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ATTACHMENT 1 TO
DRA'S MOTION TO STRIKE PORTIONS OF
PG&E'S PREPARED AND REBUTTAL TESTIMONY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company (U 39 E) for Approval of Amended Purchase and Sale Agreement Between Pasific Gas and Electric Company and Contra Costa Generating Station LLC and for Adoption of Cost Recovery and Ratemaking Mechanisms.	Application 12-03-026 (Filed March 30, 2012)

EVIDENTIARY HEARINGS

EXHIBIT NO. _____

1 SAN FRANCISCO, CALIFORNIA, August 8, 2012
2 9:40 a.m.
3 * * * * *
4 ADMINISTRATIVE LAW JUDGE GAMSON: We're
5 on the record.
6 Good morning. This is the second
7 day of evidentiary hearings in R.12-03-014.
8 And before we continue with the
9 cross-examination of Mr. Sparks for the ISO,
10 I guess there's a couple preliminary matters
11 we'd like to go through.
12 First, are there any changes to the
13 cross-examination list? I know that
14 Ms. Schmid-Frazee has some changes.
15 Please, go ahead.
16 MS. SCHMID-FRAZEE: Yes, Southern
17 California Edison Company had reserved
18 cross-examination for Clean Coalition Lewis
19 and CEC Hunt and CCC Beach. And we are not
20 intending now to cross those witnesses as our
21 motions to strike their testimony were
22 granted. And also TAZ Energy -- I think its
23 testimony was stricken in whole, so even
24 though we only have ten of the 15 minutes, it
25 would seem logical that that witness would
26 not need to be called.
27 ALJ GAMSON: Let me go through these
28 one at a time because I have a fairly

at least for the rest of the day on the possibility that somebody defers any questions back to you.

(Laughter)

ALJ GAMSON: Other than that you are excused. Thank you.

All right. You may call your next witness.

MS. SANDERS: Thank you, your Honor.

At this time the ISO would call Mr. Mark Rothleder to the stand. He's here? Yes.

ALJ GAMSON: Off the record.

(Off the record)

ALJ GAMSON: Back on the record.

Please rise. Raise your right hand.

MARK ROTHLEDER, called as a witness by the California Independent System Operator, having been sworn, testified as follows:

ALJ GAMSON: Thank you. Please be seated. And state and spell your name.

THE WITNESS: My name is Mark Rothleder, M-a-r-k R-o-t-h-l-e-d-e-r.

ALJ GAMSON: Thank you.

Ms. Sanders.

MS. SANDERS: Thank you, your Honor.

DIRECT EXAMINATION

BY MS. SANDERS:

Q Mr. Rothleder, by whom are you employed?

A Employed by the California Independent System Operator.

Q What's your position with the California Independent System Operator?

A I am the Executive Director of Market Analysis and Development.

Q Okay. And Mr. Mark -- Mr. Rothleder, do you have before you, I'm going to say it's ISO Exhibits 4 and 5, which are marked as your opening testimony and your reply testimony? Do you have those exhibits with you?

A Yes, I do.

Q And those are copies of your opening testimony, and it's ISO-4, and your reply testimony is ISO-5, correct?

A Yes.

Q And then I believe in your testimony you refer to two other documents that have been marked as ISO exhibits, and those would be ISO-17 and ISO-21. And do you have copies of those documents with you?

A Yes. Yes, I do.

Q Pardon me?

A Yes, I do.

Q Okay. Thank you. And then can you

just identify ISO-17 for me, please?

A ISO-17 is testimony in the R.10-05-006 testimony related to Track 1 for the renewable integration study work performed in the LTPP from last year.

Q Is that your testimony from the prior?

A That's my testimony. And it has several attachments to it.

Q Okay.

ALJ GAMSON: Can I just ask, the cover page says errata to that testimony. Is that accurate?

MS. SANDERS: Yes. The testimony was submitted on the record. There was an errata submitted prior to the testimony being admitted into evidence, and this is a complete copy with the changes that the errata had in it. That was how it was labeled when it was admitted into the record.

ALJ GAMSON: Okay. Thank you. Just wanted to clarify that.

MS. SANDERS: Yes.

Q Okay. And then Mr. Rothleder, do you have a copy of ISO-21 there with you? Oh, you said you did.

A Yes.

Q Could you please describe what

ISO-21 is?

A ISO-21 is a recent additional study work, renewable integration study work that we have performed at the request of California Air Resources Board, and it extends some of the study work that was in my original testimony.

Q Is that a draft?

A It is a draft. It's draft material. The Air Resources Board asked us to provide information about the study work. They had some questions. And we did some more revisions to the study, and this incorporates documents that work. It is a draft in the sense that I think the California Resources Board will be incorporating this into a report, and we're still iterating on the questions and the answers associated with that. So it's not a final report.

Q Okay. Thank you.

Okay, Mr. Rothleder, if you could turn to ISO Exhibit 4, which is your opening testimony.

A Yes.

Q Now, was this prepared by you or under your direct supervision?

A Yes, it was.

Q Do you have any additions or corrections to make to this testimony?

A I have one correction to make, and it's on several locations. There's a reference, probably first reference is on page 3 where I refer to a number of 3,137 megawatts of local capacity requirement.

Q Is that on line 25?

A That's on line 25.

Q Okay.

A That should be 3,173, and I think that number gets used in other places throughout the testimony, and it should be 3,173 throughout.

ALJ GAMSON: Okay. Let's go off the record.

(Off the record)

ALJ GAMSON: Back on the record.

MS. SANDERS: Q Mr. Rothleder, could you find the other references to that number so the corrections can be made throughout your testimony?

A Page 4, line 10.

ALJ GAMSON: How about line 7?

THE WITNESS: Page 4. I'm sorry. Let me -- line 26. Sorry. Where was line 7?

ALJ GAMSON: Let's just back up. I'm sorry.

THE WITNESS: Yes, yes.

ALJ GAMSON: I just wanted to mention I thought it was on line 7 as well.

THE WITNESS: Yes. Line 7 as well.

MS. GEORGE: What's the correct number?

THE WITNESS: 3,173.

ALJ GAMSON: Line 7, line 10.

THE WITNESS: Line 26. On page 5 line 30. Actually, yeah, line 30. Page -- I think that's the last one.

MS. SANDERS: Q Mr. Rothleder, is there also a correction on page 3, line 25, did you mention that one?

ALJ GAMSON: I think we already got that one.

MS. SANDERS: Did we get that one? I apologize.

THE WITNESS: Yeah. That was the first one.

MS. SANDERS: Q All right. So we have them all.

Okay. Do you have any -- now, do you have before you ISO Exhibit 5, your reply testimony?

A Yes.

Q Was that also prepared by you or under your direct supervision?

A Yes.

Q And were there any corrections that needed to be made to this testimony?

A No.

Q So Mr. Rothleder, subject to the change, that change in that number, if I were to ask you all the questions in ISO Exhibits 4 and 5, would your answers still be the same?

A Yes.

MS. SANDERS: I have nothing further. I would tender Mr. Rothleder for cross-examination.

ALJ GAMSON: Okay. Thank you very much. All right. Let's go off the record for a moment.

(Off the record)

ALJ GAMSON: Back on the record.

First cross-examination is by Alliance For Nuclear Responsibility.

MR. GEESMAN: No questions, your Honor.

ALJ GAMSON: Thank you.

MS. SANDERS: Good start.

ALJ GAMSON: Next I have CEERT.

MS. MYERS: Thank you, your Honor.

CROSS-EXAMINATION

BY MS. MYERS:

Q Good afternoon, Mr. Rothleder. My

name is Sara Myers. I'm here as of this moment representing the Center for Energy Efficiency and Renewable Technologies, CEERT.

I'd like you to turn to -- my questions go to both your opening and reply testimony, ISO-4 and ISO-5. I'd like you to turn first to page 7-9 or 7 of 9, rather, of your opening testimony.

A Okay.

Q In your answer that begins on line 13 and the first paragraph ends on line 21, the questions go to a statement you have made, which is, it is your recommendation for this phase of this LTPP proceeding that, quote:

> Load-serving entities should be authorized to procure new or repowered resources with flexibility characteristics that will meet the SWRCB regulations in the local capacity areas as soon as possible in the timeframe set forth in the LTPP settlement agreement.

Do you see that statement?

A Yes.

Q Okay. To begin with, when you

1 refer to load-serving entities in this
2 statement, specifically what LSEs are you
3 asking the Commission in this Track 1 LTPP
4 proceeding to give that authority to?
5 A It would be the jurisdictional
6 entities, the investor-owned utilities.
7 Q All of them would have this
8 procurement authority at the end of this
9 proceeding?
10 A It would be the respective -- if
11 these are local, presumably they may have to
12 authorize the respective investor-owned
13 utilities for the resource, the local
14 resources in the respective areas where the
15 local constraints are.
16 Q Okay. Well, I'm trying very hard
17 to understand what the exact recommendation
18 of the CAISO is with respect to the LCR
19 needs. And what I heard yesterday from Mr.
20 Sparks is that the need -- LCR need that is
21 going to be found or recommended to be found
22 by the Commission in this proceeding is 2,830
23 megawatts for Edison.
24 It's my understanding -- and I'm
25 sorry to -- I'm just trying to cut through
26 this as quickly as I can -- that the need for
27 San Diego Gas and Electric is being addressed
28 in a separate application.

So I'm trying to find out if your statement applies really to all utilities for a broad procurement authority or just to one utility for a specific amount of LCR need?

A I suppose since I'm involved in both proceedings, I should have clarified. And it would have been, for this proceeding, it would have been the Southern California Edison for the resources, local capacity resources in the LA Basin and the Ventura area. The San Diego area local needs, yes, would be handled -- my understanding at this point would be handled potentially under a different proceeding A.11-05-23.

That said, I think there's an open issue there whether the incremental quantities, 373 megawatts, which is above the proposed projects in the San Diego case, I'm not sure that has been resolved, whether that case will address the additional quantity of needs beyond the proposed projects.

And when I say the proposed projects in that case, I'm talking about specifically the Pio Pico project, the Quail Brush project, and the Escondido project, totaling, I think, 445 megawatts.

Q Okay. So your statement, though, that I read earlier, and I want to repeat it,

goes to those two utilities and their LCR needs to the extent they're going to be determined in this proceeding?

A Correct.

Q Okay. You've also testified, and this is at ISO-4, pages 4 of 9 to 5 of 9, that there is an additional 1200 megawatts of generic resources that you state are needed to meet a residual system shortage?

A That's correct.

Q That is correct.

A Sorry.

Q And on whose shoulders does meeting that residual system need fall in terms of the jurisdictional IOUs?

A At this point I'm not asking for that need to be authorized at this point. If it was authorized at some point in the future, I think potentially in Track 2, then as a system need it may be the Commission could distribute that authorization, I guess, in various ways, and I'm not sure which way would be determined.

Q Okay. That was an important clarification, and I appreciate that.

I did want to ask some questions about that system need, however. Is it correct that as to the six cases that you

studied, and if I'm naming them correctly, trajectory, environmentally constrained, cost constrained, time constrained, all gas, and high load, does that sound familiar?

A Yes.

Q Some of which are referenced in both your opening and reply testimony. This system need only arose in the all gas or high load scenarios; is that true?

A The 1200 was in the high load scenario. We did not rerun the all gas with local -- we did not rerun the all gas scenario from the previous work with local resources. We only added the local resources to the high load scenario and reran that scenario, which originally showed needs of 4600 megawatts.

Q Okay. So now, turning -- and I'm sorry to jump around. I'm trying to combine it all. Turning to your reply testimony ISO-5, page 3 of 5, line 20. Is it correct that the high load scenario is not RPS compliant unless you add this 1,497 megawatts of additional renewable capacity?

A I believe that's correct. We've had to add that capacity and the production out of that capacity with the higher load to maintain the 33 percent scenario.

Q Okay. So if the 1200 megawatts of generic resources are still needed in your opinion, in the high load scenario does that mean that the approximately 1500 megawatts of additional renewable capacity would also still be required to comply with RPS goals? I think I'm repeating what you said, but I just want to make sure.

A That amount of capacity or some other capacity that can produce sufficient additional production of renewable energy to satisfy the 33 percent requirement, which is an energy requirement, not a capacity requirement.

Q Going on to a new line of questioning.

A Okay.

Q And thank you for your clear answers. ISO-4, page 7 of 9, line 18.

A I'm sorry. What page are we on?

Q 7 of 9 of ISO -- what did I just say? 4. Sorry.

MS. SANDERS: What were the lines again? I'm sorry.

MS. MYERS: Q I'm sorry. We had some discussion earlier about this, and I think it's still in my mind. Sorry. ISO-4, page 7 of 9, line 18.

A Okay.

Q And again, here, I'm just going to continue with the word "LSE," but you define what is meant here. You've said that they should be authorized to procure new or repowered resources with flexibility characteristics. Then on the following page you define what you mean by flexible resources, and then on the page thereafter you state, at line 5:

> The ISO is not aware of a viable alternative to flexible conventional generation that has all the attributes of such resources.

So I'm just asking you to keep that testimony in general in mind.

Is it fair to state that this conclusion, especially the last one, is based on applying the definition that you have used for flexible resources?

A Not completely because in the page 9 of 9 I also refer to voltage support, which I don't identify as a flexibility characteristic. It's more of on operational characteristic. And I don't refer to flexibility sustained energy supply or

1 explicitly reliable responsiveness. Although
2 I think flexibility, dispatchability, I guess
3 responsiveness is covered there, but the
4 sustained energy supply is not part of that,
5 and I don't refer to use limitations but I do
6 on page 9 of 9.
7 Q So the viable alter -- so flexible
8 conventional generation is defined
9 differently than flexible resources?
10 Flexible conventional generation -- let me
11 just try it again -- to this is being defined
12 by you as being having all the qualities of a
13 flexible resource, as you state on page 8 of
14 9, and then it has these other things too; is
15 that correct?
16 A Yes. Some of these other things
17 are -- may not be so much for system
18 flexibility but probably are more relevant to
19 the local needs themselves and what they
20 provide for local purposes, which Mr. Sparks
21 addressed in his testimony.]
22 Q All right. Is the impact
23 ultimately of both your definition and now
24 these additional qualifications on how the
25 utility will meet its LCR need -- basic
26 result of that is that the utility can only
27 meet this LCR need with gas-fired generation?
28 A No. Just because I'm not aware of

an alternative doesn't mean that an alternative could not be presented that we would be aware of and it would be able to meet these characteristics.

Q Okay. Well, let's talk about that for a minute. If that's the case, do you not think it would be prudent for the Commission -- and I believe that Judge Gamson in asking questions recently suggested there might be a phased approach to meeting this need. But wouldn't it be important to the Commission or prudent for them to explore whether or not such alternatives not only would exist but would exist pretty soon, like by 2013 or 2014? Let's say dispatchable demand response as an example?

A I think -- I think it's important to explore that, but I think it's -- it should be done at -- not at the expense of the timing of when -- when actions need to start being taken to meet the -- both the local needs and really the system needs. I think for the local needs, I'll leave it at that.

And let me add, the system needs -- I think we are saying that we -- additional time should be taken to look at the -- especially the residual system needs and look

at what the alternatives are for that. And the reason we say that is because there may be timing wise -- especially if we're getting down to 1,200 megawatts or less -- the options and the impacts. And the options where you can put those resources are much more potentially flexible than the local resources themselves.

Q Okay. Okay. So let's see if I understand this.

A Okay.

Q So for the local need, the LCR need --

A Yeah.

Q -- you don't really want to wait to find out if there's alternatives. You'd like to move ahead?

A Correct.

Q But for this 1,200 megawatts of system need, you see some more room to explore alternatives? Have I misstated that?

A No, I think that's correct. And we also want to complete additional studies to explore and validate that number and also look to see if -- what alternatives could be used to meet that residual system need.

Q Changing gears. And thank you

again for your prompt answers.

Okay. ISO-4, page 5 of 9 at line 11. I'm going to ask you to compare it to two things.

A I'm sorry. What page?

Q 5 of 9.

A Okay.

Q Let's see if I've got this right. Okay. Around line 11 through 13 to be compared with your reply testimony at page 3. Just so you have those two things in front of you, at --

A You're comparing 5 of 9 on -- on exhibit --

Q Let's see. Hold on just a second.

A Okay.

ALJ GAMSON: Off the record.

(Off the record)

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

Please, continue.

MS. MYERS: Q Page 5 of 9, line 12, where you talk about the average capacity factor of the two CCGT units --

A Yes.

Q -- as being close to 80 percent in San Diego -- about 84 percent --

A Yes.

Q -- versus your reply testimony where the CCGT resource capacity factors had --

A Yes.

Q -- from my perspective a dramatic reduction in --

A Yes, yes.

Q -- in capacity factors by about 20 percent.

A Yes.

Q And I wondered first of all, could you please explain how this change occurred and what impact if any it has --

A Yes, the change occurred as we were reviewing the results -- the first round of results that resulted in the higher testimony -- I'm sorry, the higher capacity factors that was in my original testimony. What we found was that in modeling the outages on those new resources that we modeled in Southern California Edison's area and San Diego area, we thought we accounted for outage rates -- forced outage rates of the resources. What we realized is that we didn't. So they ended up having really a zero percent forced outage rate, which isn't realistic for any resource.

And so in the work that we were

doing with the ARB, we corrected that. And we used forced outage rates that we -- we used from NERC GADS database, which is kind of a database of forced outage rates of typical types of resources. And that resulted in the lower capacity factor results in the -- that resulted in the testimony -- the reply testimony.

Q Were there any other assumptions that needed to be or have changed and would any affect the actual dispatch of these units?

A That was -- there may have been some other very minor changes, but that is the -- that's the material change that was made that produced that -- results that were in the reply testimony.

Q Do any of these changes or that change affect the actual dispatch of these units?

A Yes. The outage -- modeling the forced outage rates, at some points those resources would be unavailable. When you model them, they would be unavailable. Whereas, in the original results in the -- in the original testimony, the resources were basically capable of running all the time without any forced outage rates, and that's

not realistic.

MS. MYERS: That concludes my questions. Thank you.

ALJ GAMSON: Okay. Thank you. We will now take a break until hopefully just before 3:00 o'clock, about a 9-minute break.

We're off the record.

(Recess)

ALJ GAMSON: We will go back on the record.

And the next cross-examination is by CEJA.

MS. BEHLES: Thank you, your Honor.

CROSS-EXAMINATION

BY MS. BEHLES:

Q Good afternoon, Mr. Rothleder,

A Good afternoon.

Q Just a couple questions to follow-up on the questions that Ms. Myers asked.

A Okay.

Q In response to some of her questions, you referred to a timing question associated with procuring LCR resources; is that correct?

A Yes.

Q How long does it take to procure and develop distributed generation PV

resources?

A I don't have a -- an idea on that.

Q So when you're referring to the timing issue, you weren't referring to those resources?

A I -- I was referring to resources -- resources that I thought would be flexible. So when I was talking about timing, it was referring to presumably a conventional solution, conventional resource issue.

Q How long would it take to develop demand response resources in a local area?

A I do not know.

Q How long would it take to develop energy efficient resources in a local area?

A I do not know.

MS. BEHLES: That's all I have.

ALJ GAMSON: Thank you very much.

Next cross-examination is by DRA.

CROSS-EXAMINATION

BY MS. LEE:

Q Afternoon, Mr. Rothleder. My name is Diana Lee. I'm the attorney for DRA.

A Good afternoon.

Q I see you're the executive director for market analysis and development for the ISO. Can you explain what type of market

analysis and development that means? In other words, is it transmission markets or is it broader energy markets and what geographical location?

A It really analyzes the California ISO market, which is dispatching and transmitting allocation in the day-ahead timeframe and in the real time timeframe. And so when I refer to market analysis, it's those markets, the day-ahead market and real time markets that I'm referring to.

Q Thank you. Isn't it true as stated in the California ISO's Articles of Incorporation that the purpose of the ISO is to ensure efficient use and reliable operation of the electric transmission facilities of those transmission owners that have transferred operational control of those facilities to the CAISO?

A Yes.

Q Thank you. Page 3 of your opening testimony, which has been marked as ISO-4, -- and I'm talking about --

A ISO-4?

Q I apologize. I'm talking about page 6.

A Of ISO-4?

Q Yes. Thank you.

A Okay.

Q But it kind of starts back at page 3, so let me just set the framework and I'll tell you what I'm going to ask.

A Okay.

Q Starting at page 3, you explain a process that the ISO undertook to use the OTC studies to consider potential residual system needs. And then at page 6, you discuss one of the reasons why the results of the recent studies differ from the results of the prior study that shows 4,600 megawatts of residual system needs. And one factor that you explained as contributing to the difference is that in the 4,600 study, demand response resources were modelled as having a 4-hour minimum run time. But in the most recent results, that constraint was relaxed.

A Correct.

Q And the result was that the demand response resources were better used and reduced the need for additional capacity.

A Correct.

Q Do you think that this example of how changing the way the demand response resources were modeled results in a more efficient use of resources is analogous to what could happen in the real world? By that

I mean doesn't it show that success of demand response programs can depend on how those programs are designed?

A Yes, I agree.

Q Okay. Now, earlier, you were speaking to Ms. Myers about alternatives to flexible thermal resources that would meet -- that would also meet the ISO's operational needs in local capacity areas?

A Yes.

Q And my question is is it necessary for alternatives to flexible resources to have every single attribute of a flexible thermal resource, or can an approach be used in which some resources supply some aspects and other resources supply other aspects?

A I think you can put together packages of resources that meet the combination of needs, but in order to do that, you need procurement mechanisms that recognize all the needed characteristics and account for those appropriately.

Q Thank you. Has the ISO to your knowledge explored how such a package could be developed or devised?

A We are -- the ISO has recommended and is actively involved in resource adequacy proceedings currently -- I think it's

1 R.12-03 -- I'm sorry. That's not correct.
2 R. 11-10-23, where we did recommend that the
3 resource adequacy requirements factor in
4 resource capabilities, attributes --
5 flexibility attributes. And that's one
6 mechanism where the ISO has tried to have
7 those accounted for in procurement
8 processes -- resource adequacy procurement
9 process.
10 The ISO has also explored backstop
11 mechanisms that would -- in case we saw a
12 shortage of certain flexibility
13 characteristics, give us sufficient
14 flexibility characteristics in the fleet.
15 And we'll continue to explore options and
16 approaches that recognize capabilities of the
17 resources to meet all the system needs,
18 including flexibility needs.
19 Q Thank you. Do you agree with the
20 statement that a witness to this proceeding
21 made -- Mr. Hoffman, an ENERNOC witness, he
22 testified in his opening testimony that in
23 the Western Electrical Coordinating Counsel,
24 that demand response could only provide
25 non-spinning reserves. Is that your
26 understanding of we can requirements?
27 A I know they have tried to modify
28 that, but I don't believe they have gotten

the FERC approval for modification of that at this point. I think they were trying to expand it to spin and I think potentially regulation. I'm not sure.

Q Thank you. Do you in your view as the Director of ISO Market Analysis and Development -- do you think that relaxing that barrier so that demand response could provide spinning reserves -- do you think that that would be helpful to markets or the operation?

A It would be helpful so long as all considerations were taken into account, including the impact on frequency response of the system, which spinning reserve specifically right now is expected to be synchronized. And part of the reason it's synchronized is because it's a rotating mass and can provide some frequency response in addition to being able to be responsive to -- to a contingency event in -- over a -- a longer period. As long as all those things were considered, I absolutely believe that more expansive consideration of technologies is appropriate.

MS. LEE: Thank you, Mr. Rothleder. Thank you, your Honor.

ALJ GAMSON: Okay. Thank you.

The next party up is ENERNOC.

MS. MYERS: I hope it's not like a bad penny, but I am back. Sarah Myers, again.

THE WITNESS: Do you have a twin?

(Laughter)

CROSS-EXAMINATION

BY MS. MYERS:

Q Yeah. I'm here also on behalf of ENERNOC, and so we're actually going to focus on some different things.

A Okay.

Q I'd like you to turn, if you would, to page 6 of 9, lines 5 through 19. It says ISO-4?

ALJ GAMSON: Thank you.

THE WITNESS: ISO-4.

MS. MYERS: Q Your opening testimony.

A Okay.

Q Is it correct in this portion of your testimony, you were explaining one of the factors that reduced a system need result of 4,500 megawatts for approximately 1,200 megawatts of incremental system resources? Is that correct?

A In which lines?

Q Just in this answer, the entire answer.

A Okay. I think this answer is

referring to not the full difference between 4,600 and 1,200, but accounting for a smaller difference that was the -- that was the -- basically, the difference between if you add 1,200 plus the 3,100 megawatts. You would ask yourself, "Well, why doesn't 3,173 plus 1,200 add up to 4,600?" Okay? That's one question you would ask.

You would say, "Well, there may be other differences that are causing the reduction in the need." And this was trying to be responsive and explain that additional difference, why those don't add up. And that's a 263-megawatt difference that in part can be attributable to how we model the demand response.

Q Okay. So then is it fair that one of the factors that contributed to this change wasn't an incremental 263 megawatts of need reduction that directly resulted from recent demand response resources? Is that correct?

A I think it's -- I don't know -- I can't say that it's -- directly all 263 is because of the demand response. It's one of the changes that was made, and I can point to that change. It could be that the -- the mix of resources, the combination of CCGTs, gas

turbines that we used in this study versus the one that produced the 4,600 may have also contributed to some of the that difference why 3,173 plus 1,200 doesn't add up to 4600. Okay?

Q Okay. How much DR capacity did you include in your analysis before you changed or relaxed the 4-hour minimum run time?

A The same amount of capacity was modelled. And I think it was just hundred 5,000 megawatts.

MS. MYERS: One moment.

ALJ GAMSON: Off the record.

(Off the record)

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

MS. MYERS: Q I apologize. The 5,000 megawatts that you just referred to, is this a -- I'm not sure what it's -- I was asking about what you modeled for demand response. Is that what you're saying you --

A Yes, we modeled approximately 5,000 megawatts of demand response as a supply-side resource. We didn't model on the demand side. What we did was increase the load and moved the demand response basically as a pseudo generator to reflect the responsiveness of the demand response.

Q Was this for a system analysis only, or did you also model demand response to look at the local capacity need?

A I'm strictly talking about the system studies that we've been doing for renewable integration. I can't speak to the local studies that Mr. Sparks spoke to earlier.

Q Is it correct that in the studies you've conducted, you limited your demand response resource assumptions to ISO emergency demand response resources only? I'm looking in particular at line 7 at page 6 of 9.

A I'm sorry. What page?

Q Page 6 of 9, line 7.

A I'm not sure they're all strictly emergency triggered programs, but they were modeled in such a way that they were -- the demand response was utilized after effectively using other effective resources. Because our experience has been the demand response is kind of the last thing dispatched, unless there's -- there's some of it that is triggered before or a day ahead based on forecast high, low conditions. And we don't have that granularity to model that, so we model is kind of as a last used

1 resource.
2 Q So you didn't model this with
3 reference to any particular emergency or
4 retail emergency DR program?
5 A No, no.]
6 Q Okay. Are you aware that DR
7 programs in addition to emergency programs
8 can be dispatched for reasons other than
9 Stage 1 emergencies? And in fact have, if
10 you will accept subject to check, have been
11 dispatched far more frequently than the
12 emergency programs? Did you take that into
13 account?
14 A To the best that we could. We
15 accounted, tried to account for the full set
16 of megawatts that were identified in the
17 scoping memo in terms of the amount of demand
18 response exemption study.
19 Q When you performed your recent
20 simulation I identified on page 6 of 9, were
21 you aware that the Commission has required DR
22 resources to be dispatched on a local basis
23 in order to account for local resource
24 adequacy effective as of up to 2013
25 compliance year?
26 A I wasn't aware of it in the sense
27 that that factored into this study.
28 Q Okay. But in light of that

requirement, and given the fact it takes effect in 2013, would you not agree that there are more DR resources available than just the emergency DR programs on which you might have relied that can contribute to further reducing local need, and certainly will be in 2013?

A I think we accounted for all the megawatts of capacity of demand response that was expected in that time period, not just limited to emergency.

Q And this was with reference though to the system analysis. You did not do the local?

A I did not do the local, yes.

Q I'm going to turn now again to a page I discussed with you earlier on page 8 of 9 when you are talking about flexible resources. First of all, is this definition one you were asking the Commission to adopt in this proceeding?

A If they can adopt this in this proceeding, that would be great. My understanding is there is another proceeding opened up in the resource adequacy that may be addressing what does flexibility mean. In light of that, I recognize there may be another proceeding that would have to be

1 addressed.
2 Q So your definition hasn't been one
3 that has been publicly -- or vetted in a
4 public forum like that yet?
5 A I've mentioned it before in other
6 workshops, and I mentioned it in the San
7 Diego case A.11-05-023, and I've maintenance
8 it in some of the ISO's proceedings. But I
9 can't say that it has been adopted as what
10 does flexibility mean.
11 Q Thank you.
12 On the following page again you
13 talk about viable alternatives to flexible
14 conventional generation. Is it your
15 testimony that dispatchable demand response
16 is such a viable alternative?
17 A I think a dispatchable demand
18 response is truly responsive. And has the
19 ability to be dispatched on and off to
20 balance a system freely, fairly freely, may
21 be a viable alternative.
22 Q Have you reviewed the testimony of
23 EnerNOC Witness Andrew Hoffman in this
24 proceeding? You were asked a few questions
25 about it by DRA's attorney.
26 A I have not reviewed in detail.
27 Q Are you aware that demand response
28 is and can provide fast response services in

other wholesale markets, or is today providing such services?

A I have heard, and I've talked to other jurisdictions where they've had programs of dispatchable demand response. And I've heard -- I am aware that they do have it. I've heard both challenges and things that are working right in the jurisdiction. So kind of just anecdotally in conversation.

Q Is there any reason to believe that these services can't be offered by load-serving entities, or demand response providers in California today?

A If you mean -- I think there is some technical and policy hurdles to get over that need to be addressed. But if you can get over those hurdles, I don't see a reason why they couldn't be developed.

Q If such resources, fast response dispatchable demand response was available, would that change your need assessment or how you would approach your system need assessment?

A I don't believe so. Because I think I've already accounted for demand response being there in quantities that were specified by the CPUC scoping memo. So I

1 think I've accounted for that demand
2 response.
3 Now, I have the high load scenario
4 is high load -- let me -- I answered the
5 question. I'll stop there.
6 MS. MYERS: Thank you, Mr. Rothleder.
7 I appreciate your answer.
8 ALJ GAMSON: Okay. Thank you very
9 much.
10 The next party is IEP.
11 MR. CRAGG: Thank you, your Honor.
12 CROSS-EXAMINATION
13 BY MR. CRAGG:
14 Q Good afternoon, Mr. Rothleder. I'm
15 Brian Cragg representing the Independent
16 Energy Producers Association. I have just a
17 few questions about Exhibit 4, your opening
18 testimony. Could we start by turning to page
19 2.
20 A Okay.
21 Q And in the question and answer
22 starting on line 21 you describe the steps
23 that the ISO is taking, or how the ISO is
24 continuing with renewable integration studies
25 by incorporating the findings of the
26 once-through cooling studies. Do you see
27 that testimony?
28 A Yes.

Q And in the following pages you describe the results of some of the simulations that you performed, including the once-through cooling simulations?

A Yes.

Q Is that basically correct?

A Yes.

Q All right. On page 7 the question and answer on beginning on page -- excuse me, line 4, you indicate that the ISO has not completed these studies of system flexibility. Those studies are ongoing. Do you see that testimony?

A Yes.

Q Then at the very bottom of the page that paragraph that ends on page 7 and continues onto page 8, you indicate that your recommendation, the ISO's recommendation is that the Commission's assessment of new system need for new system resources to meet renewable integration needs should take place in this docket during 2013 with a decision by no later than December of 2013; is that correct?

A Yes.

Q And at the very bottom the sentence that continues on to page 8 you indicate that this schedule, your recommended schedule,

will accommodate additional time for the study group to complete the renewable integration analysis; is that correct?

A Yes.

Q Do you have any expectation right now about how long it will take for that analysis to be completed?

A I think we are in evaluation phase of that in light of -- and I think it is dependent on the new planning assumptions that we do or don't have to incorporate into these studies. And the new planning assumption is one of the decisions I think comes out of the Track 1 part of this. Or, I'm sorry, I caused confusion, and I'm still confused.

(Laughter)

So I think the planning assumptions are coming at a Track 2, but they need to be decided early on so that they can be incorporated into whatever study work that we need to do in the renewable integration studies.

Just to be clear, the assumptions that are -- all the study results I did here are based on last year's LTPP which came out of the scoping memo on December 3rd, 2010. Okay. Sorry.

MR. CRAGG: Q So do you have any expectation right now about when the analysis will be completed?

A I can't answer that until I know when the planning assumptions are finalized, and I haven't time to evaluate incorporation of those into the study.

Q Would you expect the analysis to be complete this year in 2012?

A A portion of it would continue -- well, I don't think -- no. I don't think the new assumptions will be incorporated in this year. There may be completion study work on the previous assumptions that can be completed this year, including some methodology associated items using probabilistic approaches.

MR. CRAGG: Thank you. Those are all my questions.

Thank you, your Honor.

ALJ GAMSON: Okay. Thank you very much.

Let's go off the record for one moment.

(Off the record)

ALJ GAMSON: All right. We will go back on the record.

The next party is Sierra Club.

MR. ROSTOV: Thank you.

CROSS-EXAMINATION

BY MR. ROSTOV:

Q Good afternoon. My name is William Rostov representing Sierra Club. Many of my questions have already been asked, so this will be relatively short.

Do you know what the lead time is for combined cycle gas turbines?

A I don't know the exact time, but we are estimating I think about 6 to 7 years from the time this proceeding starts to the point of through siting and contracting and ultimate construction.

Q What about lead time for simple cycle, CTs?

A I don't have a good enough view differentiating those two.

Q Do you believe they are different?

A I think the construction piece of it may be different, but I'm not sure about the rest of it.

Q So could it vary by a couple of years?

A I estimate construction phase of it to be two years anyway. So if that could be shortened by a year, maybe a year difference.

Q So what is your -- do you have an

estimate for CTs or not?

A I don't have a good basis for an estimate.

MR. ROSTOV: Okay. Actually, I believe I don't have any other questions.

ALJ GAMSON: Okay. Thank you.

Now, unless I missed somebody, the only other party I have left on the list here is TURN. So it is your turn.

MR. FREEDMAN: Thank you.

CROSS-EXAMINATION

BY MR. FREEDMAN:

Q Good afternoon.

A Good afternoon.

Q I would like to ask you to turn to page 2 of your testimony, your direct testimony where you describe the ISO scenario provided in the last LTPP.

A What lines?

Q Starting on line 15 you reference an ISO scenario showing need for 4600 megawatts of incremental upward load?

A Following, load following, yes.

Q Load following. Thank you.

For purposes of this conversation, I would like to call it the 4600 scenario so we avoid having to repeat all those words. Is that acceptable to you?

A That is fine.

Q How many scenarios were presented in the last LTPP?

A How many scenarios were presented, or how many scenarios were being produced results for?

Q Did you produce results for. Thank you.

A We produced results for six scenarios, six.

Q And how many of those scenarios showed no need for incremental upward load following new flexible system resources by 2020?

A Four other scenarios.

Q Did the PUC adopt in that proceeding what were calling the 4600 scenario?

A They adopted the scenario to be run. They did not adopt or authorize procurement based on that scenario. What I'm saying there is that the scoping memo prescribed that that scenario, and frankly speaking it was -- the times it was described as a scenario, at points it was described as sensitivity. It was part of the scoping memo that that scenario should be run.

Q And the Commission also asked for

the other scenarios to be run as well, did it not?

A That is correct.

Q So it didn't give preference to the 4600 scenario, did it? It didn't adopt any preference?

A It was a set of scenarios that they requested to be run.

Q And the ISO was a party to a settlement agreement in that case, was it not?

A Yes, it was.

Q And as part of the settlement agreement did the ISO commit to updating the study and coordinating with a group of experts representing various stakeholders?

A Yes, it did.

Q And did the ISO convene such a group?

A Yes, it did.

Q Is the man to my right TURN's witness Mr. Woodruff part of that group?

A Yes, he is.

Q Is it fair to say that many of the individuals who are part of this group have offered critiques and feedback about the model and the inputs?

A I would say many, there is probably

20 or 30 people on the team. There is probably five or so that provide the most input. So I'm qualifying the "many."

Q Thank you.

And has the ISO made any changes to the model or the inputs based on the feedback received from these individuals?

A Yes, it has.

Q So has the model and the inputs changed from the one that was presented to the Commission in the last LTPP?

A Yes, but that is -- yes, but that is not the results I'm -- part of my testimony today.

Q Your testimony refers to the previous outputs, correct?

A Yes. And the previous inputs, but for what I had qualified in my testimony.

Q Okay. I understand. Since that time, since the model had been run in that case, it has evolved somewhat. Is that fair to say?

A Through that group that you describe there is some additional changes, and not just changes to the model, but also some proposed methodology changes.

Q And does the ISO intend to consider additional changes?

A From that group or --

Q Yes.

A I think so. I think the -- it is not too late for that group to get back together and continue working through those issues.

Q Are there any changes proposed by members of that group that were not accepted by the ISO?

A There was some study sensitivities that the group reviewed and decided they were lower priority relative to the amount of time that we had to do the work. And so there were some recommendations or some suggestions for additional study work that were not performed.

Q And is it your understanding that the proposed -- that the evolution of that model will be reviewed in a future phase of this current proceeding?

A I expect that to be part of the Track 2 effort of this proceeding.

Q At that time will the intervenors in this case have an opportunity to express their concerns about the model?

A I expect so.

Q And have you run any new scenario outputs based on the revised or evolved

model?

A We've run several outputs, but I don't believe it is ready for review or to inform this proceeding in Track 1 at this point.

Q Okay. Thank you.

At page 7 still of your direct testimony you reference on line 13 incorporating the OTC study results into the renewable integration studies.

A Yeah.

Q Can you explain what you mean by that?

A Yeah. It is basically taking the quantity of the once-through cooling resource studies, local capacity resources that those studies indicate may be needed. Accounting for those, modeling those in the studies that we were running and determining what the residual need would be. It wasn't to perform a -- that is it.

So it was to take renewable integration studies and account for and add resources that were identified. The quantity of those resources that were needed in the local areas to satisfy the once-through cooling retirement and the local -- the local reliability needs.

Q What is the role of the renewable integration study in that process?

A The renewable integration study role is to look at systemwide needs, and system flexibility needs as a result of renewable integration. Underlying that is what the resource mix is expected to be there. So we started with a mix of resources that were scoped in terms of expected resources, and then we added the additional resources that came from the local capacity study.

Q And so is the model you are talking about here the same model I was just asking you about?

A The evolved model or the? It is not the evolved model. It is the model that we use to produced the 4600 case.

Q So would the results then change if the OTC study results were used with the evolved model?

A It is possible.

Q So if there is an agreement by the ISO and parties or perhaps the Commission adopts a particular version of the renewable integration model in Phase 2, would using that model have an impact on the need for new resources in the LA Basin, Big Creek and San

Diego local areas?

A I don't think the new model or the evolved model will impact the local capacity studies that drove the need for local capacity resources in those areas, no. It may impact the amount of residual need, system need, when you account for those local resources.

Q Can you turn to your reply testimony.

A Okay.

Q Page 2 here you are responding towards the bottom of the page to critiques in Mr. Woodruff's testimony regarding the ISO's references to the 4600 study. Do you so that paragraph?

A Yes.

Q And were you part of the ISO team that briefed the board of governors about the renewable integration modeling results in August of 2011?

A I made the presentation, yes.

Q Did you write the board memorandum?

A It was a collaboration. I think the memo is from Vice President Keith Casey to the board.

Q Was the memo written before or after the settlement was executed?

A I think it was written after.

Q Does it reference a settlement?

A I'm not sure if it referenced the settlement directly. I think it referenced the outcome of the settlement, and that was that we were not seeking authorization to procure at this point, and additional studies were necessary.

Q Does the memo urge the ISO to proceed on the basis of the 4600 scenario or one of the other scenarios?

A It refers to and discusses the other scenarios. It does discuss that we think that from an operational perspective the 4600 scenario was a relative scenario to continue to study.

Q When you say "relevant," do you mean the ISO would see that as the base case?

A What do you mean by "base case"?

Q The default.

A It is an important case that we felt was needed to be studied. I'm not sure I would call it the base case or default case. It is a relevant case for assessing potential operational impacts.

Q Would you say that the memo gives equal weight to all of the scenario results?

A I'm not sure. Certainly the

discussion is more around the 4600 because that was what was operationally, I think, relevant to the board.

Q So would you agree that there is general agreement that further analysis is needed before any renewable integration resource need determination is made?

A There is general agreement on that, yeah.

Q And did the ISO in supporting the need proposed waiver related to the Sutter generating facility, did it provide the results of the 4600 study?

A It mentioned the residual of the 4600 megawatt study, but the results there was additional sensitivity that was not in the 2020 case but 2018 scenario that was developed from that case.

Q Did the ISO also provide the results of the other scenarios in supporting the waiver for the Sutter facility?

A I don't recall that we did. We didn't take their scenarios and look at 2018. In part because that was looking at not so much need for new resources, but it was asking a question about a resource that was actually part of the base assumption that would be there in the CPUC scenarios.

ALJ GAMSON: Can I -- I need to interrupt here. Mr. Freedman, what is the relevance of all of this discussion to this proceeding?]

MR. FREEDMAN: Well, your Honor, there's reply testimony here specifically directed to the opening testimony of Mr. Woodruff where Mr. Woodruff takes issue with repeated references to the 4600 study and wants to make it clear that it's a preliminary study and there's broad disagreement about the actual numbers. And we just want to clarify that the 4600 scenario is simply one scenario, that it's preferred by the ISO but has not been adopted by this Commission.

ALJ GAMSON: Okay. I think it's been made clear that that's not been adopted by this Commission, and I don't think we're talking about all these other proceedings really in his testimony here. I think we have reached the end of that line of questioning. So why don't you move on to something else.

MR. FREEDMAN: Can I have a moment off the record?

ALJ GAMSON: Off the record.

(Off the record)

ALJ GAMSON: We'll go back on the record.

MR. FREEDMAN: Okay. Thank you. That's all my cross-examination.

ALJ GAMSON: Okay. Thank you very much.

Now, I believe that every party who requested cross-examination time for this witness has had an opportunity; is that correct?

(Counsel nodding)

ALJ GAMSON: Okay. Good. Thank you.

Now, Commissioner Florio, do you have some questions you'd like to ask?

COMMISSIONER FLORIO: Just a few.

EXAMINATION

BY COMMISSIONER FLORIO:

Q Good afternoon, Mr. Rothleder.

A Good afternoon, Commissioner Florio.

Q On page 3 going up to page 4 of your opening testimony, Exhibit 4, you describe the units that you modelled as a result of the once-through cooling findings: Two 500-megawatt combined cycles and 18 100-megawatt gas turbines. Do you see that?

A Yes, I do.

Q It looks like in terms of flexible

operating ranges you assumed that the combined cycles could operate between the range from 200 to 500 megawatts?

A Yes. I think it's about 60 percent flexibility Pmin to Pmax ratio if I'm not mistaken.

Q And for the conventional CTs it was a 50 to 100 megawatt range?

A It was a 40 to 100 megawatt.

Q Thought I saw 50 on line 30.

A That may be --

Q So you describe these units as 40 to 50 percent flexible?

A I think it's more like 50 to 60.

Q 50 to 60. Excuse me.

A Yes.

Q Okay.

A And I'm sorry. The CTs also have the attribute that they're relatively quick start.

Q Right. Well, if electricity storage technologies were commercially feasible such as a battery storage or compressed air storage, could they provide similar flexibility?

A Potentially. We'd have to look to see how long the storage is and compare that to the length of time that we would need not

1 just the movement capability but the
2 sustained output of that resource, and I
3 think some of those technologies potentially
4 could. Although I -- except for compressed
5 air and pumped storage hydro, my experience
6 has been that the -- they're usually smaller
7 type resources, very quick but not
8 necessarily can sustain the energy output for
9 a long period of time.
10 Q Okay. So you might be able to get
11 the ramp rate, but the duration of the ramp
12 might be an issue?
13 A That's correct.
14 Q So it's very technology specific?
15 A You'd have to really look at the
16 characteristics of the technology and compare
17 it to the operational chara -- or
18 requirements of the system based on load
19 changes and the supply changes.
20 Q Okay. And is the same generally
21 true of demand response, that you have to
22 look at the characteristics of the particular
23 resource --
24 A Yes.
25 Q -- or the particular program?
26 A Maybe a different type of
27 characteristic, how long the resource remains
28 off, lead time to interrupt, is it a block of

interruption or is it going to be ramped in.

Q Okay. Has the ISO had experience with Southern California Edison Company's air conditioner cycling program and the capabilities of that program?

A I think operationally we've had some experience with it. I can't speak directly to that experience, though.

Q Okay. The discussion on page 6 of your testimony at the top of the page seems more likely to characterize the traditional interruptible program more than AC cycling. Would you agree?

A I think that's correct, yes.

Q Just a clarifying point. Over on page 8 of your testimony starting at line 27 you have a sentence that reads:

> Resources that have inertia or governor control can also automatically respond to changes in frequency and provide system stability.

Just so I match these things up correctly --

A Yeah.

Q -- it's the inertia that provides system stability and the governor control that provides frequency response?

A Yeah. The inertia basically affects the speed at which the frequency may fall or how far it will fall. The governor control, kind of once you turn the frequency around, how fast and how far do you get back up in terms of the frequency and response.

Q Okay. Now, a synchronous condenser can give you the inertia; is that correct?

A Since it's a spinning, rotating mass, it can provide -- it does provide inertia, yes.

Q Okay. You don't get gener --

A You don't get governor control out of it.

Q Okay. Are there other technologies other than generation resources that can provide governor control?

A I think you'd have to be generating -- I think there is some -- I think there is some exploration of demand response being frequency responsive or regulation responsive. I'm not sure if I know enough about that. I've heard.

Q Oh, okay.

A Okay.

Q In your reply testimony ISO-5, page 4 of 5, the last paragraph you mention, while energy from inflexible resources may be able

to unload other flexible resources, further study is needed to determine to what degree this trade can occur.

Are you referring there to adding something like combined heat and power that runs on a 24/7 baseload profile?

A Yeah, basically. Something that is more inflexible but gives you the ability to unload other flexible resources in the system and to make -- to use those when you need to to ride through the variations in the system. And yeah, that's basically.

Q That would be kind of a portfolio specific phenomenon that if you have those flexible resources that are running above minimum load you can do this, but if they're running at minimum load you can't?

A There's two things you have to think about when doing that. Do those resources exacerbate potential issues with overgeneration. Okay. And the second thing that has to be considered is do you have enough embedded flexibility to meet your needs because if you don't have enough embedded flexibility you can't do that trade-off in the first place.

Q Right.

A Okay.

Q Now, are the studies that you're working on for Phase 2, do they explore this issue of the embedded?

A They try to explore the question about whether you're effectively flexibility limited or, lack of a word, capability limited where that trade-off wouldn't even be an option. And so some of the new methodologies are trying to expose that differentiation.

Q Okay. That's good. The overall takeaway I get from your testimony is -- tell me if this is a fair characterization -- is we're dealing here in this phase of the proceeding with replacing once-through cooling generation, but in doing that you're recommending that we keep an eye on the issue in the next phase of flexibility and, you know, potentially consider getting both elements at once rather than, say, pursuing a lot of inflexible resources here and then having to do more procurement of flexible resources later?

A I think that's right. You have an opportunity here to address the local issues, and potentially how you address those and the characteristics of those resources that you use to do -- satisfy the local issues, it has

effects on what may be the residual flexibility needs in the Track 2.

COMMISSIONER FLORIO: Okay. Thank you very much.

THE WITNESS: You're welcome. Thank you.

ALJ GAMSON: Thank you, Commissioner. Is there any redirect?

MS. SANDERS: Your Honor, if I might, could I just have a minute with my witness before we determine whether we have any redirect? We'll be quick.

ALJ GAMSON: Certainly.

Off the record.

(Off the record)

ALJ GAMSON: We will go back on the record.

MS. SANDERS: Oh, we're not on the record.

ALJ GAMSON: Do you have any redirect?

MS. SANDERS: I do not, your Honor. Thank you.

ALJ GAMSON: Okay. Thank you. We'll go off the record again.

(Off the record)

ALJ GAMSON: We'll go back on the record.

All right. Thank you very much, Mr.

Rothleder. You are excused. Appreciate your testimony.

THE WITNESS: Thank you.

ALJ GAMSON: And there being nothing further to discuss today, we will recess for the day and come back tomorrow at 9:30.

We're off the record.

(Whereupon, at the hour of 4:12 p.m., this matter having been continued to 9:30 a.m., August 9, 2012, at San Francisco, California, the Commission then adjourned.)

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