:22 96:12 118:20 159:21 177:14 187:8	
comments 62:24 127:12			commit 174:24	
commercial 108:6,9 109:15 120:21 125:7,	commission's 168:3,8 180:8		commitment	

123:10,14 124:13,19 126:2,3,4,16 127:7,15 128:3,17 130:6 131:5, 19 162:2,9 163:3 173:8,9 180:14 184:6 186:18 187:15 188:1 209:14 213:18 214:2 216:22 224:22 230:18	compared 15:8 79:17 141:23 comparing 99:18 112:15 comparison 27:16,18 188:14 comparisons 38:8 compass 196:4 205:20 compensated 182:1 compensatin g 136:17 compensatio n 181:20 182:5,6 compiled 85:22 86:18 89:20 complains 187:11 Complaints 186:25 complete	43:25 113:3 120:4 121:6, 11 122:9 126:11 135:1 completed 115:16 completely 164:2 200:21 complexity 142:2,8,11 compliance 41:23 179:15 complicated 130:24,25 205:3 complicates 150:2 component 145:25 components 11:9 112:18 132:9 139:10 182:23 comprehensi ve 11:15 15:6 comprise 181:10	comprised 11:9 comprises 212:21 concept 30:19 concern 67:12 77:18 84:15 101:8 115:15 116:3 concerned 33:17 83:23 84:13 108:11 116:1 141:8 206:7 concerns 55:22 67:16, 20 68:13 97:9 115:22 127:2 151:2 206:13 212:16,20 concert 105:6 concerted 181:21 conclude 152:7 216:9 concluded 235:14	concludes 109:19 114:14 128:18 190:12 217:9 conclusion 85:22 89:20 97:17 128:8 conclusions 100:7 136:22 178:20 condition 231:3 conditioner 143:8 160:17 conditioners 137:18 conditioning 124:8 198:9, 18,20 conditions 12:10 154:20 186:4 191:17 193:22 198:1 conduct 20:4 42:9,12 confidence 12:7 23:7,13 24:19,24
company's 10:23 11:2 13:14 14:7 15:4,14 48:15 52:24 61:7 68:23 96:22 97:13,17 99:10 100:5 102:4 113:1 118:25 124:15 127:5, 13,18 139:21 149:9,14 150:15 151:24 157:18 161:18 162:5 177:23 178:6 180:21 189:15 222:4 compare 46:24 151:14				

36:16 88:5 101:24 103:12 127:13,18 149:18,20 161:22 195:14 212:12 215:1, 4 233:12	162:12 consequence s 30:10 Consequently 211:22 consider 32:24 38:9 56:3 68:23 84:2 91:4 97:12 225:24 considerable 75:18 considerably 184:3 consideration 30:18,21 42:19,21 84:16 230:15 consideration s 41:5,24 121:1 133:17 179:5,16 189:2 191:19 considered 32:15,19 33:13 34:9 115:6 134:17 considering 42:16	consistent 50:23 116:2 183:3 193:3 consisting 107:7 147:25 constant 103:6,9 163:15 constitute 60:17 consultant 9:2 95:10 consulting 9:3 18:23 19:16 210:13 211:13 consume 143:9 153:19 consumed 75:7 consumer 2:14 6:24 7:2 107:5 120:11 Consumers 153:18 consuming 132:11	consumption 46:7,10 150:7,8,9 178:13 181:24 183:10 187:10,12,16, 22 contained 74:1 224:14 contains 230:21 contemplating 172:25 contend 177:25 178:17 context 38:6, 9 230:16 232:14,15 contingency 35:3 36:7 104:5 212:13 216:13,15 217:6 continually 31:23 continue 12:15,19 184:1 185:12	229:8 continued 5:15 191:24 229:9 contract 175:6 contrary 213:14 contrast 122:17 control 123:22 204:16 228:23 controllability 120:1 converters 151:2,10 cooler 207:5 coolers 198:9 cooling 124:8 coordinator 118:21 copy 218:6
---	---	---	---	---

core 196:13	199:24 200:1 203:19 204:1, 17 205:7 215:9 219:9, 10 222:15 230:20 233:10,20	correlates 24:14 36:21 222:12	113:8 115:14 122:5 140:24 141:14,21,24 151:3,7 162:3 171:11,15 173:1,21 174:5 180:14 184:1 185:9 186:8,25 187:1,25 188:2,7 195:10 196:23 199:12 200:10 201:19 202:23	15,25 162:2,3 165:22 168:4 170:24 171:1, 2,5,6,9,10,17 174:5 179:4, 9,14 182:3 188:8,14
correct 17:19, 22 20:9 24:1, 6 26:3,4,17, 18,20,24,25 27:1,2,15 28:4,20 29:3, 4,6 31:12,14 33:5,6 35:18 38:5 40:14 42:14,24 43:2,10 45:4, 5,17 47:1 48:9 50:4,9, 11 54:4,15, 21,25 55:8 56:5 58:20 60:7,8 63:6 64:24 65:4,12 66:7 67:10 79:3,4 81:1, 11,19 82:1,3, 4,6,7 83:22 87:3,6,8,24 88:9,11 89:1 90:3,20 93:13,17 99:8,19,21 100:9,14 101:14 102:14,23 103:13,14 104:2,7,20, 21,24 105:14 110:4,5 132:4 133:8,12 140:14,15,20, 21,25 153:7 161:18,22,23 163:13 192:14	corrected 214:10 correcting 214:5 correction 176:22 corrections 74:5 95:21 107:9 148:11 correctly 27:13 88:14 91:18 96:24 97:9 104:16 218:14 229:15 233:11 correlate 39:16 70:13 171:2,4 correlated 37:19 38:1,5, 8,10,11,13 39:18,24 150:8 216:1,4	correlation 13:18 25:12, 15,18 37:7, 13,18,20 38:14,24,25 39:9,20,23 40:5,24,25 102:22 103:4, 9,23,25 215:12,15,23 216:4,7,9,11 222:13,17,19, 21 223:2,4,9 224:3,5,20 229:12,20 230:10,16 231:2,3,23 232:3,5,9 233:2,3,7,11, 15,19 correlations 222:24 cost 15:4,11 44:15,18,21 52:13,16,22, 25 53:4,19,23 54:3,5 60:1,9, 18 61:8 62:20 63:2 65:21 75:12 76:2 77:18,23 78:1,10 79:22 82:10,12,23 88:19 90:17 97:7 109:5,11	costly 142:7 184:10 186:22 costs 13:13 15:2 41:5,18, 22 52:18 58:13 61:6 65:10 70:12 75:1,19 76:9, 15 79:18 82:22,24 109:3 113:10 120:14 121:1, 23 125:6 126:21 127:24 128:15 133:16 141:5, 6,9,23 144:24 146:13 149:2, 6,12,21,23 150:18 161:6,	costumers 174:13 counsel 6:9, 20 7:16 17:3 174:20 175:10 226:1, 21 227:25 count 131:20 country 208:20 county 22:17, 18 150:15 couple 80:20 157:3 174:11 177:17 189:5 200:24 223:22 course 17:6 34:8 73:19 95:12 99:12 119:24 128:5 188:8,23 195:8 204:25 court 18:13,

17 92:3	119:15	223:23 229:8, 9	57:7,20 58:24	23 203:17
cover 18:7	125:21		61:1 64:4	212:25 213:1,
36:2,5 209:7	141:13		67:10,20,22	5,11,19,23
covered	145:17,23	cross-	69:3,17,20	214:19
56:17	157:24	examine	74:24 75:5,	215:24 216:1,
	161:11 202:4	15:19 224:25	11,15 78:14,	7 217:7
	credits 9:20		21 80:7,24	218:22
	12:2 15:7	cross-	81:9 83:19	222:14
covers 84:4	46:2 146:2	reference	84:12 85:19	229:18 231:7,
	192:9 202:15	124:14	89:18,22 94:7	12
create 20:11,		current 28:18	96:21 105:1	customer's
16,22 22:1,14	critical 121:4	97:17 112:17	109:17 120:1,	44:1,25 45:7
34:1,18 39:12	122:9 124:21	125:11 155:5	5,7 121:7	59:16 109:9
73:21 95:13	125:22 178:4,	220:16	122:12,18	122:16,25
191:6 220:10	8 186:4		123:4,6,8,23,	123:15,18
created 28:23	cross 77:1	currently	125:17 126:1,	124:12,15
29:2 41:3	97:22 98:1	13:5 32:2,3	11,24,25	126:14
212:2 219:14		109:17 121:5	132:7,10,20,	130:12
creates 132:3	cross-	127:6 136:19	22 133:1	132:23
	examination	149:19	134:1,3,9	133:20 135:2,
creating	3:10,11,19,20	179:12	137:20	13,22 144:19
21:20,24 24:4	4:3,7,8,15,16,	186:16	138:12,19,23	168:4 180:24
47:20 51:10	22,23 5:7,8,	219:15	139:2 141:19	181:19
102:21	12,13,15	220:23	150:25	customers
creatively	15:17,22	curve 14:11	153:17,21,23	11:14,17,23
146:4	16:15 17:14	22:1,19 34:1	155:19,20	12:5,24 13:2
credit 10:24	53:10,15	51:18 99:12	156:12,16,17,	14:9,16,18,
57:4,7,19	77:3,13 89:9	181:4 189:17	18 166:19	22,23 15:3
58:23 59:6,15	94:7 97:25		167:3,8 170:4	20:9,13,16,
60:25 65:8	98:11 109:21,	curves 99:15	172:7,8,15,19	18,19,20,22
74:23,24	25 111:7		173:14	21:10,12,13,
75:3,21,24	112:8 129:7	customer	174:15	15 22:8,11,13
76:7,14,18	140:6,11	9:20 11:11	178:13	23:1,8,14,18,
78:19 105:8	152:11,24	12:22 13:24	179:19 181:9,	20 25:16
	161:2 163:3	14:18 25:23	10,21,24	26:2,17,23,24
	190:14 191:1	43:8 46:20	182:22 183:2,	27:5,8,13,17,
	203:13	47:19,24	11,12 184:17,	20,25 28:3,16
	217:12,23		23 187:18,20,	29:6 32:1,2,4,
			23 194:4	20 34:10 35:4
			197:23 200:6,	
			7,10 202:22,	

37:6 38:15, 16,24 44:14 46:16,23 48:4,22,23,25 49:2,18,19,21 50:7,11 54:10 56:4 57:12, 14,19 58:18 60:2,6,12 61:3,16 63:6, 17,21 64:2,16 67:13 69:5,14 70:19,22,25 71:2,12,15 72:15 75:7,19 76:9,12 78:1 80:25 81:10, 15,17,21 82:17 84:21 85:2,25 90:18,24,25 91:2,5,7,17 92:6,10,12, 13,24 93:3,5, 7,9 96:14,15, 18,20 97:19 98:24 99:6, 11,13,19,25 100:14 101:2, 9,14 102:9 103:3 104:13, 15,19,24 105:3 108:6, 19 109:15 115:9,16,24 119:16,17,18, 22 120:8,14, 20 121:5,8,11 122:10,19,20, 22,23,24 123:13 124:24 125:2,	7,10,12,15, 16,20,22,23 126:6,17,23 127:2,3,7,8, 11,22 132:18 134:4 136:2, 6,17,23 139:12 141:20 143:20 146:17 150:10 151:15,18 152:1,3 153:15,20 154:2,3,4,10, 14 155:3,6, 10,18 156:5, 6,11,22 157:23 158:6, 15 160:4,13 162:12,16 167:3,21 169:24 170:2 171:9,10,14 172:2 175:6 178:13,21 181:14,16,24 182:17,19 183:4,5,7,9, 10,11,16,24 184:21,25 185:1,10,13, 16,17,19 186:6,15 187:12,13,21 188:5,11 190:5,7,9 191:6,11,13, 15,17,24 192:18,19 193:2,11,16	194:19 195:1, 11 197:18 199:23 203:5 208:13,22 209:2,13 212:14,22,23, 24 213:8,13, 16,23 214:3, 14,21 215:11, 19,22 216:5,6 218:12,13,18 219:2,4,6 220:1,2,5,6, 10,17 221:24 222:8 229:20 231:5,9,11,12 232:20 233:13,22,23 customers' 64:11 88:6 137:13 208:16 cut 67:19 79:25 164:9, 18 cutoff 222:18 cutting 114:8 <hr/> D <hr/> D&d 88:6 D.C. 210:14	damage 188:25 dangerous 87:22 data 11:7,10, 13,16,22,23, 25 20:15,21 25:21,23 26:1 27:21 30:3 31:19 35:6 36:5 39:7 40:8 42:4,5, 11 43:1,5,23, 25 45:13 46:6 47:10 48:1,4, 5 49:24 50:3, 4,7,10,14 51:2,23,24 54:20,22,23 56:3,7 57:7, 10,16,23 58:1,7,12 59:1 65:7,15 66:7 67:6,9, 14 68:3,9 69:14,18 70:14 71:13 75:3,9,13,21, 22,25 76:1,6, 10,11,12,19 79:2,7,11,12 80:16,23 81:9 82:20 83:24 84:4 85:19 86:18,24 87:17,18 88:3,10,21 89:18,22 90:2 94:3,8,9,13	96:13 99:9, 12,13,17 102:7,11 104:18,19,22, 24 105:1,2,5, 6,13 108:6, 11,15,21 109:1,4,10,16 112:19 113:19 114:22 119:4, 8 120:18,23 121:4,5,14,24 122:2,3,6,9, 11,18,19,21, 23 123:5 124:14,21 126:17 127:9, 22 128:10,15, 17 134:18 137:25 141:2 146:8 149:7, 11 151:1,6,8, 9,10,13,15, 16,25 153:10 156:11 162:11,13,18, 23 166:4 169:1,17,18 170:3,8 172:7,14 174:12,14,16, 18 177:22 178:5,7 179:19,21,24 180:11,12,18 181:5 182:14 183:2,4,6 184:7,17,18, 19,22 185:12, 15 186:5,9, 15,16 187:7,
---	--	--	---	---

16,19 189:7 192:7,16,20 193:24 195:4, 5 198:23 199:1,6,7,8, 11,13,14 200:13 203:17,23 204:1,2,11, 14,20 205:2, 4,5,8,12 206:7,22 215:18 220:4 221:19 222:8 223:10,13 225:16 226:4 228:22,24	168:1 181:22 dead 228:18 deal 86:2 91:4 dealing 68:4 debatable 186:20 December 9:15 11:15 63:13 186:11, 17	187:21 193:4 deem 41:6 59:22 60:20 121:2 128:17 179:5 deems 203:23 deep 171:8 deeply 168:14 184:15 defer 62:9 69:16 deferring 99:23 100:4,7 deficiencies 149:14 defined 145:24 definitive 201:13 degradation 33:14,18,19, 21 34:7 degree 17:18, 21,24 37:25	52:3 83:7 88:5 189:10 194:25 196:8 198:2 204:21, 24 degrees 196:5 202:1 205:25 206:1, 2,3 delay 6:5 deliberate 226:14,16 delivered 202:25 deliveries 46:9 delivery 11:10,22,24 13:7 71:13 76:1 80:23 81:8 83:10 151:13,15 183:3 demonstrate 149:7 demonstratin g 134:19 deny 14:8 229:7	denying 45:4 department 68:2 depend 182:6 dependent 45:8 84:11 175:5 180:23 depending 47:12 72:14 133:24 150:19 162:19 166:2 174:22 196:25 197:1, 2 depends 24:13 142:16 deployed 193:1 deployment 183:19 deposition 18:19 depth 173:10 222:10 derive 12:23 13:24 233:12
date 55:11 131:11 224:11 225:12,13 dated 225:12 David 2:3 Davis 3:17 6:20 73:5,6, 10,15,17 74:11 76:25 77:3,15,17 89:6,11 90:9 93:20 94:1,17 day 69:1 133:7 144:3, 6,8,16 160:6 163:21,22 167:14,16,23	decide 32:16 153:19 167:22,24 decided 87:20 116:5 128:6 deciding 169:23 191:18 decision 13:14 14:7 178:12 180:8 187:9 192:2 194:4 decisions 87:5 132:7 167:10			

describe 19:9 37:24 56:13 220:22	213:5,17,21 214:15,17 216:12,16,21, 23,25 217:6 219:4,15 229:15 230:14,17,18, 21 232:13	227:18	186:21 192:24 195:24 197:24 198:23 207:6	36:24
described 56:1 71:12 153:4 195:18		despite 101:21		device 123:19 184:7
describes 120:24	designed 20:2 35:18 36:24 42:15, 23 45:22 50:18,19 51:13,15,19, 23 78:19 81:14 98:23 102:12,13 103:10 129:16,17 142:8,12,15 180:22 227:9	detail 108:24	determined 35:10,15 97:2 193:13	devices 124:7 140:19 143:17 192:23 198:1 206:21
describing 197:14		details 183:12 189:24 195:18	determining 61:4 88:6 97:18 130:12 141:13 185:8 187:17 200:23 222:18	DG 149:5,8 150:12,19,20, 22 151:22,23 173:23 174:3
description 94:9 230:14		detecting 35:21		diced 174:23
design 19:6, 23 20:1 27:7 28:7,10 62:8 64:9 65:3 74:21 75:20, 22,24 76:14 82:15 96:23 97:10,18 100:8 111:18 119:5 127:3 128:11 129:12 136:16 139:16,19,21 142:2 144:11, 13,21,25 145:18 146:1, 3 154:23 157:24 172:25 189:11 197:9 211:16,19 212:13,19	designing 62:6 66:3 135:4 140:13 185:8	determinant 159:13	detriment 150:3	dictates 153:17
	designs 108:25 109:2, 3 212:3 213:24 223:9	determinate 149:4	develop 102:4 126:5 181:11 182:8 200:22	differ 196:25
	desire 226:13	determination 97:1 197:10 202:18	developed 185:6 200:14 202:8	difference 28:10 34:11, 15 46:4 143:25 151:19 178:8 204:21,24 209:5
	desired 214:25	determine 9:20,22,23 14:17 15:1,6 20:8 22:18,19 35:13 37:7 46:2 57:4,19 58:13 61:6 64:23 65:1,21 74:23 75:3 79:13,14 83:20 96:22 161:6,10 164:21 181:3	development 96:20 109:2 118:24 188:17	differences 32:20,25 45:21 108:8, 25 125:8 136:22 151:17 213:10,12
	desires		deviation 24:5 102:17	
			deviations	

different 14:4 21:16 24:17 28:1 29:14,24 43:17,21 44:3,6,10 46:4,25 47:1, 5 51:11 81:16 85:21 89:19 100:19,22 101:2,13 103:19 105:12 109:3 122:20 129:21 130:22 131:1, 11 132:17 134:2,4,5,13, 14 136:1,6,7, 8,23 138:19 139:4,5 143:10 144:4, 5 146:4 155:18 156:6, 7 159:22 160:1,9,19 162:16,19 163:22,24 165:4 181:15, 18 186:4 189:23 190:8, 10 191:19 192:1 197:7 200:3 201:8,9 202:19,22 203:5 209:9 212:2 213:21 217:4 221:18, 22,23 230:22	150:21 differing 150:9 differs 120:8 difficult 75:21 131:22 156:1 157:9,17 158:4 216:20 diluted 184:17 direct 3:9,18 4:2,6,14,21 5:6,11 8:12 10:1,12 27:10 73:13,22 74:1,10 76:20,25 84:20,25 89:11,12 95:5,14,18,25 101:7 106:24 117:14 118:1, 7,11 121:19 147:16,25 176:8,17 177:1,5 197:9 203:15 209:16 210:7 211:16 213:9 214:11 218:7 224:8 direction 79:24 80:1,5	83:12 130:13 157:4 directions 167:6,7 209:10 directly 78:24 119:17 166:23 189:11 193:23 disagree 40:12,15 43:15 113:4 235:9 disagreement 108:4 disclose 172:15 175:7 discourage 168:11 198:7 discouraging 145:6 discourse 145:19 discrete 186:21 discuss	10:23 11:1 13:3 52:11 94:7 discussed 29:12 36:10 38:7 55:6 139:8 191:4 199:22 200:24 226:23 discussing 112:23 130:17 229:13 discussion 15:22 78:8 115:17 131:25 137:7, 10 157:7 159:2 165:10, 19 169:2 188:1 189:6 232:14 dismissed 55:24 disposal 55:2 disproportion ately 21:5 dispute 12:15,18,19 distinction	145:17,21 167:19 distort 108:11 distracted 91:24 distributed 58:14 92:13 149:3 161:7 173:8 178:14 231:9 distribution 41:21 119:21 124:13,17 133:23 134:3, 15 149:9 150:14,17,20, 21 172:19 173:2,9,13, 22,24 179:13 201:18 202:19 distributive 183:20 dive 45:23 diversity 45:8 120:20 dividing 23:25 division 2:9
---	---	--	---	---

6:16,19,21 12:9 16:3 34:23 73:4, 18,20 74:17, 20 76:16,21 78:17 79:12 86:4 94:12,20 95:10,13 104:12 106:12 112:16 120:22 128:17	documentation 184:8 documents 216:14 dollar 78:3 93:14 dollars 32:13 78:6,12 88:19,22 90:17 91:1,6 188:6,13 189:1,3 194:2,12	184:1 193:12 196:7 DPU 74:10 dramatic 233:1 drastically 150:2 draw 35:3 136:21 145:16 160:17 178:19	199:10 due 114:7 183:17 231:25 duly 8:10 73:11 95:3 106:22 117:12 147:14 176:6 210:5 dumped 173:19 during 12:11 34:8 75:13 130:10 142:14 159:24 160:15 181:25 dynamic 209:8,15	160:13 168:4 177:20 182:21,22 187:23 189:13 190:7 197:13,23 201:23 212:17 214:13 215:21 earlier 16:12 36:10 90:16 100:25 138:22,24 166:25 169:15 184:24 189:25 201:6 early 116:14 128:6 Earth 157:14, 15 163:5,7 195:23 205:21 easily 123:14 163:4 east 2:15 51:17,18 107:4 130:8 159:24 201:25 east-facing 143:23 160:5
division's 12:12 76:3 128:2 docket 6:4 13:17 25:17 37:2 57:3 58:4 60:21 61:14 73:23 74:23 75:5,17 76:8,19 83:7, 8 88:1,17 95:15 97:16 107:24 112:21 116:23 118:2 119:3,23 121:4,25 124:3,20 133:16 170:23 176:18 196:20 216:14 230:3	done 25:2,7 27:15 52:21 53:1 62:12 83:3 88:14 97:16 110:10 140:23 156:4, 14 157:3,4 188:21 190:6 195:7,10 215:18 228:13 doors 209:4 double 64:18 down 36:15 49:16 79:23 86:6,24 93:9 99:2 114:8 164:10,18 173:10,20	drawn 211:20,21 214:13 drive 15:2 176:14 191:25 driven 39:17 driver 42:4 drivers 178:12 drives 31:13 45:21 46:4,19 driving 39:8 196:18	E each 13:3 14:9,13 21:23 26:7,12 39:11 47:24 98:17 122:12,15,25 123:7 124:14 130:3 131:3 143:24 151:13,22	
dockets 138:24				

189:21	53:5	226:4,20	166:19	encourage
easy 51:5	efficient	228:24	173:18 203:1	158:12
196:3	16:13 122:5	229:17 230:9,	element	168:11 198:5,
economic	effort 58:4	16 231:2,24,	182:2 189:13	6
28:2 186:4	127:18	25 232:5	190:1 214:7	end 63:5,22
191:16,19	181:21	233:11	elements	81:24 86:19
economics	efforts 74:21	Elder's 10:12	181:10 197:8	96:18 101:23
17:22 18:4	eight 9:4	81:18 99:23	213:3	124:23 127:9
178:14	157:6 161:25	100:3 101:22	embedded	153:25
191:22	either 28:6	110:15	155:1	endeavored
economist	33:14 106:8	185:20	emerging	121:20
9:3,5 18:22	108:3 115:10	211:15	128:5	energy 2:18,
19:5,21	141:16	212:15	Emphasis	19 7:6,8
211:13 222:1	154:14	213:12	85:24	11:17,19 13:7
edits 74:5	184:18 198:5	214:11	employee	14:9 15:7
effect 189:2	212:5 226:13	220:12	123:15	20:12,17
224:4	234:13	222:23 224:5,	205:22	28:23 37:21,
effective	Elder 3:8 6:10	14 225:25	206:12,25	25 41:19
122:5 158:18	8:3,5,9,14,16	228:22	207:1 209:17	44:11 57:4,8,
185:9 186:8	9:14 10:18	229:14	employees	9,11,20 58:23
effectively	15:16 16:13	electric	110:19	59:6,15 60:25
36:13 189:22	17:16 38:14	123:20 124:8	employment	74:24,25
196:23	40:10,22 41:2	137:18	45:1 73:20	75:2,4,5,8,11,
201:19	53:17 56:24	164:16	95:13 183:18	14 76:1 78:20
effects	62:20 66:23	181:22	enable 79:23	80:12 83:21
208:24	67:2 72:24	206:21 207:7	encapsulated	84:3,10 88:7
efficiencies	78:8 94:2,10	electrical	50:19 180:20	108:7 116:24
	101:1 102:12	123:19 124:7		117:3,24
	103:10,22	132:23		118:21 119:2,
	113:20 114:6	140:19		7,24 120:13
	212:6 215:2,	143:17 184:7		121:7 122:13,
	13 216:2	192:23 198:1		14,16,19,25
	225:11,15	electricity		123:18,23
		133:3,4,6		124:15 126:1,
		134:23		12,14,17
		164:16		132:10,15
				133:10,15,21

134:8 135:18, 21 136:1,3, 15,25 138:3, 14 139:11,13 140:16 141:8, 13 144:3,5, 20,22 146:7 160:17 161:10,11 165:22 178:15 179:10 182:3, 5,8,11 183:20 201:8 220:4 222:1 230:3	202:17 205:24 206:4, 23 ensure 121:24 149:16 180:6 ensuring 171:12 enter 74:10 118:11 210:25 entered 119:2 177:6 entertain 15:24 69:8 entire 13:20 21:9 36:2 47:23 50:20, 24 51:19 187:14 194:23 entirely 122:20 environmenta l 41:23 179:15 equal 201:14 equals	189:18 equate 213:15 equipment 133:25 192:13 equivalent 213:14 error 11:18, 19,24 13:6 23:8,14 24:19,25 30:11 31:3,13 36:17 68:11, 14,17 101:6, 24 103:12 214:12 especially 108:19 141:23 146:13 157:17 216:18 225:24 essential 120:4,17 211:25 essentially 113:1 201:5 establishing	57:7 153:25 estimate 20:17 21:21, 24 22:14,24 29:18 30:12 34:12 44:21 52:16 60:15 63:8,24 71:1, 5 122:22 146:7 149:2, 6,12,21 150:16 156:2, 12 161:14 163:9,25 214:11 218:17 estimated 59:18 126:6 189:9 207:14 214:24 estimates 33:19 68:10 149:23 162:6 211:23 214:9 estimating 174:5 estimation 212:3 EV 140:19 evaluate 61:20 109:14 133:16 168:4	170:23 186:13 222:3 evaluating 127:20 evaluation 219:1 evaporative 124:8 even 63:9 71:9 101:23 115:9 130:11 157:11 160:6 185:25 192:19 197:2 205:3 214:10 220:1 event 212:14 every 32:7 41:10 60:13 184:22 194:3, 6,9,12 208:20 everybody 31:18 50:16 88:17 98:10 everybody's 23:24 31:8 everyone 47:18
--	--	---	---	---

everything 113:4 189:19 202:11	171:24 174:9 176:8 208:6 210:7	182:18	20 192:7,8	133:19 135:11,18 155:14,15 158:2
evidence 41:4,18 61:24 65:20 95:25 120:25 179:3, 9 187:8 216:10,15	examined 8:11 73:12 95:4 106:23 117:13 147:15 176:7 210:6 215:22	excluding 185:25 213:1	expectations 99:14	
exact 141:1 146:21	example 58:17 60:4 110:21 125:14 140:18 155:9 160:14 161:20 162:20 163:17,25 164:10,11,23 174:12 181:13 183:23 197:19 206:24 216:19	exclusively 219:5	expected 143:20 218:21 223:14	explained 100:15
exactly 32:12 43:7 68:4,5, 13 82:5 92:2 215:7 228:19 230:25		excuse 73:21 97:1 104:23 204:9 206:10 220:5 221:21 224:18	expedited 177:19	exploring 127:25
Examination 3:9,12,14,15, 18,21,23,24 4:2,6,9,10,11, 14,17,18,21, 24 5:1,2,3,6, 9,11 8:12 56:22 66:25 70:6 73:13 90:14 92:22 93:24 95:5 106:24 112:13 113:16 114:17 117:14 143:2 145:13 147:16 165:17 169:12	exceeds 12:8 13:11	exhibit 10:1, 13 13:17 45:7 177:6 211:2 232:4	expense 64:15 115:2,3 116:6 123:1,3	export 9:20, 23 10:24 11:10,13,17, 20,22 12:2 13:7 15:7 42:4 43:23 44:11 45:13, 15,21 46:2 57:4,7,19 58:22 59:5,14 60:25 64:19, 20,23 65:4,8, 15,22 66:3 71:13 74:23 75:3,7,8,20, 24 76:1,7,14, 18 78:19 79:13 80:10, 12,22 81:8 83:10 84:3, 10,13 87:20 105:8 119:15 122:19 125:21 141:13 143:24 144:3 145:17,23 146:2,5 149:5 151:13,15 157:24 159:7,
	except 202:12	exist 14:6 21:11,12 34:21 99:20 220:16,18,23 222:8	expensive 60:3,4 162:5, 6 186:19	
	excepting 100:12	existing 28:19 96:15 154:21	experience 8:24 97:14,15	
	excess 83:20 181:25	exists 89:24 97:7 138:18	experienced 53:5	
		exorbitant 61:2 141:23	expert 18:13, 16 78:15 82:15 85:9 129:14 222:3	
		expect 35:11 70:12 130:5, 14 131:4,18,	expertise 54:7 222:7	
			experts 62:9	
			explain	

<p>9 161:10,11 166:23 168:13 181:2, 4,15,20 182:16 183:4 188:15,24 192:9 193:13 194:18 196:21,22 197:22 200:2 202:1,4,15</p> <p>exported 11:19 57:4,8, 9,11,20 58:23 59:6,15 60:25 74:25 75:2,14 88:7 132:15 139:11 141:13 144:9, 15 150:18 160:2 161:10 178:10 182:5, 8 184:3 201:9</p> <p>exporting 44:1 47:9 135:22 159:24 168:1 173:16</p> <p>exports 9:24 15:1 33:24 43:13,17,21, 24 44:6 45:2 46:4,9,19 47:1,16 120:7,19 122:14 123:5 124:15 126:12</p>	<p>129:25 132:10 136:1, 5,15,17 138:15 150:9, 17 153:6,10 158:18 165:21 166:5, 14,19,23 167:11,17 178:12 180:17 181:5, 6,11,12,18 182:7 184:14 189:14,23 191:25 192:25 196:10,12,13, 15,19 197:3, 4,6 199:10 207:17</p> <p>exposes 225:24</p> <p>express 67:12 77:18</p> <p>expresses 12:9</p> <p>expressly 65:11</p> <p>extend 36:1, 3,4</p> <p>extent 46:14 51:9 94:8 100:10 103:4</p>	<p>123:12 127:22 136:21 191:23 197:4 204:23</p> <p>extrapolate 23:19 26:2 47:9 155:9 219:12,20,23 221:3,5,10</p> <p>extrapolating 26:6,11 98:16 100:13,21</p> <p>extrapolation 218:11 219:7</p> <p>extreme 78:5</p> <p>eye 141:5</p> <hr/> <p>F</p> <hr/> <p>face 130:13</p> <p>face-to-face 10:25 207:1,3</p> <p>faces 130:23 201:25</p> <p>facilitate 88:3 109:1</p> <p>facility</p>	<p>130:22</p> <p>facing 51:17, 18 188:19 201:8</p> <p>fact 31:17 32:10 39:22 40:3,6,11 53:18 99:10 101:8 103:21 105:11 109:1 182:20 187:2 188:23 213:18 216:2 220:13,14 231:20 233:10</p> <p>factor 33:22 135:23 158:2, 4</p> <p>factors 84:7 113:24 132:14,17 133:13 135:25 151:23 153:11 154:8, 11 159:9 166:17,18,22 181:3,17 189:10,13 196:18 199:10 201:18 212:7</p> <p>facts 231:4</p>	<p>factual 180:2, 5,6</p> <p>fail 31:1 43:22 212:3</p> <p>fair 13:13 27:22,23 39:24 133:2 155:7 199:16 201:20</p> <p>Fairbanks 9:5 19:19</p> <p>fairly 156:22</p> <p>faith 58:4</p> <p>fall 206:22 211:17 215:23 216:16 231:5, 7</p> <p>fallen 222:14</p> <p>familiar 9:14 30:4,19 41:8 131:17,23 195:9 202:21</p> <p>family 185:5</p> <p>far 17:7 63:9 104:7 130:3 139:16 168:8</p>
--	--	---	---	---

173:10 187:4 189:12 195:2 203:20 212:10 232:5	field 9:7 18:14,17	128:2 139:14 189:5 190:3 200:17 212:13	98:5,7 106:22 108:5 111:23 116:25 117:3, 12 121:3 122:8 147:14 156:3 176:6 178:23 186:1 190:16 205:14 210:5 211:20 212:19 215:23 218:19 222:15 225:13 228:7 229:15,19,21 231:6,7,21 232:8	flowing 133:3,4,6,7, 10
fashion 126:23	fifth 12:25 14:21	financing 172:12,13		flows 135:18
favor 190:4 198:9	figure 69:8 85:14 86:9 174:22 205:20 208:18	find 12:12 13:12 76:17 159:16 160:8 168:23 169:3 211:16		focus 127:1
fearing 231:24	figured 170:1	findings 12:13		focused 230:3
February 10:1 11:6 55:11 119:1 127:16	figuring 169:24	fine 40:12 204:24 205:1		follow 92:21 159:20 164:2
feedback 11:3	file 10:1 107:6	fit 174:18		follow-up 55:10 92:16 106:1 166:18 169:14 174:11
feel 44:14 79:6 141:4 204:2 206:18	filed 9:15 11:6 73:22 95:14 127:16 147:25 148:4 224:9,12 225:21 226:20	finer 157:5	five 12:18 131:18 177:18 187:4 192:8 193:12, 22 194:9,12 201:24 229:4	followed 201:5
few 18:5,6 25:20 36:4 42:3 57:2 62:15 89:7 127:12 129:5 131:10 139:5, 8 140:4 152:22 153:11 203:12 231:22	filing 161:13 224:13	finish 194:20		following 41:18 54:16 109:13 119:9, 11 122:7 140:4 149:15 179:9 194:1 196:11
	filings 74:2	finished 72:23	fixed 216:19	
	final 105:7 212:1 216:12 235:4,5,8	firm 9:3 18:23,25 19:16	flatter 181:17	
fewer 150:22	finally 127:12	first 8:10 11:9 12:18 13:4 16:13 30:11 49:23 56:25 66:22 67:18 73:11 77:9 92:18 95:3	flaw 100:12 225:25	follows 8:11 30:11 73:12 95:4 106:23 117:13 147:15 176:7 210:6
			flexible 181:21	
			Floor 2:10,15	forecast 8:21

foreclose 166:1 168:24	forward 79:11 115:19,24 119:7 134:19 143:21 154:2, 10 156:1 200:9 222:19 233:17	front 218:7	165:12 171:21 175:13,22 193:1 207:18 229:2 234:2, 16,18,19 235:2,12	gathering 122:18,19 123:5 141:16 184:7 192:16 199:13
foresee 130:4,21		fuel 41:22 179:15 182:3		
foreseen 225:17		fulfill 152:5 179:19		gathers 137:9
foresight 120:9	found 13:17 115:25 215:22	full 20:12,16, 19 35:23 37:25 45:15 87:9 120:18 146:16 185:18 211:24	future 94:13 119:24 120:2, 12 154:4,22 156:8,12 182:13 183:25 192:21 193:1, 5,11 202:9	Gay 3:2
forgot 16:21	founding 211:12			gears 221:17
form 69:3 174:16	four 28:23 29:2 33:8,11 53:1 130:16 211:19 212:17 215:20 216:6 230:22 231:8, 11	full- requirements 12:4 37:21 182:11	G	general 2:10, 14 12:9 20:25 30:10 99:12 100:8 194:3
former 186:1		fuller 162:11	gain 79:2	General's 6:18 7:1
forms 85:21 86:11 89:19		fully 133:16 145:24	gas 207:4,5	generalized 122:23
formula 100:10,11 159:15 199:18,20 212:3 213:25	Fourth 12:23 14:7	fundamental 214:6	gather 48:15 108:18 109:15 119:8 121:4,14 122:2,5,9,11 123:8,10,17 124:11,13 128:9 136:18 198:23 199:7, 11,13 207:2	generally 14:20 96:23 99:8,14 151:8 172:6 190:8 201:14
formulas 96:24 97:8 214:5	framework 209:11	further 12:1 66:9 70:2 72:25 76:24 89:4 91:9 97:21 105:16 111:3 114:5 116:11,12 128:1 130:18 131:25 137:7		generate 24:18,24 29:18 47:1 65:8
formulated 68:24 69:7	frankly 168:24		gathered 104:13,18,23 123:14 124:5 135:8	generated 9:21 29:24 74:24 76:1 149:9 151:24
forthcoming 76:17	free 208:20 226:2			

generating 84:12 160:5 171:14	126:5,8,10,12 132:5,12 135:2,13 138:14 144:23 146:17 149:3 151:13,16 161:7,22 172:19 173:8 178:11 179:12 180:23,25 181:9,25 182:21,23 183:2 184:4, 16,18 187:18 189:15,17,20, 24 190:9 195:17 199:2 201:11 215:13,15 216:2,11 220:5 222:12 230:19	get all 54:23 187:7	123:1 132:13 135:5 144:2 150:9 151:2 162:24 166:5 167:11 168:1 214:10 226:24 231:20	217:25 218:1 223:25 224:1
generation 11:4,12,17 12:3,5,16,20, 21,25 13:8, 18,19,20,21 14:2,5,11,18, 19,23 15:10 20:8 22:1,16 23:3,21 24:11,15,22 25:19,23,24 26:2 27:12,19 28:19 32:3,6 34:2,6 36:21 37:8,14,21 38:1,25 39:10,15,25 41:20 42:5 43:17 45:16, 18 46:8 47:20 48:5,16 50:3, 10 51:10,12 52:1 56:10,25 57:17,23 58:14 63:1 70:15 75:6 78:21 80:7,23 81:8,16 83:10 94:11 96:21 97:18 99:6, 16,18,24 102:8,23 103:5,22 104:24 105:2 120:5,7 121:7 122:13,18,21, 22 123:4 124:1 125:9	generations 102:5 120:19	getting 6:5 83:23 135:4 140:13 141:8 164:17 188:15,20 205:2,3	goal 181:1 197:23	Google 157:14,15 163:5,7 195:23 205:20
	generator 183:11	giant 164:4	goals 178:18	gotten 171:8 189:12
	generic 47:20 182:23	Gilliam 5:5 7:23 175:24 176:1,5,10, 13,16 177:10 190:13,17 203:15 207:25 209:20 213:9	goes 11:21 16:13 82:11 165:20 166:2 169:2 208:8,9	government 208:10,15,16, 17 209:8,16, 17
	geographicall y 150:13	Gilliam's 70:9,18 177:5	good 6:3,8,17 7:21 8:14 10:22 17:16, 17 37:17 54:9 56:12 58:4 64:10 67:2,3 68:15 73:15 74:20 77:15, 16 90:19 91:4 95:7 96:12 98:13 111:9, 10 117:16,17 118:20 140:8, 9 145:5 153:1 156:9 161:4 171:7 172:1 177:14 185:15 187:8 191:3 205:24 206:23 207:2 211:10	grab 16:21
	germane 164:19	gird 120:12	give 25:6 35:23 81:2 105:15 154:22 160:9, 11 187:7 201:13 226:22 228:16 232:3 233:14	grade 68:6, 16,17,19 151:9
		given 32:7 34:3 60:23 83:6 84:4		graduate 17:21
				grandfather 72:4 212:22
				grandfathered 12:22 13:2,23 14:1,2,21 20:8 23:18 28:1 32:2 35:4 37:6 48:22,23,25 49:1 50:7 57:18 70:19,

22 71:6,7,14, 21 72:2,11,15 80:24 81:10 96:15 97:19 103:3 154:14, 18 182:17 185:16 191:15 192:18 212:25	11,15 134:2, 6,9,12,15 135:14,17,22 136:1,11,16, 17 138:23 139:11 143:25 144:23 158:7, 8 160:18 166:20 173:16 179:14 186:24 192:14 201:9	growth 114:8	197:20,21	hear 9:11 16:24 17:5,9 100:25 145:18 179:1
granted 10:16 74:14 96:4 107:16 118:14 148:19 177:9 211:5	ground 124:10	guess 22:5 72:1 85:9 88:17 111:11 112:15 129:9 131:19 153:1 158:23 166:21 170:23 171:4 174:25 175:8, 18 192:11 194:1 197:12 198:15 201:4 203:16 205:15 208:9 218:2,18 220:8 228:3	happened 177:20	heard 59:2 68:10,14 85:6 96:16 101:4 146:6 170:21 185:22 195:22 204:19
granular 181:8 192:22	grounds 56:18 102:6	guy 173:20	happening 130:21	hearing 15:25 189:12 235:8, 14
great 131:21 173:6	group 21:5 29:19 70:23 71:6,7,9,21, 24 72:2,4,11 92:6 165:6 170:2 186:3 190:7 212:22	H	hard 159:17 160:8 168:23 169:3	heat 124:10
greater 22:9, 10 26:7,12 98:18 129:20 213:4	groups 24:1,5 28:7 129:21 183:5,17 190:9	half 33:19,20 186:1 188:6, 12 189:3 194:2,11	hardware 127:23	heater 207:4
green 17:11	grow 113:23 164:18	hand 121:18	having 8:10 53:1 60:22 73:11 84:22 95:3 106:22 111:15 117:12 144:24 147:14 156:23 158:10 170:8 176:6 198:16 208:25 210:5 224:25 225:1	heavily 214:17
grid 41:22 44:1 74:25 75:14 83:21 84:5,9 119:20 120:2,6,8 121:8,12 132:8,21,22, 24 133:1,3,	growing 123:19	handful 15:20 71:18 233:14	head 49:22 51:7	hedging 41:23 179:15
		handle 34:1		help 43:16 44:4 58:19 65:21 76:7 135:18,19 138:5 167:19 170:25 196:21 199:9 208:17,23
		happen 87:14 180:3 186:23		helped 39:12
				helpful 84:8

139:12 196:9 199:9	39:19 63:11 88:5 109:6 157:12 178:4 188:19 193:14 232:3 233:12	56:20,21,23 62:11 72:25 73:1 77:2,4 97:25 98:1 109:23,24 110:1 111:3 140:3,4,7 142:17,19,20 161:1,3 165:12 169:7, 9 203:11,12, 14 207:18 223:21,22,24 224:17 226:15,19 228:4,9,16 229:2,3,10 234:2,5	132:23 135:6 185:5 199:4 207:12	159:25 160:2, 6,15 201:10 202:2,4
helps 135:12 136:11 145:9			homeowner 207:1,3	hour's 201:10
here 6:4,9,18, 21 7:1,7,9,22 8:5 10:8,22 16:21 20:7 24:8 26:15 29:8 38:7,9 42:2,5 44:12 52:6,17 54:16 63:9 65:6 77:21 78:6 82:6,19 83:18 86:3,11 88:8 91:13 94:6 103:20 116:20 149:2 153:12 157:20 170:2 173:10 176:11 188:22 191:4 194:15 198:25 200:12 208:17,25 209:11 210:10,15 221:18 222:2 226:4,8 230:2 232:15	higher 13:18 42:20 68:11 180:10 181:17			hours 131:6 144:9,15
	highest 196:8		homes 33:1,2 40:18,23 44:5 45:19,20 46:25 130:24, 25 143:22 172:3 198:18, 19 208:16 226:4	house 45:14 123:15 163:10 164:3, 5,15 207:15 208:19,25
	highly 37:19 39:18 175:3 183:8 184:17 216:1	hold 17:24	Honor 73:1 77:8	household 132:11 136:3 138:3,14 183:19 185:5
	himself 40:10 216:3	Holman 2:18 4:14 7:7,12, 13 17:6,11 53:10,12 90:8,10 105:21,22 112:4,5 117:3,4,5,15 118:10,16 128:20 139:25 142:21,23 147:2,4 152:16,18 190:16,18 217:13,15	hope 24:4 61:9 113:21 143:4 145:9 193:25	houses 45:24 47:7,12 143:8 159:22 201:15,17,23, 24 202:12
	hire 157:10, 11 163:4		hopeful 88:2	
	historic 182:8		hopes 119:3	however 15:1 97:11 99:12 102:25 114:4 122:4 126:7 150:5 178:2 182:12 183:12 186:14 212:24 215:8, 18
	hit 78:11		hoping 44:24 103:19 222:6	
	hits 75:14 84:5,9	home 32:8 39:18 44:9 45:2 130:12	horse 228:18	
hesitancy 32:7	Hogle 2:5 3:9, 12 4:7,16,23 5:8,13,15 6:8 8:2,3,13 9:14 10:11,17,18 15:16 40:1		host 161:16	
high 25:18			hour 143:10, 11,24 144:1,7	huge 33:22 173:17,21

174:3 232:16	I	119:8 120:16	197:3	132:15
humans 45:9, 12	idea 113:9,10 157:1 158:24 190:3 207:11 220:25	121:15 122:3, 6 125:19 128:10,16 130:1 133:15 134:17 142:15 149:13,24 150:3,23 158:1 166:2,4 168:25 171:8, 19 177:22 178:1,4 179:20 180:1 193:12 199:7 200:14 204:3 206:5	impacted 28:6 45:2 51:11 52:1	133:22 135:23 136:18 158:15 166:4 172:20,22,23 173:5,6 178:16,24 179:1 184:12 185:23 189:14,24 192:23 197:8 198:13,14
hundred 32:13 57:14 63:15 71:11 182:18 185:22 206:15 207:10	ideal 170:6 Ideally 21:8 identical 144:16 160:14	imagine 157:9 170:17 174:21	impacts 43:13 82:16 108:23 123:22 132:7 134:5 144:25 153:6 189:13	importantly 122:10 176:24 192:4
hundreds 189:1	identified 211:19 229:18	impact 31:2, 14 33:15 34:12,16 54:5 60:24 64:2,4 78:9,14 80:10 94:5 101:6 114:6 119:22 132:9,14 133:14,24 138:11 150:16 151:23 154:2, 4 166:5 174:5 181:18 184:2 188:12 189:23 191:21 192:25 194:14,22	impart 232:16 implementing 161:25 imply 105:9 import 122:19 import/export 46:24 48:1 104:19 105:1 136:25 importance 12:17 33:23 42:6,8,11 44:12 important 9:10 14:12 65:16,18 79:13 114:11 124:2,23 125:2 129:23	importing 47:9 135:22 imports 122:13 124:15 126:12 136:1, 5 imposed 77:18 232:22 impossible 27:18 159:18 160:10 169:4 192:10 219:22 225:18 improper 98:25 179:24
hung 164:17	identifies 192:22			
Hunter 2:18 7:7,12,13	identify 179:18 203:17 229:24			
Hunter@ utahcleanene rgy.org 2:21	ignore 154:7 Ignoring 151:18			
hurdle 219:16,18	II 65:5,6 76:8, 19 78:18,22 79:11 80:6 84:8 86:4,20 87:12,15,20			
hypothetical 88:20 91:19 92:8 134:23 135:13 164:11 194:8, 9 201:22 202:10 225:4				

221:7,10,11	include 13:1 57:22 114:1,3 124:6 128:17 133:17 189:7 217:1	incorrectly 170:21 214:12	70:10 84:20	215:10
improve 127:19		increase 125:3 138:18 149:16 150:24 151:7, 11 183:25 216:13	indicates 25:17	inefficiencies 52:25
improvement 121:16	included 38:15 80:11 95:18 213:19 216:7 225:5 232:7		indicating 213:12	infer 172:24 221:11
in-person 114:24		increased 11:4 55:15,18 146:20	indication 68:14 227:17	inferences 211:24 213:7
inadequate 112:17 149:11 180:14	includes 14:8 124:16 125:14 186:16	increasing 125:6 151:10	indicative 191:21	infinity 228:15
inapplicable 233:23	including 41:11 122:13 126:12 127:22 177:21 182:2 187:21 216:25 226:8	incredibly 226:7	indirectly 166:21	influence 138:17 167:10 182:22 201:19
inappropriate 151:14 214:1 216:23 225:11		incremental 146:13	individual 14:10 44:25 45:8,11,24 47:11 64:2 69:14 168:4 173:2 181:9 183:4,7,13 184:17,21 188:2 197:23 205:19 208:22	influences 139:11 153:21
incentive 32:10,13 153:16 154:3 158:11,15 167:4,5	incorporate 120:13 161:17	independent 83:3		influencing 135:25 153:22
incentives 28:2,6 129:15 155:19 156:5 167:3,9,22	incorporated 55:25 116:24	indicate 10:15 15:23 74:13 96:3 107:15 108:3 116:16 148:18 211:4 212:7 215:17 226:22 227:6 235:5,7,9	individually 130:3	inform 121:25 125:18 144:25 196:10,12 197:9,16 198:4 199:9
incentivize 158:6	incorporates 154:23		industry 12:8 13:11 120:10 188:25 194:23	information 15:6 21:11 27:19 39:5
	incorrect 24:23 36:24, 25 115:11 187:14	indicated	ineffective	

40:4,7 43:1, 24 45:3,4,14, 15,25 46:11, 18 47:13 48:12,16,18, 22,23,25 49:3,9,11,14, 17,22,24 50:18,24 51:6,14 52:4, 19 53:4 54:18 55:1 58:2,3 60:23,24 61:11,15,25 62:5 66:3 67:21,24 68:23,24 69:4,9,19 71:22 72:14, 16 75:16 76:13 83:8 85:25 86:14, 16,17 94:14 104:13 108:18 109:5, 8,18 110:3, 12,24 114:2, 19 115:8,10, 14,23,25 121:22 122:14,24 123:3,8,11, 13,18 124:2, 4,6,12,17,22 125:2,17 126:8,11,20 127:21 129:10,23 130:7,10,19 132:16 135:4, 7,10 136:2, 15,19,20	137:9,14 138:2,5 139:12 140:13,18 141:3,4,9,10, 12,16,19,21 142:2,6,9,13, 14,16 143:12, 16,19 144:19 145:20 150:23 151:21 152:2 153:5 154:22 161:24 163:5 166:21 170:11,14 172:2,14,20 175:2 178:5 180:4 182:25 184:20 185:3, 14 192:22 195:6 196:9, 13 197:24 198:10,12,16 199:5 200:13 201:12 202:7, 17 205:17 206:14,19 207:2 209:1 218:21 219:3, 12,23 220:6 221:3,5,8 222:9 224:23 225:1 226:25 227:2 228:8, 11 229:17 231:16 informing 189:24 197:14	initially 55:15 input 42:21 insight 43:20 45:16 install 32:9, 17 35:22 52:12 60:18 80:8 84:1 123:15 126:18 132:7 135:6 151:3,4 162:6,9,10 167:4,6 168:5 192:2 194:5 195:25 installation 46:22 52:20 115:17 123:10 131:9 136:9 185:21 186:11 187:1 192:4 197:11 221:23 installations 52:22 108:9 174:14 installed 27:25 32:5,8, 21 33:8,14 46:15 54:2 60:13,14,17 62:25 63:18, 23 104:5	183:11 191:16 installer 162:20,25 installers 69:11 84:1 115:9 151:1 162:13 170:15,17 204:17 205:6 installing 63:14 123:1 141:24 162:3, 15 172:3 178:14 186:3, 6,18 188:2 191:17 192:13 193:17 instance 35:10 181:22 193:17 195:3 instead 126:9 150:1,7 151:5 211:21 insufficient 178:6 179:24 205:21 216:10 integration 41:21 179:14	integrity 216:21 intend 20:11, 15,21 22:9,16 26:1 41:13 42:17 49:2 72:17 78:17, 21 intends 180:19 184:12 intent 121:23 intention 199:18 interact 121:7 132:8 134:5 192:14 interacting 121:12 interaction 123:4 132:20, 21 133:3,20 134:9 135:14, 16 136:11 138:23 interacts 120:6 133:1 134:2 interconnecte d 127:6,8
--	--	---	---	---

150:19	internal 174:20 175:9	41:12 43:4 48:7 62:21 89:18 178:7 180:11 204:2	22:23	involved 19:12 88:17 178:9 225:14 227:1
interconnecti on 47:14 48:19 61:12, 16 110:4 114:21 130:9 135:8 206:9, 10	Internet 17:4		intrude 15:2	
interest 77:25 78:2,4 180:16 211:21,22 212:20,21 220:16,22	internship 157:13	intervenor ' 42:12 225:23	intrusion 44:14 209:3	irrelevant 193:18
interested 67:23 76:13 82:11 84:5,6, 9 85:13 153:22 184:16 185:1 206:2	interplay 123:25	into 10:12 21:19 22:24 24:1 29:18 30:17,21 31:2,9 39:7 42:19,21 43:20 44:10 45:16,23 46:19 52:17 65:9 74:11 84:8 86:20 87:10 95:25 111:12 118:11 129:21 144:3 154:22 157:6 158:5 159:4, 10 161:17 177:6 199:23 206:22 209:15 211:1 215:23 222:15 228:15 230:14,15 231:5,7,9,23 233:2,7	invalid 232:9, 10 233:19,22	Irrespective 85:1
interesting 94:13	intertemporal 182:10		inverter 56:3 67:6 68:3 69:13 94:9 127:22 169:17 170:3 174:12,18 195:4 221:19 222:8	issue 33:25 34:18 35:1,2 68:1 72:11 101:25 102:1 108:3,4,5 110:25 113:18 167:13 173:7 174:3,5 178:23,24 189:11 208:9 212:19 213:17 214:15 216:12
interests 78:23,24	interval 179:11 180:15 220:4		inverter- based 204:22	issues 104:12 129:14 208:12 211:19 212:17 216:24
interject 227:4	intervals 41:19 179:11 216:19		inverters 67:8 80:16 94:3 151:6,8 162:12,19	
intermingled 200:11	interveners 85:19 94:8		invest 154:4	
intern 157:11 163:4 170:8	intervening 44:24 79:9 87:11 179:18 203:17		investment 90:19	
	intervenor 186:25	introduce 29:17 61:24 67:21	investments 41:21 119:20 154:10,21 167:24 179:13	item 21:23 26:7,12 98:18
	intervenor	introducing		items 30:11, 25 100:19,21

189:8	169:6 190:23, 24 191:2	July 48:24	160:2,6 201:10,24 202:2,4	L
J	195:9 203:8, 10 217:21,22, 24 223:21	justifies 102:7	kilowatts 125:15 229:16	lack 108:2 216:13
Janna 6:11	Jetter's 140:5	justify 230:17	kind 54:5 71:5 82:18 86:2 130:2,4 134:21 137:3 144:10,14 153:1 159:20 171:1,5	lacks 217:6
January 11:5, 14 55:4,5,6, 14,23 87:1 118:25	jjetter@ agutah.gov 2:12	Justin 2:9 6:17	kinds 113:19 114:1	laid 53:24
jerk 36:3	jmargolin@ selendygay. com 3:4	K	Kate 4:13 7:8 117:5,11,20, 25	Lake 2:7,11, 16,20,24 117:21 202:13,20
Jersey 210:13	job 168:3,7 222:3	keep 98:9 185:24	KLE-1 10:1, 13	large 39:18 133:14 145:3 151:25 156:23 181:13 183:15 217:1
Jetter 2:9 3:18,21,23 4:2,6,15,22, 25 5:7,12 6:17 16:3,4 73:3,4,14 74:9,15,16 76:24 90:12, 13,15 91:9, 16,21,25 92:16,23 94:19,20 95:6,24 96:5, 6 97:21 105:24 106:1, 9,11 111:5,6, 8,20,22 129:4,5,8 143:5 145:19 152:21,22,25 160:23 161:1 166:9,10,12	Joelle 6:10	keeping 120:14 121:22 141:5, 6 144:24	knee 36:3	largely 39:17
	Jordan 2:4	Kenneth 3:8 8:9,16	knowing 44:8 71:23 75:20 134:24 141:7 167:11 198:17	larger 101:23 125:4 143:17 144:22,25 181:16 214:24 233:6
	Joshua 3:1 7:21	key 12:18	knowledge 69:15 181:8	largest 156:21
	JR 3:8	Kids 164:14	known 30:7 213:3	last 68:21 114:5 124:11 196:7
	judge 222:23	kilowatt 14:14 131:6, 12 143:9,11, 24 144:1,7,9, 15 159:24		later 131:11
	judgment 99:2,4 100:16 102:1,8,9 105:7			
	judgmental 98:21			

144:3	140:19	104:9 118:14	109:22 111:4,	55:19 101:24
Law 2:23	Lee 3:8 5:10	130:2 132:19	22 112:1,4,6,	103:12
lay 208:10	6:10 7:24 8:3,	168:19	11 113:15	112:20
	9,16 10:12	172:24 177:8	114:16,18	127:13,18
lead 75:16	178:21	194:20	116:7,10,13,	149:18,20
189:10	209:23,25	202:10	22 117:4,7,10	150:15
211:12 233:4	210:4,9,12,16	208:10	118:13	161:22
leads 231:23	211:6,12	218:18	128:22,25	195:14 196:8
	217:11,14	221:20	129:2,4 140:2	222:17
learn 31:18	223:25 225:3,	223:10	142:18,21,24	232:23
	17 226:1,7,9	226:12	145:11	233:12
	228:19	227:18	146:24 147:2,	
	229:11,22	228:24	5,9,12 148:17	levels 44:6
	234:8,14	233:25	152:12,16,19,	187:22
learning		Levar 2:3	21 160:25	
44:10	Lee's 211:1	3:15,24 4:11	165:14 166:8	liberty 21:11
lease 172:10	224:18	5:3,9 6:3,15,	169:7,10	
	225:12,23	23 7:5,11,14,	171:22 174:8,	life-style
leasing 172:8		19,25 8:4,8	10 175:11,16,	183:18 199:4
	left 7:22	9:8,12 10:14	20,23 176:1,4	
least 99:1		15:18 16:6,9,	177:7 190:15,	light 17:11
103:24 115:2	Lehi 147:23	14,18,22	19,21,23	137:19 143:5
127:6 131:24		17:2,8,13	203:10 204:5	
135:9 136:18	length 190:11	40:16 53:9,13	207:20,23	lighting 124:9
138:24 162:5		56:19 62:13,	208:2,4,7	
182:17	less 31:19	17 66:10,13,	209:18,22,25	lights 140:19
193:24	35:23 72:12	17,20 69:25	210:3 211:3	207:13
197:23	101:24	70:4,7 72:23	217:13,16,19,	
198:23	102:17	73:2,6,9	21 223:20	like 10:5,19
203:23	108:13	74:12 77:2,5,	225:8 226:11,	16:14 40:1
208:14	114:11 116:3	7,11 89:5	17 227:5,15,	44:14 63:19,
227:12	151:8 186:22	90:8,11 91:11	22 228:1,14	24 64:10,12
leaving 82:18	188:10 223:4	92:17,20	229:1,4,6	68:18 73:5
	let 40:19	93:19,22,25	234:4,7,11,	74:6,9 94:21
LED 124:9	51:22 80:15,	94:15,19,23	13,16,19,23	95:22,24
	20 82:21	95:1 96:2	235:1,6,12	106:15
	84:19 92:17	97:24 98:2,4,	level 11:4	107:10,12
		8 105:18,21,	12:6,7,19	113:19
		23 106:3,6,8,	13:4,9,10,11	116:16,17
		13,17,20	15:12 31:21	
		107:14	36:16 45:8	

118:10	131:14	lines 37:24	10,13,25	195:9 200:2
123:20	138:17	57:2 85:14,16	13:5,12,16,25	211:17
131:16 132:6	149:11 152:1	89:11 94:5	14:12 15:4,14	218:25 219:4
134:8 135:23	160:11	104:8 124:16	19:6,7,23	220:5
148:11,25	181:20	176:23	20:3 25:3	
156:16,19	183:24		42:15 55:17	loads 45:7
157:1 158:1,	191:25	list 50:1	57:23 59:25	76:10 120:1,
13 159:13,19	193:20	133:18 145:3	60:10 61:5,8,	19 123:24,25
162:10,23	214:11		19,21 62:1,7	124:1 136:6
163:11,24		listed 161:16	65:1 68:2,20	181:17,22
166:25	Likewise 48:7		70:14 74:22	182:13
168:21,25		listening	75:12,22	183:13
169:1 170:2,5	limit 127:10	16:25 17:4	76:5,22 79:2	
171:2 172:6,		153:13	81:14 85:22	localized
21 174:3	limitation		86:12,14,15,	150:16
175:24 177:4,	113:9	lists 30:12	18 88:18	
16 182:24			97:14 107:25	located
186:14	limited 96:20	little 33:21	108:12	210:13
195:19	124:6 167:1,	36:10,15	109:13	
197:22 198:8,	12	116:14 130:3	118:23,25	location
11 204:7		135:11	120:7 121:3,	124:12
206:20	Limiting	138:21 157:8,	9,13,21	133:22,23,24
208:20	180:12	16 159:17	122:1,4,8	134:1,12,14
209:23		163:23	123:23	149:8 172:18
210:25 218:2	line 41:20	165:16	124:23 125:9,	
224:2,17	57:1 58:9	170:13 191:4	24,25 126:15,	locationally
225:5,9	59:2,9,10	202:11	22 127:4,10,	183:3
227:20 228:9,	60:5 68:22	208:11	14 128:8	
19 234:24	77:20,22	221:17,20	138:12,19	locations
likelihood	80:22 81:4	233:14	140:14	108:25 198:6
71:8 98:19	83:15 84:20,	live 227:11	141:20,24	
100:20	25 85:1 86:6		142:6 161:18	logical
likelihoods	89:17 140:5	living 45:2	171:3 177:24	200:13
29:24	141:14		179:21	
likely 21:18	171:11	load 8:21	180:24	long 192:6
75:16 85:20	179:12 197:9	9:23 10:23	181:10,17,19	226:5
89:19 109:5	201:5 218:4,	11:2,6 12:2,	182:15,21	
125:21	10 221:18		183:1,17	longer 109:6
			184:3,9,18	
			185:11	
			187:23	
			188:20 190:8	

182:13	164:12,17,22 168:15 173:24,25	magnitude 123:22 132:15 134:10,22 135:17,21,25 138:12 181:7	136:21 145:15 148:12 153:10 155:1 156:21 158:11 164:24 166:13,16,22 167:24 176:22 177:18,25 178:1,5 180:4 187:6,9 191:7 195:23 198:24 202:18 204:3 205:19 211:23 232:9, 10,12 233:19, 22,23 235:6	124:24 185:9 225:20
looked 37:5 39:14 230:5	love 157:13			many 35:13 49:1,7,11,14, 20 50:4 60:14,18 84:7 126:7 150:20 153:11 183:7 190:1 195:3, 24 199:3 207:13
looking 37:1 71:5 85:17 87:12,25 114:4 119:25 130:11,12 132:4 156:1 163:9 167:25 184:20 192:15 206:12 207:15 218:3	low 71:18 109:5 113:8 115:14 120:14 144:24 151:7 169:4 193:14 199:12 215:8 232:4	main 2:6 102:24		
looks 156:16 169:1 197:22	lower 109:11 181:20 182:1 215:24 224:3, 5,20 232:5	maintaining 120:13 216:20		map 130:12
losing 186:23	LRS 85:22 89:20	major 33:18 115:12 146:19 207:12,15 216:24 225:25	makes 75:21 80:22 81:8 142:13 200:15 216:19,24 233:21	March 35:20 118:1 148:1 176:17
Loss 33:20	lunch 116:14	majority 125:20 215:25 231:6, 21 233:21		margin 23:7, 13 24:19,25 31:3,13 36:17 68:11,13,17 101:6,24 103:12 214:12
losses 41:20 179:12 182:3	M			
lost 188:20	made 34:23, 24 65:15 68:12 87:13, 16 103:20 107:13 121:15 122:7 154:20 155:4 165:2,5 168:22 192:11 213:7	make 7:11 10:5 11:22 16:23 17:3 27:18 50:13 54:14 74:6 82:8,10 83:13 87:5 95:22 100:17 105:7 107:10 108:20 109:13 113:6 116:4 118:10 124:20 131:19	making 72:12 85:20 87:21 112:23 154:10 171:11 194:4, 22 209:9 234:25	Margolin 3:1, 10,13,20 4:3 5:6,11 7:21 16:12,19 17:15 40:8,22 53:7 54:12 62:14,15,19 66:9 77:7,8 89:6,7,10 90:6 92:18,19 98:6,8,9,12 105:16 112:2, 3 117:2
lot 58:2 62:4 87:16 114:6 145:18,19 155:1 166:13, 22 187:5 189:6 204:19			manager 6:13 8:22	
lots 159:4,9 163:19			manner	

128:22,24 147:6 152:13, 15 175:23,24 176:9 177:4, 10 190:13 194:20 207:20,22 209:22,23 210:8,25 211:6 217:11 225:8,10 227:14 228:12,18 234:5,6,17,18	mathematical 96:24,25 97:8 100:10,11 159:15 mathematicall y 26:22 158:3 199:19 matrix 168:5 matter 21:1 26:19 29:22 98:15,20,21, 22 100:13,16, 18 122:12 138:25 162:25 195:7 211:11 217:10 218:10 219:19 221:14 235:3	29:17 31:2,14 32:25 34:16 35:20 36:25 37:1 41:4,17 42:17 43:19 44:10 50:6 58:7,12,18 65:10 77:18 101:23 103:10 104:2 108:11 115:12 120:22 129:10 130:1 131:11 144:4, 10,16 145:4 150:18,21 151:17 153:11,20 178:13 179:3, 8 180:25 181:12 182:13 184:10 185:15 189:16 191:7 192:25 193:18 195:2, 3,6 196:5,6 198:7,13,14 207:6 208:22, 23 209:2,15 214:24 218:6 227:4 228:12 235:8	159:17 167:1 192:18,19 199:5 200:21 203:4 206:15 219:25 228:3 230:5 mean 25:1 38:6 72:16 77:20,22 85:2,5 103:17 105:8 113:2 135:17 145:3 154:17 156:3 157:9 159:2,8 162:22,23,24 163:13,14,16, 17,23 164:11 165:1,6,23 166:15 167:2 168:16,24 170:8 171:6, 17 196:12 201:13 202:25 204:8 209:5 221:6 223:12 228:14 meaning 11:19 meaningful 43:23 means 23:25 185:6 213:23 meant 65:3	measure 137:5,7 158:18,25 166:14,20,23 195:20 205:22 216:9 measured 33:15 157:2 measurement 41:19 130:5, 15 179:10 measurement s 166:24 measuring 24:11 200:19 Mecham 2:22 3:11,19,22 4:21,24 7:15 16:10,11,16 53:13,14,16 56:17 66:11, 12 77:9,12,14 89:3 91:12, 13,15,22 98:6 105:18,20 111:24,25 112:1 128:25 129:1 147:5, 6,7,17 148:15,20,21 152:10 165:15,16,18 166:7 175:14, 15,21,22 190:19,20
marked 15:21 148:1,5 177:5				
market 221:24				
match 109:3 223:13				
matches 110:10				
matching 124:16				
materially 151:23 153:5 156:7				
materials 12:23				
math 39:3				
	mathematical 96:24,25 97:8 100:10,11 159:15 mathematicall y 26:22 158:3 199:19 matrix 168:5 matter 21:1 26:19 29:22 98:15,20,21, 22 100:13,16, 18 122:12 138:25 162:25 195:7 211:11 217:10 218:10 219:19 221:14 235:3 matters 8:1 50:2 94:14 177:17 max 34:3,8 maximize 181:24 maximum 189:18 may 24:18,24 25:13 28:6	29:17 31:2,14 32:25 34:16 35:20 36:25 37:1 41:4,17 42:17 43:19 44:10 50:6 58:7,12,18 65:10 77:18 101:23 103:10 104:2 108:11 115:12 120:22 129:10 130:1 131:11 144:4, 10,16 145:4 150:18,21 151:17 153:11,20 178:13 179:3, 8 180:25 181:12 182:13 184:10 185:15 189:16 191:7 192:25 193:18 195:2, 3,6 196:5,6 198:7,13,14 207:6 208:22, 23 209:2,15 214:24 218:6 227:4 228:12 235:8 maybe 70:5 71:18 109:24 110:20 116:15 131:17 157:5 158:11,13	159:17 167:1 192:18,19 199:5 200:21 203:4 206:15 219:25 228:3 230:5 mean 25:1 38:6 72:16 77:20,22 85:2,5 103:17 105:8 113:2 135:17 145:3 154:17 156:3 157:9 159:2,8 162:22,23,24 163:13,14,16, 17,23 164:11 165:1,6,23 166:15 167:2 168:16,24 170:8 171:6, 17 196:12 201:13 202:25 204:8 209:5 221:6 223:12 228:14 meaning 11:19 meaningful 43:23 means 23:25 185:6 213:23 meant 65:3	measure 137:5,7 158:18,25 166:14,20,23 195:20 205:22 216:9 measured 33:15 157:2 measurement 41:19 130:5, 15 179:10 measurement s 166:24 measuring 24:11 200:19 Mecham 2:22 3:11,19,22 4:21,24 7:15 16:10,11,16 53:13,14,16 56:17 66:11, 12 77:9,12,14 89:3 91:12, 13,15,22 98:6 105:18,20 111:24,25 112:1 128:25 129:1 147:5, 6,7,17 148:15,20,21 152:10 165:15,16,18 166:7 175:14, 15,21,22 190:19,20

217:16,18 227:4,8,16 234:21,25 235:3,11	55:3 56:2 101:7 113:7 132:20 166:25 204:23	22 46:22,24 52:13 60:5,16 62:25 63:14, 18,23 66:1 68:6,16,19 104:5 123:3 141:25 146:16 151:3, 4,9 162:7,10 185:11 186:7, 19 187:2 188:5 204:22, 25	160:16 middle 181:22 might 15:24 16:12,25 25:2 33:15 55:7 58:19 68:15 85:21,24 86:17 89:19, 25 90:2 101:5 103:16 105:6 109:1 115:7, 22 133:17,24 136:5 137:18 146:19 154:8 171:2 173:15 205:3	102:10 121:19 122:7 144:1 159:12 185:24 199:20 minimal 152:1 199:5 minimize 180:7 minimum 127:16 minor 68:18 115:12 minus 11:20 12:6 13:9 23:13 55:16, 18 127:17 149:17,19 161:21 212:11 214:25 215:3 minute 175:17 179:11 220:4 229:22 minutes 66:18 175:18 229:4 mischaracteri ze 113:21
Mecham@ mibllc.com 2:25	met 55:3 meter 32:21 46:15 60:13 63:1 123:2,16 132:22 133:20 135:6 139:1,13 162:4,15 184:15 186:7, 11 187:14 188:3 192:5 198:2	meters' 68:17 method 109:5 methodology 149:10 methods 108:1 metric 133:19 137:8 200:22 201:3 microphone 16:23 microphone's 9:9 microphones 17:3 microwave	million 15:11 60:17,22 61:2 62:22 63:19, 24,25 64:1,5, 12 78:10,12 88:19,21,22 90:17,23,24 91:1,6,7,16, 18 92:1,5,9, 11,25 93:2,5, 9,10,14 146:11 188:6, 13 189:3 194:2,12 millions 78:6, 7 189:1 mind 33:22 42:16 52:10	
mechanism 136:16 145:20 153:23 158:14				
meet 14:24 25:13 31:21 55:8 75:12 94:9 217:7				
meetings 11:3 118:24	metered 181:5			
megawatts 47:15	metering 13:16 25:17 37:2 38:19 57:18 58:1 80:12 92:24 93:3,9 155:4, 10 171:10 185:21 186:1 203:5 213:2 230:2			
member 185:5				
members 2:3 39:12 44:11 71:9				
mention 50:6 188:23	meters 13:24 14:1 15:10 28:19,20 29:9 32:3,5,6,17, 24 33:4,8,14 35:10,12,14,			
mentioned 18:21 48:21				

170:21	month 35:21	191:13	107:15,16	206:13 207:1
misrepresent	163:22	192:18,19	118:10,14	208:13,24
s 40:2	185:22	193:17 197:5,	148:18,19	211:17
	188:12	6,15,16	177:8 211:4,5	226:24
Miss 118:16	monthly	201:2,4	225:9,21	move 10:11
	12:14 126:17	202:7,8 205:3	226:12,14,17	74:9 95:25
missing 36:5	128:4	206:1 220:20	227:6 229:7	107:12 137:2
	months 36:4	228:12,16	motions	148:15 177:4
misunderstan	193:25	231:1 233:25	15:25	207:16
ding 180:20	more 14:25	morning 6:3,	Mountain 2:5,	210:25
misunderstoo	16:13 18:6	8,17,19 7:21	6 6:9,12 8:19	224:17 225:6
d 219:25	21:5,18 22:6	8:14 10:22	56:3 57:10,22	233:17
modifications	24:21 35:4	17:16,17	69:19 74:21	much 43:4,6
107:25	36:8 54:24	56:25 62:5	75:6,18 76:9,	71:7 75:13
	62:6 71:25	67:2,3 73:15	11,22 77:19	77:24 78:19
modify	72:12 77:19	74:2,20	79:6 96:12	82:22 122:6
139:21	82:25 86:24	77:15,16 95:7	107:25	124:22
	90:7 108:22,	96:12 98:13	108:17	128:15
moment	24 109:2	111:9,10	110:25	132:16 138:9
40:11 53:8,18	125:17	118:20 197:5	114:20	143:18 145:8
62:11 89:22	130:19,24,25	205:18	118:22	148:20
101:20	131:21 135:1,	most 65:16,	125:11 149:3,	153:19
207:22	11,23 136:2	18 121:22	10 150:14,25	164:15
	137:10 138:9	122:4,10	151:4,12,20,	167:11,25
money 54:10	142:13,14	126:13 130:8,	25 157:13	174:7 180:10
61:3 64:11	143:16,18,19	25 131:1,8,	169:19 170:9	185:18 195:3
197:16	150:8 153:14,	13,14 141:3,8	173:22 174:4	199:1 209:15
	20 156:16	169:21	177:21	215:24
monitor	158:10,12,18	170:18	179:22	232:14 233:6
172:9	160:21	171:13 182:1	180:11,17,20,	234:15
	166:13,16,22	185:9 186:8	25 182:24	multi 78:12
monitoring	168:10	190:1 192:3	184:11 185:7	
12:11	168:10	mostly 83:8	187:11	multiple
	170:13		188:17 196:3	130:22
	172:21	motion 5:14	200:22	185:13
	181:19	10:16 74:14	203:22 204:1,	Multiplied
	183:12,22,23	96:3,4	12,14,15	
	184:3 185:14		205:4,5,12,	
	186:23,24		16,19,21	

53:25	38:25 39:9, 14,25 43:20 47:12,15,17 84:11 102:14, 22 103:5,21 131:6 214:17, 19 215:17 222:12 230:4	11:7,16 12:1 15:6,25 57:15,19 58:3 59:23 60:21 75:13 76:6 79:12 97:2 119:8 121:24 128:18 129:10 141:4 180:18 182:7 203:24 214:24 223:11	needed 36:8 75:21 76:18 78:1 87:18 88:22 122:2 128:10 151:3 179:19 182:21 185:15 187:7 203:17 212:14 217:7 219:4	220:11
Multmonah 8:17				NEM 185:18 187:12
Murray 4:5 7:3 106:16, 17,21 107:3, 18 109:20,23 111:5 112:7 116:8	narrow 86:24 113:18 144:14 206:3			net 13:16 25:17 28:23 37:2 38:19 43:13 57:18 58:1 92:24 93:3,8,11 126:24 155:4, 10 178:10,12 180:17 181:2, 3,4,11,12,18 182:16 186:1 189:14,23 196:10,12,13, 15,19,23 197:22 199:10 203:5 207:17 230:2
must 61:5 108:20 140:12 178:11 180:11	narrower 161:9	need 22:13 23:14 29:25 30:14,22 31:1 36:1,14 42:17 50:14 54:18 55:7 58:7,12 65:8,10 71:20,21 79:8 82:20,24 86:23 88:10, 11 97:5 101:15 114:23 120:23 122:3 136:2 138:2 143:15,19 149:7 150:22 167:8,20 174:2,6 178:5 181:5 183:2 187:6 194:25 196:7 204:3 205:25 206:5 207:13 220:24 228:21 230:14 232:13	needle 207:16	
N	Narrowing 75:25		needs 21:6 30:17,21 42:16 87:14 117:6 167:21 177:25 178:2, 7 186:22 205:22 214:7	
name 6:25 7:12 8:15,16 73:16,17 95:8 107:1,3 117:18,20 147:18 176:10,13 210:9 211:12	natural 9:3 18:22 19:16 116:15,17		negative 215:16	netting 180:15
namely 28:2 121:5	nature 27:7 69:2 123:24 214:4		negatively 101:6	network 75:2
nameplate 12:21 13:15, 17,21 24:9, 14,23 25:18 29:3 36:20 37:2,7,14	Nearly 63:7		neighbor 173:20	never 68:1,3 89:23 177:20
	necessarily 50:17 61:18 86:16 98:21 105:9 124:6 125:3 129:18 142:10 144:20 164:6 206:8		neighbors 159:23 201:22	new 3:3 28:19 54:1 119:17 126:10 141:18 155:18,20,21 183:21 202:22,23 210:13
	necessary		neither 173:12 212:15	

219:13,23 220:10	16,19	nothing 66:12 89:3 116:12 147:4 175:15, 22 190:18,20, 22 234:18	numerous 75:24 213:10	37:3 113:23 231:25
news 78:11, 13	nonuse 137:23 139:17		NY 3:3	obtain 11:13, 22 20:15 31:22 48:8 49:21 125:17 150:25 169:16
next 16:10 53:10 58:8 61:14,24 73:3 94:21 124:18 125:25 127:1 163:22 193:25 205:15	normalized 189:16,17,19, 22	November 185:20 186:1	O	
nods 33:12	normally 78:20	nuanced 120:5	object 40:2	obtained 12:20 13:4 17:18,21 109:17 170:15 186:10
nomenclature 145:16	North 130:8	number 22:17 45:1 51:7 52:11 64:19 116:1 130:23 131:2 139:22 146:15,21 162:10,23 163:10 171:17 183:18 186:13 188:9 191:20,25 194:25 195:22 197:14,16 207:14 212:7 216:24 218:8 231:4 233:6	objecting 43:3	obtaining 127:21
non-net-metering 195:11	Northeast 8:17		objection 10:16 40:20 74:13 80:15	
non-post-transition 91:5	Northwest 210:14		objective 219:16	obvious 100:12
none 60:23 95:23 130:20 189:10 217:18	not-well-thought-out 188:24		objectives 11:8 222:5	obviously 40:14
nonfinal 235:4	notably 14:3		objects 10:15 43:9 74:12 96:3 107:15 118:13 148:18 177:7 211:4	occupation 73:16 95:8
nonresidential 12:24 14:9,	note 15:19 94:12 131:2	numbers 15:20,23 115:18 139:16 188:4, 5 232:18	obscure 125:2	occur 93:4,11 183:17
	notes 104:12 126:16 182:7	numerical 132:2	observe 231:4	occurring 56:10
			observed	off 39:6 49:22 51:7 67:19 79:25 84:10

119:10 121:17 161:5 164:9,14 233:18 offer 177:11 211:7 232:6 offered 230:17 offering 176:11 210:10 offers 212:13 office 2:14 6:18,23 7:1,2, 4 16:8 79:10 107:5,20 108:8,16 109:12 112:16 office's 112:16 offset 78:21 79:13,14,22 old 102:6 214:3 229:23, 24,25 230:2 on-site 75:7 109:16 110:8 115:13 124:1	206:12 once 138:22 170:1 220:20 one 10:25 14:14 21:5 22:6 24:21 30:9,12 32:7 33:18 34:4 38:16,21 39:18 44:9 46:19 52:12 55:20 60:4, 13,14 65:24 67:15 70:5 71:25 78:3 82:25 86:2 92:21 93:12, 15 98:17 105:15 109:24 113:22 116:15,20 121:18 122:18,21 130:3 131:1, 17 132:10 133:22 134:7 139:10 143:4, 8,9,11,22,23, 24 149:16 159:13,21,23, 24 160:4,5, 13,15,16 163:20,21 166:10 169:23 170:20 173:14 176:22	182:24 189:13 191:14,16 192:2,17 193:16 197:6 198:12 201:4, 25 202:1,12, 13 204:20 207:22 208:4 213:14 215:16 218:11 219:8, 21 220:23 228:3,12,16 231:5 one-year 182:12 186:21 ones 88:10 115:19 138:10 144:24 ongoing 128:3 online 96:18 only 16:1 32:8 51:17 57:6 63:12 65:14 79:9,12 88:10 93:15 103:3 112:23 122:2 130:16 142:7 156:19 158:21 168:21	169:19 170:10 179:17 180:3, 5 192:20 199:7 203:16 212:24 213:22 214:20 215:19 216:5, 6 226:10 231:11,22 232:23 233:14 open 130:17 157:7 159:1 165:10 operations 170:5 opine 222:2 opinion 114:19,23 166:3 194:11 216:22 217:9 219:19 222:20 223:1 opportunity 108:18 119:13 121:4 122:2,5,9 149:1 151:6 152:5 177:15 179:18 203:16 224:23 225:6, 14 226:21	228:7,17 opposed 61:10 62:6 165:22 opposes 46:16 option 166:1 168:24 181:23 options 127:20,25 146:3 168:8 oral 231:17 order 12:3 22:14 29:25 50:13,15 54:19 55:7 59:23 79:14 87:14 110:23 169:16 170:5 191:4 192:17, 21,24 198:24 208:12 223:9 230:17 235:3, 5,7,8 ordered 88:1 Oregon 8:18 organizations 209:7
---	--	---	---	--

orientation 48:11,17 49:8,12,13, 14,17,24 50:13,22,23 51:1,16,25 52:8,9 59:11, 16 61:12 75:9 83:18 110:16 111:12 123:9, 11 129:11,12, 16,18,21,24 130:4,5,7 137:4 151:21 153:3 154:7 156:25 165:20 170:16 189:9 195:19,21 196:1 197:1 198:2 204:7 205:20	others 42:17 130:25 153:20 otherwise 75:1 116:17 137:14 outcome 119:23 154:1 218:25 outlier 39:18 outliers 232:1,3,7 output 11:12 13:20 21:14 27:12,16 33:20 34:2,3, 8 38:2 39:15 132:5 213:12 222:13 230:4 outside 18:17 86:14 122:3 129:14 over 11:14 17:4 26:2 31:18 33:8 36:15 64:13 75:23 96:17 102:6 108:21 113:23 114:7, 12 134:10 164:6,12,17, 22 181:13	182:14 188:8 189:3 193:10, 25 194:21 198:14,17 205:13 overall 23:1 141:23 overcome 219:18 overloaded 173:25 overly 33:17 overreliance 214:16 own 139:16 171:15 177:22 199:24 200:6, 7 223:1 <hr/> P <hr/> p.m. 116:21 175:19 229:5 235:14 P.O. 2:11,15 pace 185:18, 21,24,25	Pacificorp 8:22,25 18:22 25:8 Pacificorp's 68:2 pages 67:5 107:7 147:25 paid 201:9 pales 188:13 panel 131:18 134:25 135:19 panels 113:24 131:3, 5,9,10,12 132:7,12 134:21 135:10 143:23,24 144:3 157:1 158:20 159:23 160:14 165:3 168:21 201:8 paper 69:6 228:21 papers 224:23 227:1 228:9 paradigm	119:25 paragraph 178:25 179:8 parallel 56:10 part 25:24 49:2 59:10 61:19 62:1 63:15 71:24 87:24 90:3 101:3,12 107:13 110:18 159:14 173:2 185:2 199:18 221:13 225:4 partial 48:24 participant 151:14 158:8 participants 107:24 151:5, 16 158:7 participated 118:24 participating 122:10,15 123:8 141:20 particular 15:8 17:25 19:11 22:18
--	---	---	--	---

35:25 36:5 38:18 44:1 45:14 46:12 51:16 67:22 113:20 133:25 138:8 143:17 168:17 187:1 197:25 221:1 224:15,25 232:2,12,14	150:22 152:4 158:11 166:2 171:18 172:16,20 173:5,6 174:2,6 179:3,8,18 180:3 182:16 185:13 193:20 198:24 203:17	patterns 99:16 155:11 187:22 218:17 pause 233:16 pay 15:24 61:3 85:8 90:23,25 125:22 134:14 154:11 202:3 payers 54:6 78:10 89:1 paying 90:24 91:5 94:1 167:16 172:12 peaky 181:19 pen 69:6 people 16:24 45:1 85:7 164:16,21 167:16 183:18 192:13 199:3 209:6,9 people's 32:7 percent 11:20 12:7 13:9,10	23:7,13 24:19,24 25:19,22 26:13,16 33:19,20 36:16 55:16, 17,18,19 57:14 63:16 68:18 70:11, 12,20,25 71:2,4 103:11,12 127:17 149:17,19,20 161:21 172:6, 17 183:23 185:25 189:18 195:14 198:18,19,20, 21 206:15 212:11 215:1, 4 224:21 percentage 233:24 perfect 97:6 121:18 135:4 140:13 perfectly 40:12 perform 59:23 150:21 169:20 180:19 184:12 223:9	performed 174:13 215:6 performing 97:14 perhaps 31:15 71:16, 17 86:5 156:8 163:2 period 12:11 36:1,4 63:13 82:2 126:18 218:14 periods 182:14 permission 69:17 person 207:2 208:21 personally 185:3 perspective 114:10 144:15 145:1 pertain 144:12 pertains 124:18
particularly 71:7 125:5 202:8 parties 11:1 12:4,15,19 15:9 41:4,17 54:13 55:7,23 57:25 58:5,7, 12,19 59:22 60:1,11,20 61:13,17,23 65:9,18,19 66:6 72:17,19 75:15,24 76:7,13,17 77:1 78:23 79:6,10,21 86:1,23 87:11 88:8 97:5,23 108:14,23 116:16 119:4, 13 120:25 124:22 126:7 128:10 130:1, 18 133:17 134:18 142:14 149:1, 7,12,20	parties' 42:20,21 74:22 88:4 partner 211:12 party 10:14 41:6,10 44:24 74:12 96:2 107:14 111:16 118:13 147:19 148:17 169:18,21,22 170:9,10 177:7 179:5 211:3 227:6, 10,16 party's 203:18 past 206:14 227:12			

Peterson 4:1 6:21 76:4 94:21,23 95:2,7,9 96:1, 6 97:22 98:13 105:17,19 106:9 211:15 212:5,15	21 180:1 188:22 193:12 198:22 199:7, 14 200:14 203:19,24 204:3 206:5	plan 28:18 29:13 35:3,7 36:8 42:12,15 56:1 68:24 69:7 101:2, 12,16,17,19 104:5 118:25 177:24 178:17 179:22 180:18 183:1 212:9 216:13, 15 217:6 222:4	point 11:10 21:20,24 22:14,24 29:18 34:12 40:17 59:1 78:24 83:14 85:20 97:12 102:11 104:8 113:10 115:2, 23 132:25 134:2,3 135:2 138:7 141:11 157:5 164:25 170:20 180:16 183:1 187:6 192:10 193:18,24 194:24 199:6 202:6 209:11 220:16 224:8	pool 152:1 156:21,23 poor 188:24 213:14 popular 138:9 populate 231:22 population 13:8,20 14:4 21:2,6,9,17, 18,22 23:1 24:1 26:6,7, 11,12 29:8 36:14 39:12 44:11 50:20 98:17,18 100:19 102:18 103:1, 2,7 124:25 127:11 146:16 186:14 187:14,17 194:25 195:1 211:21,22,24 212:20,21 214:14 217:1, 4 218:12,13 219:8,21 220:15,22 221:1,4,6,12
Peterson's 220:13	physical 132:25 physically 169:23	planning 50:3 120:9 225:15 plans 42:9 120:2 212:14	pointed 54:12 points 75:3 139:17 177:18 213:10 221:15	
Ph.d. 5:10	pick 35:21 91:2 117:1 picking 9:9 17:9,10 picture 120:18 121:6, 11 126:11 132:6 135:1 138:3 144:22 182:12 piece 224:15, 19 232:12 pieces 10:8 181:11 place 86:25 141:17 179:12 216:15 places 64:19	plant 171:16 planting 114:8 play 209:15 PLLC 3:2 plus 11:20 12:6 13:9 23:13 55:16, 18 127:17 149:17,19 161:21 212:11 214:25 215:3	poles 130:16 policy 98:21 208:9 polls 209:6 ponder 195:16	
phase 9:22 10:24 58:8,14 60:21 61:14, 24 64:25 65:3,5,6 76:8, 19 78:18,22 79:11 80:6 84:8 86:3,4, 20 87:12,14, 15,20 112:20 119:2,8 120:16 121:3, 15,25 122:2,6 124:2,20 125:18 128:10,16 130:1 133:15 134:17 142:2, 15 148:2,6,16 149:13,24 150:3,23 158:1 166:2,4 168:25 170:11,23 171:8,19 177:22 178:1, 3 179:17,20,				populations 47:5 183:13 199:24 213:11

221:24	16:24 28:9	145:20 171:1,	Power's 75:6	predict 63:4
	32:25 34:21	2 188:12,14	76:22 107:25	192:21
portion	76:12 83:9,10	197:25	118:23	198:16
21:18,19 22:8	98:10 122:6,	214:16 228:4	125:11 149:4	
217:1	11 123:5		150:14	predictable
	124:20,23	potentially	173:22	126:8
portions 50:6	126:16 128:6,	110:25	180:17,20	
	16 131:2	136:21 170:7	181:1 182:24	prediction
Portland 8:18	132:16 141:5	182:18	188:18	219:1
	142:14	186:19 197:2	204:15	
pose 110:25	162:18 164:8	198:5 227:25	211:17	predicts
	180:2 183:7,			198:19
	14 185:9	power 2:6	Powers'	
position 8:19	186:22	6:9,12 8:20	74:21	preference
41:6 42:3	218:14 219:9,	9:21 56:3		147:6
44:25 74:17	20	57:10,22	practical	
84:23 85:2	possibly	69:19 75:19	213:4	prefers 150:5
88:12 96:9	75:18 89:2	76:9,11 77:19		
107:19	163:21	79:6,16 96:13	pre-solar	prefiled 95:19
112:17,22	post 155:10	108:17 111:1	187:15	227:8
113:5 121:13		114:20 149:8,		
128:13	post-136	11 150:18,25	precedents	prejudicial
136:13	191:6	151:4,12,20,	68:19	225:22 226:8
138:25 179:6,	post-	24,25 153:19		
22 206:6,25	transition	157:14	precisely	preliminary
212:11	90:18 155:17,	167:23,25	110:11	8:1 177:17
positions	20 191:10,11,	169:20 170:9	precision	premises
41:13 42:17	13,23	171:15,16	12:19 13:4,9	137:13
88:4	potential	173:16 174:4	127:19	preparation
possibilities	101:13 113:8,	177:21	183:14 196:7,	199:14
75:25	10 114:13	179:23	8 206:1,7	
possibility	115:10	180:12	214:10,23,25	prepare
22:10 103:18	119:23	184:11 185:7	215:3 216:17	147:24 148:4
104:3 193:16	123:21	187:11 196:3	217:5,8	
203:6	134:10	200:22	232:21,23	preclude
possible	138:11	203:22 204:1,		122:3
		12,14 205:4,		
		6,12,16,19,22		
		206:13 207:1		
		208:13,24		
		226:24		

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126:6,9 141:25 146:10,16 151:3,9 162:4,6,15 172:2,14 182:11 183:4 185:11 186:7, 11,18 187:13 188:3,5 213:2	184:4 190:8 200:2	proper 65:22 105:8	proposed 10:23 11:2,5, 13 12:2,5 13:5 15:14 47:3 55:16 60:10 74:21 76:10,22 107:24,25 111:15 118:23 121:10,14 122:17 124:19 125:3 126:2 127:13, 16,24 128:9 134:16 139:9, 16,19,20,21 141:2,14,16, 18 142:12 149:10,18 150:15 161:18 177:24 178:17 180:21 216:18 220:3	prospective 184:5
products 123:20 221:25	profound 123:21 138:11	properly 178:10 214:7 221:2		protections 175:4
profile 12:23 13:25 14:17 15:10 20:22 22:1,17,19 23:21 28:19 32:6 34:6 47:20,22 51:10 63:1 70:15 96:21 97:18 102:5,8 126:6 180:23, 24,25 181:2, 9,10 182:8,23 184:16 185:11 189:16,20 190:10 197:22 220:6	program 11:23 12:5 13:2,8 14:3,5, 15,22 21:15 47:19 48:15, 21 57:12,14 60:6,12 70:19,25 71:12 155:4 212:23	proponent 179:21		protocols 20:1
	prohibition 169:18	proportion 76:16		prove 82:20 88:21 104:2
	project 97:4 118:21	proposal 96:22 97:13 112:17 113:1 125:11 127:16 137:11 149:14 165:5 168:22 178:6 180:13,17 189:15		proved 50:21 103:25
	projecting 96:17	proposals 87:7,9 186:20 187:1		proven 31:20
	projections 63:12 127:7	propose 23:17 60:1 77:20 78:25 110:6,10 126:25 130:1 137:22 146:19 157:22 165:4 195:20 205:16	proposes 12:3 13:25 62:2	proves 24:17, 23 36:23
profiles 23:3 34:2 99:6,18, 24 126:9 136:25 137:1 138:20 150:9 181:15 182:17,21	projects 185:21		proposing 20:7 53:19,20 65:17 81:12 96:14 100:9 104:1 126:3 129:17 137:24 146:16 157:18 163:6 208:9	provide 8:23 9:18 10:19 11:7 12:16 32:10 34:5 43:20,22 44:10 45:14 49:24 50:3 66:1 67:9,14, 21,23 72:14 76:6,13 90:2 91:6 119:14 124:2 126:17 139:7 144:21 170:11 180:1 182:25 197:5 204:13 218:21 223:6 228:5

<p>provided 39:7 40:10 47:13 53:4 57:25 63:2,12 90:17 109:8,18 114:20 115:9 117:25 139:22 162:3 212:5 222:8 227:2 229:17 230:9,16</p> <p>provider 69:18</p> <p>providers 69:4,10</p> <p>provides 15:5 120:18 121:6 122:23 126:11 135:1 151:6</p> <p>providing 61:10</p> <p>proving 41:7 179:6</p> <p>proxy 21:14</p> <p>prudent 76:2</p> <p>PSC 175:3</p> <p>public 2:10 6:4,16,19</p>	<p>16:3 73:18,20 77:25 78:2,4 95:10</p> <p>publish 174:17</p> <p>pull 29:9</p> <p>pulled 16:23 21:18 29:6</p> <p>pulling 23:2 25:21</p> <p>pulls 21:5</p> <p>pumps 124:10</p> <p>purchase 78:20</p> <p>purpose 14:24 21:1 43:23 57:3 61:20 72:19 74:23 96:19 102:2,4,19,25 112:20 120:23 126:5, 13 152:5 153:4 161:6, 13 211:25 216:23 218:16,24 220:8,9 223:5 227:21 233:6</p>	<p>purposes 72:17 141:12 145:20 178:6 206:4</p> <p>pursue 78:22</p> <p>put 32:7 65:14 69:6 83:21 88:20 114:9 119:7 130:23 134:19 146:7 153:15 157:5 158:19 177:23 191:18 225:3, 11 230:15 232:18</p> <p>putting 146:16</p> <p>puzzled 157:8</p> <p>puzzlement 157:20</p> <p>puzzling 157:16</p> <hr/> <p>Q</p> <hr/> <p>quadrants 157:6 159:4</p> <p>qualified</p>	<p>18:13</p> <p>quality 180:4</p> <p>quantifiable 41:5 121:1 179:4</p> <p>quantify 79:1 171:19</p> <p>quantity 180:4</p> <p>quartiles 201:1</p> <p>question 19:13 20:14 21:16 22:6 24:21 25:11 26:9 28:12,14 31:5 32:18 34:9,13 36:3 40:2,4,20 43:18 44:3 46:21 50:5 51:20 53:3 54:8 63:20 64:3 65:13 67:13,18 68:8 69:16 70:24 72:8,9 90:16, 22 91:3,13,18 92:2,4,7,9 93:1 113:18 123:2 129:9 131:21 133:9 137:2,3,16</p>	<p>142:5 143:15 144:11,12,13 146:7 154:25 157:20 158:24 160:12 166:10 168:2 170:20 171:7 173:6 175:2 195:16 197:13 200:18 201:13,21 205:15 207:10 208:21 218:19,23 219:25 220:9, 20 222:11 227:25 230:5 232:11</p> <p>questioning 57:1 58:9 59:2,9,10 60:5 140:5 143:6 201:5 221:18</p> <p>questions 10:7 15:22 16:4,8,17 19:12 25:20 56:25 58:6,11 62:15 66:9, 15,22 67:4 69:23 70:1,3, 5 72:21 73:25 76:25 77:6 80:20 89:8 90:7,9 91:10</p>
--	---	--	--	---

93:20,21,23 95:17 97:22 98:3 105:16, 19 106:2,5,7 109:23 111:3, 5,6,20 112:7 113:14 114:15 116:8 118:6 128:21, 23 129:1,3,5 134:21 137:6, 12 138:22 140:1 142:19, 25 145:10 146:22 148:8 152:13,17,20, 22 153:2 159:21 160:24 165:13 169:11 171:21 174:11 177:1 190:16,24 201:6 203:9 207:11,19,22, 24 208:1,3 210:22 217:14,17,20, 22 223:17 227:23 228:23 233:25 234:2, 8,10,12	196:3 quote 153:5 180:21 182:9 R raised 55:23 206:13 random 15:8 23:6,9,10,11, 12,18 36:11, 14 60:15 62:24 63:2 85:11 139:18 206:8,24 213:25 214:4 215:4,5 230:18 232:19 randomly 31:24 67:24 84:22,23 85:3 214:13 range 44:23 70:11 146:18, 21 207:5 ranging 125:15 rate 28:1,2 54:6 59:16 62:8 64:9,19,	24 65:4,22 66:4 70:13, 20,21 71:2 78:9,15 80:10 87:20 88:25 109:2 111:11, 18 125:21 129:12,17,20 137:22,25 138:6 144:11, 13,21,25 145:17,23,25 146:1,3 149:5 153:14,18,25 154:3,12,23 155:18 158:3, 5 159:9,13,15 160:1,4,9,11 165:23,25 167:16 172:25 182:1, 6 189:11 191:6 193:9, 13 196:21,22 197:9 202:16, 22 rates 62:6 70:10 78:14 90:25 119:15 139:2,9 142:8,11,15 155:5 156:7 157:23 159:7 160:19 167:2, 10 168:12 172:25 192:8 193:10,11 194:13,18 199:19,21 202:14 208:18	rather 21:10 79:23 125:6 126:2,24 215:5,21 rating 131:6, 11,12 146:5 reach 226:22 reaching 69:2 react 209:9 read 30:4 33:20 79:5 80:2 81:7 85:18 104:16 123:16 179:1 218:4,14 231:17 readily 126:9 reading 38:2 reads 218:10 really 62:6 69:6 72:5 86:6 132:9 135:24 136:16 138:11,13 153:15,16,22 154:9 164:19 165:21 167:2, 8 171:8	177:15 188:13,25 189:10 192:23 196:19 206:2 207:16 233:15 reask 218:23 reason 25:5 36:8 37:4 65:24 121:12 142:12 144:18 156:15 191:12 233:1 reasonable 12:12 15:5 21:14 25:6 74:24 75:3 76:2,7 82:14, 24 83:1 97:19 102:2 119:7 121:23 127:10 128:14 131:13 137:8 140:24 141:6, 9,10,11 149:5 154:1,19 155:8 160:22 166:3 187:9 194:3,11 195:13 215:18 221:22 222:18 reasonably
--	---	--	---	---

<p>41:4 103:6,9 120:25 128:16 179:4 193:20</p> <p>reasons 15:13 33:18 52:12 65:24</p> <p>rebuttal 10:2, 13 15:20 34:22,25 37:10,11 45:6 48:14 49:25 50:21 52:11 53:24 56:2 67:5 68:12 69:1 70:8 73:22 74:1,10 76:21 80:21 81:19 83:15 85:13,17 89:13 95:14, 18,25 104:9 107:6 109:7 114:3 118:1, 7,11 119:12 121:20 127:5 148:5 182:4, 25 185:20 210:17 212:6, 16 215:14 216:3 218:3,6 224:6,12,13, 14 225:11,20 226:9 227:11 230:9 232:6</p> <p>recall 19:7 57:1 58:9,11, 15 59:3,12</p>	<p>92:4 141:1 224:6</p> <p>recalling 230:23</p> <p>receive 197:11</p> <p>received 11:3 184:10 224:14</p> <p>recent 184:1</p> <p>recently 183:22</p> <p>recess 66:19 116:19,21 175:17,19 226:14 227:19,20 228:1,24 229:5</p> <p>recognize 122:1 185:14</p> <p>recognized 96:23</p> <p>recollection 113:22</p> <p>recommend 15:13 60:1</p>	<p>68:19 100:3 115:3 121:21 127:1 140:17 168:19,20 200:1</p> <p>recommendat ion 34:23 63:10,11 70:9 108:14 113:6 114:1,22 124:18 128:3, 7 149:15,25 150:12,24 151:12,20 164:20,24 165:2 169:15</p> <p>recommendat ions 42:20 61:7 74:22 76:20 87:13, 16 119:7,14 121:15 122:8 128:14 139:20 161:17 162:1 177:23</p> <p>recommende d 15:9 70:18 109:4 123:7, 17 124:4,11 125:6,25 127:15 162:9</p> <p>recommending 30:23 99:22 110:3 129:20 151:4 204:12</p>	<p>recommends 12:10 109:12 206:19</p> <p>reconvene 175:17</p> <p>record 8:15 10:12 52:15 66:21 73:16 74:11 95:8 107:13 116:23 117:19 118:12 147:20 175:21 177:6 180:2,5 210:11 211:1 229:7</p> <p>recross 62:14 66:11 91:11 92:18 166:8 169:8,9</p> <p>Recross- examination 3:13,22 4:25 62:18 91:14 166:11</p> <p>redirect 3:12, 21,23 4:24 56:20,22 62:12 90:12, 13,14 92:22 105:25 112:9, 10 142:22 165:15,17</p>	<p>166:18 207:21 234:5</p> <p>Redstone 176:14</p> <p>reduce 24:5 36:14 102:16 127:24 214:20</p> <p>reduces 150:3</p> <p>reduction 92:11,25 93:2,11 191:20,24 212:8 232:16, 25 233:1,5</p> <p>refer 31:23 146:1 174:14 231:10</p> <p>reference 88:2 184:25</p> <p>referenced 204:13</p> <p>referring 37:10 99:4 205:8</p> <p>reflecting 150:13</p>
--	--	---	--	--

refrigerated 198:8	58:6,11,18 59:2 61:12 137:24 180:23 224:24	72:1,3,5,9,10, 13 93:15 121:2 122:12 125:1 179:5 192:7,8	100:1 103:5 202:11 209:17	206:9,23 215:24
regarding 13:14,23 14:7,21 38:7 40:5,17 53:5 67:5 99:15 108:15 129:10 153:3 166:18 172:18 224:3	relates 68:6 199:3 221:18 relation 71:22 relationship 103:21 120:6, 18 129:24 135:20 172:7 182:10	reliability 31:14 40:25 120:14 187:19 reliable 180:6 reliably 216:8 relies 214:17 rely 223:8 relying 9:10 97:13 100:3 102:21 215:17 222:23 232:11	remedy 228:5 remember 91:25 229:14 remembering 50:8 remind 60:9 rendering 108:12 renewable 120:13 repeat 22:6 34:14 58:10 135:15 154:25 repeating 27:13 rephrase 135:15 168:19 report 12:13 35:7 37:13 128:3 reported	reporter 92:3 reporting 12:11 represent 27:8 40:8 representatio n 39:24 185:15 representativ e 26:23 27:3,8 50:20 51:19 103:1 125:1 150:13 180:22 185:4 191:13 196:4 representativ es 120:10 represented 114:25 182:24 representing 6:19 7:2 178:21 request 16:20 46:16 186:20 228:4
regardless 34:6 44:1 69:18 145:7	relative 38:11 46:11 113:8 151:22 relatively 51:4 109:4,6 130:10 135:9 192:16 199:12 206:3	remain 66:15 95:19 remainder 32:21 123:13 remaining 16:16 33:5 51:3 116:15 remains		
regime 186:2	release 174:16 released 69:20 relevance 93:1 relevant 41:6 66:3,6 71:10			
regular 126:15				
regulated 209:14				
regulation 6:12,13				
regulators 120:10				
reject 87:8				
relate 67:4 70:22				
related 56:25				

requested 43:9 46:15 48:8 52:5 58:3 109:10 137:25 144:18	211:18 requires 181:8 requiring 61:25 208:12	180:18 183:1 184:9 188:21 195:10 197:15 211:17 213:20 218:25	120:13 178:15 183:20 respect 40:18 41:13 70:9 91:3 104:11 134:12,20 137:4,12 156:25 200:18 206:7, 8 222:11	rest 215:12 231:8 restate 20:14 32:18 64:3 65:13 142:4 restricting 157:22 restriction 158:19
requesting 62:22 69:19 146:8,14 235:1	research 8:21 9:23 10:23 11:2,6 12:2, 10,13 13:1,5, 12,16,25 14:12 15:4,14 19:6,7,23 20:3 25:4 42:15 55:17 57:24 59:25 60:10 61:5,8, 19,21 62:1,7 65:1 68:2,20 74:22 75:22 76:5,10,22 79:2 81:14 85:22 86:12, 14,15,18 88:19 97:14 108:1,12 109:13 118:23,25 121:3,9,13,21 122:1,4,8 124:24 125:24,25 126:15,22 127:4,10,14 128:9 140:14 141:20,24 142:7 161:18 171:3 177:24 179:21	reserve 16:15 40:11 200:14 202:9 reset 194:12 residence 207:13 residences 201:16 residential 12:24 14:8,16 108:6,9 109:14 120:21 125:7, 9,16,22,23 136:7 150:10 166:19 178:20 188:11 190:4, 9 199:23 resolve 82:8 resource 9:3 17:22 18:22 19:16 resources	respected 178:7 respond 193:11 225:9 226:15 227:10 228:6, 7,10,17 responded 108:1 184:6 225:20 226:9 response 13:3 70:10, 13,20,21 71:2 108:2 140:10 163:3 184:10 responses 71:8,17,23 72:11 responsibility 139:1	result 11:2 21:7 75:8 89:1 93:3 103:11 123:3 128:14 138:15 139:23 141:22 146:19 181:21 192:6 197:11 213:5, 11 215:16 resulting 149:11 214:9 results 22:4 23:19 25:6,12 29:13 31:14 34:12,17 39:11 97:11 98:24 100:14, 21 101:23 103:19 108:12 121:22,24

124:21,25 125:13 128:4 141:3 151:19	revisited 194:24	road 173:20 193:12	208:13,23 211:17 226:24	23:2 33:11 44:22 49:18 63:5 71:3 185:22 212:9
rethink 202:9	rewording 40:19	Robert 3:17 6:20 73:5,10, 17 74:11	role 19:4,20 208:10,15	round 188:3,4 227:8,13
retroactively 154:13	RFP 52:21	robust 11:7 76:6 180:5	roof 108:23 110:20 115:7, 8 130:13 131:1,17,22 157:15 195:25 205:22	rounds 10:25
retrospect 197:21,22	rich 187:8	Rocky 2:5,6 6:9,12 8:19 56:2 57:10,22 69:19 74:20 75:6,18 76:8, 11,21 77:19 79:6 96:12 107:25 108:17 110:25 114:20 118:22 125:11 149:3, 10 150:14,25 151:4,12,20, 24 157:13 169:19 170:9 173:21 174:4 177:21 179:22 180:11,17,19, 25 182:24 184:11 185:7 187:11 188:17 196:3 200:22 203:22,25 204:12,13,15 205:4,5,11, 16,18,21 206:13,25	rule 26:20	rule 26:20
return 66:14 220:3	richest 180:2		rooftop 79:16 91:17 111:13 119:19 121:11 122:24 154:5 158:9 164:3 167:4,24 168:11 173:14 174:1 182:11 187:23 194:5	ruling 180:7
revamping 97:12	Rick 5:5 7:22 175:24 176:5, 13,16 213:9		running 44:9 143:8 171:11	run 23:17 35:17 109:6
revenue 68:6, 15,17,19 92:10,25 93:2,6,8,11 151:9	rights 40:12		S	
review 100:10 187:20 206:15 223:14 224:23 225:7 226:25	rigor 76:4 206:24		rooftops 165:3	S-o-n 95:9
reviewed 96:22 118:22 216:14	rise 232:3 233:15		room 23:24 204:4	Saba 6:11,12
reviewing 49:17 211:15 220:12	risk 54:19 88:15 179:23		rooms 207:14	safety 110:25
	RMP 10:1 42:2,9 45:3 65:25 150:17 169:16 178:18,19 179:20 182:4 183:2 185:4		rough 71:5,19 188:9	said 19:15 21:22 24:20 42:3 44:12,18 49:11 52:8 62:23 64:5,19 82:6,24 86:2 88:2 89:24 94:10 135:24
	RMP'S 42:16		roughly 9:7	

136:20 138:4 163:4 167:18 169:14 172:19 184:14 189:25 191:20 193:4 196:2,11 200:20 202:11 219:7 229:24 231:13	20,21 194:10, 25 197:13 201:6,8,17, 20,22 202:3, 5,12,16 206:24 210:16,22,23 223:5 225:12 230:8 232:20, 23	96:14,19 97:1,2,11 98:17,23,24 100:19 102:17,25 103:6 104:1, 12 109:14 124:24,25 125:4,13 126:3,5,6,10, 19 139:17,19, 22 146:20 149:16,22 150:3,6,13,25 151:7,10,16 152:3 157:10 161:22 162:11 180:22 185:2 186:6,10 199:24 206:24 211:20,23,25 212:1,8,10, 15,24 213:2, 22,23,24 214:1,3,4,13, 15,17,20,23, 24 215:2,4,5, 6,7,10 216:8, 13,16,17,20, 24,25 217:3, 4,6,7 218:11 219:8,20 220:6,25 221:1,2,3,4,5, 13,15 223:9, 11,14 229:18, 23,24 230:2, 8,18 231:5 232:13,19,20, 24	sampled 25:23 26:8, 13,17 67:24 100:20 101:10,13 103:2,3 125:7 150:12 182:21 183:14 184:21 212:20 220:1, 2 226:4	214:6 216:12, 23 217:2 220:24,25 222:3,4 Sarah 7:9 satisfactory 187:16 satisfy 42:16 saturation 22:17 saturations 46:12 50:22 72:15 savings 52:25 91:19 92:1,9 saw 115:23 225:13,16 232:4 say 18:25 37:5,25 48:14 55:11 64:10, 12 67:22 69:10 80:22 83:18 84:15 88:12 91:23 93:4 100:11 110:9 114:10 115:1,24 129:19 133:2
Salt 2:7,11, 16,20,24 117:21 202:13,20 same 9:1 10:9 14:20 15:12 17:2 34:7 43:20 44:5 47:8 59:2 73:25 74:3 80:23 81:9 95:17,19 117:25 118:6, 8 123:6 131:6 134:21 137:3 138:25 143:22 144:8, 10,15 148:8,9 156:5,8 158:9 159:20 160:11,12,13, 17 162:25 170:7,9 175:1 176:16 177:1 181:14 186:7 187:22 189:22 193:9,	sample 11:5, 11,19,20 12:3,6,16,20, 21,25 13:8, 15,22 14:8, 10,13 20:7, 11,16 21:4,9, 19,20,23 22:1,9,11 23:6,9,13,18, 25 24:6,18 25:16,22,24 26:6,11,22 28:22 29:1,5, 13,23 30:12, 25 31:16 35:4,12 36:5, 8,11,14 38:19 42:22 45:19 46:8 47:2 49:2,4 50:17, 18,19,22,23 51:15,23 56:8,14 57:10,15,17 60:15 62:24 63:1,16 67:25 68:20 70:13, 23 71:9,24 75:23 80:23 81:9 84:21		samples 22:18 97:3 186:13 191:5 212:2,4 213:19 214:2 217:4 219:5 224:4,20 229:25 sampling 11:18,24 13:6 15:8 18:7,11, 14 19:9 20:1 21:1 30:5 57:1 63:2 102:19 124:19 139:18 149:25 150:1, 6,15 161:20 169:24 179:24 183:15 187:11 188:20 206:8 211:16,18 212:2,19 213:3,17,21	

155:3 156:10, 23 159:16 160:10 164:25 172:5, 16,24 183:14 194:8 198:9 199:16 201:14,16 202:4,12 203:15 208:17,21,23 209:2 219:11, 17 220:15 221:10 225:17 228:12,25 231:6	scantly 231:9 scenario 174:21 schedule 23:19 25:16, 22 27:16,24 28:2,16 29:1 64:24 65:4 96:14,15,17, 19 99:18,19 104:15,23 105:2 115:16 151:18 155:9, 23 156:5,6, 16,17,18 183:15 185:10,14 186:15 191:8, 12 212:22,23, 25 213:1,5,7, 15,16 214:18 218:12,13,18, 21 219:2,6, 13,24 220:10, 11,17 Schedules 191:5 219:13 221:9 school 17:25 18:3 157:12 scope 75:17 second 11:11 12:20 13:14	58:14 60:21 81:2 105:15 108:14 114:22 117:21 121:25 122:22 124:2 170:11,23 180:16 199:14 203:24 212:1 213:17 secondary 12:17 33:23 42:5,6,8 57:23 201:18 secondly 179:8 201:1 231:8 section 20:8, 12,17 27:5,12 104:23 seek 68:24 69:17 seeking 195:5 196:14, 20 seem 160:22 166:3 221:22 225:22 seemed 116:2	seems 76:2 116:14,17 127:10 135:7, 8 139:3 164:19 170:5 228:19 seen 40:4,7 81:18 99:9, 15,17 100:1 102:7 139:14 209:17 213:15 sees 79:12 174:18 segregated 129:21 190:5 select 220:25 selected 22:10 31:24 32:4 67:20 84:23,24 85:3,5 100:23 212:24 213:4, 6,20,24 214:8 219:5 221:2,4 selecting 211:25 214:2 selection 22:20,23 29:14,24 30:1,15 98:19	Selendy 3:2 self-selection 222:7 sell 221:25 sellers 69:11 sending 115:4 116:6 sense 80:22 81:8 82:8,10 83:13 105:4 153:10 156:21 166:13,16,22 191:7 195:23 200:16 sentence 68:21 83:25 176:23,24 sentences 218:4 separate 56:9 108:10 195:10 202:14 212:2, 22 213:18,24 217:3 separately 108:7 109:15 125:8 150:11
---	--	---	---	---

215:21	197:25	137:3,4,5	21 45:14	side 164:5
	199:19	151:22 153:3	50:19 75:4	171:8
separating	221:20	158:24,25	76:5,12 88:16	
125:16		163:7,9,17,25	97:19 100:13	sign 104:14
199:22	sets 99:25	165:20	105:8 108:17	
	112:19	189:10	109:10 119:5	significant
series 56:24	159:13	195:19 197:1	122:11 124:5	108:10,22
58:6,11	213:13	198:2 200:18,	126:10,21	115:25 123:1,
207:10		19,23,25	134:13	19 125:8
	setting 138:6	201:1	143:10 150:6,	126:21
	159:8 165:23,	shape 14:11	10,12,25	149:23
serious 97:12	25 167:15	34:5,6 181:3	151:12,20	151:17 184:2
	168:12	184:3	154:9 160:1,	192:25
serve 171:9	194:18		19 169:25	
	199:20	shapes 14:20	177:20 178:7	significantly
served 172:3			180:1 183:2,	125:6 200:3
	settle 31:19	share 56:4	6,15 185:12	
service 6:4		61:15	187:2,15	similar 27:12
171:12	settlement		189:7 190:6	43:16 126:23
195:11	41:2,16 65:11	shed 143:5	194:24 200:5	131:13 153:2
	120:24		201:9 202:5,	156:22
services 2:14	128:12	shift 181:21	14,16 203:5,	158:23
6:24 7:2	178:25		7,25 208:18	183:10
41:22 107:5		short 89:7	225:17	188:17
179:15	seven 71:18	211:17	233:16	189:15
		216:16	shouldn't	
set 9:19 11:7,	several 86:1		226:5	similarities
15 24:6 31:22	182:18	short-term	show 37:20	99:5 100:5
57:6 118:6		189:2	65:10 83:24	
119:15,24	shade 111:13	shortsighted	149:22	similarly
122:18,20,21,	113:20,23	167:1,12,15	208:16	155:20
22 124:21	114:1,4			
154:13 159:7,		shot 40:19	showing	simple 23:6,
15 161:21	shading	86:2	39:19 216:10	10,12 124:5
165:23	59:18,19 75:9			130:10 135:9
167:10 187:8	114:4,7,11,12	should 13:1,	shows 65:21	143:4 149:25
191:16,19	123:9 129:11,			161:20
192:8 193:10	12,18,22		sic 214:12	202:25
196:21				206:17

228:20 232:19	141:17,18 185:4 196:4 205:19 207:6	sizing 178:12 187:20	social 154:23 158:13	24 168:5,12 170:18 173:14 174:1, 13 176:15 177:5 178:14, 20,21,24 180:19 181:14 182:11,23 183:23 184:16,23,25 186:3 187:23 188:15,25 189:17 194:5 195:24,25 196:24 203:23 204:6, 8,9,17,18,20 205:6 206:6, 19 208:25 210:15 211:1, 14 221:23 226:21
simply 39:14 65:14 130:8 225:14	sites 36:6,8	sliced 174:22	software 127:23	
since 40:16 53:25 108:19 115:4 132:8 136:23 155:17 205:13 225:24 228:6	sitting 52:6 54:25 153:12	slight 91:13	solar 2:22 3:1 7:16,17,20, 22,23 43:9 46:14 48:7 49:10 59:16 65:10,21 69:3,10,18 78:23,24 79:16 91:17 99:16 108:8, 9,17,24 110:21 111:13 115:9 116:24 118:21 119:17,19 120:10 121:5, 6,11 122:12, 13,24 123:9 125:1,12,21 126:4,7,9,18, 22 127:21,22, 25 131:1,9, 17,18,22 132:7,12 134:21,24 136:4,8 138:14 145:2 147:22 148:2, 6,16 149:3,5 150:16 151:1 154:5 158:9, 10,12 162:13, 19 164:3 165:22 167:4,	
single 215:5	situation 16:2 30:17 131:3	slower 185:18		
singles 131:18	six 107:7 161:25	slowly 64:15		
sir 18:12 19:25 27:14 28:21 36:12 37:9,23 48:13 53:21 67:7,11 69:15 89:15 92:19 98:16 112:3,5 152:15,18 176:21 210:20 234:18	Sixth 3:2	small 15:20 91:7 92:6 104:2 109:14 149:22 181:13 199:23 212:10 217:5		
	size 14:15 64:20 70:13 75:23 83:18 84:3 97:1,2 104:1,12 125:4,5 136:6 139:22 146:20 150:25 157:10 162:11 187:19 192:2 207:15 212:9, 10 215:8,10 216:8 217:4 222:21 233:4	smaller 24:1, 5,6 181:19		
sit 198:25 200:12		smart 123:21 124:9 140:19		Solar's 40:17 179:22
site 11:11 14:13 108:20 130:11	sized 188:18	Snarr 2:14 4:8 6:25 16:7, 8 77:5,6 98:2, 3 106:14,15, 25 107:12,17, 18 109:20,22 112:9,10 116:10,12 129:2,3 152:19,20 190:21,22 217:19,20		sold 172:12
	sizes 125:14 136:8 230:24			sole 102:4 179:20 203:23 204:14
				solely 143:12
				solution 186:22
				solutions

127:23	sorry 9:13 25:7 27:1 28:5 33:2 46:21 50:22 55:2 58:10 64:17 67:19 71:25 89:13 101:17 105:24 119:10 231:14	south 2:10, 15,23 107:4 130:8 164:4,5 span 125:13 speak 27:10 129:25 170:16 223:10 226:1 speaking 100:25 172:6 speaks 222:22 specialist 62:8 64:9 specific 39:11 93:15 109:2 120:19 121:8 137:11, 24 138:9 139:9,19,22 141:14,21 144:20 146:2 162:2 186:20 specifically 34:25 48:11, 20 97:15 99:11 103:22 211:18 speculate 79:9 156:19,	20 158:21 spell 8:15 spelled 95:9 spend 54:10 194:11 197:16 spent 88:23 187:5 189:3 split 51:16 157:5 spoiling 214:3 sporadic 45:9,12 spread 188:8 spreadsheet 40:9 stakeholder 177:21 stand 66:15 117:5 147:8 175:25 209:24 228:6 233:10 standard 12:8	24:5 36:24 54:16 55:17 102:17 212:3 213:25 217:2 standards 13:12 start 6:6 129:9 153:1 177:19 191:3 218:2 started 6:5 138:21 161:5 233:2,18 starting 48:24 176:24 193:24 starts 224:19 state 6:13 8:14 24:21 26:9 28:14 43:18 45:7 46:21 47:23 50:5 51:19 71:25 73:16 95:8 107:1 117:18 147:18 176:10 194:23 208:24 210:9 217:5 stated 11:8
somebody 51:9,24				
somebody's 195:25				
somehow 225:17				
someone 115:4,5 116:6 135:5 170:8	sort 46:12,18 50:18 54:14 82:12 130:14 131:19 140:4 146:1 164:19 165:7 167:1 219:11 228:13 sorts 59:11 144:22 145:1 sought 85:19 89:18 94:8 sound 85:10 sounds 23:15,16 29:7 55:5,12 86:4 200:12 source 89:22 124:10 sources 99:15 137:19			
something 31:9 34:20 64:18 69:2 81:16 110:16 131:16 132:19 134:17 137:9 139:2 155:12 158:6,7 169:14,17,19 192:17 193:15 195:7 224:4 234:24				
sometimes 173:15				
Somewhat 195:12				
somewhere 44:23 146:18				
soon 186:23				

82:9 99:20 108:2,16 109:7 212:10 216:23 219:15 222:4	statistically 98:25 99:1 149:23 151:17	steward 6:10, 11 54:9	214:13 215:20,21 216:8 222:15 229:15 230:22,23 231:4,6,7 232:9	stratum 215:23 216:5, 6,10 229:19, 21 231:10,11, 12,21,23
statement 7:9 74:17 81:1 85:12 96:7 100:5 118:17 128:19 155:7 180:21	statistician 85:10 113:5 195:15	stewards 54:10 64:10	stratification 24:13 103:10 124:19 126:24 187:18,24 212:8 214:16, 18,22 215:7, 9,12 223:6 229:14 230:21 232:16,22	stratum-to- stratum 231:24
states 40:3 41:3,17 129:13 215:2 216:3	statistics 17:24 18:1,5, 9,14 29:22 98:16 100:18 218:11 219:20 229:20 230:17 232:5	still 16:15 40:20 63:14 65:17 66:14 72:18 86:24 121:10 128:16 136:10 137:8 164:6 197:12 198:15	stream 16:25	streaming 9:9
static 182:12 192:16 198:11	status 45:1	stipulation 41:3,17 120:24 178:25	streams 122:9,11 123:5 183:6 184:22 185:11	
stating 40:6	steams 186:5	storage 123:20 124:9 181:23 183:24 193:17 198:6 207:8	stratified 23:18,25 25:3,4 36:11, 13 102:19,25 126:1,23 150:1,6 180:13 213:22,25 215:5 230:18	street 8:17 201:23
statistic 224:15	steep 60:1	straightforwar d 126:19	strength 233:2,3	
statistical 26:6,11,19 76:4 85:9 97:10 98:20, 22 100:13 104:15 105:9, 11 132:2 211:18,25 213:3,7 214:6 217:2 222:21 231:25	step 103:17 194:21	strange 51:20	stricken 176:24 226:10	
	Stephen 2:22	strata 28:23 29:2 38:16,20 102:13,16,21 125:13,14 139:17 187:22	stratifies 125:12	strike 5:14 224:18 225:6, 21,23 226:12 229:7
	Steve 7:15		stratify 12:21 13:15,21 124:24 126:3, 13,19	strong 216:10 222:20,24 223:2,4
	Steven 2:14 6:25		stratifying 24:8	
	stevensnarr@ agutah.gov 2:17			

233:15	65:1,16 70:14	211:17	87:17	62:20 75:23
structure	74:22 75:22	213:20	substantially	108:2,7 113:4
28:1 75:20	76:5,6,10,15,	215:19	214:19	184:6 187:10
76:18	22 78:10 79:2	218:17,25		188:2 232:8
	81:14,16 82:2	219:5 220:3,		
	84:22 85:3,23	22 229:18		
students	86:12,14,15,		substation	suggesting
157:12,13	18,20 88:18,	Studying	124:17	63:10 70:20
	19 90:17	75:14		75:16 86:11,
	93:1,14 94:11		successfully	13 165:11
studied 75:4	97:6,15 98:23	stuff 170:18	180:8	203:4,6
86:6 222:10	99:23 100:3,8			
231:1	101:6,12,22			suggestions
	102:2,4,25	subgroup	such 13:19	112:15
studies 13:12	104:15 108:1,	32:4	32:5 90:2	195:22
15:4 18:1	10,12,23		97:6 109:1	
19:6,9,24	109:14	subject 85:3	124:7 149:22	suggests
25:3 55:18	118:23,25	137:19 175:9	184:2 216:17	68:22 76:16,
56:10 97:14	119:5 121:3,	191:24		23
100:17	9,14,18,19,		suddenly	
195:10,14	21,24 122:1,		164:14	suitable
	4,8,11,13	submitted		177:25 178:2,
study 9:23	123:8,17	115:12	suffer 89:1	19
10:23 11:2,6,	124:11,21,24	185:19		
13,21 12:3,	125:24 126:1,	205:14	sufficient	Suite 2:6
10,11,14,17	15,22 127:1,	210:16	14:4 75:23	210:14
13:1,5,16,25	4,10,14,19,24		99:5 121:14	
14:12 15:15	128:4,9,11,14	submitting	127:3 128:9	sum 75:5
18:3 19:7	135:5 139:16	175:2 185:17	136:14	
20:3 24:23	140:14	234:21	150:16 180:3	summarize
25:1,13 31:18	141:20,24		186:5 216:8	76:4 96:9
33:16,23	142:7 149:16,	subsequent	222:19	177:15,18
35:17,23	18 150:2	224:13		
36:1,25 37:6	151:5,11,14,	231:22	suggest	summarizing
42:6,8,12	16,19,22	232:13	30:13,24	74:17 107:19
45:22 51:13	162:14,17		158:14 162:8	
53:19 56:1,9	169:25 170:3	subset 91:7	165:25 200:5,	summary
57:24 59:25	171:3 188:21	211:22	9,19 202:15	10:19 27:9
60:10 61:3,5,	190:6 192:7	220:25		53:17 86:23
8,19,21 62:1,	193:21 194:2,		suggested	
7,21 63:15	10 199:24	substantial		

107:19 109:12,19 110:2 119:9, 11 140:11 148:22 152:7 153:4 161:5 163:2 169:15 177:11 190:11,12 191:20 193:4 196:2 199:16 200:20 205:11 211:7 216:22 217:9 224:19 225:5 231:18	12:9 80:19 87:17 88:4 94:11 99:9 127:13,25 128:6 165:1 190:3 supported 217:2 supportive 127:20 supports 76:21 230:10 suppose 111:2 173:3 supposed 35:17 87:3 supposing 154:24 supposition 220:17 surprised 38:23 39:2 surrebuttal 227:9,12,13 surrounding 113:24 163:10	survey 13:1 14:21,23 20:2 43:8,16,19 44:4,13,22 45:3,11 46:11 58:18 66:1 70:10 71:8, 10,22,23 72:5,10 124:5 140:18 141:19 164:20 165:1 184:9,22,24 185:8 206:20 207:10 208:8, 13 surveyed 99:14 surveying 70:17,18 184:25 185:1 surveys 20:4, 5 209:6 suspect 69:1 71:17 99:1 233:4 swamp 198:9 207:5 swear 8:5 73:6 94:24 106:17 117:7 147:10 176:1 209:25	sworn 8:10 73:5,11 94:22 95:3 106:22 117:6,12 147:14 176:6 210:5 system 13:18,20 14:10,15 27:16 28:7,10 38:1 44:5 48:8,11,16 51:11 59:7 64:20 66:1 75:6,8,10 80:8 83:18 84:3,11,12 108:15,25 109:3,16 119:21 123:12 124:13,16 125:14 126:18 133:23 134:3 136:4,8 140:17 149:4, 9 150:7,14, 17,20 151:2, 21,22 160:4,5 164:4 166:6 170:12 172:19 173:2, 22,24 181:15 187:19 189:5, 8,21,22 192:1,2,3 197:10 198:3 202:19 204:6 206:12 207:8	systematic 216:19 systems 11:12 14:3,5 27:25 33:15 43:16,20 46:4 49:20 59:3 61:1 67:10 69:11 125:15 150:12,21,22 151:24 172:3 186:24 191:16,18 198:6 201:7, 24 <hr/> T <hr/> tab 91:2 table 6:10,20 7:16 37:10, 12,13 38:8,15 54:25 87:7 215:14 224:5, 6 225:12 232:18 tables 17:3 tailored 25:14 take 31:1 34:2 40:11,19 41:14 42:17, 19 44:24 51:25 65:9
--	---	--	---	--

66:13,17 79:24 86:25 108:17 116:17 143:22 156:11 175:16 221:9 224:2 226:5 228:23 232:13 233:16	94:6 144:7 157:10 166:17 188:6 190:6 194:14 195:19 207:9, 10 224:19 231:13	technology 192:12 193:5	test 28:17 29:20 30:2, 16,20,22 31:4,6,11 32:23 34:23, 24 36:4,15 63:13 149:21 154:9 155:14, 16,19 156:4 198:11	testimony 10:1,2,5,8,13, 25 15:20 16:1 34:22,25 40:17 45:6 48:20 50:21 52:12 53:18, 24 65:7 67:5 68:12 72:25 73:23 74:2,10 77:17 79:5 80:2,14,21 83:15 87:25 89:12,13 95:15,19 96:1 101:7 107:6, 10,12,19,23 109:7 110:15 112:24 113:22 114:3 118:1,2,4,7, 11 119:12 121:20 127:5 139:7,15 147:25 148:5, 12,22 164:25 167:14 175:13 176:11,17,20 177:1,5,11, 16,18 178:22 182:25 185:20,21 196:2 203:15, 19 205:11 210:10,17,19 211:1,7,16 212:16 213:9 214:11 215:14 216:3 218:3,6 220:12,13
taken 18:2 30:17,21 31:9,21 42:2, 3,21 60:11 97:3	target 217:1	teleconferenc e 11:1	tempered 187:2	
taker 209:16	tariffs 154:21	temporal 181:12	tested 40:23 155:12	
takes 111:12	task 169:20 170:22 186:21	temporally 183:3	testified 8:11 18:16 27:9 60:24 73:12 95:4 106:23 117:13 140:10,22 147:15 157:25 176:7 190:4 203:22 210:6 224:3,9	
taking 94:12 141:17 191:4	tasks 170:22	Ten 159:22	tend 181:16	
talk 43:8 65:6 70:8 84:21 130:2 165:6 171:1 195:17 207:3	taught 18:9, 11	terms 30:10 42:22,25 43:4 46:19 100:2 102:12 134:9 138:19 144:16 145:18,24 146:12 170:12 172:9 175:8 181:6 192:16 195:25 197:6 202:25	testify 149:1 157:19 210:15 211:11 229:11	
talked 16:12 53:18 114:21 163:2 170:22 184:24 189:8 195:4 196:25 205:18	technical 95:10	territory 188:18	testifying 7:3, 17 107:2,4 117:22,23 176:15 211:13	
talking 78:5,7	technically 103:2 179:24	Tesla 131:17, 22	testimonies 76:21 212:6	
	Techniques 30:5			
	technologies 138:8,10,17 183:22 184:2 192:4			

222:23 224:2, 6,8,9,14,18, 24 225:12,16, 20,22,23 226:9,20 227:11 230:9 231:10,15,17 232:6 234:14, 22	185:18 188:10 190:9 191:13 201:2 205:3 213:4 214:23 215:5, 21,24 223:5 224:5,20 232:5 233:6	196:4 198:24 199:4,23 200:2,5,7 204:3 206:15 212:6 214:5,7 225:21	things 30:9 55:7 83:24 113:22 114:6 134:7 137:18 145:3 158:16 159:4 164:12, 17,22 167:2 168:16 171:8 195:19 201:14 205:13 207:16 233:13	66:15 88:8 122:11 123:5 183:6 184:22 185:11 186:5 187:3 192:3 193:21 194:3, 6,9,12
text 217:2	their 14:19 24:2 25:23 27:25 30:15 32:8 37:2 39:14,15 44:2,14 45:2, 9,12,15,16 47:12,13 49:19 55:8 58:8,12,19 59:23 64:5,8 76:16 88:4 90:24 115:16, 25 120:23 123:9 126:18 127:16 128:18 130:13 132:10 134:12,14 135:14,16 136:4,24,25 137:13 138:19 144:17 155:10 158:19 167:22 168:7 171:15 172:3 173:19,24 177:22,25 180:4,21 191:16,18	themselves 170:15 theoretically 74:25 theory 29:21 30:2,20,22 31:4 34:23 thereby 108:12 therefore 165:21 178:19 203:25 212:9 213:6 214:3 215:25 216:9 thermostats 123:21 124:9 140:20 thing 17:2 46:13 97:6 153:16 155:24 156:3 159:13 193:9 228:12,16 230:15	thinking 153:14 160:3 167:12 third 12:22 13:23 187:3 212:7 214:15 Thirty-six 213:19 thorough 181:2 thought 36:2 55:7 115:4,13 140:23 168:14 220:1 thousand 63:17,21 182:19 188:4 194:18 three 9:6	through 53:7 61:11 85:14 89:12 104:8 109:17 114:24 119:15 123:14 124:5 130:15 140:18 141:16 163:7, 14 184:18 187:3 197:13 206:20 228:24 throughout 63:14 77:17 118:24 164:1, 7 188:17 throw 230:11 Throwing 230:13 thumbnail 188:10 tilt 48:12,17 49:9 50:14 51:3,4,6,25

52:10 59:11 75:9 83:19 110:16,20 111:12 123:9, 12 129:11,12, 18,22 134:20, 24 135:10,19 151:21 153:3 154:7 163:7,8 165:20,24 166:1 170:16 189:9 195:19 197:1 198:2 204:7 205:23	167:11,14,16, 23 168:1 181:13 182:14 185:6 186:7,23 187:5 188:21 189:18 190:1 193:10,15 198:14,17 202:6 205:13 209:6 219:12, 17 223:18 224:17 225:2, 5,13,16 226:24,25 228:7	tiny 233:14 toaster 143:9 today 6:22 7:3,9,10,18 10:8,19,22 16:2,12 24:20 27:9 42:4 52:6 65:2 79:25 81:22, 23 85:6 95:17,22 98:14 100:25 106:12 107:2 117:22 118:6, 17 148:9 149:1 175:13 176:12,15 177:2,11,16 188:1 192:12, 20 194:15 195:23 198:25 199:13 200:12,15 202:17 203:16 210:22 211:7, 14 234:14	tons 157:12 took 18:5 tool 153:21 168:21 tools 146:3 168:10 top 49:22 51:7 108:24 topic 136:19 159:1 222:10 torn 164:9 total 37:25 44:18 97:3 122:16 126:1, 14,25 132:6, 10 136:3 138:2,14 150:7,8 183:10,12 187:10,12,23 213:23 230:3 totally 105:12 touched 60:5 tough 70:24 track 49:16 137:18 172:9,	13 trade 121:17 trade-off 19:12 trade-offs 97:5 transfer 167:15 transformer 201:23 202:24 transformers 124:16 transition 11:14,23 12:5 13:2,7 14:3,5, 15 21:15 26:16 46:15, 23 47:19,24 48:15,21 57:11,14 60:6,12 63:6, 17,21 70:19, 25 71:12 80:24 81:10, 15,21 90:24 96:13 99:11 104:13,19 105:1 108:19 123:12 127:2, 3,6,11 146:17 151:15 155:5
tilted 201:25 tilts 165:4 time 9:2,4 10:5,11 11:15 19:15 22:6 24:21 25:6 34:3 35:5,9, 16 36:9 64:13 68:5,25 71:25 74:9 75:9 81:13 82:25 84:4 86:25 87:23 88:3 94:22 108:21 113:23 114:7, 12 116:17 127:4 133:7 134:11 137:20 144:8, 10,16 145:24 149:8 151:3, 23 153:6,9 158:9 164:1, 6,7,12,17,22	time-of-day 158:17 times 42:4 52:11 53:1 136:2 144:6 168:12 181:25 232:25 timestamp 162:24 timing 75:2 123:22 132:5, 14 133:11,21 134:9,22 135:17,21,25 138:11 181:7 182:2,6 184:14 197:3 199:2	together 55:3 65:3 177:23 told 38:23 39:17 72:9 84:2 86:21 ton 162:15		

182:19	truth 8:6 73:7	13 133:13	U	undebatable
185:17	94:24 106:18	134:4 139:10		235:4
186:13	117:8 147:10	143:7,22		
192:19	176:2 210:1	144:9,15	Uh-huh 90:21	undefined
212:23		145:21	143:13	82:12
	try 54:9 69:8	159:22 160:4,		
transitional	98:9 131:19	13 181:10	ultimate	under 9:21
70:22	171:19	183:5 188:6,	87:20 179:23	27:25 54:15
		11,12 189:3		83:25 96:15
transitioned	trying 54:23	192:2 194:2,	ultimately	154:21 155:4
14:22 154:14	75:22 79:21,	11 201:7,15,	34:5 44:11	156:6 175:3,7
	22 85:14	17,22 202:15	64:19 80:10	183:25 186:1,
transmission	86:5,9 91:24	204:21 208:5	83:20 88:5	3 191:16,19
41:20 179:13	156:20 158:5	212:1,2,4,21	99:22 100:16	209:7
	166:21	213:11,13,18,	103:11	
transmit	219:12	24 214:1	119:22	undergrad
171:16		216:5 217:3	142:11,16	17:18
	turn 119:19	218:4 226:13	144:10	
treatise 30:7	171:15 195:2	231:1,4,11	220:16	undermine
	199:3 212:18	type 61:25	unable 88:25	187:19
tree 114:7	230:1	146:12		
163:24 164:4,	turned 40:22	157:24 190:6	unassailable	understand
6,8,9			97:6	21:1 22:5,22
	turns 31:12	types 58:23	unaware 90:4	28:22 30:25
trees 113:23	35:8,21	61:13 119:4		41:10 43:16
114:8 159:3		125:18	unclear 72:18	44:4 45:21
163:10	tweaks 113:1,	132:18		46:1,3,25
164:18	2	136:23	unconditional	47:8,25 50:15
trends 83:19	two 9:1 10:25	138:19	ly 231:2	51:10 65:19
	11:9 33:18	140:18 145:2		79:21 86:23
true 50:9	44:5 45:20	184:8 198:8	uncorrected	87:11 91:18
57:3,6 59:25	52:9 56:9	221:25	214:9 221:11	101:5,17
61:23 62:3	70:5 88:21	typical		104:18,22
184:11	91:16 99:24	180:10	uncreated	120:12,15
trustworthine	108:1 112:18,	typically 68:7	219:24	121:17
ss 68:9	23,24 125:17	69:13 138:25		129:24 130:6
	131:1 132:9,	223:8		132:6,17
				133:9 134:8
				135:19 136:5,
				11,14,18

138:2,5,13,16 142:5 145:4, 15 167:8,19, 21 168:9 170:25 172:21 173:7 174:2,6 178:17 181:12 182:16,22 197:12 198:15 208:24 219:3 220:7,9 225:15 226:6 227:2	unfortunately 119:6 unique 22:1 United 129:13 units 198:18, 20 unity 34:1 University 9:5 19:17,18 unknown 187:12 unless 116:15 123:3 131:9 unlike 231:2 unlikely 149:22 183:8 unmodified 221:12 unnecessarily 150:2 unnecessary 44:16 54:11 unreasonable	141:15 unreliable 216:25 until 31:18 102:11 115:23 116:20 183:12 186:13 225:16 untrue 104:1 UPC 146:13 updated 127:9,15 usage 12:4 28:24 43:13 80:8 83:19 84:12 122:16, 25 123:18 126:1,12,14, 17,24,25 132:11 136:3, 25 138:3,14 144:20,22 155:10 213:22 use 12:20,22, 24 13:15,23, 25 20:7,11, 15,21 21:25 22:9 26:1 29:9 36:10	50:13 51:9 56:7 58:18 67:9 68:7 69:18,20 70:25 72:18 75:11 76:17 78:17 79:11 80:18 82:5 87:14 94:12 105:4 121:7 122:6,21 124:7 133:7 137:23 138:5 145:24 150:5 155:15 156:12,21 159:6 160:12 162:11,13 164:15 166:23 167:22,23 168:11,20 174:17 178:19 182:23 189:16 195:13,24 199:3,17,18, 19 201:22 208:19 221:19 229:22 231:15 used 13:16, 21 14:10,25 39:15 40:9 46:1 53:23 56:8,9 58:24 68:3 72:17 87:12 125:18 126:10	129:12 142:16 173:3 187:24 211:23 215:19 223:4 229:16 230:8 useful 71:22 75:16 108:13 114:22 121:22 124:20,22 125:17 127:21 128:15 130:19 132:16 137:9 138:1,4,16 141:4 145:19 182:9 usefulness 71:10 users 29:2 uses 199:1 using 21:13 25:4 28:23 29:2 30:10 31:20 36:13 52:18 57:10, 13,18 68:19 71:4 80:16 102:16 139:13 145:16 146:1 157:23 160:16
understandin g 40:21 58:22 59:5,14 61:4 62:4 65:23 67:8 69:21 82:3 102:3 108:24 120:5 123:24 132:1 135:12,24 136:10 138:24 154:12,15,17 178:11 181:2, 8 182:10 218:16,20,24 219:22 228:21 understood 101:15,19 140:12 undue 76:8				

166:21 187:10 191:5 212:2 213:20, 24 214:7 216:18 225:16	121:7 129:15 137:14 138:15 144:5, 17 203:1 209:13	149:21 158:10 159:7, 9 161:10 178:10 179:10 182:4 184:4,9 188:19 189:18 191:25 197:6, 7	164:1 variety 125:13 146:2 187:21 201:2	110:3 114:24 115:4,5,14 130:10 205:12,16
UT 2:7,11,16, 20,24	utility's 119:20		various 12:15 55:6 92:13 183:19 196:24	versus 29:15 32:21 40:18 44:9 79:19 99:7,19 112:16 136:7 202:20 212:20
Utah 2:18,19 6:13,18,19 7:5,8 14:17 47:23 51:20 64:4 73:20 75:6 108:7 116:23 117:2, 21,23 118:21 119:2,6,24 120:17 121:13 128:13 129:14 131:24 134:7 136:13 140:16 141:7 146:7 147:23 178:21 189:1 202:13	utilize 149:25 <hr/> V <hr/>	values 196:24,25	vary 58:23 59:6,15,18,21 64:20 132:17 136:6,23,24 150:18	via 135:8 141:19
	vague 82:19	variability 120:1 138:18 215:8 232:17		vice 6:11
	validate 110:23	variable 12:17 33:22 57:23 159:3 180:13,16 187:24 214:16	vast 215:25 231:6,20 233:21	view 35:23 37:17 38:4 39:19,23 40:13,24 52:24 139:4,5 195:20 208:14 235:8
	validation 110:18	variance 24:2,3	vehicle 124:8 181:23 207:7	
	valley 202:13, 20	variation 143:19 214:20	vehicles 123:20 137:19 164:16	viewpoint 200:15
utilities 2:10 6:7,16,20 16:3 73:18,20 95:11	value 9:23 11:16 12:2 14:24 15:1,7 41:19 44:8,13 45:25 46:2 88:6 93:14 109:6 129:25 132:3,4 133:10,14 134:24 136:12 143:10,25 144:4,17,21	variations 102:14 116:1 183:17	verification 110:19 206:17	violate 214:5
utility 73:17 75:1,12 79:22 114:24 119:19,22 120:2,6,8,10		varied 173:1	verified 114:23 115:19,25 130:19	violates 213:2
		varies 75:12	verify 109:18	violating 26:19
				visit 108:20

130:11 141:17 185:4 196:4 205:19 207:7	46:14 48:7 49:10 108:7, 17 116:24 127:25 176:15 177:5 178:21,24 179:22 180:19 184:16 203:23 204:20 206:6, 19 210:15 211:1,14 226:21	12 51:9,25 wants 40:10, 15 98:5 116:25 198:5 227:6,16 warrant 97:12 108:10 131:25 137:7 Washington 210:14	188:18,19 189:22,23 195:6,23 198:7 199:11 200:18 209:9 210:23 224:24 227:10 230:6 ways 143:16 146:4 157:4 159:5 185:8 195:3,6 201:2 202:19	23 31:6 weights 30:10 welcome 69:24 72:22 116:9 went 93:9 west 2:23 51:17,18 130:8 147:22 159:23 201:25 west-facing 143:23 144:2 158:10,12 160:4,14 168:21 189:21 whatever 35:22 36:1 72:17 84:13 163:22 233:24 whereas 13:8 whether 14:18 32:15, 19 33:13 34:9 61:6 67:13 80:24 81:9 93:4,12 96:23
visiting 135:6 visits 123:16 141:18 Vivint 2:22 7:14,15,17 116:24 127:25 147:21 148:1, 6,16 170:18 172:2,3 174:12,15,17 195:4 204:8, 9,18 Volar 204:6 Volt 40:17 volume 149:8 151:23 153:6, 9 167:15,17 168:1 182:6 volunteer 174:19 volunteered 222:9 Vote 3:1 7:19, 22,23 43:9	W want 30:4 54:14 58:7 64:18 65:25 79:24 80:6 83:11 89:21 100:24 114:2 130:1 133:17 145:4,15 155:1 158:8,9 159:16 160:10 166:1 168:23 170:16,20 172:5,21 173:10 174:19,24 177:19 178:1 190:3 197:15 198:7 200:14 202:9 208:23 234:24 wanted 23:6,	waste 219:17 wasting 219:12 water 16:20 207:4 watts 162:24 way 16:21 29:13 33:25 56:12,15 69:8 72:12 75:15 86:7 115:14 121:6 125:5 132:8 136:11 141:3 142:8, 11 148:9 158:2,22 163:20 167:1, 12,15 170:6 173:18,23 177:22 186:8	weak 216:4 weather 83:19 week 114:5 weigh 61:6 159:11 227:6, 16 weight 21:20, 22,23 22:3,9, 13,16,19,23 29:13,25 100:20 101:2 weighted 21:6 31:1 165:7,8 214:7 weighting 21:25 30:14,	

99:3,5 102:2 123:2 145:24 155:19 156:4 163:10 164:18 168:5 175:6 192:24 194:24 198:4, 17,19 201:16 204:6 205:25 221:14 222:7, 11,18,24 223:2 232:11 233:9 235:8	147:19 wide 45:7 125:13 187:21 widely 131:24 136:24 138:9 will 7:3,17 11:7,13,18 12:6,16 13:3, 6,8 14:10,14, 20 17:4 21:6 24:20 27:12 29:20 34:7, 11,13 41:7 43:24,25 44:11 46:6,7, 9,11 47:4,11, 16 48:4 53:25 58:23 59:6,8, 15,17,18,20, 21,24 60:24 61:15 62:24 63:5,13,15 64:20 66:8,21 76:4,6 80:9, 12 81:24 87:12 88:3,10 96:17 97:3 98:6 104:13, 14 105:5 108:21 115:6 119:16,17,19, 21 120:3,15 121:10 122:14 124:1 127:8 128:14, 16 131:13 135:5 138:1,4	142:11 143:5 144:12 149:12,20 151:10 152:4 153:18,25 154:2,10 156:18 166:5 168:5,6 171:18 177:21 178:3, 17,18,22 179:6,17 180:6,8 181:4,15,18, 20 182:6,16, 25 184:1 188:16 189:23 190:10 191:8 192:17,24 193:4,21,23, 25 196:9,12, 15 197:2,10, 20,21 198:10, 11,16,19 199:1,5 210:24 212:8, 17 214:19,23 218:7 220:3 227:17 235:3, 4,9 William 30:5 willing 12:13 56:3,4 68:4 69:7 200:21 201:3 willingness 68:23	wish 134:18 wishes 225:3 226:1 within 12:25 14:10,13 21:17 34:10 146:21 204:15 215:21 without 14:25 32:23 42:16 45:16 61:25 76:8 125:5 174:19 181:11 228:18 witness 3:7 8:7,10 9:11, 13 16:20 17:1 21:14 33:12 53:11 66:16 69:24 73:8,11 74:10 76:3 94:18,21,25 95:3 106:16, 19,22 116:9 117:9,12 147:1,11,14 152:14 153:13 176:3, 6 197:13 209:21 210:2, 5 225:1,19 226:22 228:5 230:2 234:15	witnessed 53:4 witnesses 106:12 wondered 113:25 wonky 189:17 word 43:6 105:4 140:25 187:25 words 24:4 92:11 112:25 140:25 141:1 171:4 181:4 183:6 187:4 189:5 192:17 207:3 215:6 232:2 work 8:17,24 75:17 85:15, 23 120:11 132:1 151:1 162:12 185:7 192:20 200:21 201:3 210:12 214:22 224:23 225:7 226:25 228:9, 21 worked 9:2,4 19:8 215:7
---	---	---	---	--

working 9:1 69:3	116:5 123:2 145:5 188:25 194:2 198:12 201:10	192:18 198:11	Z	
works 7:17 86:9,10 173:19	worthy 137:10	year's 198:12	zero 11:20 25:22 26:8, 13,16 98:19 129:20 130:15 213:4 229:16 230:25	
workshop 10:25 11:5 55:4,14,23	Wright 7:10	years 9:1,4,6, 7 25:4,7 33:8, 11 53:2 97:14 119:16 139:5, 8 163:14 184:2 185:13 187:4 188:9 189:4 192:8 193:12,22 194:3,6,9,12 198:20	zip 48:12,17 51:3,4,5 52:9 110:16 189:9 197:2	
workshops 19:11 76:17 86:25	write 89:17 104:11			
world 82:19 111:12 129:13 139:5	writes 30:9			
Worley 4:20 7:17 147:7,9, 13,18,21 148:21 161:4 165:19 172:1 174:11 175:12 200:24 204:5, 23	written 227:9 235:5,7	yet 14:6 21:12 69:6,7 131:24 145:23 189:22 219:14,23		
	wrong 86:7 180:13 214:10 219:22	York 3:3		
	wrote 68:25 83:25 86:22	yourself 44:12 63:4		
	Y	Yvonne 2:5 6:8		
worried 77:23	year 33:19 34:8 35:18,23 36:2 63:5,22 81:24 96:18 104:14 127:9 139:6 148:1 185:23 186:17 189:19	yvonne. hogle@ pacificorp. com 2:8		
worry 84:17				
worse 214:23				
worth 60:22 61:8 88:22 92:5 115:2,3				