

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In The Matter of Union)
Electric Company d/b/a)
AmerenUE for Authority) Case No.
to File Tariffs Increasing) ER-2008-0318
Rates for Electric Service)
Provided to Customers in)
the Company's Missouri)
Service Area.)

DEPOSITION OF AJAY ARORA
TAKEN ON BEHALF OF MISSOURI PUBLIC SERVICE
COMMISSION
NOVEMBER 18, 2008

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<p style="text-align: right;">Page 3</p> <p>1 BEFORE THE PUBLIC SERVICE COMMISSION</p> <p>2 OF THE STATE OF MISSOURI</p> <p>3</p> <p>4 In The Matter of Union)</p> <p>5 Electric Company d/b/a)</p> <p>6 AmerenUE for Authority) Case No.</p> <p>7 to File Tariffs Increasing) ER-2008-0318</p> <p>8 Rates for Electric Service)</p> <p>9 Provided to Customers in)</p> <p>10 the Company's Missouri)</p> <p>11 Service Area.)</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p style="text-align: right;">Page 5</p> <p>1 FOR UNION ELECTRIC COMPANY:</p> <p>2 SMITH LEWIS, LLP</p> <p>3 Suite 200, City Centre Building</p> <p>4 111 South Ninth Street</p> <p>5 Columbia, Missouri 65205-0918</p> <p>6 (573) 443-3141</p> <p>7 by: Mr. James B. Lowery</p> <p>8 lowery@smithlewis.com</p> <p>9</p> <p>10 ALSO PRESENT:</p> <p>11 MIDWEST LITIGATION SERVICES</p> <p>12 711 North 11th Street</p> <p>13 St. Louis, Missouri 63101</p> <p>14 (314) 644-2191</p> <p>15 1-800-280-DEPO</p> <p>16 by: Ms. Tara Schwake, CRR, RPR</p> <p>17</p> <p>18 Dr. Michael Proctor</p> <p>19 Mr. Tim Finnell</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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<p>1 IT IS HEREBY STIPULATED AND AGREED</p> <p>2 by and between Counsel for the Plaintiff and</p> <p>3 Counsel for the Defendant that this deposition</p> <p>4 may be taken by Tara Schwake, Notary Public and</p> <p>5 Certified Realtime Reporter, thereafter</p> <p>6 transcribed into typewriting, with the signature</p> <p>7 of the witness being expressly reserved.</p> <p>8 AJAY ARORA,</p> <p>9 Of lawful age, having been produced, sworn, and</p> <p>10 examined on the part of the Missouri Public</p> <p>11 Service Commission, testified as follows:</p> <p>12 EXAMINATION</p> <p>13 QUESTIONS BY MR. DOTTHEIM:</p> <p>14 Q Good morning, Mr. Arora.</p> <p>15 A Good morning, Mr. Dottheim.</p> <p>16 Q I'm Steve Dottheim, we of course</p> <p>17 know each other, do we not, from previous</p> <p>18 dealings between AmerenUE and the Missouri Public</p> <p>19 Service Commission, correct?</p> <p>20 A Correct.</p> <p>21 Q Okay. Mr. Arora, have you ever</p> <p>22 been deposed before?</p> <p>23 A I have not.</p> <p>24 Q Okay. Have you ever sat in on a</p> <p>25 deposition before?</p>	<p>1 I'll try to the best of my ability to make the</p> <p>2 question comprehensible. Of course, the subject</p> <p>3 matter is very complicated.</p> <p>4 MR. LOWERY: Mr. Dottheim, I was</p> <p>5 just going to comment, as we've done a couple of</p> <p>6 other deposition, I suspect there may be occasion</p> <p>7 to address highly confidential information in</p> <p>8 this deposition, and I think we've stipulated in</p> <p>9 the last deposition that we would go ahead and</p> <p>10 just have one transcript.</p> <p>11 If you choose to use the deposition</p> <p>12 as part of the hearings or in evidence in some</p> <p>13 fashion, that -- just as we would be responsible</p> <p>14 for depositions we've taken, you would mark</p> <p>15 what's highly confidential and, and we'll do the</p> <p>16 same of course with our deposition, rather than</p> <p>17 trying to parse the record in this deposition.</p> <p>18 I assume that's acceptable to you?</p> <p>19 MR. DOTTHEIM: Yes, yes, it is. In</p> <p>20 fact, I know some of the questions I am going to</p> <p>21 ask, or actually some of the numbers I was going</p> <p>22 to use are, are highly confidential. I certainly</p> <p>23 -- I think I can, in asking those questions,</p> <p>24 identify those numbers as highly confidential.</p> <p>25 Of course, the Staff always is</p>
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<p>1 A I have called in to Dr. Proctor's</p> <p>2 deposition.</p> <p>3 Q Okay. Well, then, I think you have</p> <p>4 some understanding of how we're going to proceed</p> <p>5 this morning. I'm going to ask you questions,</p> <p>6 and you're going to be expected to provide</p> <p>7 responses to the best of your ability.</p> <p>8 You're represented by counsel this</p> <p>9 morning. Mr. Lowery may, upon occasion, instruct</p> <p>10 you -- he may object to a question of mine, he</p> <p>11 may instruct you not to respond. I think</p> <p>12 generally if he objects, he ultimately will</p> <p>13 instruct you to respond.</p> <p>14 If he objects to some questions I</p> <p>15 ask, those are matters that we may need to take</p> <p>16 before the Regulatory Law Judge for</p> <p>17 determination. But I'll leave that to your</p> <p>18 counsel, Mr. Lowery. I'll try not to ask you</p> <p>19 questions to which he'll object.</p> <p>20 I'll try not to talk over you.</p> <p>21 I'll try to let you respond to the questions I</p> <p>22 ask, and I ask that you show me the same</p> <p>23 courtesy.</p> <p>24 If you don't understand a question</p> <p>25 I ask, please ask me to repeat it or rephrase it.</p>	<p>1 conscious of trying to protect information that</p> <p>2 the company has asserted to be highly</p> <p>3 confidential or proprietary.</p> <p>4 Is there some preference that the</p> <p>5 company would like to treat the deposition in</p> <p>6 totality initially as highly confidential and</p> <p>7 have an opportunity to review it in particular</p> <p>8 when Mr. Arora is reviewing the deposition, and</p> <p>9 the company at that time could indicate what it</p> <p>10 believes is highly confidential or proprietary?</p> <p>11 MR. LOWERY: I think that -- I</p> <p>12 think the best thing to do is treat the entire</p> <p>13 deposition as highly confidential.</p> <p>14 We will identify those things that</p> <p>15 are highly confidential when we review it, and</p> <p>16 then a redacted version, if one were to be,</p> <p>17 ultimately, to be received into evidence, for</p> <p>18 example, a redacted version could be provided as</p> <p>19 a public version and then the original would be a</p> <p>20 highly confidential version.</p> <p>21 If that's acceptable to you, then I</p> <p>22 think that's how we should proceed.</p> <p>23 MR. DOTTHEIM: Yes. The Staff has</p> <p>24 no problem.</p> <p>25 MR. LOWERY: And I don't think it</p>

3 (Pages 6 to 9)

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<p style="text-align: right;">Page 10</p> <p>1 would be necessary for you that way to say, 2 "Well, this number is highly confidential." You 3 won't have to worry about that. 4 It will save a little bit of time 5 today because we know what items are highly 6 confidential and what aren't. I think they're 7 all items that were likely discussed in testimony 8 and already marked as such. 9 MR. DOTTHEIM: Okay. Very good. 10 Thank you. 11 Q (BY MR. DOTTHEIM) Mr. Arora, with 12 the matter that Mr. Lowery raised also reminds me 13 that some of the matters that we'll be 14 addressing, either because of their technical 15 nature or whatever, there may be names that'll 16 have particular identification or they may be 17 acronyms. 18 For purposes of clarity in the 19 record, if, if you might remember, I'll try to 20 remember to identify for the court reporter the 21 names or the spelling of acronyms so that we can 22 keep the record as accurate as possible. 23 If at any time you would like to 24 take a break, please indicate that and we can 25 take a break.</p>	<p style="text-align: right;">Page 12</p> <p>1 that's what you're saying, right? 2 MR. MILLS: That's what I'm saying. 3 MR. LOWERY: Sure. And if Ryan 4 could just -- we'll hear him beep in, but he 5 probably should at least at the first break where 6 he doesn't interrupt somebody speaking at least 7 announce his presence if he does come on. 8 MR. MILLS: Sure. And I imagine 9 he'll sit in my office. In either event, I will 10 make sure he lets himself known at the earliest 11 convenient moment. 12 MR. LOWERY: Thank you. 13 MR. MILLS: Thank you. 14 Q (BY MR. DOTTHEIM) Mr. Arora, you 15 filed direct rebuttal and surrebuttal testimony 16 in the presently pending AmerenUE rate increase 17 case. Did you not? 18 A That is correct. 19 Q I'd like to direct you to your 20 surrebuttal testimony. 21 A Okay. 22 Q And I'd like to direct you to page 23 1, line 20, and I'd like to direct you to the 24 fourth word on that line, the word "intuitive." 25 A Mm-hmm.</p>
<p style="text-align: right;">Page 11</p> <p>1 Is there any reason this morning 2 that you wouldn't be able to answer fully to 3 questions I will be asking? Are you on any 4 medication that would prevent you from answering 5 fully and correctly to the questions I'll be 6 asking? 7 A No. 8 Q Why don't we start? 9 A Yes. 10 MR. MILLS: This is Lewis Mills in 11 Jefferson City. I'm probably going to be leaving 12 for a meeting at ten o'clock. I imagine Ryan 13 Kind will be sitting in as well. I didn't want 14 to interrupt just in the middle of questions to 15 say I'm coming or going, but I wanted that to be 16 clear on the record. 17 Also, if possible, I have a couple 18 of questions I would like to ask at the end if 19 the timing works out, but I just wanted to let 20 you all know that before you got deep into 21 questioning. 22 MR. LOWERY: Lewis, I take it, 23 then, if you're here when the deposition is 24 concluding, you will ask your questions; if 25 you're not, then you won't have that opportunity,</p>	<p style="text-align: right;">Page 13</p> <p>1 Q You used that word various other 2 places in your surrebuttal testimony. Could you 3 identify what you mean by the word "intuitive" 4 that you use in your surrebuttal testimony? 5 A Sure. In the context that I use 6 this word, it means that, you know, the results 7 would make common sense when viewed by a layman, 8 given that that person knows the real world 9 operations of AmerenUE's business. 10 Q Okay. And in this instance, you 11 used the words "highly intuitive." What is the 12 meaning you ascribe to the term "highly 13 intuitive" as opposed to just your use of the 14 word "intuitive"? 15 A Mm-hmm. So there are two things I 16 am addressing through my testimonies. Are, you 17 know, the components of net fuel cost uncertain? 18 And if those components are uncertain, would 19 there be any reason not to expect the net fuel 20 cost to be uncertain? And that would we expect 21 any offsetting at all with any of the components? 22 So when I say "highly intuitive," 23 you know, when I look at some of the charts and 24 data that I have presented and/or AmerenUE 25 witnesses have presented, I say it's highly</p>

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<p>1 intuitive because just looking at the chart, you 2 can see, one, that there is a lot of uncertainty 3 just, you know, you can see individually. 4 As to the second point, you know, I 5 -- to illustrate why it's highly intuitive I give 6 a simple example in my surrebuttal, and you can 7 see a large hurdle that would have to be cleared 8 for there to be any offsetting, and that's why I 9 call it highly intuitive. If the hurdle were 10 smaller, I may have called it intuitive. 11 Q And you reference in your response 12 about looking at the work, the testimony, I 13 think, of other AmerenUE witnesses. Could you 14 identify those other AmerenUE witnesses? 15 A Sure. For power prices, Mr. Sean 16 Schukar; for coal price volatility, Mr. Bob Neff; 17 and for gas prices, Mr. Scott Glaeser, 18 G-l-a-e-s-e-r. 19 Q And Schukar is S-c-h-u-k-a-r? 20 A Yes. 21 Q And Neff is N-e-f-f? 22 A Right. 23 Q Also on page 1 I'd like to refer 24 you to line 13. The fourth word from the end of 25 the line, "volatility."</p>	<p>1 Q On page 3, the words I just 2 referred you to, there is the word "substantial" 3 before the word "uncertainty." Does that have 4 any additional meaning when defining or looking 5 at the words "uncertainty" or "volatility" as 6 you've used it in your surrebuttal testimony? 7 A Well, there's a couple of ways to 8 answer that question. You know, one way would be 9 it will be substantial in the sense of the impact 10 on AmerenUE's ROE. So to the extent, you know, 11 this volatility answer and we did not allow UE to 12 earn its allowed rate of return, you know, there 13 would be a number that we would consider 14 substantial. 15 Another way you may look at it, and 16 this would depend on specific years, if there are 17 events that, you know, are beyond what we call 18 like three standard deviations, I would say 19 that's pretty substantial. 20 Q Okay. Mr. Arora, I'd like to refer 21 you to page 5 of your surrebuttal testimony. At 22 the bottom of the page, line -- starting at line 23 23 where you state, "It is quite clear and indeed 24 is highly intuitive that off-system sales, 25 revenues, cannot be expected to offset fuel cost</p>
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<p>1 A Mm-hmm. 2 Q And you used the "volatility" 3 throughout your surrebuttal testimony. Could you 4 provide an explanation of the term "volatility" 5 as you use it in your surrebuttal testimony? 6 A Sure. I mean, the way I would 7 define this term "volatility" is the uncertainty 8 or the risk in the changes of a commodity's price 9 around an expected value. 10 Q And you use the term "uncertainty." 11 That word appears also in line 13. In fact, it 12 appears two words before "volatility." Does, 13 does the word "uncertainty" have any meaning 14 other -- or in addition to "volatility" to you? 15 A In my mind they can be used 16 interchangeably. 17 Q And if I could refer you to page 3 18 of your surrebuttal testimony, line 3, where you 19 have the words "substantial uncertainty" and then 20 parenthetically you have the word "volatility." 21 Is, is that an example of what you 22 just indicated where you said that, if I 23 understood correctly, that "uncertainty" and 24 "volatility" could be used interchangeably? 25 A Yes.</p>	<p>1 increases for AmerenUE." 2 Have I read that part of the 3 sentence correctly that carries over to page 6? 4 A Yes. 5 Q By the word "offset" as you've used 6 that word in that sentence, do you mean that 7 revenues from off-system sales would increase by 8 the same amount as the increase in AmerenUE's 9 fuel costs? 10 A Just so I make sure I understand, 11 you said that the revenues would increase by the 12 same amount as the increase in AmerenUE's fuel 13 costs? 14 Q Yes. 15 A Yes. That's what I would expect. 16 That's what I would mean by that word "offset." 17 Q I'd like to refer you to page 8 of 18 your surrebuttal testimony. Starting on line 9. 19 In the middle of that line where you state, "It 20 would require an extremely unlikely move in 21 prices, beyond six standard deviations, for any 22 expected power price increases to offset AmerenUE 23 expected delivered cost increases." 24 A Coal cost increases. 25 Q I'm sorry. Coal cost increases.</p>

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<p style="text-align: right;">Page 18</p> <p>1 Did I, with the insertion of the word "coal"</p> <p>2 before "cost," did I read that correctly?</p> <p>3 A Yes, you read it correctly.</p> <p>4 Q Okay. And in a footnote at the</p> <p>5 bottom of the page, footnote 2, there's a -- the</p> <p>6 very last sentence to that footnote, you state</p> <p>7 that the probability of this is almost zero. Is</p> <p>8 that correct?</p> <p>9 A Right. I do need to clarify one</p> <p>10 thing, though.</p> <p>11 Q Okay.</p> <p>12 A You know, the six standard</p> <p>13 deviations on line 10 is a typo. It should be</p> <p>14 three. So yes, with that change, and if you look</p> <p>15 at the footnote, the probability of anything</p> <p>16 being beyond three standard deviations is almost</p> <p>17 zero.</p> <p>18 Q Okay. I would like to refer you</p> <p>19 again back to the -- your surrebuttal testimony</p> <p>20 bottom of page 5, line 23. And, and continuing</p> <p>21 to the top of page 6, line 1, that, that phrase I</p> <p>22 previously read, but the word "offset" that</p> <p>23 appears on the top of page 6, line 1, if I</p> <p>24 replace the word "offset" with the words "reduce</p> <p>25 the effects of," would you consider that</p>	<p style="text-align: right;">Page 20</p> <p>1 mitigation? You know, depending on the</p> <p>2 uncertainty going into a year, there could be a</p> <p>3 small probability of a partial mitigation,</p> <p>4 certainly.</p> <p>5 The, you know, the main thing is</p> <p>6 when you say "expect" here, that is something you</p> <p>7 would expect. And since going into a year it's</p> <p>8 difficult to know what those power prices will be</p> <p>9 at, I don't know that I would say expected.</p> <p>10 Q Okay. Mr. Arora, does Dr. Proctor</p> <p>11 in his rebuttal testimony claim that revenues</p> <p>12 from off-system sales should be expected to</p> <p>13 offset fuel cost increases?</p> <p>14 A I don't fully recall. Do you have</p> <p>15 his testimony that I can read?</p> <p>16 Q Yes.</p> <p>17 A This is for this rate case?</p> <p>18 Q Yes, I believe so.</p> <p>19 A I think he may have stated -- well,</p> <p>20 let me check one thing here. Well, at least in</p> <p>21 this rate case testimony on page 3, line --</p> <p>22 starting on line 18, he says, "In essence, since</p> <p>23 there is a high level of correlation between fuel</p> <p>24 prices and market prices, the net impact of</p> <p>25 changing prices on profit margins could be fairly</p>
<p style="text-align: right;">Page 19</p> <p>1 statement still to be true?</p> <p>2 So the statement, if the word</p> <p>3 "offset" were replaced with the words "reduce the</p> <p>4 effects of" would read, "It is quite clear, and</p> <p>5 indeed it is highly intuitive, that off-system</p> <p>6 sales revenues cannot be expected to reduce the</p> <p>7 effects of fuel cost increases for AmerenUE,"</p> <p>8 would you consider that to be a correct</p> <p>9 statement?</p> <p>10 A I think I request you to clarify</p> <p>11 what you mean by "reduce the effects of." And</p> <p>12 how much are you reducing the effects of?</p> <p>13 Q By any amount. Or instead of</p> <p>14 "reduce the effects," "mitigate the effects" of</p> <p>15 fuel cost increases for AmerenUE?</p> <p>16 A Well, I guess the, the thing I'm, I</p> <p>17 am thinking about is when you say "expected,"</p> <p>18 that means you would expect that to happen. And,</p> <p>19 you know, given that the fuel costs are hedged</p> <p>20 and the off-system revenues are uncertain in that</p> <p>21 they float, I don't know that I would necessarily</p> <p>22 expect there could be some of a reduction in the</p> <p>23 net fuel cost effect.</p> <p>24 Now, maybe, is there a possibility</p> <p>25 with the appropriate probability of a partial</p>	<p style="text-align: right;">Page 21</p> <p>1 minimal, and I will present evidence to show that</p> <p>2 this is the case."</p> <p>3 When I read the words "fairly</p> <p>4 minimal," I read them as "largely offsetting,"</p> <p>5 and I wouldn't expect that to be the case in the</p> <p>6 future.</p> <p>7 Q Is the word "offset" in the words</p> <p>8 that you just read?</p> <p>9 A No, and I would read "net impact"</p> <p>10 as kind of, you know, having the same meaning.</p> <p>11 Q That's your interpretation, is it</p> <p>12 not?</p> <p>13 A It is.</p> <p>14 Q And the words that you just read</p> <p>15 from page 3 of Dr. Proctor's rebuttal testimony</p> <p>16 are from a quote of his rebuttal testimony in</p> <p>17 AmerenUE's last rate increase case, is it not?</p> <p>18 A Yes.</p> <p>19 Q Have you asked Dr. Proctor whether</p> <p>20 his position is that revenues from off-system</p> <p>21 sales should be expected to offset fuel cost</p> <p>22 increases?</p> <p>23 A I have not, but I believe Mr.</p> <p>24 Lowery had some questions in Dr. Proctor's</p> <p>25 deposition in which he was trying to, you know,</p>

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1 ask Dr. Proctor about whether they would be
2 expected to offset given the four to one ratio
3 off coal costs or coal generation to off-system
4 sales volume.

5 Q Was that part of the deposition
6 that you were listening in on --

7 A Yes.

8 Q -- last week? Do you recall Dr.
9 Proctor's response?

10 A I don't recall it, but I can
11 certainly look it up.

12 Q Mr. Arora, I'd like to ask you to
13 turn to pages 9 and 11 of your surrebuttal
14 testimony.

15 A Okay.

16 Q The table on those pages.

17 A So you're referring to table
18 AKA-SR1?

19 Q Yes, and table AKA-SR2.

20 A Okay.

21 Q And I am looking in particular at
22 the forecast for 2009.

23 A Okay.

24 Q And would like to compare the
25 forecast from September and November of 2007 to

1 I picked those dates for each of those tables
2 separately was to pick a day that would be
3 representative of the going into a particular
4 year case, try to pick a date that would be
5 representative of the end of the year, and then
6 pick a couple of other dates that are the highest
7 and the lowest for that year.

8 So in table AKA-SR1, the reason you
9 see September on there is because it's the
10 highest for that forecast. Now, in the other
11 table, AKA-SR2, the reason you see another on
12 there is because that would be expected to be a
13 good estimate of the forecast. Again, I think
14 the reason you see November on there, I'm sorry,
15 is because it's the lowest for that table, SR2.

16 Q Okay. Do you have the number for
17 September 2007?

18 A Yes, I have it on a flash drive.

19 Q Okay. I think we've found it at
20 row 113 of column AX in the spreadsheet marked
21 tab. We think the number is [REDACTED] Would you
22 accept it subject to check, or would you like to
23 verify that?

24 A I will accept it subject to check
25 if that's okay.

Page 23

Page 25

1 the forecast for October 8. Do you have those
2 tables in front of you, do you not?

3 A I do, but did you say September, or
4 November?

5 Q I said September and November. And
6 in table AKA-SR1, for 2009, the first entry there
7 is for September 2007, is it not?

8 A That's right.

9 Q Okay. And for table AKA-SR2, for
10 the forecast period 2009, the first entry is for
11 November 2007, is it not?

12 A Right.

13 Q Okay. Is, is there an explanation
14 why the first two entries are not for the same
15 month? Why for table AKA-SR1 the first entry for
16 2009 is for September 2007, and for 2009 the
17 first entry is for November 2007?

18 A Yes, there is.

19 Q Okay. Could you provide that
20 explanation?

21 A Sure. The way we, you know, chose
22 those dates on the two different tables, we have
23 a spreadsheet, that's probably in the work
24 papers, that has all the monthly details.

25 What I was trying to show here when

1 Q Okay.

2 A You said [REDACTED]

3 Q Yes.

4 MR. LOWERY: Mr. Dottheim, I'm
5 sorry, just to clarify, subject to check if he
6 were to find that that's different and you ask
7 him about that at the hearing and it's different,
8 you wouldn't have a complaint if he corrects the
9 record in that; is that right?

10 MR. DOTTHEIM: That's exactly
11 right.

12 MR. LOWERY: With that proviso,
13 that's fine.

14 A And that's for table AKA-SR2?

15 Q (BY MR. DOTTHEIM) Yes. Yes. For
16 September '07 fuel/purchase power cost, be [REDACTED]

17 Okay. Isn't it true that the
18 difference between fuel and purchase power costs
19 and net fuel costs is the revenues from
20 off-system sales?

21 A Yes. That's true.

22 Q Okay. In September 2007 with fuel
23 and purchase power costs of [REDACTED] million and net
24 fuel costs of [REDACTED] million, is the difference of
25 [REDACTED] million the forecast for revenues from

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1 off-system sales?

2 A The difference of \$[REDACTED] million is
3 the forecast for revenues for off-system sales
4 for 2009.

5 Q And again, looking at table AKA-SR1
6 and table AKA-SR2, looking at the forecast period
7 2009, looking at the last entry for 2009, October
8 '08, in October '08, 2008, with fuel and purchase
9 power costs of \$[REDACTED] million and net fuel costs of
10 \$[REDACTED] million, is the difference of \$[REDACTED] million
11 the forecast for revenues from off-system sales?

12 A Yes, it is.

13 Q And again, looking at these numbers
14 that we've just gone over for table AKA-SR1 and
15 table AKA-SR2, the forecast for October 2008
16 shows an increase in fuel and purchase power
17 costs of \$[REDACTED] million, does it not? That is from
18 \$[REDACTED] million to \$[REDACTED] million; is that correct?

19 A That is correct.

20 Q And the forecast for October '08
21 shows the forecast of revenues from off-system
22 sales went up by \$[REDACTED] million, that is, from \$[REDACTED]
23 million to \$[REDACTED] million, does it not?

24 A Yes, it does.

25 Q Okay. Thus, it appears that the

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1 increase in revenues from off-system sales
2 increased by more than the increase in fuel and
3 purchase power costs?

4 MR. LOWERY: Object to the form of
5 the question to the extent it suggests there's
6 some actual increase. These are forecasts that
7 we're talking about at various points in time.
8 You can answer the question.

9 A I agree. These are forecasts, and,
10 you know, in that specific instance, those
11 numbers are correct. Again, we do not know where
12 the realized values will come in in 2009.

13 Q (BY MR. DOTTHEIM) These numbers
14 show an increase in fuel and purchase power costs
15 of \$[REDACTED] million being matched by a decrease in net
16 fuel expense of \$[REDACTED] million, do they not?

17 MR. LOWERY: Same objection.
18 Object to the form of the question to the extent
19 it suggests there's some actual increase that's
20 taken place.

21 A Could you repeat that, the numbers
22 again?

23 Q (BY MR. DOTTHEIM) Certainly.
24 Yeah. These numbers show an increase in fuel and
25 purchase power costs of \$[REDACTED] million being matched

1 by a decrease in net fuel expense of \$[REDACTED] million?

2 MR. LOWERY: Subject to my
3 objection, you can answer.

4 A For the forecast, that is correct.

5 Q (BY MR. DOTTHEIM) Is this an
6 example of where off-system sales revenues offset
7 or more than offset fuel cost increases for
8 AmerenUE at least on a forecasted basis?

9 A It is an example of that fact, and
10 it's because the increases that we are observing
11 in the expected value of the fuel costs is not so
12 high that a forecasted change in off-system sales
13 revenues may not offset it.

14 I mean, there's still a big hurdle,
15 you know, it has to be increased by about four
16 times, but in this case because the increase,
17 expected increase in fuel cost is small, there's
18 the possibility that it may be offset.

19 If you go beyond '09 into the
20 future with increases unknown and substantially
21 much higher to the tune of \$[REDACTED] million from 2010
22 to 2009, you would not expect such a change in
23 the forecast.

24 Q And, Mr. Arora, I do acknowledge in
25 my questions to you that we are dealing with

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1 forecasts here.

2 A Okay.

3 Q Okay. I'd like to direct you to
4 page 14 of your surrebuttal testimony.

5 A Okay.

6 Q In particular your graph on that
7 page, I think what you refer to as the dark
8 spread for coal commodity cost at Labadie plant
9 for 2009 compared to the forward 2009 around the
10 clock electricity price at the synergy hub.

11 And I'm going to refer you to your
12 work papers. Okay? You may have instant recall
13 of them and not need to refer to them at all, but
14 looking at your work papers that were provided
15 for, for that figure, AKA-SR1, the Staff note is
16 two columns for coal prices, PRB 8800 CY 2009
17 dollars per ton in column D, and weighted average
18 price of PRB 8800 CY 2009 dollars per ton in
19 column E.

20 Does column D represent the
21 unhedged forward price for Powder River Basin
22 8800 Btu coal and column E represent the
23 combination of hedged and unhedged forward price
24 for PRB 8800 Btu coal as of the dates shown in
25 column B?

8 (Pages 26 to 29)

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<p>1 A I think that is correct.</p> <p>2 MR. LOWERY: If you need to check,</p> <p>3 let's check it.</p> <p>4 A Okay. Okay, can you tell me again</p> <p>5 which columns you were referring to, Mr.</p> <p>6 Dottheim?</p> <p>7 Q (BY MR. DOTTHEIM) Yes. I was</p> <p>8 referencing column D --</p> <p>9 A I'm sorry, which --</p> <p>10 Q Column D and column E, PRB 8800 CY</p> <p>11 2009 dollars per ton in column D, and weighted</p> <p>12 average price of PRB 8800 CY 2009 dollars per ton</p> <p>13 in column E.</p> <p>14 Does column D represent the</p> <p>15 unhedged forward price for Powder River Basin</p> <p>16 8800 Btu coal and column E represent the</p> <p>17 combination of hedged and unhedged forward price</p> <p>18 for PRB 8800 Btu coal as of the date shown in</p> <p>19 column B?</p> <p>20 A I would state it a little</p> <p>21 differently. I think the basic concept is</p> <p>22 correct, but column D represents the price for</p> <p>23 the unhedged coal. And then column E represents</p> <p>24 the weighted average price for the hedged and the</p> <p>25 unhedged coal, but the price for the hedged coal</p>	<p>1 Q Does -- does that chart show the</p> <p>2 percents of hedged PRB 8800 coal costs for 2009?</p> <p>3 A It shows, well, it shows two</p> <p>4 things.</p> <p>5 Q Okay.</p> <p>6 A It shows the percentage of the coal</p> <p>7 that was hedged for 2009 on the right Y axis, and</p> <p>8 it shows the expected cost of the hedges along</p> <p>9 with the unhedged portion at the market price as</p> <p>10 of that day on the left Y axis.</p> <p>11 Q Okay. I'd like to refer you back</p> <p>12 to your surrebuttal testimony.</p> <p>13 A Okay.</p> <p>14 Q To page 14, figure AKA-SR1. Do you</p> <p>15 agree that the coal price used for figure AKA-SR1</p> <p>16 on page 14 of your surrebuttal testimony</p> <p>17 multiplies the combination of hedged coal costs</p> <p>18 and unhedged forward coal prices times a heat</p> <p>19 rate at the Labadie generating units to convert</p> <p>20 the dollars per ton coal price to a dollars per</p> <p>21 megawatt hour price?</p> <p>22 A Yes, it does.</p> <p>23 Q In your work papers, is a</p> <p>24 conversion from dollars per ton to dollars per</p> <p>25 million Btu required?</p>
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<p>1 is already known.</p> <p>2 It's not this price. This -- it's</p> <p>3 this price for the unhedged coal weighted by the</p> <p>4 known price for the hedged coal and together</p> <p>5 that's what column E is.</p> <p>6 Q Does, does ATC stand for around the</p> <p>7 clock?</p> <p>8 A It does.</p> <p>9 Q And what is that concept? Or is</p> <p>10 there a concept?</p> <p>11 A It means all hours of the year.</p> <p>12 Q Okay. Does it mean the average</p> <p>13 over the 8,760 hours of the year?</p> <p>14 A Yes, to the extent that year has</p> <p>15 8,760 hours, yes.</p> <p>16 Q As a consequence, does it mean an</p> <p>17 average annual price?</p> <p>18 A As a consequence, does it mean an</p> <p>19 average annual price. Yes. I would say it does.</p> <p>20 Q I'd like to refer you to page 4 of</p> <p>21 your rebuttal testimony.</p> <p>22 A Okay.</p> <p>23 Q All right. There is a chart on</p> <p>24 page 4 of your rebuttal testimony, chart AKA-R1.</p> <p>25 A Okay.</p>	<p>1 A Yes, it is.</p> <p>2 Q Can you identify where that occurs?</p> <p>3 A So it's on column I, that formula</p> <p>4 -- when you're calculating the formula, it's the</p> <p>5 difference in the power price minus the coal</p> <p>6 price in dollars per ton times the conversion</p> <p>7 factor. Which is the Labadie heat rate in column</p> <p>8 F.</p> <p>9 Q Does heat rate equal Btu -- pardon</p> <p>10 me. Does heat rate equal Btu's per KWH? Not</p> <p>11 tons per KWH?</p> <p>12 A I think it does.</p> <p>13 Q In your work papers, does column C</p> <p>14 represent the forward 2009 ATC electricity price</p> <p>15 at the synergy hub?</p> <p>16 A Yes, it does.</p> <p>17 Q For purposes of hedging its</p> <p>18 off-system sales, do you know if AmerenUE sells</p> <p>19 forward an ATC product, or does it sell forward</p> <p>20 combinations of on and off-peak products that</p> <p>21 vary by month?</p> <p>22 A It sells a combination off --</p> <p>23 effectively ATC products and monthly products.</p> <p>24 So there are times when AmerenUE will sell the</p> <p>25 entire calendar on-peak and the entire calendar</p>

9 (Pages 30 to 33)

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<p>1 off-peak effectively realizing an ATC price.</p> <p>2 There are other portions that they</p> <p>3 will hedge in the monthly forwards. The off-peak</p> <p>4 is typically hedged by a calendar. That's how it</p> <p>5 creates usually, that's more the typical.</p> <p>6 Q Does figure AKA-SR1 represent the</p> <p>7 portion of sales that AmerenUE has already hedged</p> <p>8 for 2009, or does it represent all potential</p> <p>9 sales as unhedged?</p> <p>10 A It actually represents neither.</p> <p>11 All AKA-SR1 is trying to demonstrate is at a</p> <p>12 particular plant, in this case, Labadie, the</p> <p>13 spread is volatile, even though the coal costs</p> <p>14 are essentially fixed.</p> <p>15 Since the spread is volatile while</p> <p>16 the coal costs are fixed, that's why you would</p> <p>17 expect no correlation between the realized spot</p> <p>18 prices for power and the hedged delivered coal</p> <p>19 prices. That's what that chart is trying to</p> <p>20 demonstrate.</p> <p>21 It's easier to calculate a number,</p> <p>22 but this just shows it visually. Either way you</p> <p>23 get the same result. You should not expect any</p> <p>24 correlation between a hedged delivered coal price</p> <p>25 and a floating spot power price. That's all that</p>	<p>1 recognize data request No. 317 or the AmerenUE</p> <p>2 response? Have you seen it before?</p> <p>3 A I have not seen it before.</p> <p>4 Q At the bottom of the first page,</p> <p>5 and it's a two-page document, it is shown as</p> <p>6 prepared by Timothy Finnell, title, managing</p> <p>7 supervisor, date, October 7, 2008. Have I read</p> <p>8 that correctly?</p> <p>9 A Yes.</p> <p>10 Q Do you know Mr. Finnell?</p> <p>11 A I do.</p> <p>12 Q And Mr. Finnell is sitting in on</p> <p>13 the deposition, is he not?</p> <p>14 A He is.</p> <p>15 Q Are you familiar with any of the</p> <p>16 information contained in the data request</p> <p>17 response?</p> <p>18 A When you say "familiar" --</p> <p>19 Q Well, can you identify any of the</p> <p>20 information?</p> <p>21 A I think I can understand the</p> <p>22 information, if that's what you are asking.</p> <p>23 Q The, the data request response</p> <p>24 lists both the quantities, prices, and sources</p> <p>25 for AmerenUE's forward sales for 2009, does it</p>
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<p>1 chart is trying to show.</p> <p>2 Q At the time you created AKA-SR1,</p> <p>3 was a portion of AmerenUE's off-system sales</p> <p>4 hedged?</p> <p>5 A For which year?</p> <p>6 Q 2009.</p> <p>7 A Yes. I believe it was. A portion.</p> <p>8 Q Do you know how much was hedged for</p> <p>9 2009?</p> <p>10 A I'd have to say I don't know</p> <p>11 exactly. I'd like to say it's maybe around [REDACTED]</p> <p>12 [REDACTED] megawatt hours.</p> <p>13 MR. DOTTHEIM: Okay. At this time</p> <p>14 I'd like to have an exhibit marked.</p> <p>15 (Exhibit AA1 marked for</p> <p>16 identification by the court reporter.)</p> <p>17 MR. LOWERY: Do you have a</p> <p>18 question, Mr. Dottheim?</p> <p>19 Q (BY MR. DOTTHEIM) Yes. Mr. Arora,</p> <p>20 have you had a chance to look at what's been</p> <p>21 marked as Deposition Exhibit 1?</p> <p>22 A Yes, I have.</p> <p>23 Q Deposition Exhibit 1 is Staff data</p> <p>24 request No. 317 for AmerenUE in this proceeding,</p> <p>25 and AmerenUE's response. Mr. Arora, do you</p>	<p>1 not?</p> <p>2 A It does.</p> <p>3 Q Based on this document, can you</p> <p>4 calculate the megawatt hours of forward sales</p> <p>5 that AmerenUE has entered into at the date of the</p> <p>6 response that is this document, and the date</p> <p>7 being October 7, 2008?</p> <p>8 A Yes, I can.</p> <p>9 Q Would it take you long to do that?</p> <p>10 A It will take me some time because</p> <p>11 I'll have to calculate the hours for each month</p> <p>12 on-peak and off-peak times the quantity here.</p> <p>13 Q Okay. How long would it take you</p> <p>14 to do that?</p> <p>15 A I don't know, maybe fifteen minutes</p> <p>16 or so.</p> <p>17 Q Why don't -- if you could do that</p> <p>18 and just --</p> <p>19 MR. LOWERY: Mr. Dottheim, do you</p> <p>20 have a number you'd like for him to assume and,</p> <p>21 and he can do that subject to check as well?</p> <p>22 Rather than taking fifteen minutes to --</p> <p>23 MR. DOTTHEIM: We believe it's</p> <p>24 close to -- Mr. Arora previously gave a number of</p> <p>25 [REDACTED] megawatt hours, approximately. We</p>

10 (Pages 34 to 37)

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1 think that's close, if he could just verify that
2 subject to check. We wouldn't want to ask him to
3 take the fifteen minutes to stop and make the
4 calculation.

5 THE WITNESS: Okay.

6 MR. DOTTHEIM: If he could
7 subsequently provide that, you know, at the -- at
8 the time when he --

9 MR. LOWERY: Well, why don't you
10 just ask him to assume, subject to check, that
11 the volume that would be reflected if he made
12 those calculations would be approximately [REDACTED]
13 [REDACTED] megawatt hours and ask him if he agrees
14 with that.

15 Q (BY MR. DOTTHEIM) Mr. Arora, would
16 you assume, subject to check, that the megawatt
17 hours of forward sales that AmerenUE entered into
18 as of the date on Deposition Exhibit 1 on October
19 7, 2008, was [REDACTED] megawatt hours, subject to
20 check?

21 A I do, but I do need to clarify one
22 thing on my previous answer.

23 Q Certainly.

24 A You know, you had asked me if they
25 sell it on the clock. AmerenUE does not

1 expectations of realized spot market sales given
2 that coal is hedged.

3 MR. LOWERY: Mr. Dottheim, and it's
4 fine if you're not at a logical break, but Mr.
5 Arora is ready for a break, if you have a logical
6 stopping point coming up.

7 MR. DOTTHEIM: Let me ask one
8 follow-up question.

9 MR. LOWERY: Absolutely.

10 Q (BY MR. DOTTHEIM) Mr. Arora, I'd
11 like to refer you to page 15 of your surrebuttal
12 testimony. And I'd like to refer you to line 3,
13 and I'd like to refer you to the sentence that
14 begins on line 3, which states, and it does have
15 highly confidential numbers in it, "At
16 approximately 10 million megawatt hours in
17 off-system sales, this would mean the relative
18 movement of power prices at AmerenUE coal costs
19 may actually reduce (not increase) off-system
20 sales margins by up to \$[REDACTED] million (\$[REDACTED] per
21 megawatt hour times 10 million megawatt hours)
22 compared to 2008."

23 The 10 million megawatt hours
24 referred to in that sentence contains both hedged
25 and unhedged, does it not?

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1 typically sell the summer. And that wasn't --
2 this chart AKA-SR1 wasn't trying to, like I
3 mention, show the hedge position that it would
4 have. It's trying to show the concept of
5 correlation. So I just wanted to clarify that.

6 Q Mr. Arora, if you used hedged costs
7 in your calculation of dark spread in order to
8 present a balanced picture, wouldn't you also
9 need to include sales that are already hedged?

10 A No, not necessarily, because if you
11 go back to the significance of that chart, what
12 that chart is trying to show is the uncertainty
13 on the unhedged sales. There really wouldn't be
14 any uncertainty in the hedged sales, we would
15 know that for a fact.

16 But what it's trying to show is the
17 uncertainty, assuming that the sales came from
18 Labadie for the unhedged sales that would happen
19 in the spot market, if we assume that the
20 forwards are representative of the spot market
21 prices.

22 Again, this chart does not show or
23 even attempt to show the margins because it
24 doesn't include transportation or emissions or
25 anything else. It just shows the uncertainty and

1 A Yes, it does.

2 Q Okay. Is that consistent with the
3 explanation you just provided to me?

4 A No, I think, you know, what I think
5 you're asking is should the 10 million really
6 have been [REDACTED] assuming [REDACTED] was hedged.
7 So the number should have been [REDACTED] times
8 [REDACTED] million as opposed to [REDACTED] million.
9 And I agree with that.

10 MR. DOTTHEIM: Okay. Why don't we
11 take a break.

12 MR. LOWERY: Okay.

13 MR. MILLS: Ryan and Christina
14 Baker, another attorney from our office, will be
15 sitting in.

16 MR. LOWERY: Okay, Lewis, we'll
17 leave the phone line open, we'll be back.

18 (Off the record.)

19 Q (BY MR. DOTTHEIM) Mr. Arora, I'd
20 like to refer you to your direct testimony, not
21 to any page in particular, just in general. In
22 your direct testimony for purposes of analyzing
23 the correlation between coal and electric prices,
24 you calculated daily changes in 2006 and 2007 for
25 the annual average forward prices for coal, and

11 (Pages 38 to 41)

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1 the ATC forward price for electricity in 2009.
2 Is that correct?

3 MR. LOWERY: Can you clarify, when
4 you say "coal"?

5 A Yeah, I'm not sure -- go ahead.
6 Did you want to rephrase it or you want me to
7 clarify it? What I did?

8 Q (BY MR. DOTTHEIM) Yes. Why don't
9 you state what you did.

10 A Let me tell you that there's two
11 kinds of correlations. So let's talk about those
12 first. There's the correlation for the sales
13 that are made in the spot market, and there, you
14 know, the correlation would be between a hedged
15 coal price and a floating spot power market
16 price. And for about [REDACTED] percent of the 10
17 million megawatt hours, that is the correlation
18 we would test for.

19 Like I just said, for 2009, they've
20 hedged about [REDACTED] megawatt hours
21 approximately out of the 10 million megawatt
22 hours they have for sale. So for the remaining
23 [REDACTED] the correlation that is relevant is
24 between the hedged fuel cost and the uncertain
25 spot power prices where I would expect no

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1 correlation.

2 So the correlation I have earlier
3 tested for was for the remaining [REDACTED] percent
4 that AmerenUE would hedge in the forward markets.
5 So there, the way I tested for it was the changes
6 in the forward power price correlated with the
7 changes in the forward coal prices for a given
8 year, and I looked at both -- at least for one
9 year I looked at both the daily changes and the
10 monthly changes.

11 Q Okay. You looked at daily changes
12 in forward prices starting three years before the
13 year 2000 and ending two years before the year
14 2009; is that correct?

15 A That is correct. Yes.

16 Q And you indicated that you didn't
17 solely look at daily changes, you looked at
18 monthly changes?

19 A I looked at monthly changes as
20 well.

21 Q Okay. Did you look at whether
22 there was a sufficient number of trades taking
23 place on a daily basis in the forward markets to
24 be looking at changes in daily forward prices?

25 A You know, I couldn't determine what

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1 would be a sufficient number of trades, so to
2 speak. You know, what I can say is I expect the
3 forward markets will be representative of the
4 bilateral markets where we actually would procure
5 our coal from. And, you know, the determination
6 of what is sufficient and not, I think Mr. Neff
7 would be best qualified to determine that.

8 Q Did you ask Mr. Neff if there were
9 a sufficient number of trades taking place on a
10 daily basis in the forward markets to be looking
11 at changes in daily forward prices?

12 A No, I did not, but it's my
13 understanding that Mr. Neff, when you ask about
14 his expectations of the future prices, they are
15 based on what he sees in the forward markets.

16 In fact, he even talks about the
17 relationship of being spot coal and forward coal
18 in his testimony, I believe.

19 Q And when you say is your
20 understanding in regards to Mr. Neff, what is the
21 basis of your understanding?

22 A Well, several times, you know, when
23 we in the company are trying to manage the
24 business forward and looking at expenditures we
25 would make in future years, we have the hedge

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1 fuel costs from Mr. Neff's group and then we
2 would also ask him, you know, where he would
3 expect to be able to transact that in the
4 bilateral market given where the current forwards
5 are. And then he has typically stated that the
6 forwards are a good representation of what he is
7 seeing in the bilateral markets.

8 In fact, we have tested for that,
9 and even in some of our sort of fundamental
10 modeling we tested for what he was able to
11 transact versus some other forecast, and they
12 were in line.

13 Q And when you say "they were in
14 line," they were in line with what?

15 A They were in line with -- the
16 transactions that Mr. Neff made were generally
17 supportive of the forward markets at that time.
18 I haven't done a detailed analysis on that, I'm
19 sure Mr. Neff would.

20 Q Does Mr. Neff look at only daily
21 forward prices? Do you know?

22 A No. I think Mr. Neff may look at
23 spot prices, forward prices, he may be looking
24 at, you know, other events in the industry.

25 Q Does he look at monthly changes by

12 (Pages 42 to 45)

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<p style="text-align: right;">Page 46</p> <p>1 monthly changes?</p> <p>2 A I'm not aware if he does or not.</p> <p>3 Q Do you know whether he looks at</p> <p>4 trends in the forward prices?</p> <p>5 A I don't recall any time when he has</p> <p>6 looked at a trend. He is always looking forward</p> <p>7 markets. I have not had any discussion with him</p> <p>8 about specific trends that I can recall.</p> <p>9 Q Mr. Arora, do you know whether any</p> <p>10 analysis has been performed by you or anyone else</p> <p>11 in the company regarding whether there might be a</p> <p>12 lag between forward electricity prices and</p> <p>13 forward coal prices?</p> <p>14 A I have not performed that analysis.</p> <p>15 I am not aware of any other analysis. At least I</p> <p>16 am not aware.</p> <p>17 Q You are not aware of any -- anyone</p> <p>18 else that may have performed such an analysis in</p> <p>19 the company?</p> <p>20 A I have not seen any such analysis.</p> <p>21 Q Mr. Arora, I'd like to direct you</p> <p>22 to page 30 of your surrebuttal testimony.</p> <p>23 A Okay.</p> <p>24 Q Okay. At page 30 of your</p> <p>25 surrebuttal testimony you stated that Dr. Proctor</p>	<p style="text-align: right;">Page 48</p> <p>1 daily power prices should be the same, but Dr.</p> <p>2 Proctor believes the uncertainty associated with</p> <p>3 annual average prices is not the same as for</p> <p>4 daily power prices?</p> <p>5 A No, I would not characterize our</p> <p>6 disagreement that way.</p> <p>7 Q How would you?</p> <p>8 A I think I would characterize the</p> <p>9 difference as I believe that the uncertainty that</p> <p>10 AmerenUE is subject to is the uncertainty in the</p> <p>11 daily power prices, because that's where it makes</p> <p>12 its sales.</p> <p>13 And I believe, and this is just my</p> <p>14 understanding of what Dr. Proctor has said in his</p> <p>15 testimony, that Dr. Proctor suggests that we</p> <p>16 should look at the annual -- the uncertainty on</p> <p>17 annual averages based on, you know, some forecast</p> <p>18 like the DOE and others.</p> <p>19 So I think that's the difference.</p> <p>20 The uncertainty we used is based on the</p> <p>21 uncertainty we face because of the reality that</p> <p>22 the sales are made in the daily markets. And I</p> <p>23 think that's -- Dr. Proctor suggests that there</p> <p>24 is a different uncertainty that we face.</p> <p>25 Q I'd like to refer you to page 18 of</p>
<p style="text-align: right;">Page 47</p> <p>1 contacted you a few days before rebuttal</p> <p>2 testimony was due.</p> <p>3 Do you recall if Dr. Proctor asked</p> <p>4 you if the results shown on your schedule AKA-E1</p> <p>5 of your direct testimony for the annual</p> <p>6 uncertainty factor represented the standard</p> <p>7 deviations of the average annual levels for power</p> <p>8 prices and natural gas prices over the 250</p> <p>9 iterations that you ran?</p> <p>10 A Yes, I would agree that he did.</p> <p>11 Q Do you recall what your answer was?</p> <p>12 A I recall that my answer was yes.</p> <p>13 Q I'd like to refer you to page 17 of</p> <p>14 your surrebuttal testimony, lines 15 to 17 where</p> <p>15 you state, "Dr. Proctor critiques my analysis by</p> <p>16 claiming that I relied on daily average</p> <p>17 electricity prices, and that this measure cannot</p> <p>18 be used to measure the dispersion associated with</p> <p>19 changes in annual levels for electricity prices."</p> <p>20 Did I read that accurately?</p> <p>21 A Yes.</p> <p>22 Q Would you agree that one of the</p> <p>23 primary differences between you and Dr. Proctor</p> <p>24 is that you believe that the uncertainty</p> <p>25 associated with annual average prices and with</p>	<p style="text-align: right;">Page 49</p> <p>1 your surrebuttal testimony, lines 19 to 21.</p> <p>2 A Okay.</p> <p>3 Q Where you state, "My uncertainty</p> <p>4 analysis reflects the daily uncertainty in power</p> <p>5 and natural gas prices that AmerenUE is actually</p> <p>6 subject to when it makes a substantial majority</p> <p>7 of its off-system sales in the daily spot</p> <p>8 markets." Did I read that accurately?</p> <p>9 A Yes.</p> <p>10 Q Okay. Your statement, does this</p> <p>11 mean that you programmed your analysis so the</p> <p>12 uncertainty associated with annual average prices</p> <p>13 for electricity and natural gas were designed to</p> <p>14 reflect the same level of uncertainty that</p> <p>15 AmerenUE faces in the daily spot market?</p> <p>16 A No, I don't think that's accurate.</p> <p>17 It's not the -- the model doesn't look at the</p> <p>18 comparison between the dailies versus the annual</p> <p>19 levels. It has to -- since the uncertainty we</p> <p>20 face is at the daily level, it forecasts every</p> <p>21 day, and then rolls it up to a year.</p> <p>22 But the uncertainty for that day is</p> <p>23 around a monthly average price, not around the</p> <p>24 annual average price. So.</p> <p>25 Q All right. For the next question</p>

13 (Pages 46 to 49)

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<p style="text-align: right;">Page 50</p> <p>1 I'd like for you to focus on the uncertainty that 2 AmerenUE faces in the daily spot markets, and to 3 consider constructing a single scenario that 4 represents a full year of hourly electric prices 5 and daily natural gas prices that reflect the 6 daily uncertainty in power and natural gas prices 7 that AmerenUE is actually subject to in a single 8 year when it makes a substantial majority of its 9 off-system sales in the daily spot market. 10 Is it possible to construct that as 11 a single scenario? 12 A I'm not sure I understand -- 13 Q Would you like me to repeat that? 14 A Well, I think I understood the 15 question. I'm not sure what it means, though. 16 Would it be possible to create a single scenario? 17 Q Yes. With those parameters. 18 A Well, a single scenario wouldn't 19 have any uncertainty, so I am not sure if it is 20 possible. The uncertainty comes from the 21 weighted scenarios. A single scenario would be 22 doministic. 23 Q Mr. Arora, can you explain how your 24 250 scenarios were generated? 25 A Sure. Which part?</p>	<p style="text-align: right;">Page 52</p> <p>1 those forwards and those specific time periods. 2 So once you have the base, the 3 uncertainty was based on, you know, the changes 4 in the daily prices around the monthly averages, 5 and that's what we used in the model. 6 Now, it's important to note, I 7 guess just for clarification, that 2006 and 2007, 8 while they were uncertain in their daily prices, 9 they were probably less uncertain than 2008 and 10 2005. 11 Q Mr. Arora, I'd like to direct you 12 to your direct testimony. 13 A Okay. 14 Q I'd like to direct you to pages 7 15 and 8 of your direct testimony. I am looking at 16 your answer that starts on page 7, line 18 and 17 goes through line 10 on page 8. 18 A Okay. 19 Q Okay? The annual uncertainty 20 factor calculated on schedule AKA-E2 is [REDACTED] 21 percent, and I read your direct testimony saying 22 that this is the evidence to support the [REDACTED] 23 percent model for the test year on schedule 24 AKA-E1. 25 And in particular I am -- I am</p>
<p style="text-align: right;">Page 51</p> <p>1 Q What parts are there? 2 A Okay. Well, there's the 3 uncertainty around coal prices. There's 4 uncertainty around power prices. There's 5 uncertainty around gas prices. There is 6 uncertainty in loads, and there is uncertainty in 7 generation of outages. 8 Q Let's focus on power prices. 9 A Okay. So for power prices we used 10 the years 2006 and 2007, and looked at for every 11 month the daily volatility around the monthly 12 prices for the four time periods, five by 13 sixteen, one by sixteen Saturday, one by sixteen 14 Sunday, and the seven by eight nighttime prices. 15 And then for that same time period, 16 2006 and 2007, once we got the uncertainty for 17 those four time periods for each month, we had to 18 start with a base level for each month for each 19 of those time periods around which the 20 uncertainty would be calculated. 21 And so the base level was 22 determined by the forward prices for a specific 23 year for those time periods that they were 24 available. If they were not available, then it 25 was based on the historical relationships between</p>	<p style="text-align: right;">Page 53</p> <p>1 looking at, on page 8, the sentence that starts 2 on line 7 and goes to line 10. And I am 3 wondering if you've got those numbers reversed in 4 that sentence. That the modeled annual 5 uncertainty factor -- 6 A Yes. I do have them reversed. 7 Q Okay. So the modeled annual 8 uncertainty factor of [REDACTED] percent on schedule 9 AKA-E1 compares favorably to the historical 10 annual uncertainty of 22 percent shown on 11 schedule AKA-E2 as noted earlier which confirms 12 the model reasonably represents average annual 13 power price uncertainties, is that how that 14 sentence should approximately read? 15 A Yes. 16 Q Okay. I'd like to refer you to 17 your schedule AKA-E2. 18 A Okay. 19 Q Do you agree that the standard 20 deviations and uncertainty factors calculated on 21 this schedule represent the historical level of 22 uncertainty that AmerenUE has faced over a nine 23 year period from 1999 through 2007? 24 A Yes, I do agree with that. 25 Q Okay. Do you agree that 22 percent</p>

14 (Pages 50 to 53)

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1 uncertainty factor calculated for this nine year
2 history is [REDACTED] percent lower than the [REDACTED] percent
3 uncertainty factor modeled for the test year?

4 A Yes, I agree.

5 Q Okay. Do you agree that the [REDACTED]
6 percent uncertainty factor calculated for the
7 test year accurately reflects the uncertainty
8 factor that you found for the daily price
9 variations from 2006 and 2007?

10 A No. I don't agree with that.

11 Q Okay. Would you explain?

12 A The [REDACTED] percent -- and let me just
13 clarify why it is [REDACTED] percent as opposed to being
14 a lower number. It's [REDACTED] percent because the
15 average is [REDACTED] as opposed to being [REDACTED] in which
16 case it would be a lower number. So part of the
17 -- part of the reason it's a higher percentage is
18 because we have a lower denominator, starting
19 from a lower base.

20 But really what this is trying to
21 show, or this is showing is the uncertainty of
22 the annual average prices. So what it's truly
23 showing for the test year with uncertainty, I
24 guess is what I called in other places in my
25 testimony, is if I am sitting here in November

1 percent?

2 A Yes, it does. The reason is the
3 base, [REDACTED]

4 Q Why did you choose nine years of
5 history as the basis for your comparison?

6 A Because that's the history we have.
7 If I had more, I would certainly have used more.
8 In fact, I would say the more we have, the better
9 it is.

10 Q Mr. Arora, when did the MISO energy
11 market start up?

12 A If I recall correctly it's April of
13 2005.

14 Q Might it be March of 2005 rather
15 than April?

16 A No, I believe it was April 1.

17 Q Okay. Would you agree that power
18 prices before April 2005 came from a different
19 type of market than the prices starting April of
20 2005?

21 A That's a pretty broad question.
22 When you say "a different type of market," um,
23 there wasn't an LMP market if that's what you're
24 suggesting.

25 Q Yes.

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1 2008 and you ask me what the spot prices for 2009
2 will come in at? I would say at the appropriate
3 probability they could look like any one of those
4 250 iterations.

5 So that year could turn out to be
6 any one of those 250. So it's the uncertainty of
7 the annual averages. I don't know which of those
8 250 it will look like, but, you know, I could
9 give you the range based on the way we did our
10 analysis.

11 Q But doesn't your testimony state
12 that that is the uncertainty that you saw on a
13 daily basis in 2006 and 2007?

14 A It's the uncertainty we saw on a
15 daily basis around the monthly prices. So it's
16 not the same level of uncertainty for every day
17 for the year. It's a different level of
18 uncertainty for every month. And I think that's
19 where there's a difference in the understanding,
20 I guess.

21 Q Does the annual average price
22 uncertainty factor that you modeled for the
23 single test year exceed the annual average price
24 uncertainty factor that AmerenUE has historically
25 faced over the previous nine year period by [REDACTED]

1 A Yes.

2 Q Would you agree --

3 A There wasn't an LMP market prior to
4 April of 2005 that AmerenUE transacted in.

5 Q I'd like to refer you again to your
6 schedule AKA-E2.

7 A Okay.

8 Q And I'd like to refer you to the
9 year 2005 in the first column.

10 A Okay.

11 Q The annual average ATC power price.
12 Do you agree that the annual average price
13 observed for 2005 is high compared to the price
14 shown for the other years in that column?

15 A Yes, I agree it is, it is the
16 highest, just like 2002 is the lowest.

17 Q Do you agree that the high annual
18 average price observed for 2005 was the result of
19 unusual events involving rail issues with Powder
20 River Basin coal that disrupted coal supplies and
21 the Rita, Katrina hurricanes that disrupted
22 supplies of natural gas?

23 A I would say that those two events
24 had a role in those prices. I would like to also
25 say that speculation probably played a big role

15 (Pages 54 to 57)

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1 in the prices that were realized.

2 You know, it's -- in the
3 marketplace, the price is driven by the sellers
4 trying to extract as much of a price as they can
5 under those conditions and the buyers buying
6 until they resist. And that's kind of what would
7 have set some of those prices as a result of
8 these events as well.

9 Q Might the beginning of the MISO
10 market in 2005 been another factor?

11 A I do not believe so. I think -- I
12 think the main drive was for those prices, or
13 the, the transactions and, you know, potentially
14 speculation as a result of the coal disruptions
15 and Katrina.

16 Q Do you know for a fact that the
17 starting of the MISO market was not a factor?

18 A No, I do not. I do not. I would
19 say that the main issue with the MISO market in
20 that time was, you know, one of the issues we
21 faced, just the sort of dispatch of the beakers,
22 that could have been a factor. There are several
23 factors that would determine a market price.

24 Q Should some of the 250 scenarios,
25 iterations for a single year reflect the impact

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1 on electricity prices of fuel supply
2 interruptions from the combined events of the
3 western coal rail issues and the two hurricanes
4 that occurred in 2005?

5 A Should they?

6 Q Yes.

7 A Do they extend -- yes, I believe
8 they should. And to the extent that that's
9 uncertainty that AmerenUE actually faces, I think
10 they should. I don't think AmerenUE can avoid a
11 year like 2005 or 2002 or 2008 and potentially
12 even 2009 with a recession. That's the actual
13 uncertainty we will face.

14 Q Is the inclusion of such scenarios
15 accomplished by using scenarios that have
16 significantly higher ATC electricity prices than
17 the overall average ATC electricity price shown
18 on your schedule AKA-E1?

19 A I think it's -- the answer to that
20 is yes, but at the appropriate probability, you
21 know, those events would have to be factored in
22 at the likelihood that they would happen. That's
23 kind of what I was trying to do when I compared
24 the two schedules.

25 You know, we have to recognize that

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1 these things happen, that, you know, the way
2 these things happen during any given year and we
3 can't predict what they will be. So when I say
4 going into a given year it could look like any of
5 those 250, it could.

6 We just have to know that, you
7 know, there's a probability associated with it.
8 The extreme prices may have a lower probability
9 than the middle level prices, but they could
10 happen.

11 Q If your analysis includes scenarios
12 with levels of ATC electricity prices that are
13 above the average for the 250 iterations,
14 scenarios, must it also include scenarios with
15 levels of ATC electricity prices that are below
16 the average for the 250 iterations, scenarios?

17 A Yes. And it does.

18 Q Does the program that generates the
19 250 scenarios, iterations use a symmetric
20 probability distribution like a normal
21 distribution?

22 A It uses a log normal distribution.
23 That happened to be the best fit for the data.

24 Q In Dr. Proctor's rebuttal
25 testimony, page 15, lines 15 to 16 --

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1 MR. LOWERY: What lines, Mr.
2 Dottheim?

3 Q (BY MR. DOTTHEIM) Page 15, lines
4 15 to 16. By removing the high price for 2005
5 from the analysis, he calculates that the
6 uncertainty factor over the period from 1999 to
7 2007 would be 18.75 percent. Do you have any
8 reason to question that calculation?

9 A I don't have any reason to question
10 the result of that calculation. I would question
11 just removing '05.

12 Q And why would you question just
13 removing '05?

14 A Because I would say if you -- if
15 you should -- if you remove the highest price
16 year and you have reason to do that, you should
17 also look at 2002 and see if there is a reason to
18 exclude that as well because it's the lowest year
19 of the last nine.

20 Q Would removal of 2005 from the
21 calculation of the historical uncertainty factor
22 increase the difference between the test year and
23 the historic -- historical uncertainty factor
24 from [REDACTED] percent to [REDACTED] percent based on Dr.
25 Proctor's calculation?

16 (Pages 58 to 61)

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1 A See, I wouldn't remove this one
2 year, like I said. If I remove '05, I would
3 remove 2002, and then I don't know since I
4 haven't done the calculation what the result
5 would be.

6 Again, I guess I'm concerned with
7 removing years that AmerenUE is actually subject
8 to. You know, AmerenUE cannot selectively pick
9 and choose what kind of year 2009 and beyond is
10 going to turn out at, so. I'm just significantly
11 concerned with making selective removals of
12 actual events. The calculation itself I believe
13 is probably accurate.

14 Q Mr. Arora, would you agree that if
15 the 250 scenarios have an uncertainty factor
16 comparable to historic levels that include the
17 major price increase for 2005, those scenarios
18 will reflect both that level of increase and a
19 comparable level of decrease in revenues and
20 profits from off-system sales?

21 A I'd have to check that based on the
22 distribution since it's log normal. It could be
23 that the decreases, while they may still have the
24 same probability, the level may be lower than the
25 level of the increases. Just because of the

1 increase," I mean, there's couple of years --
2 well, there's at least one year it's \$7.74, it
3 looks like. Versus maybe \$12.

4 Q Well, I'm looking again at your
5 schedule AKA-E2.

6 A Okay.

7 Q And I'm looking at 2004, I'm
8 looking at the first column in schedule AKA-E2,
9 annual average ATC power price, the column 2004
10 dollars per megawatt hour, \$34.25 for 2004; then
11 2005, \$46.74. Could you verify that that is a
12 36.47 percent increase from 2004 to 2005?

13 A I'm sorry, did you say a 36.4?

14 Q Point 47.

15 A Yes. I can verify that.

16 Q Are you aware for those years that
17 are shown a decrease that is equal to or greater
18 than that percentage?

19 A No, I am not.

20 Q I'd like to refer you back to your
21 surrebuttal testimony. Page 21, lines 3 to 5,
22 where you state, "This simple illustration
23 documents that one cannot rely on the apparent
24 trends from the last few years of data to even
25 predict the next year or two of power prices with

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1 shape of the distribution.

2 Q Would you check on that and get
3 back to us on that?

4 A Sure.

5 MR. LOWERY: He can answer your
6 questions. I'm going to object to some request
7 that he has to supplement a deposition. He can
8 answer questions to the extent he can answer them
9 today, and if he can't answer them, he doesn't
10 know.

11 MR. DOTTHEIM: Yeah, we'll submit a
12 DR.

13 MR. LOWERY: Fair enough.

14 MR. DOTTHEIM: To follow up, so, so
15 it will have to be a supplement to the
16 deposition.

17 MR. LOWERY: We'll consider any DR
18 you submit.

19 Q (BY MR. DOTTHEIM) Mr. Arora, would
20 you agree that in the nine year price history for
21 AmerenUE of 1999 to 2007, AmerenUE never
22 experienced an electricity price decrease
23 anywhere near the magnitude of the price increase
24 in 2005?

25 A When you say "anywhere near the

1 any degree of certainty."

2 Did I read that accurately?

3 A Yes.

4 Q Is it your testimony that Dr.
5 Proctor was trying to predict with the trend he
6 used, or that instead he was using the trend to
7 eliminate the impact that an upward trend creates
8 in calculating standard deviations and
9 uncertainty factors?

10 A I think he was using the trend to
11 eliminate the impact from the trend around the
12 uncertainty. But I think by using that trend, he
13 is implicitly assuming a level of the next year's
14 prices and basing his uncertainty around that
15 level. So to an extent he is trying to predict a
16 base level, or forecast a base level of prices
17 based on trends observed over the last few years.

18 Q I'd like to refer you to page 29 of
19 your surrebuttal testimony, lines 14 and 15.

20 Toward the end of line 14, you
21 state, "A very common approach to anticipating
22 spot price forecast uncertainty is to quantify
23 how much the forward price for the forecast
24 delivery date is likely to change between now and
25 the delivery period."

17 (Pages 62 to 65)

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1 Now, did I read that accurately?
 2 A Yes, you did.
 3 Q I'm interested in asking you how
 4 you would calculate the amount of change that
 5 would occur between a given date and the date of
 6 the delivery period as a measure of forecasting
 7 error.

8 Is that change the same as the
 9 change that occurs between that given date and
 10 the next day? Or is it the accumulation of daily
 11 changes with positive changes and negative
 12 changes netting out between the given date and
 13 the date of the delivery?

14 MR. LOWERY: I'm going to object to
 15 the form of the question as being confusing, but
 16 perhaps Mr. Arora is not confused. You can
 17 answer the question if you can.

18 Q (BY MR. DOTTHEIM) Would you like
 19 me to --

20 A I think I'm going to -- I think I
 21 would -- I think what you're trying to ask is how
 22 would the changes in forward prices allow you to
 23 reflect the forecast uncertainty between a
 24 certain date and the delivery date. And for that
 25 there is -- I think there is a very common

1 changes can be. So that's how we could do it.
 2 It's essentially since a black model uses a log
 3 normal distribution, it's kind of similar to what
 4 I did for coal.

5 Q Mr. Arora, I'm not sure that your
 6 answer responded to my question, which was --
 7 which was intended to ask you how you would
 8 calculate forecasting error in this -- in this
 9 instance. You know, whether --

10 A Okay.

11 Q Okay, yeah, I mean, it's --

12 A Okay. Let me talk to that.

13 MR. LOWERY: Let him ask you a
 14 question.

15 Q (BY MR. DOTTHEIM) Okay. Well, and
 16 the question is how would you -- how would you
 17 calculate forecasting error given the changes
 18 between the given date and the date of delivery
 19 with there being daily changes between the two?

20 A Okay, so for the forecast error,
 21 you have the start of the forecast, right? So
 22 you start at the base level. You can start with
 23 the base level assuming a forward as of a given
 24 date, or you can take the average of forwards
 25 over a period of time.

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1 approach. There are actually a couple of
 2 approaches.

3 You can -- and again, I think it's
 4 even more relevant for a commodity like coal
 5 which you can store, so that there's an --
 6 essentially an implicit arbitrage between forward
 7 prices and spot prices such that if forward
 8 prices are too far away from the expected spot,
 9 you know, buyers or sellers could buy and sell to
 10 reflect that sort of patterned aberration in the
 11 prices.

12 That being said, you know, in
 13 standard risk management practice, the way you
 14 calculate value at risk is you either use
 15 historical volatility or option implied
 16 volatility, and you look at the volatility over
 17 the period of time and then you decide for that
 18 volatility what is kind of your range that you
 19 want to measure the value at risk for, and then
 20 you measure how much the prices can change for
 21 that duration.

22 The other thing you could do is
 23 you, from based on the historical volatility and
 24 the time to delivery, you know, you can calculate
 25 using a black model what the expected price

1 Once you start with that base
 2 level, that may or may not be the level at which
 3 you are able to transact at when you actually get
 4 to the date of transaction. So what can that
 5 uncertainty be?

6 Typically you would measure that
 7 uncertainty as the standard deviation around
 8 that, or the -- in the case of a log normal
 9 distribution and the volatility around that sort
 10 of base level, and you get that volatility from
 11 the historical data.

12 So you can look at the forecasting
 13 uncertainty for a one standard deviation at the
 14 appropriate probability, you can look at it for
 15 two standard deviations at the appropriate
 16 probability. So that's how you will do it, you
 17 would say what's the probability, let's say 67
 18 percent that I would be able to transact within
 19 this range if I start at this level.

20 Q Thank you.

21 A Okay.

22 Q Mr. Arora, would you agree that
 23 forward prices are highly volatile?

24 A For which commodity? I would ask
 25 you to clarify exactly which one.

18 (Pages 66 to 69)

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<p>1 Q Are there, on the basis of your 2 response, are there any commodity for which you 3 would identify that -- at issue that you would 4 not answer that forward prices are highly 5 volatile? 6 A The commodities I deal with in my 7 testimony? 8 Q Yes. 9 A Specifically coal, natural gas, and 10 power, I would say that forward prices are 11 volatile. 12 Q Highly volatile? 13 A Depending on the time period you 14 look at, yes, highly volatile. If you look at 15 the last eighteen months. 16 Q Does some of the volatility come 17 from speculators involving each of the 18 commodities? 19 A I would expect some of the 20 volatility does come from speculators involving 21 each of the commodities. 22 Q Because of the volatility in 23 forward prices, would you agree that using a 24 single day's forward price as a forecast of the 25 spot price is likely to result in a high degree</p>	<p>1 A Okay. 2 Q And I'd like to refer you to page 3 9, lines 11 and 12. 4 A Okay. 5 Q Where you state -- and this is just 6 part of a sentence that I'm going to quote from, 7 but on page 9, lines 11 and 12 of your rebuttal 8 testimony, you state that "the chart on page 10 9 uses a sixty day average to smooth out the 10 potential for extreme average price swings due to 11 daily prices." Did I read that accurately? 12 A Yes. 13 Q And in a footnote to that statement 14 you indicate the Ameren risk management 15 department uses the same sixty day period to 16 ensure that the data is still relevant for future 17 volatility elimination -- excuse me. Let me 18 start that quote again. 19 "The data is still relevant for 20 future volatility estimation purposes, and is 21 accurate for risk management purposes." That is 22 part of the footnote. Did I read that portion 23 accurately? 24 A Yes, you did. 25 Q Okay. And you continue on to</p>
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<p>1 of uncertainty? 2 A I would agree with that with the 3 following caveat though. That is the price at 4 which you can transact at. And so if you want to 5 remove the uncertainty, to the extent you can 6 operationally, you can transact at that price and 7 remove the uncertainty. And that's why it's 8 appropriate to use forward prices. 9 Q Did you use a two year average of 10 forward prices from 2006 and 2007 to forecast 11 future prices for your study? 12 A No, I think -- I think we are 13 confusing the term "forecast" versus what I would 14 like to call "a base level." When I would look 15 at uncertainty, I would look at uncertainty 16 around a base level. 17 That doesn't mean that that's 18 necessarily the forecast. It could be, but the 19 main -- the main issue is, is there volatility 20 around whatever level you choose. So is two 21 years average an appropriate forecast? I would 22 say it could be, depending on which years you 23 choose. 24 Q I'd like to refer you again to your 25 rebuttal testimony.</p>	<p>1 state, "The use of a rolling sixty day average 2 for calculating annualized volatility is 3 consistent with most risk management practices." 4 Did I read that accurately? 5 A Yes, you did. 6 Q Do you still agree with those 7 statements? 8 A Yes, I do. 9 Q I'd like to refer you back to your 10 surrebuttal testimony. 11 A Okay. Which page? 12 Q Page 29. 13 A Okay. 14 Q Lines 16 to 17. 15 A Okay. 16 Q Where you state, "This is exactly 17 the type of analysis I have used and discussed in 18 my direct testimony." Have I read that 19 accurately? 20 A Yes. 21 Q Do you agree that the analysis 22 performed as described in your direct testimony 23 did not hold the time frame between the forward 24 price and the delivery date fixed? 25 A I'm sorry, I don't understand the</p>

19 (Pages 70 to 73)

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1 question.

2 Q Do you agree that the analysis that
3 you performed as described in your direct
4 testimony did not hold the time frame between the
5 forward price and the delivery date fixed?

6 A Did not hold the time frame -- are
7 you saying because the prices -- I'm just trying
8 to clarify the question. Are you saying that
9 because the prices were picked on different dates
10 but they were for the same delivery time period;
11 therefore, the time period between those dates
12 and the delivery time period is not fixed?

13 Q Yes.

14 A I would agree with that.

15 Q Do you agree that absent unusual
16 events like hurricanes or rail problems, the
17 closer the forecast is to the delivery date, the
18 smaller is the level of forecast uncertainty?

19 A No. I do not. Actually, I would
20 say it may be more. Because the closer you are
21 to the delivery date, even smaller things may
22 have an impact on the price.

23 You know, you may get a different
24 forecast of weather, outages, fuel prices. That
25 may change the volatility for a near-term

1 you hedge at a location that is different than
2 the location you would eventually close out the
3 hedge, the difference in prices between those two
4 locations is the basis.

5 I think what you may be referring
6 to is the settlement price. Do you hedge forward
7 at a given location and does it settle at that
8 same location at a different price potentially in
9 the spot market.

10 Q Mr. Arora, would you agree that in
11 determining the amount of a commodity to hedge,
12 it is important to determine the correlation
13 between the change in future price and the change
14 in spot price of that commodity?

15 A In determining the amount to hedge?
16 I think, again, could you be more specific? Am I
17 trying to determine the amount to hedge for which
18 commodity? And what would I be looking for in
19 terms of the changes?

20 Q For any commodity.

21 A So if I am looking to hedge power,
22 would I need to look at the changes in -- I'm
23 sorry, what was your question for that? If I am
24 looking to hedge power --

25 Q Yes. Any of the commodities that

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1 contract more than they would for a further
2 contract where, you know, because of the time
3 duration, you don't know for a fact if those
4 things will pan out.

5 Q Mr. Arora, you are familiar with
6 basic hedging strategies, are you not?

7 A I am familiar with basic hedging
8 strategies for AmerenUE for power. I am somewhat
9 familiar with the hedging strategies for AmerenUE
10 for coal and gas. But I am not certainly the
11 expert on either of those. I am familiar with
12 them.

13 Q Are you familiar with the term
14 "basis risk," b-a-s-i-s, risk?

15 A Yes, I am.

16 Q Do you agree that basis risk is a
17 risk that someone hedging takes when closing out
18 a hedge at a point in time when there is a
19 difference between the spot market price and the
20 futures price at that date?

21 A No, that's not the definition of
22 basis risk that I understand.

23 Q What, what is the definition of
24 basis risk that you understand?

25 A The definition of basis risk is if

1 you deal with.

2 A Okay.

3 Q Is it important to determine the
4 correlation between the change in future price
5 and the change in spot price of that particular
6 commodity?

7 A If I understand your question, I
8 think it depends on what you intend to use the
9 hedge for. If you intend to take the hedge all
10 the way to delivery, then I'm -- I think it may
11 matter what the forward exchange at, but
12 eventually what really matters is what the spot
13 price is that the forward settle against come in
14 at.

15 If you are intending to potentially
16 close out the hedge before delivery, then I think
17 you would want to look at how the forward prices
18 itself may change. So I think it just depends on
19 what you are trying to accomplish through the
20 hedge.

21 Q Mr. Arora, you used the term
22 "forward price," and I used the term "future
23 price." Is there a difference between forward
24 price and a future price?

25 A There's a difference, really, I'm

20 (Pages 74 to 77)

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1 not sure if it's a -- if it's a big operational
2 difference, but the way I understand future is
3 it's traditionally traded on sort of like a
4 central exchange like a NYMEX where NYMEX is
5 taking on the credit risk of the transacting
6 parties. The contracts are standard and, you
7 know, NYMEX is in between the two transacting
8 parties.

9 Now, in a forward market, the
10 contracts are still standard, you know, now they
11 are even done on the exchange, but they're not
12 only done on NYMEX, but maybe other exchanges
13 like the Intercontinental Exchange. And the
14 Intercontinental Exchange may not necessarily get
15 in the middle to provide credit for the
16 transacting parties.

17 Q Mr. Arora, are you familiar with a
18 college professor by the name of John Hull,
19 H-u-l-l?

20 A Yes, I've heard his name before.

21 Q Are you familiar with his textbook
22 Introduction to Futures and Options Markets?

23 A I don't know if I've read that
24 particular book, but he has -- he probably has
25 several books. Sure, I may have read parts of a

1 am -- received it back from you. I'm going to
2 hand it back to you again and I'm going to direct
3 you this time to page 97, again, in the chapter
4 Hedging Strategies Using Futures, and there's a
5 -- one sentence that's highlighted, and I'd like
6 to ask you to read it into the record.

7 You're certainly free to read
8 anything else into the record on that page or
9 anywhere else in the book, but I'd like to ask
10 you to read that, that one sentence.

11 And certainly take your time to
12 look, I know I have just handed that to you and
13 you've indicated that you don't recall having
14 seen that book previously, although you are
15 familiar with Mr. Hull.

16 MR. LOWERY: I'm going to object to
17 improper foundation, hearsay. Mr. Arora doesn't
18 have any knowledge of having seen the book
19 before. Is there a question? You've made a
20 request, is there a question pending?

21 MR. DOTTHEIM: Yes, I'm going to
22 first ask him to read -- to read the sentence
23 into the record --

24 MR. LOWERY: And I object based
25 upon hearsay, lack of foundation.

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1 book at one time in business school.

2 Q I'd like to hand you a copy of the
3 book Introduction to Futures and Options Markets
4 by John C. Hull, second edition. Mr. Hull is
5 identified in the book as a member of the faculty
6 of management at University of Toronto.

7 And I'd like to ask you just to at
8 the moment take a look at a sentence that's
9 underlined on page 96 in a chapter titled Hedging
10 Strategies Using Futures. And if could you just
11 take a look at the sentence underlined in red?

12 A Okay.

13 Q Mr. Arora, would you agree that the
14 change in prices in the correlation of the change
15 in future price and the change in spot price of a
16 commodity should not be the daily price changes,
17 but instead should be the changes that occur over
18 the time period that a person is expecting to
19 hold the hedge?

20 A I'm not sure I can agree or not to
21 that. I think it depends on what you are putting
22 the hedge in for.

23 Q Okay. And I'm going to -- I
24 previously handed to you the book Introduction to
25 Futures and Options Markets by John Hull, and I

1 A I'm just trying to, since I'm not
2 familiar with these exact pages that you are
3 referring to, I'm just trying to understand what
4 commodity this refers to before I read that
5 sentence.

6 Q (BY MR. DOTTHEIM) Certainly. Of
7 course.

8 MR. LOWERY: Just for the record,
9 Mr. Arora, you're not required to study the
10 entire textbook in the middle of the deposition.

11 THE WITNESS: Okay.

12 MR. LOWERY: If you can answer Mr.
13 Dottheim's question subject to my objection, I'm
14 not sure it's even an answer, but I object to
15 this statement being part of the record based on
16 improper foundation and hearsay.

17 A Um, are you requesting me to read
18 that particular line?

19 Q (BY MR. DOTTHEIM) Yes. Well, let
20 me first, first ask you, you've recognized Mr.
21 Hull's name and you mentioned that you recognize
22 it from courses, or a course you've taken?

23 A Yes.

24 Q And the course was in business
25 school? Or --

21 (Pages 78 to 81)

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<p>1 A It was in business school, and I 2 think we have used Mr. Hull's textbook from time 3 to time when we have priced things for Ameren, 4 but I don't recall if it was the second edition 5 or not. I just don't recall. 6 Q Was it via the book that you're 7 looking at now? Or was it a -- another book of 8 his? Because you said you don't recall whether 9 it was the second edition or not. 10 A Yeah, and I don't recall if it was 11 this exact book, it may be. Usually people just 12 refer to the book as John C. Hull. By the title, 13 I don't recall. 14 That being said, it seems at least 15 in the start of the chapter they're talking about 16 oil, and I don't know if it continues on to this 17 page, but they may be talking about crude oil. 18 And I, without looking at the context, I wouldn't 19 know for sure. 20 Q Certainly. 21 A But -- 22 MR. LOWERY: Is there a question 23 pending? 24 THE WITNESS: I think he wants me 25 to read the line.</p>	<p>1 A Yes. 2 Q Can you identify any of those other 3 works that you just referred to specifically that 4 apply to electricity or natural gas? 5 A I think, if I get the name right, 6 it's Philippe Palvich [phonetic]? I'll have to 7 get you that name. It's a -- I don't know if 8 she's a professor, but it is an author that has 9 written specifically about the risk around 10 electricity prices, and she had a book on that 11 specific topic and why you cannot use just 12 standard models from the stock market and apply 13 to the electricity market or natural gas. 14 It may be Victoria something, but I 15 don't recall the exact name. 16 MR. DOTTHEIM: Okay. Well, I 17 believe that Mr. Lowery will object to you or to 18 us trying to supplement the deposition, so I 19 assume we'll submit a data request for those -- 20 for those references. Because if, if there are 21 studies, analysis out there, we certainly would 22 be interested in seeing those. 23 THE WITNESS: Okay. 24 MR. DOTTHEIM: Thank you for 25 calling our attention to those.</p>
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<p>1 MR. LOWERY: Okay. Same objection. 2 A "Ideally, the length of each time 3 interval should be the same as the length of the 4 time interval for which the hedge is in effect." 5 Q (BY MR. DOTTHEIM) Okay. And do 6 you have any opinion regarding that one sentence? 7 A Yes, I think I do, especially if 8 it's about crude oil as opposed to electric 9 prices. I don't think those commodities are 10 comparable in the sense of how you may price 11 options for the two commodities or options on 12 futures. Electricity prices have typically been 13 more volatile than crude oil absent the last 14 eighteen months. 15 So I think you just have to be 16 extremely careful when you price electricity 17 options, and, you know, there are other books 18 that are specifically for commodities like 19 electricity and natural gas that deal with the 20 wide swings in prices and deal with different 21 markets than what Mr. Hull may use for other 22 commodities. 23 Q Okay. But you made reference to 24 Mr. Hull's work being referred to here at Ameren. 25 Is that correct?</p>	<p>1 We probably have another hour. You 2 want to take a break and just go straight through 3 then? 4 MR. LOWERY: Why don't we go off 5 the record and talk about it. Is that all right? 6 (Off the record.) 7 Q (BY MR. DOTTHEIM) Mr. Arora, I'd 8 like to ask you to return to your work papers. 9 A Okay. 10 Q To your spreadsheet. It's the 11 forward 2009 ATC electricity prices in column C 12 of your work papers. 13 MR. LOWERY: Mr. Dottheim, are you 14 in direct testimony, surrebuttal? 15 MR. DOTTHEIM: It's surrebuttal. 16 A Do you know which exact work paper? 17 Q (BY MR. DOTTHEIM) It's related to 18 the dark spread chart that I think is on page 14. 19 A Okay. 20 MR. LOWERY: Go ahead. 21 Q (BY MR. DOTTHEIM) I'd like to 22 direct you to the forward 2009 ATC electricity 23 prices in column C. 24 A Okay. 25 Q And the combined hedged and</p>

22 (Pages 82 to 85)

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1 unhedged coal prices in column E.
 2 A Okay.
 3 Q It appears that the combined hedged
 4 and unhedged coal price shows significant --
 5 significantly less variation than the forward
 6 electricity price. Is that correct?
 7 A Should I eyeball it and look at it?
 8 Q Yes.
 9 A That's probably correct, and I
 10 would expect that, if it's hedged.
 11 Q Why would you expect that?
 12 A If the bulk of the 2009 coal is
 13 hedged, I would not expect a huge variation in
 14 the weighted average price of the hedged and
 15 unhedged portion. The power prices are just the
 16 power prices and so they would move, and the coal
 17 wouldn't move to the extent it's hedged.
 18 Q It appears that the combined hedged
 19 and unhedged coal price in column E is almost
 20 constant from June 2008 through October 2008. Is
 21 that correct?
 22 A It varies a little bit. It varies
 23 a little bit.
 24 Q Is the variation as you have
 25 identified it, you said it varies a little bit,

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1 is the variation only a little because almost all
 2 of the PRB 8800 Btu coal has been hedged over
 3 this time period?
 4 A Yes. For 2009.
 5 Q I'd like to ask you to look at the
 6 unhedged forward coal prices for 2009 from column
 7 D.
 8 A Okay.
 9 Q And the combination of unhedged and
 10 hedged coal prices for 2009 from column E.
 11 A Okay.
 12 Q Would you agree that around May of
 13 2007, the unhedged coal prices go above the
 14 combination of hedged and unhedged coal prices?
 15 A On average? Or every day?
 16 Q Every day.
 17 A They are not above every day.
 18 Q On average?
 19 A On average, the unhedged prices are
 20 slightly above the hedged prices, about seven
 21 cents or so.
 22 Q Are the unhedged coal prices above
 23 the combination of hedged and unhedged coal
 24 prices most of the days? And the time period,
 25 again, is from May forward.

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1 A May forward?
 2 Q Yes, I'm sorry. I said --
 3 MR. LOWERY: May forward to when?
 4 MR. DOTTHEIM: Till the end of the
 5 data in October.
 6 A In October 2008?
 7 Q (BY MR. DOTTHEIM) Yes.
 8 A Yes, they are above most of the
 9 days. I'm sorry, they are -- the coal prices for
 10 the unhedged prices are above the weighted
 11 average for most of the days.
 12 Q I'd like to ask you to look at the
 13 period May 2007 through July 2008.
 14 A Okay.
 15 Q Okay? Would you agree that the
 16 forward 2009 price for unhedged coal remained
 17 above the combined hedged and unhedged coal costs
 18 for 2009, and that the unhedged price was
 19 generally increasing?
 20 A I'm sorry, could you repeat the
 21 time frame? So from May --
 22 Q Yeah. From May 2007 through July
 23 2008, would you agree that the forward 2009 price
 24 for unhedged coal remained above the combined
 25 hedged and unhedged coal costs for 2009?

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1 A Not on all days, but for most of
 2 the days.
 3 Q Would you agree that for that
 4 period of May 2007 through July 2008, that the
 5 unhedged price for coal was generally increasing?
 6 A I haven't charted it, so.
 7 Q No, no, and there is no chart.
 8 A No, but I haven't charted to see,
 9 to answer your question.
 10 Q I wasn't trying to refer you to a
 11 chart.
 12 A So without charting it, no, I don't
 13 know if they are increasing.
 14 Q Okay.
 15 A There's too much data to eyeball.
 16 Q Would you agree that in July 2008
 17 the unhedged coal price began to decrease?
 18 A In 2009? No, in --
 19 Q July 2008.
 20 A As of -- again, I haven't charted
 21 this particular data --
 22 Q Okay.
 23 A -- to see how the prices are -- I
 24 haven't chart the data to see how the prices are
 25 moving, to see whether they are increasing or

23 (Pages 86 to 89)

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1 decreasing. Do you want me to chart it or not?
 2 Or --
 3 Q How long would that take you?
 4 A Depends. I don't know.
 5 Q Okay. Okay. Mr. Arora, do the
 6 forward ATC electricity prices follow the same
 7 general pattern as the unhedged coal forward
 8 prices, that is, increasing from May 2008 to July
 9 2008 and then decreasing?
 10 A Again, I'll have to chart those
 11 prices. Do you have a chart where you have done
 12 this? I could look at that.
 13 Q We do have a chart.
 14 A Okay.
 15 Q This chart which Dr. Proctor has
 16 put together is a graph that combines the forward
 17 2009 ATC electricity prices from column C of your
 18 work papers with the unhedged coal forward prices
 19 from column D of your work papers. Would you
 20 accept this chart, graph, subject to check?
 21 MR. LOWERY: I'm going to object
 22 unless you're asking him to assume that that's
 23 true.
 24 Q (BY MR. DOTTHEIM) Okay. I'm going
 25 to ask you to assume that this is true, subject

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1 to check.
 2 A Okay. I will assume it's true,
 3 subject to check.
 4 Q Okay. Then why don't I return to
 5 those prior questions. Would you agree that the
 6 forward 2009 price for unhedged coal remained
 7 above the combined hedged and unhedged coal costs
 8 for 2009?
 9 MR. LOWERY: Again, just for
 10 clarification, based on that assumption, all of
 11 these questions are based on that assumption; is
 12 that right?
 13 MR. DOTTHEIM: That is correct.
 14 Q (BY MR. DOTTHEIM) Yes, and I think
 15 you may have answered, I'm sorry, Mr. Arora, I
 16 think you may have answered this question
 17 yourself based on the chart you had on your
 18 computer from your work papers.
 19 Let me ask you the next question,
 20 and this series of questions are based on the
 21 assumption, respecting this chart which I'd like
 22 to have marked as Deposition Exhibit 2.
 23 (Exhibit AA2 marked for
 24 identification by the court reporter.)
 25 Q (BY MR. DOTTHEIM) And the question

1 is, would you agree that for the period May 2007
 2 through July 2008, the unhedged price, coal price
 3 was generally increasing?
 4 MR. LOWERY: Mr. Dottheim, when you
 5 say "unhedged coal price," you're talking about a
 6 spot coal price; is that correct? Just so we
 7 understand the question?
 8 MR. DOTTHEIM: That is correct.
 9 Yes. I'm sorry. Yes.
 10 MR. LOWERY: Well, I should say a
 11 forward coal commodity price. I didn't speak
 12 very precisely.
 13 A Well, I don't know if I can answer
 14 about generally increasing. The price on July
 15 2008 is higher than the price on May '07.
 16 Q (BY MR. DOTTHEIM) Is that also
 17 true for the electricity prices?
 18 A I don't know. I mean, it seems
 19 they are about the same. If I look in May '07
 20 and July '08, they seem to be about the same.
 21 Q Do you agree that in July 2008, the
 22 unhedged coal price began to decrease?
 23 A Yes. I do agree with that.
 24 Q Do you agree that in July 2008, the
 25 electric price began to decrease?

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1 A Yes, but by -- it seems by a much
 2 larger percentage.
 3 Q Mr. Arora, on what's been marked as
 4 Deposition Exhibit 2, the two price series appear
 5 to be tracking one another. Would you agree that
 6 the two price series appear to be tracking one
 7 another?
 8 A No, I would not.
 9 Q Okay.
 10 A If you look at the period January
 11 through March of '07, you know, it seems
 12 electricity prices went down, coal prices went up
 13 in February. Look at the period from April '07
 14 through seems like July '07, electricity prices
 15 went up, coal did not go up as much.
 16 If you look at the period from July
 17 '07 through October '07, coal stayed flat while
 18 electricity moved around. Same thing seems to be
 19 applicable for October '07 through January '08,
 20 it looks like; and even if I look at April 2008
 21 through June of 2008, the time periods on coal
 22 went down and electricity went up.
 23 I don't think the changes would be
 24 correlated looking at this chart.
 25 Q Okay. I'd like to direct you to

24 (Pages 90 to 93)

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<p style="text-align: right;">Page 94</p> <p>1 page 21 of your direct testimony. 2 A Okay. I am there. 3 Q Okay. And I'd like to direct you 4 to the sentence that begins on line 21 and goes 5 to the next page, 22, the first line. 6 A Okay. 7 Q And I'd like to ask you if the type 8 of correlation that you discuss in the sentence 9 that begins on line 21 on page 21 is the -- is 10 reflected on what's been marked as Deposition 11 Exhibit 2? 12 A No, there is no correlation 13 calculated on Deposition Exhibit 2. The prices 14 are around the clock. I think this was for the 15 off-peak period in my page 21. And there is no 16 correlation calculated for the price changes or 17 for the prices on that exhibit. 18 Q Have you or anyone working with you 19 on the uncertainty study looked at how well the 20 average annual unhedged coal and electricity 21 prices for the 250 scenarios track one another? 22 A I'm sorry, I'm just trying to 23 clarify once again. 24 Q Sure. 25 A The average unhedged coal prices</p>	<p style="text-align: right;">Page 96</p> <p>1 work papers? 2 A Yes, I expect they are. 3 Q Could you identify where they are 4 in your work papers? 5 A I think it should all be in a 6 spreadsheet called RTSIM update 03/27/08 with my 7 direct testimony. There is columns of the fuel 8 costs and the power prices, and there's lots of 9 columns hidden, so if you unhide them, you 10 probably find the details. 11 Q If we don't, I assume we can 12 contact you if we can't find them? So. 13 A Sure. 14 Q Okay. I'd like to refer you to 15 your surrebuttal testimony, page 21, and it's 16 figure AKA-SR2. And I'd like to ask you 17 questions about the trends that you identify on 18 that figure. 19 I first want to focus on the trend 20 that you have identified as I believe Dr. 21 Proctor's trend. Will you accept, subject to 22 check, that the slope of the trend line that you 23 have identified as Dr. Proctor's trend is a per 24 year increase in average annual price of \$3.47? 25 A Yes, I will.</p>
<p style="text-align: right;">Page 95</p> <p>1 and the -- 2 Q Average annual unhedged coal prices 3 and electricity prices. 4 A Unhedged electricity prices? Is 5 that correct? Unhedged? 6 Q Yes. 7 A I think we may have done that in my 8 direct testimony. Let me see. For what time 9 period? 10 Q For any time period. 11 A I think on schedule AKA-E6-2, we 12 looked at that correlation of the price changes. 13 Q And that was for the 250 scenarios? 14 Or 250 iterations? 15 A No, no, no. Okay. Are you asking 16 if we look at how the 250 scenarios unhedged coal 17 prices and the unhedged power prices track one 18 another? 19 Q Yes. 20 A No. I don't believe anybody has 21 looked at that. Not to my knowledge. 22 Q Is the data for the annual average 23 electricity prices, unhedged coal prices, and 24 natural gas prices matched for each of the 250 25 scenarios and each of the years available in your</p>	<p style="text-align: right;">Page 97</p> <p>1 MR. LOWERY: Can we go off the 2 record a second? 3 (Off the record.) 4 Q (BY MR. DOTTHEIM) Mr. Arora, I'm 5 referring you to your surrebuttal testimony, page 6 21, figure AKA-SR2, and I am directing you to the 7 line that you've identified as Dr. Proctor's 8 trend, and I'd like to ask you, if you would, to 9 in essence extrapolate that trend out through 10 2011 using the 2007 price of \$41.94 that's on 11 your schedule AKA-E2 in your direct testimony, 12 and to add the \$3.47 which I asked you to accept, 13 subject to check, as the slope of the trend line, 14 and if you would accept, subject to check, for 15 the year 2008 the value of \$45.41; 2009, \$48.88; 16 for the year 2010, \$52.35; and for the year 2011, 17 \$55.82. If these, if you would accept that, 18 subject to check? 19 MR. LOWERY: I want the record to 20 reflect that Mr. Arora calculated those faster 21 than you could ask him. 22 MR. DOTTHEIM: I have no doubt. 23 Q (BY MR. DOTTHEIM) If these prices 24 were added to your data on schedule AKA-E2, do 25 you agree that the average for the new set of</p>

25 (Pages 94 to 97)

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1 data would increase?
 2 MR. LOWERY: Just for
 3 clarification, you're asking hypothetically if
 4 that happened, right?
 5 MR. DOTTHEIM: That's right.
 6 Q (BY MR. DOTTHEIM) I'm asking you
 7 hypothetically if you --
 8 A So are you asking me hypothetically
 9 if I just took that trend, extrapolated the '07
 10 prices and then calculated the average off the
 11 new set of prices, would the average be higher?
 12 Q Yes.
 13 A I expect it would be.
 14 Q And would you accept, subject to
 15 check, that the average for the new data set is
 16 hypothetically \$38.98?
 17 A If you will give me a minute, I'll
 18 try to calculate it.
 19 Q Certainly.
 20 A I'm sorry, what did you say the
 21 average would be?
 22 Q Thirty-eight dollars ninety-eight
 23 cents.
 24 A I'm getting slightly higher, but
 25 39.19, but I'll accept your number.

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1 Q And that would be compared to the
 2 thirty-eight -- oh, excuse me.
 3 A I think I caught an extra number.
 4 I'm sorry. Hold on one second, Mr. Dottheim.
 5 Yeah, 38.98 is what I get.
 6 Q Thank you. Would you agree that
 7 the range from the -- from the highest to the
 8 lowest price for the new set of data increases
 9 hypothetically?
 10 A Yes, hypothetically, it does.
 11 Q And could I ask you to also
 12 calculate, if it wouldn't take very long, the
 13 standard deviation?
 14 A I get 10.35.
 15 Q Okay. So hypothetically, then, the
 16 standard deviation for the new data set
 17 increases, does it not?
 18 A Yes.
 19 Q Would the uncertainty factor for
 20 the new set of data also increase?
 21 A Yes.
 22 Q What are you showing for the
 23 uncertainty factor for the new data set?
 24 A I'm showing 26.5 percent.
 25 Q Would you agree that if average

1 annual prices trend up over time, this will
 2 increase the standard deviation and the
 3 uncertainty factor compared to average annual
 4 prices that may vary from year to year, but are
 5 not trending up or down over time?
 6 A That are not trending up or down
 7 over time means they are the same?
 8 Q Yes.
 9 A Yes, I would agree with that, you
 10 know, if, if the -- if one number is the same
 11 every year, other numbers would be more
 12 uncertain.
 13 Q Let me ask that again. They are
 14 varying from year to year, but they are not
 15 trending up or down over time.
 16 A So they are trending flat?
 17 Q Yes.
 18 A I don't know if that's true or not.
 19 It just depends on how much they move every year.
 20 I think that's the other problem with using that
 21 graph is what you just asked me to demonstrate.
 22 Q Let me ask you to return to page 21
 23 of your surrebuttal testimony, figure AKA-SR2.
 24 Would you agree that this figure shows a trend
 25 decreasing average annual prices from 1999 to

Page 101

1 2002?
 2 A Yes.
 3 Q Would you agree that if average
 4 annual prices trend down over time, this will
 5 increase the standard deviation and the
 6 uncertainty factor compared to average annual
 7 prices that may vary from year to year, but are
 8 not trending up or down over time?
 9 A No, not necessarily. Again, it
 10 depends on what the year to year changes are, of
 11 what magnitude.
 12 Q If Dr. Proctor had detrended the
 13 status showing the negative trend as well as the
 14 data showing the positive trend, would you agree
 15 the resulting uncertainty factor would have been
 16 even lower than what Dr. Proctor included in his
 17 rebuttal testimony?
 18 A I'm sorry, I don't understand the
 19 question, sir. I'm not sure -- I thought he did
 20 detrend the data.
 21 Q Dr. Proctor, in referring to your
 22 AKA-SR2, Dr. Proctor detrended the data which
 23 you've shown as Dr. Proctor's trend. He did not
 24 detrend the data that you are showing as 1999 to
 25 2002 trend.

26 (Pages 98 to 101)

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1 A Right.

2 Q So my question, again, was if Dr.

3 Proctor had detrended this data that is the 1999

4 to 2002 data showing a negative trend as well as

5 the data showing a positive trend, which he did,

6 would you agree that the resulting uncertainty

7 factor would have been even lower than what Dr.

8 Proctor included in his rebuttal testimony?

9 MR. LOWERY: Object to the form of

10 the question, it calls for speculation. I don't

11 think he has any way of knowing what the numbers

12 would show.

13 A I agree. I mean, I don't know what

14 Dr. Proctor would use to detrend. Since he -- I

15 mean, my understanding, he used 1999 to 2002 to

16 detrend the other years. So without knowing how

17 he would do it, I have no way of knowing what the

18 answer would be.

19 Q (BY MR. DOTTHEIM) I'd like to

20 refer you to page 22 of your surrebuttal

21 testimony, lines 19 to 23. And on page 23 of

22 your surrebuttal testimony I think you clarify

23 that the test year does include forecast

24 uncertainty because you were attempting to look

25 at the test year uncertainty that existed at the

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1 beginning of the test year. Is that a correct

2 understanding of your testimony?

3 A Yes, it is.

4 Q I'd like to refer you to the bottom

5 of page 23 of your surrebuttal testimony,

6 starting at line 19 and going through line 21.

7 You appear to be saying that taking an after the

8 fact look back at the test year, the fuel prices

9 for AmerenUE's generation would have been known,

10 but this is not the case looking forward to the

11 test year. Is that a correct understanding of

12 your testimony?

13 A It is, and I think I should clarify

14 that the test year is just a nomenclature. It

15 could be any -- beginning of any year. But the

16 only difference is for the test year, you know,

17 we, we use the typical ratios that AmerenUE would

18 be in -- going into any given year. So with that

19 clarification, I agree.

20 Q At the top of page 24 of your

21 surrebuttal testimony, you switch from talking

22 about fuel prices and include modeled power

23 prices. At this point you're referring to Dr.

24 Proctor's criticism of the 250 scenarios for the

25 test year which includes power prices.

1 Is it your view that Dr. Proctor's

2 rebuttal testimony views the test year power

3 prices or the test year natural gas prices as

4 known?

5 A I don't know for sure, but it does

6 seem that way since Dr. Proctor says there should

7 not be any forecast uncertainty in a test year.

8 That's my understanding.

9 Q Isn't it Dr. Proctor's rebuttal

10 testimony that only those elements that are

11 hedged by AmerenUE going into the test year

12 should be considered fixed in the test year?

13 A Can you point me out in Dr.

14 Proctor's testimony?

15 Q I'm asking the question.

16 MR. LOWERY: Well, Mr. Arora, if

17 you can't answer the question without

18 understanding the reference, then you have to say

19 you don't know.

20 A Yeah.

21 Q (BY MR. DOTTHEIM) Okay. Is your

22 question you don't know?

23 A Yes. It is my answer.

24 Q Mr. Arora, what percent of all

25 system sales did you include as hedge prices in

Page 105

1 your test year calculations?

2 A I think it may have been -- it may

3 have been around [REDACTED] percent.

4 Q Mr. Arora, what percent of the

5 off-system sales did you include as hedged prices

6 in your 2009 calculations?

7 A I think it may have been [REDACTED] percent

8 based on the [REDACTED] million.

9 Q What percent of the --

10 A Actually at that time for '09, I

11 think it would have been even less than [REDACTED]

12 percent.

13 Q What percent of the off-system

14 sales did you include as hedge prices in your

15 2010 calculations?

16 A None. I think even for '09 I may

17 have made essentially [REDACTED] Yeah [REDACTED]

18 [REDACTED] for off-system sales for '09 or

19 '10 at that time.

20 Q I'd like to refer back to a

21 response that you gave me earlier. Did I

22 understand correctly that you indicated that you

23 view that Dr. Proctor in his rebuttal testimony

24 indicates that test year power prices are known?

25 A I'll have to check his testimony.

27 (Pages 102 to 105)

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1 Q Yes, that's exactly what I was
2 going to ask you to do. Because you responded to
3 it, and based on your response, I was going to
4 ask you if you could refer me to where in his
5 testimony you were basing your response.

6 A Okay. If you look at page 30,
7 lines 4 to 6, Dr. Proctor says, "Specifically in
8 the test year there is no forecast uncertainty,
9 and the only uncertainty that should have been in
10 the results is the uncertainty resulting from
11 weather as it relates to the power price and
12 natural gas prices."

13 So I read that to mean that Dr.
14 Proctor thinks there should be no forecast
15 uncertainty, and any deviation should be due to
16 weather in the power prices and natural gas
17 prices as opposed to any other factor affecting
18 those prices.

19 Q If I could have a minute, I think I
20 have just a few more questions.

21 Just a few more questions. Mr.
22 Arora, I'd like to refer you to page 30 of your
23 surrebuttal testimony. And you note on page 30
24 of your surrebuttal testimony that you spent more
25 than half a day meeting with the Staff. Was that

1 A Yes, I believe I did.

2 Q Okay. And do you recall attached
3 to Exhibit A, it requested that you bring with
4 you all documents that you relied upon for your
5 testimony and preparing your testimony which
6 would be your direct rebuttal and surrebuttal?
7 Do you recall that?

8 A Yes, I do.

9 Q Did you bring that -- those
10 materials with you?

11 A I brought those materials on a
12 flash drive.

13 Q Okay.

14 MR. LOWERY: We can copy the --
15 those documents for you onto a CD or whatever,
16 whatever you need. They were pretty -- some of
17 them were pretty voluminous.

18 MR. DOTTHEIM: Yeah, I, I didn't --
19 that'd be fine.

20 MR. LOWERY: Okay. We'll have to
21 do that literally, but we can provide those in a
22 matter of a day or two.

23 MR. DOTTHEIM: Yeah. Because since
24 the fuel adjustment clause issue is the last
25 thing scheduled, that's absolutely no problem.

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1 meeting held before or after you filed your
2 direct testimony?

3 A It was held after I filed my direct
4 testimony.

5 Q Do you recall an approximate date
6 when you began to work on your direct testimony
7 in this case?

8 A Probably middle of January, maybe.

9 Q And I guess I should be more
10 specific. I guess there's the written part of
11 the direct testimony, there's the uncertainty
12 analysis. When did you begin the uncertainty
13 analysis that's part of your direct testimony?

14 A I think it may have been late
15 January or February.

16 Q Do you recall the date or
17 approximate date when your direct testimony was
18 filed in this case?

19 A April 2008. April 1. April 4.

20 Q Did you receive a copy of the
21 notice of deposition relating to your deposition
22 today?

23 A I did.

24 Q Okay. And did you receive a copy
25 of the Exhibit A that was attached to it?

1 MR. LOWERY: Just for the record,
2 we didn't literally bring printouts of all the
3 work papers because if we had, we would have had
4 paper this high. So.

5 MR. DOTTHEIM: And frankly, that's
6 not what I'm interested in. So when we go off
7 the record, we can continue a discussion of this
8 because I'm not -- I'm not looking for everything
9 -- anything of that nature.

10 MR. LOWERY: All right. Fair
11 enough.

12 MR. DOTTHEIM: Mr. Arora, you've
13 been extremely patient and tolerant and I thank
14 you very much.

15 THE WITNESS: I thank you, Mr.
16 Dottheim.

17 MR. LOWERY: Miss Baker, I believe
18 that's your cue.

19 MS. BAKER: Okay. I am here and
20 Lewis Mills is back in the room with us as well.

21 MR. LOWERY: Or maybe it's Lewis's
22 cue, I don't know.

23 MS. BAKER: I guess it's mine.

24 EXAMINATION

25 QUESTIONS BY MS. BAKER:

28 (Pages 106 to 109)

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1 Q All right. Mr. Arora, again, my
2 name is Christina Baker and I am an attorney with
3 the Office of the Public Counsel.

4 A Okay.

5 Q All right. Do you sometimes attend
6 meetings of the Ameren risk management steering
7 committee?

8 A I do sometimes attend those
9 meetings, yes.

10 Q Did you attend some of these
11 meetings in 2006?

12 A Did I attend some of those meetings
13 in 2006?

14 Q That's correct.

15 A I may have.

16 Q How about in 2007?

17 A Yeah, I may have.

18 Q And for this year, 2008?

19 A I think I did in this year, yes.

20 Q Do you sometimes attend meetings of
21 the Ameren executive leadership team?

22 A Yes, I do.

23 Q Do you sometimes attend meetings of
24 the Ameren senior team?

25 A No, I don't think I have attended

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1 those meetings. That I can recall.

2 Q I'm sorry?

3 A I can't recall if I have attended
4 any of the senior team meetings.

5 Q All right. Is the Ameren executive
6 leadership team the new name of the Ameren senior
7 team? Or are those two separate groups?

8 A I think that's my understanding. I
9 don't believe there's an Ameren senior team
10 anymore. I think it's the Ameren executive
11 leadership team at this point.

12 Q Did you attend some of those
13 meetings in 2006?

14 A Which ones? The senior team?

15 Q Of the Ameren executive leadership
16 team.

17 A I don't think there was an Ameren
18 executive leadership team in 2006. They may have
19 been referred to as the senior team or something
20 else.

21 Q All right. How about in 2007?

22 A I'm trying to recall when the
23 executive leadership team was formed. It was
24 probably in December. I may have. I don't know.

25 Q How about this year, 2008?

1 A Yes, I have attended Ameren
2 executive leadership team meetings this year.

3 Q Were you involved in developing and
4 analyzing pricing proposals that UE or its agents
5 might make if it chose to participate in the 2006
6 Illinois auction?

7 A Yes, I was.

8 Q Did your work on the pricing
9 proposals and analysis begin prior to the time
10 that UE or its agents submitted its part 1
11 application to participate in the Illinois
12 auction on January 20th, 2006? I'm sorry, June
13 20th, 2006.

14 A Did it begin before or after? Is
15 that what you're asking?

16 Q Yes. Did it begin prior to the
17 time that UE or its agent submitted the part 1
18 application.

19 A I don't recall if it began before
20 or not. It might have.

21 Q Did your work on the pricing
22 proposals and analysis occur after the time that
23 UE or its agents submitted the part 1
24 application?

25 A May have. I think it was during

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1 that time. During that June time frame.

2 Q Were there other individuals from
3 corporate planning that worked on the Illinois
4 auction pricing proposals and analysis for UE or
5 its agents?

6 A Yes, there were, and I think I'd
7 just like to clarify. When you say "pricing
8 proposals" or "analysis," I'm not sure what you
9 mean by "proposals" because the Illinois auction
10 only had a few standard products that were
11 supposed to be priced, so I'm not sure which
12 proposals you are referring to.

13 Q My reference is to the bids for
14 that.

15 A Right. Okay. So I, I believe
16 there was one more individual that may have
17 worked on those.

18 Q And who was that individual?

19 A It was Steve Terelmes.

20 Q And what role did Mr. Terelmes
21 play?

22 A Steve Terelmes actually did the
23 pricing, and then he reviewed it with me and some
24 of the members of the AmerenUE trade floor.

25 Q Did corporate planning make any

29 (Pages 110 to 113)

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1 recommendations about how UE should participate
2 in the Illinois auction?

3 A No, it did not.

4 Q Did corporate planning make any
5 recommendations about whether UE should
6 participate in the Illinois auction?

7 A No, it did not.

8 Q What individuals at Ameren Energy
9 and UE did you work together with on the 2006
10 Illinois auction?

11 A And again, when I say "corporate
12 planning," I am just saying I am not aware of us
13 making any recommendations.

14 In terms of the individuals at
15 Ameren Energy, it was mainly Jaime Haro who is
16 currently the director of trading at AmerenUE
17 asset management and training, and John Ricky who
18 is I believe the managing supervisor of trading
19 maybe, or asset optimization.

20 Q Were there any other individuals
21 besides those two?

22 A I think Sean Schukar may have been
23 one at that time.

24 Q Anyone else?

25 A No.

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1 Q Were you part of a work group that
2 addressed Illinois auction issues?

3 A Was I part of a work group that
4 addressed issues for which company? AmerenUE?

5 Q For AmerenUE.

6 A You know, our role was mainly to
7 provide the pricing such that AmerenUE could
8 decide what is the risk premium associated with
9 participating in the auction.

10 Q Were you part of a work group on
11 behalf of any other entity?

12 A No. Not prior to the auction being
13 closed.

14 Q What were the tasks that were
15 assigned to the work group that you worked on?

16 A Again, I wouldn't characterize it
17 as a specific work group because I don't think we
18 got to that stage. I think the tasks that we
19 were talking about was if we had to price these
20 products, what would we price them at and ensure
21 that we include all of the components of the risk
22 premium that were going to the price.

23 Q Okay. Do you know why Ameren
24 Energy filed the application for UE to
25 participate in the Illinois auction instead of UE

1 filing the application on its own without Ameren
2 Energy acting as UE's agent?

3 A Do I know for sure? No, but I
4 think it was because Ameren Energy acted on
5 behalf of AmerenUE in terms of trading, and
6 AmerenUE, I'm not sure if they had any other
7 entity that could do that on their behalf at that
8 time.

9 Q Do you know of any interactions
10 that took place between the Illinois auction
11 manager and Ameren Energy regarding the
12 association or affiliate concerns of the auction
13 manager?

14 A I believe there may have been some.

15 Q How did you become aware of these
16 interactions?

17 A I think it was through hearsay.

18 Q Were you present at meetings or
19 copied on e-mails where these association or
20 affiliate concerns were discussed?

21 A I don't think I was copied on any
22 e-mails. I'm trying to recall if I was even in
23 any meeting or not. I don't recall if I was in
24 any specific meeting. I just recall that it was
25 brought to my attention as a concern the auction

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1 manager may have.

2 Q Who was the source of the hearsay
3 where you learned of the interaction?

4 A I think it may have been legal and
5 the Ameren Energy folks.

6 Q Were you present at meetings or
7 copied on e-mails where possible responses to
8 these associations or affiliate concerns were
9 discussed?

10 A No, I don't think I was. I don't
11 think that was really discussed by the AmerenUE
12 team or the Ameren Energy team with legal.

13 Q Were you present at meetings or
14 copied on e-mails where this decision to
15 participate in the Illinois auction was
16 discussed?

17 A No.

18 Q Were you present at meetings or
19 copied on e-mails where the decision of whether
20 to file a part 2 application for UE to
21 participate in the Illinois auction was
22 discussed?

23 A No.

24 Q Did UE ever file a part 2
25 application to participate in the Illinois

30 (Pages 114 to 117)

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1 auction?
 2 A I don't recall if they did or not.
 3 Q Do you know how it was decided that
 4 UE would not file a part 2 application to
 5 participate in the Illinois auction?
 6 A No, I do not know how it was
 7 decided.
 8 Q How did you learn that the decision
 9 was made that UE would not file a part 2
 10 application to participate in the Illinois
 11 auction?
 12 MR. LOWERY: Object to the form of
 13 the question. I think he just testified he
 14 doesn't know whether they even filed one or not.
 15 Q (BY MS. BAKER) All right. I'll
 16 withdraw that question.
 17 What individuals at UE or its
 18 affiliates were involved in the decision for UE
 19 to take steps to participate in the Illinois
 20 auction?
 21 A I'm sorry, could you repeat that
 22 question?
 23 Q What individuals at UE or its
 24 affiliates were involved in the decision for UE
 25 to take steps to participate in the Illinois

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1 auction?
 2 A I don't know, you know, all I was
 3 requested was to provide a pricing that would
 4 include all the risk premiums for that price.
 5 Q Who asked you to provide the prices
 6 and premiums?
 7 A It may have been Mr. Sean Schukar
 8 or Mr. Jaime Haro. I think it was Sean Schukar
 9 at that time. I think it was Sean.
 10 Q What individuals at UE or its
 11 affiliates were involved in the decision that UE
 12 would not participate in the Illinois auction?
 13 A I don't know the answer to that. I
 14 may have answered that before.
 15 Q Are these the same -- I'm sorry.
 16 Do you know if AEM was able to win many of the
 17 Illinois auction tranches for supplying the load
 18 of the Ameren Illinois utilities?
 19 A Yes, I am aware they won some of
 20 the tranches. It was publicly released, that
 21 information.
 22 Q They had winning bids for several
 23 dozen of the tranches, didn't they?
 24 A I don't recall how many. I think I
 25 just saw that they won some tranches.

1 Q Describe any role that you had in
 2 assisting AEM with the Illinois auction.
 3 A I had no role in assisting AEM with
 4 the auction.
 5 Q Did any of the employees that you
 6 were supervising in 2006 have any role in
 7 assisting AEM with the Illinois auction?
 8 A No. We kept that separate.
 9 Q Did any employees at corporate
 10 planning that you were not supervising in 2006
 11 have any role in assisting AEM with the Illinois
 12 auction?
 13 A I think that's possible at that
 14 time. There was other groups that supported AEM
 15 for that pricing.
 16 Q What were the roles and which
 17 employees were involved?
 18 A Well, I think I would be
 19 speculating as to their roles, but I expect they
 20 developed the pricing or decided how to bid or
 21 whatever. I don't know for sure since I wasn't
 22 involved, but it would have been Mark Eacret who
 23 now is the controller of AER.
 24 Q Can you repeat the name again?
 25 A Mark, M-a-r-k, Eacret, E-a-c-r-e-t.

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1 Q Any other employees?
 2 A I don't know. Mark may have some
 3 people working for him that may have been
 4 involved. I don't know for a fact.
 5 Q So you never had any kind of
 6 contact with Andy Terry or others about AEM's
 7 participation --
 8 MR. LOWERY: Objection, asked and
 9 answered, he already said he wasn't involved at
 10 all with AEM and the Illinois auction.
 11 Q (BY MS. BAKER) So the answer to
 12 that would be no?
 13 A That's right.
 14 MS. BAKER: I think that's all the
 15 questions that we have.
 16 THE WITNESS: Okay.
 17 EXAMINATION
 18 QUESTIONS BY MR. LOWERY:
 19 Q I've just got a couple, Mr. Arora.
 20 In your, I believe it's table
 21 AKA-SR1, Mr. Dottheim was asking you questions
 22 earlier about calculation of net fuel costs. Am
 23 I correct if you're going to calculate AmerenUE's
 24 net fuel costs that you've got to sum fuel and
 25 purchase power and then deduct from the sum of

31 (Pages 118 to 121)

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1 fuel and purchase power not only the energy costs
2 that are modeled in PROSEM [phonetic], but other
3 costs like MISO charges, gas pipeline capacity
4 charges, other charges in order to come up with
5 what the net fuel cost number is?

6 A Yes. You mean the net base fuel
7 cost?

8 Q Right. The net base fuel cost. In
9 Deposition Exhibit 1, do you recall which one
10 that was from your deposition today?

11 A Mm-hmm. Yes.

12 Q Do you know whether the energy
13 sales that are reflected in that table, do you
14 know whether they are net of hedges that may have
15 been repurchased after those sales were made?

16 A I don't know, but it doesn't seem
17 like -- it says forward sales contract, so. I
18 don't know for sure.

19 Q Am I correct that if -- that a
20 listing of forward sales might yield one quantity
21 of megawatt hours that have been sold, that that
22 -- there might be megawatt hours that have been
23 repurchased so that -- so that the quantity that
24 might be sold might not be the actual hedge
25 position for off-system sales for a given period?

1 transcript, do you know? Did Mr. Dottheim ask
2 you for anything?

3 (Off the record.)

4 (Wherein, the taking of the instant
5 deposition ceased.)

6 (Deposition to be read and signed
7 by the witness.)

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1 A Yes, that's possible.

2 Q Let me ask you a question about
3 Deposition Exhibit 2. Am I correct that the
4 lower most line over to the very right, I guess
5 that's the Y axis, the Y axis is the up and down
6 axis; is that right?

7 A That's right.

8 Q Am I correct that that lowest
9 point, that's the synergy ATC energy price?

10 A Yes.

11 Q That line?

12 A For 2009, yes.

13 Q Am I reading this graph correctly
14 that -- to indicate that right at the end of the
15 period depicted on Exhibit 2, that energy --
16 forward energy prices dropped considerably while
17 coal prices actually spiked up and then came down
18 a little bit? Am I reading that graph correctly?

19 A I think you're reading that graph
20 correctly, that's right.

21 MR. LOWERY: Those are all the
22 questions I have. We'd like to read and sign.

23 THE REPORTER: All done?

24 MR. DOTTHEIM: Yep.

25 MR. LOWERY: When do you expect a

1 CERTIFICATE OF REPORTER

2
3 I, TARA SCHWAKE, a Registered
4 Professional Reporter and Notary Public within
5 and for the State of Illinois, do hereby certify
6 that the witness whose testimony appears in the
7 foregoing deposition was duly sworn by me; that
8 the testimony of said witness was taken by me to
9 the best of my ability and thereafter reduced to
10 typewriting under my direction; that I am neither
11 counsel for, related to, nor employed by any of
12 the parties to the action in which this
13 deposition was taken, and further that I am not a
14 relative or employee of any attorney or counsel
15 employed by the parties thereto, nor financially
16 or otherwise interested in the outcome of the
17 action.

18
19
20
21 Notary Public in and for
22 The State of Illinois

23
24 My commission expires June 7, 2009
25

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<div style="display: flex; justify-content: space-between;"> 1 Midwest Litigation Services </div> <div style="display: flex; justify-content: space-between;"> 2 711 North 11th Street </div> <div style="display: flex; justify-content: space-between;"> 3 St. Louis, Missouri 63101 </div> <div style="display: flex; justify-content: space-between;"> 4 Phone (314) 644-2191 * Fax (314) 644-1334 </div> <div style="display: flex; justify-content: space-between;"> 5 November 24, 2008 </div> <div style="display: flex; justify-content: space-between;"> 6 Lewis Smith, LLP </div> <div style="display: flex; justify-content: space-between;"> 7 Attn: Mr. James B. Lowery </div> <div style="display: flex; justify-content: space-between;"> 8 111 South Ninth Street, Suite 200 </div> <div style="display: flex; justify-content: space-between;"> 9 Columbia, Missouri 65205 </div> <div style="display: flex; justify-content: space-between;"> 10 In Re: Union Electric ER-2008-0318 </div> <div style="display: flex; justify-content: space-between;"> 11 Dear Mr. Lowery: </div> <div style="display: flex; justify-content: space-between;"> 12 Please find enclosed your copy of the deposition </div> <div style="display: flex; justify-content: space-between;"> 13 of AJAY ARORA, taken on November 18, 2008, in the </div> <div style="display: flex; justify-content: space-between;"> 14 above-referenced case. Also enclosed is the </div> <div style="display: flex; justify-content: space-between;"> 15 original signature page and errata sheets. </div> <div style="display: flex; justify-content: space-between;"> 16 Please have the witness read your copy of the </div> <div style="display: flex; justify-content: space-between;"> 17 transcript, indicate any changes and/or </div> <div style="display: flex; justify-content: space-between;"> 18 corrections desired on the errata sheets, and </div> <div style="display: flex; justify-content: space-between;"> 19 sign the signature page before a notary public. </div> <div style="display: flex; justify-content: space-between;"> 20 Please return the errata sheets and notarized </div> <div style="display: flex; justify-content: space-between;"> 21 signature page to Mr. Steven Dottheim for filing </div> <div style="display: flex; justify-content: space-between;"> 22 prior to trial date. </div> <div style="display: flex; justify-content: space-between;"> 23 Thank you for your attention to this matter. </div> <div style="display: flex; justify-content: space-between;"> 24 Sincerely, </div> <div style="display: flex; justify-content: space-between;"> 25 Tara Schwake, CRR, RPR, CSR </div> <div style="display: flex; justify-content: space-between;"> Enclosures </div> <div style="display: flex; justify-content: space-between;"> Cc: Ms. Christina Baker </div> <div style="display: flex; justify-content: space-between;"> Mr. Steven Dottheim </div>	<div style="display: flex; justify-content: space-between;"> 1 WITNESS ERRATA SHEET </div> <div style="display: flex; justify-content: space-between;"> 2 Witness Name: AJAY ARORA </div> <div style="display: flex; justify-content: space-between;"> 3 Case Name: Union Electric ER-2008-0318 </div> <div style="display: flex; justify-content: space-between;"> 4 Date Taken: 11/18/08 </div> <div style="display: flex; justify-content: space-between;"> 5 </div> <div style="display: flex; justify-content: space-between;"> 6 Page #_____ Line #_____ </div> <div style="display: flex; justify-content: space-between;"> 7 Should read: _____ </div> <div style="display: flex; justify-content: space-between;"> 8 Reason for change: _____ </div> <div style="display: flex; justify-content: space-between;"> 9 </div> <div style="display: flex; justify-content: space-between;"> 10 Page #_____ Line #_____ </div> <div style="display: flex; justify-content: space-between;"> 11 Should read: _____ </div> <div style="display: flex; justify-content: space-between;"> 12 Reason for change: _____ </div> <div style="display: flex; justify-content: space-between;"> 13 </div> <div style="display: flex; justify-content: space-between;"> 14 Page #_____ Line #_____ </div> <div style="display: flex; justify-content: space-between;"> 15 Should read: _____ </div> <div style="display: flex; justify-content: space-between;"> 16 Reason for change: _____ </div> <div style="display: flex; justify-content: space-between;"> 17 </div> <div style="display: flex; justify-content: space-between;"> 18 Page #_____ Line #_____ </div> <div style="display: flex; justify-content: space-between;"> 19 Should read: _____ </div> <div style="display: flex; justify-content: space-between;"> 20 Reason for change: _____ </div> <div style="display: flex; justify-content: space-between;"> 21 </div> <div style="display: flex; justify-content: space-between;"> 22 Page #_____ Line #_____ </div> <div style="display: flex; justify-content: space-between;"> 23 Should read: _____ </div> <div style="display: flex; justify-content: space-between;"> 24 Reason for change: _____ </div> <div style="display: flex; justify-content: space-between;"> 25 Witness signature: _____ </div>
<div style="display: flex; justify-content: space-between;"> 1 STATE OF _____) </div> <div style="display: flex; justify-content: space-between;"> 2 COUNTY OF _____) </div> <div style="display: flex; justify-content: space-between;"> 3 I, AJAY ARORA, do hereby certify: </div> <div style="display: flex; justify-content: space-between;"> 4 That I have read the foregoing deposition; </div> <div style="display: flex; justify-content: space-between;"> 5 That I have made such changes in form </div> <div style="display: flex; justify-content: space-between;"> 6 and/or substance to the within deposition as </div> <div style="display: flex; justify-content: space-between;"> 7 might be necessary to render the same true and </div> <div style="display: flex; justify-content: space-between;"> 8 correct; </div> <div style="display: flex; justify-content: space-between;"> 9 That having made such changes thereon, I </div> <div style="display: flex; justify-content: space-between;"> 10 hereby subscribe my name to the deposition. </div> <div style="display: flex; justify-content: space-between;"> 11 I declare under penalty of perjury that </div> <div style="display: flex; justify-content: space-between;"> 12 the foregoing is true and correct. </div> <div style="display: flex; justify-content: space-between;"> 13 Executed this _____ day of _____, </div> <div style="display: flex; justify-content: space-between;"> 14 2008, at _____. </div> <div style="display: flex; justify-content: space-between;"> 15 </div> <div style="display: flex; justify-content: space-between;"> 16 _____ </div> <div style="display: flex; justify-content: space-between;"> 17 Notary Public </div> <div style="display: flex; justify-content: space-between;"> 18 My commission expires: _____ </div> <div style="display: flex; justify-content: space-between;"> 19 </div> <div style="display: flex; justify-content: space-between;"> 20 _____ </div> <div style="display: flex; justify-content: space-between;"> 21 AJAY ARORA </div> <div style="display: flex; justify-content: space-between;"> 22 </div> <div style="display: flex; justify-content: space-between;"> 23 TRS/AJAY ARORA, 11/18/08 </div> <div style="display: flex; justify-content: space-between;"> 24 In Re: Union Electric ER-2008-0318 </div> <div style="display: flex; justify-content: space-between;"> 25 </div>	

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CASE NO. ER-2008-0318

**EXHIBIT AA 1 & EXHIBIT AA 2
ARE HIGHLY CONFIDENTIAL
IN THEIR ENTIRETY**