

1 Indianapolis, Indiana  
2 June 20, 2007  
3 9:00 A.M. (EDT)

4 (Reporter marked document for  
5 identification as Petitioner's  
6 Exhibit No. 12)

7  
8 JUDGE STORMS: Let's go ahead and  
9 go back on the record.

10 Petitioner, you may call your next  
11 witness.

12 MR. POPE: Thank you, Your Honor.  
13 Call Mr. Roebel.

14  
15 **JOHN J. ROEBEL**, a witness appearing on behalf of  
16 the Petitioner, having been  
17 first duly sworn, testified as  
18 follows:

19  
20 **DIRECT EXAMINATION,**

21 **QUESTIONS BY MR. POPE:**

22 Q State your name, please.

23 A John J. Roebel.

24 Q And by whom are you employed and in what  
25 capacity?

1 A Duke Energy Shared Services, and I am Senior  
2 Vice President, Engineering and Technical  
3 Services.

4 Q For purposes of this proceeding, has your  
5 direct testimony been reduced to written  
6 question and answer form?

7 A Yes, it has.

8 Q You have a document before you that's been  
9 marked for purposes of identification as  
10 Petitioner's Exhibit No. 12.

11 A Yes.

12 Q Is that your prepared testimony?

13 A Yes.

14 Q Do you have any changes or corrections that  
15 need to be made to that testimony?

16 A No, I do not.

17 Q If I were to ask you those same questions  
18 today on the Stand, would your answers be the  
19 same?

20 A Yes, they would.

21 Q Do you adopt Petitioner's Exhibit No. 12 as  
22 your testimony in this proceeding?

23 A Yes, I do.

24 MR. POPE: Your Honor, at this  
25 time, we will offer Petitioner's Exhibit No.

1       12.

2                   JUDGE STORMS:  If there is no  
3       objection, we'll show Petitioner's Exhibit No.  
4       12 admitted into this cause.

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6                   (PETITIONER'S EXHIBIT NO. 12, BEING  
7       THE PREFILED DIRECT TESTIMONY OF  
8       MR. JOHN J. ROEBEL, ADMITTED INTO  
9       EVIDENCE.)

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1                   MR. POPE: Mr. Roebel is available  
2       for cross.

3                   JUDGE STORMS: Thank you.  
4       Mr. Hartley?

5                   MR. HARTLEY: No questions.

6                   JUDGE STORMS: Mr. Polk?

7                   MR. POLK: Thank you, Your Honor.

8

9       **CROSS-EXAMINATION OF MR. JOHN J. ROEBEL,**

10       **QUESTIONS BY MR. POLK:**

11   Q   Good morning, Mr. Roebel.

12   A   Good morning.

13   Q   Does Duke have a contract signed and a firm  
14       price for the combined cycle power block?

15   A   At the Edwardsport station?

16   Q   Yes, sir.

17   A   No, sir.

18   Q   Does Duke have a contract signed and a firm  
19       price for the air separation unit at the  
20       Edwardsport facility?

21   A   No, sir.

22   Q   Does Duke have a contract signed and a firm  
23       price for the gasifier at the Edwardsport  
24       facility?

25   A   No, sir.

1 Q Does Duke have a contract signed and a firm  
2 price for the labor to construct the  
3 Edwardsport IGCC?

4 A No, sir.

5 Q Does Duke have a contract signed and a firm  
6 price for engineering services associated with  
7 the construction of the Edwardsport IGCC?

8 A The entire construction or parts of the  
9 engineering that need to be performed so you  
10 can construct the plant?

11 Q Can you explain the difference?

12 A Well, you don't always sign up for the total  
13 engineering for a project at the beginning.  
14 You may do it in phases, and so you have to do  
15 certain pieces of engineering work to build up  
16 to finally your construction contracts and  
17 implementation in the field. We have done  
18 part of that, and part of that has been  
19 completed and paid for.

20 Q Can you tell me which part has been completed?

21 A The FEED study.

22 Q Can you tell me what remains to be done?

23 A Some detailed engineering on components and  
24 physical layout.

25 Q Does that mean you've got blueprints for the

1 facility, you know, detailed engineering specs  
2 for every piece, or does that engineering  
3 still need to be done?

4 A Some parts of that are completed but not all  
5 of it has been completed.

6 Q Do you have a contract signed and a firm price  
7 for the remaining engineering work?

8 A No, sir.

9 Q Mr. Roebel, are you familiar with the  
10 activities of Duke with respect to cost  
11 estimation for the Cliffside project in North  
12 Carolina?

13 A Not in great detail. You see, at the time of  
14 the merger, a lot of that was already  
15 completed, and we couldn't share information  
16 from one company to the other until the merger  
17 was consummated, and so their initial planning  
18 and estimation, it happened before we could  
19 talk to them about their estimates or their  
20 technologies or anything else.

21 Q Were they at a farther -- Were they further  
22 along in that process on Cliffside than Duke  
23 currently is with respect to Edwardsport?

24 A Well, they're apples and oranges kind of  
25 because we're developing this reference plant

1       with GE and Bechtel, and they were not  
2       developing a reference plant with anybody in  
3       an alliance at that point. We've been working  
4       on ours for a few years now from the first  
5       idea that we had to do Edwardsport, but  
6       certainly, they had done preliminary work on  
7       site layout and technology choices and  
8       preliminary estimates and things like that.

9   Q   Is the type of plant that was -- is being  
10       proposed at Cliffside a new, unproven  
11       technology?

12  A   There are parts of it that are not what people  
13       may have seen before. For example, the air  
14       quality control system that's now going to be  
15       used on the back end of Cliffside is going to  
16       employ a dry scrubber and then -- well, pardon  
17       me, first, it has an SCR, and then it has a  
18       dry scrubber; then it has a baghouse; then it  
19       has a wet scrubber. Originally, their  
20       original idea was to have an SCR, a  
21       precipitator, a wet scrubber and a wet  
22       electrostatic precipitator. So, that has been  
23       changed. It is a new application which is  
24       much better for the environment using proven  
25       components but never in that configuration

1       before.  It's very low risk, but I think a  
2       pretty ingenious approach.

3   Q   Is it fair to say, then, that what they're  
4       doing is simply a creative repackaging of  
5       existing components, tried and true  
6       technology?

7   A   At some time, all components have been tried.  
8       It is just the configuration in which they are  
9       put together and the process that's different.

10  Q   Are you aware that in October 2006, Duke  
11       Energy Carolinas updated its project cost  
12       estimate for the Cliffside plant from \$2  
13       billion for the project up to \$3 billion?

14  A   Yes, I am.

15  Q   Okay.

16                       MR. POLK:  I have no further  
17       questions for this witness, Your Honor.

18                       Thank you, Mr. Roebel.

19                       JUDGE STORMS:  Mr. Stewart?

20                       MR. STEWART:  Thank you.

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1     **CROSS-EXAMINATION OF MR. JOHN J. ROEBEL,**

2             **QUESTIONS BY MR. STEWART:**

3     Q    Good morning.

4     A    Good morning.

5     Q    When was the merger completed?

6     A    April the 4th, 2006.

7     Q    April of 2006?

8     A    Yes.

9     Q    Okay.  And there were still hearings going on  
10         in 2007 regarding the Cliffside plant in North  
11         Carolina, weren't there?

12    A    Yes.  It is a long process.

13    Q    Now, you seemed familiar with the update of  
14         the cost on that project; is that right?

15    A    I wasn't responsible for it, but I'm familiar  
16         with it because at that point we could talk  
17         back and forth between the folks at the old  
18         Cinergy and the folks at Duke about  
19         experiences and where they saw the markets and  
20         how to make estimates; so, yes, I was involved  
21         in some of those discussions.

22                 Again, I wasn't responsible for  
23         it, but it is interesting how our experiences  
24         lined up from say the beginning of the  
25         environmental programs that I think you're

1 familiar with to the market now and how those  
2 markets changed, and so, we talked about how  
3 that changed for Cliffside and how the market  
4 changed in the middle of their estimate.

5 Q And as originally proposed there, there were  
6 two 800 megawatt plants, and they ended up  
7 getting approval for one; is that correct?

8 A To the best of my knowledge, yes.

9 Q And the original estimate on that one was a  
10 billion dollars, but the current estimate on  
11 that one plant is \$2.4 billion?

12 A It depends on what year dollars you use and  
13 whether AFUDC is used. I mean, dollars -- I  
14 have such a hard time comparing estimates that  
15 are out in the public on these multi-year  
16 construction programs because sometimes they  
17 use current year dollars, and sometimes they  
18 use escalated dollars, and sometimes they use  
19 AFUDC, and sometimes they don't. So, it is  
20 always important to try to get them on an  
21 apples to apples basis.

22 Q I don't know whether Duke is consistent in  
23 their presentation or not; you might, but they  
24 told the Commission in North Carolina  
25 initially that it was going to cost a billion

1       dollars, and they more recently told the  
2       Commission in North Carolina that it was going  
3       to cost \$2.4 billion; is that right?

4    A   I believe they told the Commission also that  
5       it was going to be \$1.8 billion, but there was  
6       \$600 million worth of AFUDC.  So, not knowing  
7       the basis of the billion dollars, I can't tell  
8       you if it had AFUDC or not.  That's my point,  
9       sir.

10   Q   That's fine; thank you.

11                       JUDGE STORMS:  Mr. Mohler?

12                       MR. MOHLER:  Thank you.

13

14   **CROSS-EXAMINATION OF MR. JOHN J. ROEBEL,**

15       **QUESTIONS BY MR. MOHLER:**

16   Q   Mr. Roebel, could you turn to Page 5 of your  
17       testimony, please?

18   A   I'm there.

19   Q   Under the "Clean Coal Technology" heading?

20   A   Yes.

21   Q   The last sentence, you state, I believe, "As  
22       Mr. Moreland explains, the Edwardsport Project  
23       will be equipped with Selective Catalytic  
24       Reduction (SCR) technology for the reduction  
25       of NOx emissions."; is that correct?

1 A Correct.

2 Q Were you here for Mr. Moreland's testimony?

3 A Yes, I was.

4 Q Could you clarify for me, I believe he stated

5 that SCRs may be added to the IGCC plant at a

6 cost of \$4.4 million. Could you clarify the

7 status of that?

8 A They are included in the cost estimate and the

9 current plans for the plant.

10 Q Thank you.

11 MR. MOHLER: No further questions.

12 JUDGE STORMS: Mr. McGimpsey?

13 MR. MCGIMPSEY: No questions, Your

14 Honor.

15 JUDGE STORMS: Mr. Endris?

16 MR. ENDRIS: Thank you, Your

17 Honor.

18

19 **CROSS-EXAMINATION OF MR. JOHN J. ROEBEL,**

20 **QUESTIONS BY MR. ENDRIS:**

21 Q Good morning, Mr. Roebel.

22 A Good morning.

23 Q I've been looking at that picture behind us.

24 Is that a picture of the proposed facility?

25 A It is a rendition of what the facility could

1 look like.

2 Q Okay. Because when I described this hearing  
3 to my son, he asked me if I could get a  
4 picture of this, and I said I would try. I  
5 think he wants to build it out of LEGOs.

6 A I think it is suitable for framing.

7 MR. POPE: Wait until the hearing  
8 is over before you take it, Bob.

9 MR. ENDRIS: Okay.

10 Q On Pages 1 and 2, you described your current  
11 duties and some of your background.

12 What will be your role going  
13 forward if this project is approved?

14 A I am responsible for the development of the  
15 project and the engineering on the project.  
16 Until such time as we receive the CPCN, I will  
17 continue to be responsible for the technical  
18 part of the project. The execution part in  
19 the field will be turned over to a gentleman  
20 by the name of Ron Barnes who is a co-worker  
21 of mine that also reports to my boss, but we  
22 will work in a matrix fashion at that point;  
23 again, for him to execute in the field and me  
24 to continue to supply the engineering and  
25 environmental support, things like that.

1 Q And have you had experience working on a  
2 construction project of this size previously?

3 A Yes. Years ago, I guess I was 27, I did the  
4 studies to convert Zimmer from an 840 megawatt  
5 nuclear plant to a 1300 megawatt coal plant,  
6 and the final cost of that was about \$3.2  
7 billion when it went on line in 1991. So,  
8 yes, I've done projects this big.

9 Q And how did that \$3.2 billion compare to the  
10 cost projections before starting that project?

11 A The estimate for that project for the  
12 conversion was \$3.5 billion, and we came in at  
13 \$3.2 billion.

14 Q Under budget?

15 A Significantly.

16 Q On time?

17 A On time.

18 Q Wonderful.

19 Can you turn to Page 4 of your  
20 testimony, please?

21 A I'm there.

22 Q And there I notice you give the cost -- the  
23 estimated cost for demolishing the existing  
24 station, and you state that that was prepared  
25 for the Company's last rate case.

1                   Do you know why that estimate was  
2     prepared for the rate case?

3     A   No, I don't.

4     Q   Do you know whether the cost of demolishing  
5     the Edwardsport station was included in the  
6     calculation of negative net salvage used in  
7     determining the depreciation rate?

8     A   I don't know that. I know we were asked to  
9     work with somebody, an architect or engineer  
10    or somebody, by the rates people or the folks  
11    involved with the rate case to give them some  
12    figures. How they worked it into the rates  
13    and how it affected the rates, I wasn't  
14    familiar with that detail.

15                JUDGE STORMS: Mr. Endris, could I  
16    have you pull your microphone a bit closer?

17                MR. ENDRIS: Yes.

18                JUDGE STORMS: Thanks.

19    Q   And Ms. Jenner in her testimony described that  
20    the STRATEGIST analytical tool is just that, a  
21    tool, and that judgment needs to be exercised.  
22    Do you have that opinion as well?

23    A   Yes, I do.

24    Q   And do you play a role in exercising that  
25    judgment or determining that judgment?

1   A   I'd like to think so.  I get asked for my  
2       opinion on the engineering, construction,  
3       operations, of different plants, whatever the  
4       options are that are in STRATEGIST.  My group  
5       does provide the screening for the  
6       technologies that go into STRATEGIST.  
7       Mr. Moreland is in my group.  So, yes, I give  
8       my opinion, and I hope people listen to it.

9   Q   Well, what kind of opinion did you give with  
10      respect to the leading-edge nature of this  
11      technology and the kind of risk that might be  
12      faced?

13  A   I guess I've been fortunate through my career  
14      that I've been able to look at new  
15      technologies and deploy them.  I'm used to  
16      guarding the value of the dollars that we  
17      spend.

18                   One of my first jobs out of  
19      college was working as the mechanical project  
20      engineer on the East Bend station, a 600  
21      megawatt unit that went on line in 1981 in  
22      Kentucky.  It was a conventional technology  
23      boiler-wise and turbine-wise, but it had a  
24      scrubber on it, and it was the first scrubber  
25      on our system, and I was involved in the



1 investigation of what kind of scrubber to use  
2 and how to deploy it.

3 I think through that process I  
4 gained a real understanding of exactly what  
5 you have to look at, the long-term needs of  
6 the plant and the reliability that is so  
7 crucial to these plants, and how do we  
8 evaluate the use of a new technology or a new  
9 approach by us certainly in a plant that could  
10 last 40, 50, 60 years.

11 I'm proud to say that that  
12 scrubber has been wonderful and is still  
13 operating today removing SO2 in excess of  
14 96 percent when it was originally designed for  
15 81 percent on high sulfur coal and doesn't  
16 cost -- it doesn't go down to take any  
17 megawatts off the system.

18 The next approach or the next  
19 opportunity I had was the Zimmer situation.  
20 There had never been a nuclear plant converted  
21 to coal, much less being the largest boiler in  
22 the world, a 1300 megawatt boiler. We looked  
23 at that very closely. We used all the  
24 intelligence that we could gather to try to  
25 assess the success or the potential success of

1       that had we deployed it. I am very proud to  
2       say that has had a remarkable run since 1991  
3       and has been the lowest cost unit on our  
4       system and certainly one of the most  
5       dependable. It was a large project. We  
6       analyzed it very carefully, and it has been  
7       very successful.

8               In addition, we not too long ago  
9       had the Noblesville Repowering that we  
10      converted in Noblesville, Indiana, and it has  
11      been very successful up there and has been a  
12      critical part of our system. Again, it was a  
13      conversion of an older plant to a very  
14      reliable and efficient part of our generating  
15      system.

16             We have been around this  
17      technology since 1994. The project manager,  
18      Dennis Zupan, was one of the project managers  
19      on the construction of that project. The  
20      plant manager, Jack Stultz, ran the power part  
21      of that project from its first day. So, we  
22      had people around that really knew that  
23      technology, conversed a lot with and  
24      interfaced a lot with the owners of the  
25      gasification island about what the problems

1       were, what kind of syn gas they were sending  
2       them, when it was going to be available, what  
3       the bottlenecks were, what the corrections  
4       were going to be.

5                       So, after talking to them and  
6       seeing how that technology has been refined  
7       over the years and talking to people in the  
8       industry like the folks at Polk station for  
9       Tampa Electric and seeing where the technology  
10      has come, I told my boss at that time, which  
11      was Jim Rogers, that I thought it would be a  
12      good option to consider. I don't take that  
13      lightly. My reputation is staked upon whether  
14      these things run not the first day, not year  
15      one, but whether they're running 20 and 30  
16      years longer.

17                     So, we looked at it hard, and we  
18      feel very confident that this is going to be a  
19      very successful project.

20    Q   I certainly look forward to that success and  
21      have enjoyed it in the past. Just one more  
22      area, Mr. Roebel.

23                     You mentioned concern for the  
24      reliability of your generating units and the  
25      equipment. This facility is a base-load

1 facility?

2 A Correct.

3 Q And it will increase the proportion of  
4 base-load generation in your portfolio; is  
5 that correct?

6 A To a certain extent. We are going to retire  
7 the 160 megawatts at -- the existing megawatts  
8 at Edwardsport, but certainly some part of it,  
9 yes.

10 Q Those are more intermediate or peaking, aren't  
11 they?

12 A That's correct, still coal fired, but they're  
13 not part of the daily base-load fleet, you're  
14 correct.

15 Q And have you had any concerns or expressed any  
16 concerns about whether the addition of this  
17 amount of base-load capacity will affect the  
18 cycling of your other base-load facilities in  
19 terms of minimum run levels during shoulder  
20 periods or off-peak periods?

21 A We've looked at that. It is always a concern.  
22 As you well know, we put a lot of pollution  
23 control equipment on the back of our biggest  
24 units. Gibson has SCRs and scrubbers on it.  
25 Cayuga is going to have scrubbers on it, and

1       other parts of our system in Ohio, Kentucky  
2       and the Carolinas have those things. All of  
3       those things make the flexibility of the units  
4       a little tougher because they have certain  
5       requirements around them of temperature and  
6       cycles and other things like that, chemistry-  
7       wise and things; so, we've been looking at  
8       those issues a lot for our system anyhow, kind  
9       of getting ready for the future.

10                       Right now we do a lot of that  
11       regulation and turn down at night with our  
12       units such as Gallagher or Wabash River or  
13       some of the other small coal-fired units on  
14       our system. In addition, we do some of it  
15       with Noblesville where we'll put it on during  
16       the day and take it off during the night.

17                       So, we're aware of that, and we're  
18       looking at our whole system, and we think we  
19       can absorb this.

20    Q   Thank you, Mr. Roebel.

21                       MR. ENDRIS: Nothing further, Your  
22       Honor.

23                       JUDGE STORMS: Thank you.  
24       Redirect?

25                       MR. POPE: Briefly, Your Honor.

1 REDIRECT EXAMINATION OF MR. JOHN J. ROEBEL,

2 QUESTION BY MR. POPE:

3 Q Mr. Roebel, Mr. Endris asked you some  
4 questions about the demolition study for the  
5 existing Edwardsport plant.

6 Is the cost of that demolition  
7 included in the estimated cost of the  
8 Edwardsport IGCC Project, if you know?

9 A I don't know.

10 MR. POPE: That's all. Thank you.

11 JUDGE STORMS: Who would know the  
12 answer to that question that Mr. Pope just  
13 asked you?

14 WITNESS ROEBEL: Mr. Zupan.

15 MR. POPE: And Mr. Moreland too.  
16 I was just getting it into the record at the  
17 same time.

18 JUDGE STORMS: Okay.

19 Mr. Roebel, thank you very much  
20 for your testimony.

21 WITNESS ROEBEL: Thank you.

22

23

24 (WITNESS JOHN J. ROEBEL EXCUSED)

25

1 (Reporter marked documents for  
2 identification as Petitioner's  
3 Exhibit No. 5, with attached  
4 exhibits, and Petitioner's Exhibit  
5 No. 15)

6

7 JUDGE STORMS: Petitioner, you may  
8 call your next witness.

9 MR. POPE: Thank you, Your Honor.  
10 We'll call Diane Jenner.

11

12 **DIANE L. JENNER**, a witness appearing on behalf of  
13 the Petitioner, having been  
14 first duly sworn, testified as  
15 follows:

16

17 **DIRECT EXAMINATION,**

18 **QUESTIONS BY MR. POPE:**

19 Q State your name, please.

20 A Diane L. Jenner.

21 Q And by whom are you employed and in what  
22 capacity?

23 A I'm employed by Duke Energy Shared Services as  
24 Director, Integrated Resource Planning.

25 Q Ms. Jenner, for purposes of this proceeding,

1       has your direct testimony been reduced to  
2       written question and answer form?

3     A   Yes.

4     Q   Do you have before you a document that's been  
5       marked for purposes of identification as  
6       Petitioner's Exhibit No. 5?

7     A   Yes.

8     Q   Is that your prepared direct testimony?

9     A   Yes.

10    Q   Are there any changes or corrections that need  
11       to be made to your testimony?

12    A   No, with the caveat that the numbers in this  
13       case have kind of evolved over time.  So, my  
14       rebuttal testimony has the more current  
15       numbers in it.

16    Q   And I believe it also has Exhibits 5-A through  
17       and including 5-D; is that correct?

18    A   That's correct.

19    Q   And you're sponsoring those exhibits also?

20    A   Yes.

21                   MR. POPE:  Your Honor, just to tie  
22       the record, on -- tie into the record, on  
23       November the 1st, the Commission issued a  
24       Docket Entry.  We all saved a bunch of trees  
25       by incorporating by reference the IRP in this



1 proceeding which was Exhibit 5-A, I believe.

2 Q Ms. Jenner, if I were to ask you the questions  
3 contained in Petitioner's Exhibit No. 5, would  
4 your answers be the same today?

5 A Yes.

6 Q And do you adopt Petitioner's Exhibit No. 5  
7 along with attached Sub-Exhibits A through D  
8 as your testimony in this proceeding?

9 A Yes.

10 MR. POPE: Your Honor, we'll move  
11 the admission of Petitioner's Exhibit No. 5  
12 with attached Sub-Exhibits A through D.

13 JUDGE STORMS: If there is no  
14 objection, we'll show Petitioner's Exhibit No.  
15 5 with Sub-Exhibits A through D admitted into  
16 this cause.

17

18 (PETITIONER'S EXHIBIT NO. 5, BEING  
19 THE PREFILED DIRECT TESTIMONY OF  
20 MS. DIANE L. JENNER, WITH  
21 SUB-EXHIBITS 5-A THROUGH AND  
22 INCLUDING 5-D ATTACHED THERETO,  
23 ADMITTED INTO EVIDENCE.)

24

25

1 Q (Mr. Pope continuing) Ms. Jenner, do you also  
2 have a document in front of you that's been  
3 marked for purposes of identification as  
4 Petitioner's Exhibit No. 15?

5 A Yes.

6 Q Is that your prepared amended supplemental  
7 testimony filed in this cause?

8 A Yes.

9 Q Are there any corrections or changes that need  
10 to be made to Petitioner's Exhibit No. 15?

11 A No.

12 Q If I were to ask you the same questions  
13 contained therein on the Stand today, would  
14 your answers be the same?

15 A Yes.

16 Q And do you adopt Petitioner's Exhibit No. 15  
17 as your supplemental testimony in this cause?

18 A Yes.

19 MR. POPE: Your Honor, at this  
20 time, we'll move the admission of Petitioner's  
21 Exhibit No. 15.

22 JUDGE STORMS: If there is no  
23 objection, we'll show Petitioner's Exhibit No.  
24 15 admitted into this cause.

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1 (PETITIONER'S EXHIBIT NO. 15, BEING  
2 THE PREFILED AMENDED SUPPLEMENTAL  
3 TESTIMONY OF MS. DIANE L. JENNER,  
4 ADMITTED INTO EVIDENCE.)

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1                   MR. POPE: The witness is  
2     available.

3                   JUDGE STORMS: Thank you.  
4     Mr. Hartley?

5                   MR. HARTLEY: No questions, Your  
6     Honor.

7                   JUDGE STORMS: Thank you.  
8     Mr. Polk?

9                   MR. POLK: Thank you, Your Honor.  
10

11   **CROSS-EXAMINATION OF MS. DIANE L. JENNER,**

12    **QUESTIONS BY MR. POLK:**

13   Q Good morning, Ms. Jenner.

14   A Good morning.

15   Q Now, as I understand, you just indicated that  
16     a lot of numbers have been updated since you  
17     filed your direct, and you've even done some  
18     modeling runs since you filed your amended  
19     supplemental testimony; is that correct?

20   A That's correct.

21   Q Well, then, I think in order to kind of save  
22     time, rather than dwelling into the numbers  
23     that you used for your direct and your amended  
24     supplemental, we'll save some of the questions  
25     for your rebuttal testimony, but I would like

1       to cover some of the basics of the IRP  
2       process.

3                   You and I have been through this  
4       many times before, and it is going to be very  
5       familiar. I have no intention of any trick  
6       questions, but I just want to enter into the  
7       record the same type of information that we've  
8       discussed in the past regarding the STRATEGIST  
9       model.

10                   The STRATEGIST -- Well, can you  
11       explain what the STRATEGIST model is used for?

12   A   The STRATEGIST model is an optimization model  
13       that is used to develop the Integrated  
14       Resource Plan. It looks at a variety of  
15       different alternatives, the load forecast,  
16       cost of alternatives, fuel cost, et cetera, to  
17       try to determine what the best plan is.

18   Q   And is it correct that the STRATEGIST model is  
19       capable of generating outputs that would  
20       indicate increased investments in energy  
21       efficiency or renewables?

22   A   Can you rephrase that, please?

23   Q   Sure. When you do the modeling, there are  
24       choices that it can pick as the preferred  
25       resource mix going forward; is that correct?

1 A That's true.

2 Q Okay. And the way the model can operate is  
3 that it could generate any number of different  
4 options for that preferred resource mix, but  
5 that rather than setting up the model to  
6 result in a choice of renewables or a choice  
7 of energy efficiency, the Company instead runs  
8 the model using renewables and efficiency as  
9 part of the input process by way of the load  
10 forecast?

11 A I wouldn't entirely agree with that statement.

12 Q Can you explain how renewables and energy  
13 efficiency are taken account of within the  
14 STRATEGIST model as the Company runs it?

15 A The energy efficiency numbers that Dr. Stevie  
16 provides me are input into the model, and they  
17 are, for lack of a better term, hardwired so  
18 that the model does not choose them. They are  
19 a given in the model.

20 The supply-side options are looked  
21 at to serve what the load is after those  
22 energy efficiency alternatives have already  
23 been taken into account. On the renewable  
24 side, we allow the model to choose wind farm  
25 alternatives. In addition, we also ran a

1 sensitivity with a lower load forecast that  
2 could also be used as a proxy for a lower load  
3 forecast or a higher level of renewables or  
4 some combination thereof.

5 Q Let me try to break that apart a little bit.  
6 The model chooses supply options and presumes  
7 demand-side options the way the Company runs  
8 it?

9 A Yes.

10 Q The model is capable of choosing demand-side  
11 options, but the Company does not choose to  
12 run it that way?

13 A Yes, and part of the reason why we do it that  
14 way is to save on model run time and ensure  
15 that the model will solve. In addition, by  
16 hardwiring in the levels of DSM that Dr.  
17 Stevie gives us, we are giving DSM the best  
18 shot to be chosen because the model can also  
19 choose not to take the DSM.

20 I would also point out that in the  
21 C02 scenario, Dr. Stevie gave us is ultra-high  
22 DSM bundle, and that was what was used in the  
23 C02 scenario.

24 Q But, again, it is an assumption or a  
25 presumption; you said it is hardwired in to

1 the system; it doesn't allow flexibility; it  
2 is based on all of the assumptions and  
3 presumptions made by the people preparing the  
4 load forecast; correct?

5 A Well, it is different people that look at the  
6 DSM than look at the load forecast, but Dr.  
7 Stevie is in charge of both of those areas,  
8 and the folks that look at the DSM provide us  
9 with the cost-effective DSM.

10 Q Let me rephrase that question then.

11 It hardwires the presumptions and  
12 assumptions of Dr. Stevie and the folks who  
13 work for Dr. Stevie or report to Dr. Stevie?

14 A Yes, and I trust Dr. Stevie's judgment.

15 Q With respect to renewables and the choice of  
16 wind farms, did the model allow the ability to  
17 choose incremental additions of wind power  
18 each year or did it limit the addition of that  
19 power to specific years?

20 A We limited it to specific years. Again,  
21 because of the way the model solves, if you  
22 give it too many alternatives, essentially the  
23 model will not be able to come to a solution  
24 in a reasonable amount of time because it is  
25 looking at all different combinations of



1       alternatives, and with wind farms, since what  
2       we modeled was 100 megawatt wind farms, which  
3       is a reasonable size to model, however, the  
4       summer on-peak contribution of a wind farm is  
5       only about 15 percent. So, each wind farm  
6       added -- only adds 15 megawatts of capacity to  
7       the system. So, you have to be very careful  
8       not to give it too many of those or the model  
9       is going to blow up.

10    Q   Is the Edwardsport facility a summer peaking  
11       unit?

12    A   No, it is a base-load unit.

13    Q   Thank you, Ms. Jenner. I look forward to  
14       discussing these issues again on rebuttal.

15                   MR. POLK: No further questions,  
16       Your Honor.

17                   JUDGE STORMS: Thank you, Mr.  
18       Polk.

19                   Ms. Dodd, your witness.

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1     **CROSS-EXAMINATION OF MS. DIANE L. JENNER,**

2             **QUESTIONS BY MS. DODD:**

3     Q   Good morning.

4     A   Good morning.

5     Q   Can you turn to Page 7 of your testimony?

6     A   I'm there.

7     Q   And on Line 17, you discuss what the plan  
8         should include and what issues should be taken  
9         into account including risk.

10                 What risk are you referring to?

11    A   There were different kinds of risk that we  
12         considered such as fuel cost risk.  We've  
13         considered the risk of CO2 legislation.  I  
14         believe some scenarios we initially looked at  
15         in the IRP also looked at differences in  
16         reserve margin requirements, things like that.

17    Q   And you also discussed the role that judgment  
18         comes into play in the IRP process, and in  
19         exercising that judgment, do you also look at  
20         the regulatory treatment of the cost of  
21         various supply options?

22    A   That's one factor among many.

23    Q   Page 10, on Line 3, you say, "All of the  
24         generating units on our system, and their  
25         operating characteristics, were incorporated

1       into the model."

2                   Did that include the current  
3       Edwardsport plant?

4   A   The three existing units?

5   Q   Yes.

6   A   Yes, it did.

7   Q   Page 23 --

8   A   I'm there.

9   Q   -- starting on Line 4, you're discussing the  
10       Planned Reserve Sharing Group and the  
11       possibility that it may result in lower  
12       reserve margins that companies need to carry.

13               On Lines 9 through 13, you discuss  
14       what steps are still necessary before you'll  
15       know what the results are belonging to that  
16       group.

17               Do you have a time line? Do you  
18       know how long it will take for the rules to be  
19       developed?

20   A   The agreement to form the Midwest PRSG was  
21       just signed by the parties at the end of May.  
22       We have our first what I would call official  
23       meeting of the PRSG members next week, and the  
24       plan is to get going on the study that needs  
25       to be performed, and the target date for the

1       end of the study is the end of 2007 because we  
2       all have to know what level of reserves we're  
3       required to carry starting next June. During  
4       that process of performing the study, the  
5       exact rules and how some of the calculations  
6       will be done will also be established over  
7       that time frame.

8    Q   And will the study also determine the  
9       sub-region or zone to which Duke Energy will  
10       belong?

11   A   Yes, it will.

12   Q   That also would be by the end of 2007?

13   A   Yes; although, right now our expectation is  
14       that Duke Energy Indiana will be grouped with  
15       the other Indiana utilities, Duke Energy  
16       Kentucky, Duke Energy Ohio and the Illinois  
17       companies.

18   Q   And then how long for the modeling -- detailed  
19       modeling study to be performed then?

20   A   That's what I said --

21   Q   That's the second part that you were talking  
22       about; okay.

23   A   -- by the end of the year.

24   Q   On Page 26, you're discussing the results of  
25       the -- under the base case conditions, using

1       80 percent of the IGCC plant and also using  
2       100 percent ownership of the IGCC plant.

3                   The costs that were modeled, did  
4       those include the cost of carbon capture and  
5       storage?

6   A   No.

7   Q   Did Duke include the cost of IGCC carbon  
8       capture and storage in any of the IRP  
9       modeling?

10  A   No.

11  Q   Is the analysis of 100 percent Duke ownership  
12       of the IGCC modeled in the IRP?

13  A   In the IRP that was filed?

14  Q   Yes.

15  A   No.

16                   MS. DODD:  Nothing further.

17                   JUDGE STORMS:  Thank you, Ms.

18       Dodd.

19                   Nucor?

20                   MS. BECKER:  No questions, Your

21       Honor.

22                   JUDGE STORMS:  Mr. Endris?

23                   MR. ENDRIS:  Thank you, Your

24       Honor.

25

1     **CROSS-EXAMINATION OF MS. DIANE L. JENNER,**

2             **QUESTIONS BY MR. ENDRIS:**

3     Q    Good morning, Ms. Jenner.

4     A    Good morning.

5     Q    Turn to Page 7 of your testimony, please.

6     A    Okay.

7     Q    Lines 9 through 18, here you're talking about  
8           how potential expansion plans are analyzed and  
9           the present value revenue requirements are  
10          obtained for each one and the forecasted costs  
11          compared by the Company. Do you see that  
12          testimony?

13    A    Yes.

14    Q    Then on Line 13, you state, "Normally, the  
15          model analysis will produce a number of  
16          expansion plans with PVRs that are so close  
17          that, for practical purposes, they are  
18          identical."

19                    By practical purposes, are you  
20          saying that the margin of error is greater  
21          than the difference in the PVRs?

22    A    No. What I'm saying is that the difference in  
23          PVR compared to the total PVR over the study  
24          period or planning period is an extremely  
25          small percentage.

1 Q Do you have a quantifiable margin of error  
2 associated with your STRATEGIST analysis?

3 A No.

4 Q And with respect to the small percentage  
5 points relative to the total PVRr, that's for  
6 the entire generation fleet in the Duke Energy  
7 system; is that correct?

8 A Yes and no. It includes the cost of fuel and  
9 O&M going forward on the existing fleet;  
10 however, the existing capital costs that have  
11 already been invested in those units is not  
12 modeled.

13 Q And what are the total PVRrs in dollars for  
14 the base case?

15 A In general, they're -- they varied throughout  
16 here, but they're on the order of, let me  
17 throw out, 30 billion.

18 Q 30 billion?

19 A Roughly. It depends on what scenarios you're  
20 looking at.

21 Q So even a small percentage difference is  
22 several millions of dollars?

23 A That's true.

24 Q Can you turn to Page 10 of your testimony,  
25 please, Lines 8 through 10, and here you

1 discuss the fuel prices, market prices and  
2 emission allowance prices utilizing the IRP  
3 process which were provided by ICF.

4 I think Mr. Rose testified  
5 yesterday that they provide hourly prices to  
6 you; is that correct?

7 A Yes.

8 Q And on Page 9, Lines 9 and 10, you discuss the  
9 2005 load forecast, and subsequent to that,  
10 Duke Energy Indiana signed a contract to sell  
11 Hoosier Energy 100 megawatts for that period.

12 Is that an around the clock  
13 100 megawatts, if you know?

14 A I know, but I don't know if that's  
15 confidential or not.

16 MR. POPE: Can we have a moment?

17 JUDGE STORMS: Yes. Let's go off  
18 the record for a moment.

19

20 (Off-the-Record Discussion)

21

22 JUDGE STORMS: Let's go back on  
23 the record.

24 We've had a brief discussion to  
25 confirm that the potential answer is not



1 confidential; so, Ms. Jenner has been informed  
2 by counsel that she may proceed safely.

3 A It is around the clock.

4 Q Thank you, Ms. Jenner.

5 And is that how it gets modeled  
6 into STRATEGIST, does it reflect 24 hours at  
7 100 megawatts?

8 A Yes.

9 Q And would that be true with other wholesale  
10 contracts as well, that you would put them  
11 into your analysis on the basis of whether  
12 they are around the clock or a full  
13 requirements for whatever the demand level  
14 might be?

15 A Yes, we would model whatever the contractual  
16 requirements are.

17 Q And just to be clear, Dr. Stevie told me to  
18 ask you, did you use his 2004, I'm sorry, 2005  
19 load forecast or did you use his 2006 load  
20 forecast for the exhibit here in your direct  
21 testimony?

22 A We used the 2005 load forecast. As my  
23 testimony discusses on Page 24, I also -- When  
24 we developed the IRP, the 2005 load forecast  
25 was all that existed. By the time we filed

1 testimony in this cause, Dr. Stevie had  
2 developed the 2006 forecast. So, we did take  
3 a look at it to see how it compared, and as my  
4 testimony states, in 2011, there was only  
5 11 megawatts difference between the two.

6 Q Just one more question, Ms. Jenner.

7 On Page 26 of your testimony, at  
8 the bottom of the page where you talk about --  
9 well, beginning on Line 15, and there on Line  
10 16, you say, "In the CO2 Scenario, the 50%  
11 IGCC was economical with Federal Incentives  
12 and essentially break-even without Federal  
13 Incentives."

14 By break-even, what do you mean by  
15 that?

16 A I mean that the percentage difference in PVRR  
17 between that plan and the plan without the  
18 IGCC was very small.

19 Q Thank you, Ms. Jenner.

20 MR. ENDRIS: Nothing further, Your  
21 Honor.

22 JUDGE STORMS: Thank you.  
23 Redirect?

24 MR. POPE: No redirect, Your  
25 Honor.

1 JUDGE STORMS: Ms. Jenner, thank  
2 you very much for your testimony. You may  
3 step down.

4

5

6 (WITNESS DIANE L. JENNER EXCUSED)

7

8

9 JUDGE STORMS: Let's take about a  
10 ten-minute break.

11 MR. POPE: Your Honor, before we  
12 go off the record, if I could, in response to  
13 my redirect of Mr. Roebel, Page 15 of  
14 Mr. Moreland's direct testimony, which is  
15 already in the record is the reason I'm  
16 bringing it up, Exhibit No. 4, answers whether  
17 or not the cost of demolition is included in  
18 the estimate, and it is not, but he's already  
19 been on, and it's already in the record, but I  
20 wanted to point that out.

21 JUDGE STORMS: Thank you very  
22 much.

23 Let's take our ten-minute break.

24

25 (HEARING IN RECESS UNTIL 10:10 A.M., SAME DAY)

1 Indianapolis, Indiana  
2 June 20, 2007  
3 10:10 A.M. (EDT)

4 (Reporter marked documents for  
5 identification as Petitioner's  
6 Exhibit Nos. 13, 13-A, 13-B, 13-C  
7 and Confidential 13)

8  
9 JUDGE STORMS: Let's go ahead and  
10 go back on the record.

11 Petitioner, you may call your next  
12 witness.

13 MS. KARN: Thank you, Your Honor.  
14 We call Mr. Stephen M. Farmer.

15  
16 **STEPHEN M. FARMER**, a witness appearing on behalf  
17 of the Petitioner, having been  
18 first duly sworn, testified as  
19 follows:

20  
21 **DIRECT EXAMINATION,**

22 **QUESTIONS BY MS. KARN:**

23 Q Could you, please, state your name for the  
24 record?

25 A Stephen M. Farmer.

1 Q And by whom are you employed and in what  
2 capacity?

3 A I'm currently a self-employed contractor.

4 Q Do you have a document before you that has  
5 been marked as Petitioner's Exhibit No. 13?

6 A I do.

7 Q Do you also have a document that's been marked  
8 as Petitioner's Confidential Exhibit No. 13?

9 A I do.

10 Q Do you have any changes or corrections to make  
11 to Petitioner's Exhibit No. 13?

12 A Yes. First of all, I guess we should  
13 establish for the record that I'm no longer an  
14 employee of Duke Energy Shared Services. I  
15 retired as of 12-31-2006.

16 Then, also, I have a correction on  
17 Page 12 of my testimony having to do with the  
18 basis reduction of the federal investment tax  
19 credit. On Line 4, "50%" should be changed to  
20 "100%", and on Line 12, delete "one-half" and  
21 replace that with "100%"; so, the sentence  
22 reads, "In effect, this means that a portion  
23 of the investment tax credit (i.e., reduction  
24 in basis, or, 100% of the investment tax  
25 credit, times the federal income tax rate)

1 represents an interest free loan . . ."

2 Q Thank you.

3 A Those are the only corrections that I have;  
4 although, I would say that as other witnesses  
5 have explained, there have been significant  
6 changes -- there have been a number of changes  
7 from my direct testimony to my rebuttal  
8 testimony, including updates of cost estimates  
9 and changes in the various proposed regulatory  
10 treatment of certain cost items.

11 Q Thank you. And you did make those changes and  
12 initial them in the margin; correct?

13 A I did.

14 Q Thank you. Given the fact that there have  
15 been those updates, if I asked you the same  
16 questions today taking into account that there  
17 have been updates included in the rebuttal,  
18 would your answers be the same?

19 A Yes, they would.

20 Q Do you adopt Petitioner's Exhibit No. 13 as  
21 well as Petitioner's Confidential Exhibit No.  
22 13 as your sworn direct testimony in this  
23 case?

24 A I do.

25 Q Thank you.

1                   MS. KARN: We will offer into  
2 evidence Petitioner's Exhibit No. 13, which  
3 includes Sub-Exhibits 13-A through 13-C, and  
4 Confidential -- Petitioner's Confidential  
5 Exhibit No. 13, which also includes  
6 Sub-Exhibits Confidential 13-A and 13-B.  
7                   JUDGE STORMS: If there is no  
8 objection, we'll show Petitioner's Exhibit No.  
9 13 and Confidential Exhibit No. 13 and all of  
10 the sub-exhibits attached thereto admitted  
11 into this cause.

12                   MS. KARN: Thank you, Your Honor.

13  
14                   (PETITIONER'S EXHIBIT NO. 13,  
15 BEING THE PREFILED DIRECT  
16 TESTIMONY OF MR. STEPHEN M.  
17 FARMER, WITH EXHIBIT NOS. 13-A,  
18 13-B AND 13-C ATTACHED THERETO,  
19 ADMITTED INTO EVIDENCE.)  
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1 (PETITIONER'S EXHIBIT NO.  
2 CONFIDENTIAL 13, CONTAINING  
3 CONFIDENTIAL INFORMATION  
4 PERTAINING TO THE DIRECT TESTIMONY  
5 OF MR. STEPHEN M. FARMER, ADMITTED  
6 INTO EVIDENCE ON A CONFIDENTIAL  
7 BASIS.)

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1 MS. KARN: The witness is  
2 available for cross-examination.

3 JUDGE STORMS: Thank you.  
4 Mr. Hartley?

5 MR. HARTLEY: No questions.

6 JUDGE STORMS: Mr. Polk?

7 MR. POLK: Thank you, Your Honor.

8

9 **CROSS-EXAMINATION OF MR. STEPHEN M. FARMER,**

10 **QUESTIONS BY MR. POLK:**

11 Q Good morning, Mr. Farmer.

12 A Good morning.

13 Q How does it feel to be self-employed again?

14 A It is very nice. I'm enjoying it.

15 Q You said you were retired. Is that a  
16 retirement from Duke to work full time  
17 elsewhere, or are you enjoying -- having an  
18 opportunity, at least, to enjoy some free time  
19 now?

20 A I have a choice of free time. It is very  
21 nice. I have been retained by Duke Energy  
22 Indiana on a part-time basis, but I'm enjoying  
23 it.

24 Q Okay. And you worked for Duke and before that  
25 Cinergy and PSI for quite sometime; right?

1 A Yes. Duke formerly Cinergy formerly PSI for  
2 31 years, I believe.

3 Q Well, I think you've earned some free time.

4 A Thank you.

5 Q Now, you said a lot of your numbers have  
6 changed since the filing of your direct  
7 testimony and have been updated in your  
8 rebuttal testimony?

9 A Yes.

10 Q All right. In that case, I'll reserve the  
11 questions that I have dealing with your  
12 rebuttal testimony. Thank you.

13 JUDGE STORMS: Ms. Dodd, your  
14 witness.

15

16 **CROSS-EXAMINATION OF MR. STEPHEN M. FARMER,**

17 **QUESTIONS BY MS. DODD:**

18 Q Good morning, Mr. Farmer.

19 A Good morning.

20 Q Just a couple of questions. Page 17, and at  
21 the bottom of the page, Lines 22 and 23,  
22 you're talking about the procedures to  
23 recognize the difference in ratemaking between  
24 retail and wholesale jurisdictions with  
25 respect to environmental costs.

1                   What are those procedures?

2    A   The primary procedure is that our wholesale  
3       customers do not have a tracking mechanism,  
4       per se, like our retail customers do. For our  
5       retail customers, we recognize that under CWIP  
6       ratemaking, the Company would earn a cash  
7       return on its investment; therefore, there  
8       would be no need for the accrual of AFUDC.  
9       So, we discontinue the accrual of AFUDC on  
10      that portion of the investment that's  
11      applicable to the retail customers.

12               The wholesale customers, on the  
13      other hand, their rate treatment is not  
14      similar or not the same as for retail  
15      customers. Since we are not earning a cash  
16      return on the investment as the plant is being  
17      constructed, we do continue the accrual of  
18      AFUDC on that portion of the plant that is  
19      applicable to the wholesale customers. That's  
20      the primary difference.

21   Q   And the allocation -- jurisdictional  
22       allocation between retail and wholesale  
23       customers, that remains the same for the  
24       environmental costs, doesn't it?

25   A   Yes, it does.

1 Q Now, on Page 22, you're discussing the rate  
2 impacts, and on Line 15, you say -- well, on  
3 Line 14, retail revenues billed jurisdictional  
4 customers during the twelve months ending May  
5 2006.

6 Is that total revenues billed to  
7 customers, or is that just base rates that are  
8 billed?

9 A I'm sorry, would you repeat that question?

10 Q Yes. You're talking about the -- how you're  
11 calculating the percent increases from retail  
12 revenues billed jurisdictional customers  
13 during the twelve months ending May 2006.

14 My question is: The retail  
15 revenues billed, is that total revenues, the  
16 base rates plus all trackers, or is it just  
17 the base rates?

18 A It is the total plus all trackers.

19 Q Thank you.

20 MS. DODD: No further questions.

21 JUDGE STORMS: Thank you.

22 MR. MOHLER: No questions.

23 MR. MCGIMPSEY: No questions, Your  
24 Honor.

25 JUDGE STORMS: Mr. Helmen?

1     **CROSS-EXAMINATION OF MR. STEPHEN M. FARMER,**

2             **QUESTIONS BY MR. HELMEN:**

3     Q   Mr. Farmer, Indiana Michigan Power Company  
4         filed a base rate case yesterday.  Would you  
5         be available to the OUCC for consulting?

6                     MS. KARN:  I think I can answer  
7         that for him.

8     Q   Can we talk later?

9     A   We can talk later.  I have a contractual  
10        provision that I think would preclude me from  
11        probably doing that.

12    Q   I had to ask.

13    A   I could be retained by I&M, I suppose.

14                    MR. HELMEN:  I don't have any  
15        questions on your direct testimony.  Thanks.

16                    JUDGE STORMS:  Redirect?

17                    MS. KARN:  Nothing, Your Honor.

18                    JUDGE STORMS:  Mr. Farmer, thank  
19        you very much for your testimony.

20                    WITNESS FARMER:  Thank you.

21

22

23                    (WITNESS STEPHEN M. FARMER EXCUSED)

24

25

1 JUDGE STORMS: Let's go off the  
2 record for a moment.

3  
4 (Reporter marked document for  
5 identification as Intervenor's -  
6 ICC Exhibit No. JNN)

7  
8 (Reporter marked document for  
9 identification as Petitioner's  
10 Exhibit No. 1)

11  
12 JUDGE STORMS: Let's go back on  
13 the record.

14 Ms. Karn, you have one  
15 additional -- some additional testimony that  
16 you'd like to stipulate into the record; is  
17 that correct?

18 MS. KARN: Yes.

19 JUDGE STORMS: Please proceed.

20 MS. KARN: Thank you, Your Honor.  
21 I believe pursuant to stipulation by the  
22 parties, I would like to offer into evidence  
23 Petitioner's Exhibit No. 1, which is the  
24 prefiled direct testimony of James E. Rogers.

25 JUDGE STORMS: We will show

1       Petitioner's Exhibit No. 1 admitted into this  
2       cause pursuant to stipulation of the parties.

3               MS. KARN:   Thank you, Your Honor.

4

5               (PETITIONER'S EXHIBIT NO. 1, BEING  
6       THE PREFILED DIRECT TESTIMONY OF  
7       MR. JAMES E. ROGERS, ADMITTED INTO  
8       EVIDENCE.)

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1 MS. KARN: That completes  
2 Petitioner's case-in-chief.

3 JUDGE STORMS: Thank you.  
4 Mr. McGimpsey, you may call your witness.

5 MR. MCGIMPSEY: Thank you, Your  
6 Honor. The Indiana Coal Council calls its  
7 witness, J. Nathan Noland, and, Your Honor,  
8 Mr. Noland needs to be sworn in.

9 JUDGE STORMS: Please stand and  
10 raise your right hand to be sworn.

11

12 (OATH DULY ADMINISTERED TO WITNESS)

13

14 MR. MCGIMPSEY: Thank you, Your  
15 Honor.

16

17 **J. NATHAN NOLAND**, a witness appearing on behalf  
18 of the Intervenor, Indiana Coal  
19 Council, Inc., having been  
20 first duly sworn, testified as  
21 follows:

22

23 **DIRECT EXAMINATION,**

24 **QUESTIONS BY MR. MCGIMPSEY:**

25 Q Would the witness, please, state his name and



1 business address?

2 A Nathan Noland, and I work for the Indiana Coal  
3 Council, 150 West Market Street, Indianapolis,  
4 Indiana.

5 Q Thank you. Mr. Noland, did you cause to be  
6 prepared and prefiled in this cause on May 15,  
7 2007 your direct testimony which includes as  
8 an attachment thereto a brochure from the  
9 Vincennes University on its new mining  
10 program?

11 A I did.

12 Q Has that prefiled direct testimony been placed  
13 before you and marked as Intervenor's - ICC  
14 Exhibit No. JNN?

15 A Yes, it has.

16 Q Mr. Noland, do you have any changes to that  
17 prefiled direct testimony or Attachment 1  
18 identified therein?

19 A Yes, sir. I would like to direct your  
20 attention to Page 7, Line 13, where I  
21 indicated in the testimony I submitted that  
22 there were two new underground mines that are  
23 in planning in the State of Indiana. Since  
24 then, I've learned that one of those mines  
25 actually is going to have two mine complexes

1       at the same location; so, there actually would  
2       be three new underground mines that are in the  
3       planning stage. There is actually a fourth  
4       mine in Pike County, and while it is at the  
5       very preliminary stages, by the time this  
6       plant was built, it would probably be  
7       available for coal supply as well.

8     Q   So, Mr. Noland, would you like to change the  
9       word "two" to "four" or "two" to "three" on  
10      Line 13 of Page 7?

11    A   To be most accurate, I think it should be  
12      four.

13    Q   Mr. Noland, could you, please, make that  
14      change and initial it in the margin?

15    A   So done.

16    Q   Mr. Noland, if I were to ask you the same  
17      questions as set out in that prefiled direct  
18      testimony, would your answers be the same as  
19      those set out therein reflecting the change to  
20      Page 7, Line 13?

21    A   Yes, sir.

22                   MR. MCGIMPSEY: Your Honor, I  
23      would offer into evidence what's been marked  
24      as Intervenor's - ICC Exhibit No. JNN.

25                   JUDGE STORMS: If there is no

1 objection, we'll show Intervenor's Exhibit No.  
2 JNN admitted into this cause.

3 MR. McGIMPSEY: Thank you, Your  
4 Honor.

5  
6 (INTERVENOR'S - ICC EXHIBIT NO.  
7 JNN, BEING THE PREFILED TESTIMONY  
8 OF MR. J. NATHAN NOLAND, WITH  
9 ATTACHMENT 1 ATTACHED THERETO,  
10 ADMITTED INTO EVIDENCE.)  
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1                   MR. McGIMPSEY: The witness is  
2           tendered for cross-examination.

3                   JUDGE STORMS: Thank you.  
4           Mr. Helmen, we'll start down here.

5                   MR. HELMEN: Thank you, Your  
6           Honor. We have no questions of this witness.

7                   JUDGE STORMS: Okay. That's why  
8           you were waving me on. Sorry. You have to  
9           use the microphone to tell me.

10                   Nucor?

11                   MS. BECKER: Thank you, Your  
12           Honor.

13

14   **CROSS-EXAMINATION OF MR. J. NATHAN NOLAND,**

15   **QUESTIONS BY MS. BECKER:**

16   Q   Good morning, Mr. Noland.

17   A   Good morning.

18   Q   Now, are you a native Hoosier?

19   A   I am.

20   Q   IU grad?

21   A   Law school was IU. My proud undergraduate was  
22           at Purdue University.

23   Q   I was just getting ready to ask you who you  
24           root for.

25   A   Purdue.

1 Q Now, you have, essentially, worked in Indiana  
2 since you graduated from college and law  
3 school; is that correct?

4 A Yes, ma'am, other than the military.

5 Q And so since college and law school, you have  
6 sort of seen Indiana's economy wax and wane,  
7 and at times we prosper, and at times we  
8 suffer from downturns in our economy?

9 A That's correct.

10 Q Now, the thrust of your testimony this  
11 morning, as I understand it, and correct me if  
12 I'm wrong, you testify as to job retention,  
13 excuse me, job creation; is that correct?

14 A That's true.

15 Q And an increase in the tax base here?

16 A That would be true as well, yes, ma'am.

17 Q Increased economic development opportunities?

18 A Yes, ma'am.

19 COMMISSIONER ZIEGNER: Mr. Noland,  
20 could you move a little closer to the mike for  
21 us?

22 WITNESS NOLAND: Yes.

23 COMMISSIONER ZIEGNER: Thank you.

24 Q Now, all of those items are of significant  
25 concern to the mining industry; correct?

1 A Yes, ma'am.

2 Q Would you say those same things are true as to  
3 other industrial sectors of our state's  
4 economy?

5 A I certainly would.

6 Q Manufacturing?

7 A Certainly.

8 Q Steel?

9 A Certainly.

10 Q And you'd like to see an increased number of  
11 jobs, an increased tax base and increased  
12 economic development opportunities throughout  
13 our state?

14 A I would.

15 Q Now, would you also be concerned about job  
16 retention?

17 A Certainly.

18 Q Has the mining industry over time and your  
19 experience with the Coal Council and being in  
20 the coal business, have you seen the mining  
21 industry sort of suffer a downturn in terms of  
22 the number of jobs?

23 A We had a significant downturn in about 1995  
24 due to Phase II of the Clean Air Act  
25 implementations. We have recovered from that

1 with the installation of many scrubbers and  
2 other pollution control equipment in our  
3 Indiana utilities and our customers outside of  
4 Indiana. The number of jobs that have -- that  
5 have gone down somewhat in the mining industry  
6 is offset by the higher productivity that our  
7 mines enjoy today.

8 Q When you talk about that significant downturn  
9 and the loss of jobs, can you place a  
10 percentage or a number on that?

11 A Well, currently today, the number of employees  
12 in the mining industry is fairly consistent  
13 with the numbers that we had in the mid '90s  
14 to late '90s, even though our production has  
15 gone up. In the early '90s, we had  
16 significantly more employees, but the  
17 productivity trends and new technology and new  
18 equipment has allowed the mining of additional  
19 tonnage with fewer employees. I don't know if  
20 I'm answering your question directly or not.

21 Q In your testimony you refer to approximately  
22 3,000 employees directly in the mining  
23 industry; is that correct?

24 A Those would be direct mining jobs. Those are  
25 employees that are directly involved on a

1       daily basis with the production of the coal.  
2       It is not supervisory employees, safety  
3       personnel, management. It is direct mining  
4       jobs.

5   Q   Subject to check, would you agree that, you  
6       know, approximately 25 percent of 3,000 is --

7   A   750.

8   Q   Thank you. If you lost about 25 percent of  
9       those jobs, would that be a significant  
10      impact?

11  A   I think it would be a significant impact in  
12      portions of the state, yes, ma'am.

13  Q   If a local community lost 750 employees in one  
14      fell swoop, would that impact that local  
15      community?

16  A   I would certainly think so.

17  Q   Not just the local tax base but sort of the  
18      fabric of the community and the loss for those  
19      individuals involved in the community?

20  A   Yes, ma'am, I think it would.

21  Q   Okay. And the ancillary economic development  
22      associated with that particular employment  
23      loss?

24  A   Yes, ma'am.

25  Q   Thank you.



1 MS. BECKER: Nucor has no further  
2 questions.

3 JUDGE STORMS: Ms. Dodd?  
4

5 **CROSS-EXAMINATION OF MR. J. NATHAN NOLAND,**

6 **QUESTIONS BY MS. DODD:**

7 Q Hello, Mr. Noland.

8 A Good morning.

9 Q On Page 3 of your testimony, you discuss the  
10 Governor's Energy Plan, and is it part of the  
11 Governor's Energy Plan to grow Indiana jobs  
12 and incomes by producing more of the energy we  
13 need from our own natural resources while  
14 encouraging conservation and energy efficiency  
15 at any cost?

16 A The first part of that statement is accurate.  
17 Certainly in any economic model, cost is going  
18 to be a factor.

19 Q So would you agree that it is important to  
20 balance environmental issues and economic  
21 impacts of environmental compliance measures?

22 A Can you restate that for me, please?

23 Q Would you agree that it is important to strike  
24 a balance between environmental compliance and  
25 the impact on the economy of the environmental

1 compliance?

2 A Well, certainly those have to be taken into  
3 consideration in any new development, be it a  
4 new power plant or any type of new project.  
5 The electric utility industry is under  
6 constraints not only in Indiana but nationally  
7 with growing environmental concerns or growing  
8 environmental compliance, but we still have to  
9 produce electricity somehow, and my testimony,  
10 I think, would indicate that I still believe  
11 that coal is the most affordable and reliable  
12 option, and costs associated with the use of  
13 coal have to be taken into consideration by  
14 the Commission and others as they look at  
15 these projects.

16 Q And would you agree that it is not only the  
17 utility industry but all industry that is  
18 concerned with environmental compliance and  
19 incurring costs to reduce emissions?

20 A Well, certainly the electric utility industry  
21 has taken the blunt of a lot of environmental  
22 compliance issues since the early '80s, and it  
23 is affecting other industries as well and  
24 particularly the industrial community.

25 Q And on Page 4 of your testimony, you state

1       that, "The IGCC Project will add 630 megawatts  
2       of Indiana-generated electricity . . ."

3                   Now, are you aware that the  
4       proposed IGCC plant will be replacing the  
5       current Edwardsport generation plant?

6   A   I am aware of that, yes, ma'am.

7   Q   And that plant currently has the capacity of  
8       160 megawatts; right? Do you know if that's  
9       true?

10   A   It is probably roughly in that range, but I  
11       don't think the Edwardsport plant in today's  
12       world was going to be around much longer; so,  
13       we need the 600-plus megawatts of new  
14       production -- actually, we need more than  
15       that. If you believe the State Utility  
16       Forecasting Group's forecast, we need more  
17       than just this particular plant to ensure that  
18       we still will have sufficient electricity  
19       generation here in Indiana.

20   Q   Are you aware that new, super critical  
21       pulverized coal plants are considered to be  
22       clean coal technology?

23   A   Certainly the coal industry and the Indiana  
24       Coal Council would support some pulverized  
25       coal plants particularly the new generation,

1       and we believe those are still very -- can  
2       still meet the pollution control requirements  
3       that we have, but it seems like we've just  
4       skipped that generation of plants, that we've  
5       just jumped beyond that, and they're very  
6       difficult to permit in any jurisdiction at  
7       this point in time.

8     Q   And all of the benefits that you discussed to  
9       the coal industry as a result of the IGCC  
10      Project, those same benefits would occur if it  
11      was a pulverized coal plant being built,  
12      wouldn't they?

13    A   Assuming that the plant was going to be  
14      utilizing approximately the same amount of  
15      tonnage of coal on an annual basis, yes,  
16      ma'am.

17    Q   Would you agree that the IGCC technology is  
18      not a proven technology today?

19    A   No, ma'am.

20    Q   I notice in your testimony you said it is a  
21      promising technology?

22    A   But I think it is proven, and I guess by  
23      saying promising, I think that is for our  
24      industry, the next generation of electric  
25      generating plants that we're going to see

1 constructed not only in Indiana but probably  
2 throughout the country.

3 Q Are you aware of any other IGCC plant of this  
4 size operating in the United States?

5 A Personally, I'm not.

6 Q On Page 6, you discuss the number of  
7 construction jobs that will be created as a  
8 part of this project. Those are temporary  
9 jobs, aren't they?

10 A Yes, ma'am.

11 Q Would you agree that the creation of permanent  
12 jobs is more beneficial in the long run?

13 A Well, certainly, and that's one of the reasons  
14 why we support this plant because it could  
15 grow jobs for the coal industry in Indiana.

16 Q Other than the coal industry, do you think it  
17 is important to attract other types of  
18 industry and businesses to Indiana?

19 A Certainly.

20 Q Would you agree that businesses and industry  
21 when they're looking at what areas to locate  
22 in or to expand a plant will evaluate the cost  
23 of operating in that particular location?

24 A Certainly.

25 Q Would you agree that the cost of energy would

1       be a factor in those costs?

2    A   Yes, ma'am, and I think that's one of the  
3       reasons why Indiana has been able to  
4       continually grow our economy when we're  
5       sitting here with the third lowest electric  
6       utility rates east of the Mississippi River on  
7       a state average, and I think we can continue  
8       to do that.

9    Q   And what report is that from to give that  
10       statistic that you just gave?

11   A   You can go on the Department of Energy's web  
12       site Energy Information Administration and  
13       look at the average cost of electricity in all  
14       50 states.

15                   East of the Mississippi, only West  
16       Virginia and Kentucky have lower average rates  
17       on a kilowatt basis.

18   Q   Those are average rates?

19   A   Those are average rates.

20   Q   For all customer classes?

21   A   I'm not sure about that. I'd have to look at  
22       how the report is put together, but that's how  
23       it is stated.

24   Q   Do you know what the estimated rate impact is  
25       on Duke's electric rates as a result of the

1 IGCC Project?

2 A I do not.

3 Q The current estimate is around, at a peak, 18  
4 to 19 percent for the industrial customers.

5 Do you believe that could have an  
6 impact on the industrial industry's decision-  
7 making in continuing or locating in Indiana?

8 A Well, certainly the coal industry is an  
9 industrial consumer of electricity the same as  
10 many other industries in the state, and we are  
11 very concerned about rate impacts, but we're  
12 also very concerned about the reliability of  
13 the electricity that we need at the mines on a  
14 daily basis, and I think the cost of  
15 electricity is going to go up not only in  
16 Indiana from plants like this but throughout  
17 the country, and I think Indiana will still be  
18 one of the lowest cost generators of  
19 electricity, particularly on the East Coast.

20 Q And you mention the need for reliable service?

21 A Yes, ma'am.

22 Q So that is as important as cost, would you  
23 say?

24 A Certainly affordability and reliability are  
25 the two things that we think of on a daily

1       basis, and we would be very concerned as a  
2       coal industry not only with the loss of coal  
3       production because we didn't build new  
4       base-load plants, but we would be very  
5       concerned about importing power from outside  
6       the state from sources that we would have no  
7       control over, and with transmission grid  
8       issues, et cetera, we just firmly believe that  
9       close to home, which is very consistent with  
10      Governor Daniels' Energy Plan, is the way to  
11      go.

12    Q   And would you agree that pulverized coal  
13       plants are one of the most reliable types of  
14       generation you can have?

15    A   They have been over the years, and if you can  
16       get them permitted, I think they're still a  
17       viable option.

18    Q   Thank you.

19                   MS. DODD:  No further questions.

20                   JUDGE STORMS:  Mr. Polk, your  
21       witness.

22                   MR. POLK:  Thank you, Your Honor.

23

24

25



1     **CROSS-EXAMINATION OF MR. J. NATHAN NOLAND,**

2     **QUESTIONS BY MR. POLK:**

3     Q   I think one of the benefits of going last is  
4         it significantly reduces the number of  
5         questions one has to ask because they've  
6         already been asked by other folks.

7     A   Well, that's good then.

8     Q   Now, on Page 2 of your testimony, Lines 14 and  
9         15, you say that the Coal Council has an acute  
10        interest in projects that encourage the use of  
11        coal, and I think we all know what that means,  
12        but just to be clear, the Coal Council  
13        supports this project because it will burn  
14        more coal, and the folks that the Coal Council  
15        represents produce coal and make money off of  
16        that; correct?

17    A   Well, we tend to try to make money.  Sometimes  
18         our customers don't agree with our rate  
19         structures, but we try to, yes, sir.

20    Q   Does the Coal Council have a preference for  
21         the technology that is used or simply a  
22         preference that, all things being equal, if  
23         the same amount of coal is being used, it  
24         doesn't matter which technology?

25    A   Well, on the short-term basis, certainly, you

1 know, the more coal that we can sell, the  
2 happier we are; however, I think it is a  
3 given, as I've looked at other jurisdictions  
4 around the country, that our new fleet of  
5 power plants are going to have to be plants  
6 such as the IGCC plant. There are just too  
7 many environmental questions that keep being  
8 raised about pulverized coal plants. They had  
9 difficulty permitting one of those in  
10 Kentucky. They've had trouble in Illinois. I  
11 just think this is the breed and the new  
12 generation that we have to support.

13 Q Why is that?

14 A Congress and the U.S. EPA and others  
15 continually drive more and more environmental  
16 regulation of the electric utility industry,  
17 and you have to go to the technology that is  
18 going to give you the absolute best result.

19 Q Is there any particular environmental risk  
20 that you think the IGCC addresses that the  
21 super critical pulverized coal plant doesn't?

22 A I have not looked at any recent information  
23 that would compare this particular plant with  
24 a very modern pulverized coal plant. I just  
25 think that this is the way that the future is

1       going to have to go because it is just too  
2       difficult to permit these other type of  
3       plants.

4   Q   Are you familiar with the testimony that Duke  
5       has put forward in this case?

6   A   I was not here, sir.

7   Q   Have you read the testimony that they  
8       prefiled?

9   A   I scanned it, but just, I mean, briefly.

10  Q   Okay. Did you scan the testimony of any other  
11       party to this proceeding?

12  A   I did not.

13  Q   Are you aware of Duke's request for --  
14       regarding the Cliffside power plant down in  
15       North Carolina?

16  A   I am not, sir.

17  Q   Have you scanned the Governor's Energy Plan?

18  A   I have.

19  Q   In fact, I look at your testimony, and you  
20       have a quote here about growing Indiana jobs,  
21       et cetera, on Page 3, Lines 15 through 17,  
22       where it talks about encouraging conservation  
23       and energy efficiency.

24                        Would you agree that encouraging  
25       conservation and energy efficiency are a

1       significant part of the Governor's Energy  
2       Plan?

3    A   Yes, I would.

4    Q   Does the Governor's Energy Plan also support  
5       renewable energy?

6    A   There is a section in the plan where they  
7       discuss renewables, yes, sir.

8    Q   Do you know whether Indiana is a net importer  
9       or exporter of electric power?

10   A   I believe currently we are a net exporter, but  
11       if you look at the State Utility Forecasting  
12       Group's report, by 2010, we may be in a  
13       situation where we'll be a net importer if we  
14       do not build new base-load generation.

15   Q   Do you know if Indiana is a net importer or a  
16       net exporter of skilled labor?

17   A   I do not.

18   Q   Do you know whether facilities in Indiana have  
19       closed up and moved their operations elsewhere  
20       in recent years creating a loss of jobs in the  
21       state?

22   A   Well, certainly we have seen that as many  
23       states have. A lot of our economy has moved  
24       in some cases out of the country.

25   Q   Do you know what the percentage of Indiana

1 coal or the percentage of Duke's coal that  
2 comes from Indiana is?

3 A I don't know the exact percentage, but Duke  
4 certainly relies heavily on Indiana coal. It  
5 would be well in excess of 50 percent.

6 Q I believe I know the answer to this question,  
7 but I just want to make sure.

8 The Coal Council supports a net  
9 increase in jobs for Indiana, not simply an  
10 increase within its industry?

11 A Certainly the overall state economy is very  
12 important to us.

13 Q Has the Coal Council done any studies with  
14 respect to job creation or job loss as a  
15 result of increasing energy prices?

16 A We have not; although, there is some  
17 discussions going on to do some economic  
18 modeling of a number of different things, but  
19 we have -- currently, we have not.

20 Q An increase in energy prices based on normal  
21 market economics would generally trigger a  
22 response to use less energy; correct?

23 A It should.

24 Q So if prices increase sufficiently, it could  
25 actually reduce the amount of electricity

1       generated in the state or being consumed in  
2       the state and reduce the amount of coal needed  
3       to fuel that generation; correct?

4    A   I wouldn't support that statement.  I think  
5       you're going to see a growing demand for  
6       electricity even with conservation and other  
7       measures.  I mean, if you believe the State  
8       Utility Forecasting Group's report, they  
9       certainly still contend that we will see a  
10      growth in electricity of 2 or 2.5 percent,  
11      something like that, in the coming years.

12   Q   Thank you.

13                   MR. POLK:  I have no further  
14      questions, Your Honor.

15                   JUDGE STORMS:  Thank you, Mr.  
16      Polk.

17                   Mr. Hartley?

18                   MR. HARTLEY:  No questions.

19                   JUDGE STORMS:  Ms. Karn?

20                   MS. KARN:  Thank you.

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1     **CROSS-EXAMINATION OF MR. J. NATHAN NOLAND,**

2     **QUESTIONS BY MS. KARN:**

3     Q   I just wanted to follow up on a few areas that  
4         some of the other counsel have talked with you  
5         about.

6                     Ms. Dodd mentioned the rate impact  
7         from the capital costs associated with the  
8         Edwardsport IGCC Project.  Do you recall that?

9     A   Yes, ma'am.

10    Q   Would you agree with me that the fuel cost to  
11         be associated with this plant would be --  
12         which is using Indiana coal would be lower  
13         than an alternative such as a natural gas  
14         combined cycle plant?

15    A   Yes, ma'am.

16    Q   When you were speaking with Ms. Dodd and I  
17         think also with Mr. Polk, you mentioned that,  
18         in your opinion, and what you've seen in your  
19         experience, is that super critical pulverized  
20         coal plants or, at least, pulverized coal  
21         plants were difficult to permit.

22                     When you said that, were you  
23         talking primarily about environmental  
24         permitting?

25    A   Yes, ma'am.

1 Q And then, if you know, Mr. Polk was asking you  
2 about what percentage of Indiana coal that  
3 Duke Energy uses.

4 Do you know whether Duke Energy  
5 Indiana plans to use Indiana coal for the new  
6 Edwardsport IGCC Project?

7 A Well, they've stated publicly that they intend  
8 to. They made that statement, I believe, at  
9 one hearing before the General Assembly, and  
10 we believe that they will. We're the closest  
11 resource for them, and I would assume if we  
12 can provide the coal at the price that you're  
13 willing to pay, that it will be Indiana coal  
14 that you use.

15 Q Thank you.

16 MS. KARN: That's all that I have,  
17 Your Honor.

18 JUDGE STORMS: Thank you.  
19 Redirect?

20 MR. MCGIMPSEY: Thank you, Your  
21 Honor.

22  
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1 REDIRECT EXAMINATION OF MR. J. NATHAN NOLAND,

2 QUESTIONS BY MR. MCGIMPSEY:

3 Q Mr. Noland, you were asked some questions  
4 concerning job loss and job creation, and Mr.  
5 Polk, I believe, asked a specific question  
6 concerning a study done -- has there been a  
7 study done by the Coal Council regarding a  
8 change in energy prices and how that affects  
9 the -- how that affects job creation.

10 Has there been any studies done or  
11 are you aware of the -- a job creation just by  
12 an increase in coal mining activity? Is there  
13 a ripple effect that you know about just  
14 through another study in coal mining?

15 A Well, I was -- I think the most recent study  
16 that I have seen, Counsel, was, I believe,  
17 done in 2001. It was done on a site specific  
18 mine in Knox County, Indiana which was an  
19 underground mine that produced about  
20 1.8 million tons of coal a year. That  
21 particular mine had 225, plus or minus, jobs  
22 with an annual payroll of about \$16 million.  
23 As I recall, and I haven't looked at the study  
24 for awhile, there were almost 500 ancillary  
25 jobs in the county not related to the mining

1 of the coal but related to that mine with an  
2 annual payroll of -- in excess of, I believe,  
3 \$30 million or some dollars. So, it was --  
4 just in that county, it was a two to one  
5 ripple effect. It was just -- that was  
6 contained just in Knox County, Indiana.

7 Q So, it is your position that the coal mining  
8 industry has a ripple effect; that if there is  
9 an increase in coal mining jobs, there is an  
10 increase throughout the economy in general of  
11 increased economic activity?

12 A Yes, sir.

13 Q Mr. Polk also asked you whether or not you are  
14 aware of any closings of industrial  
15 facilities. I think your response was yes. I  
16 think that's just around Indiana in general.

17 Are you aware if there has been  
18 new announcements of new plants opening in  
19 Indiana within the last year, just industrial  
20 plants?

21 A Well, certainly the Honda plant in Greensburg,  
22 Indiana was one of the most significant new  
23 plants or new announcements. I think there  
24 was one in the paper the other day about a new  
25 transmission plant facility, and I think we'll

1 continue to see expansion of our economy from  
2 those sectors, from the manufacturing sectors.

3 Q Mr. Noland, you were also asked some questions  
4 concerning the Governor's Homegrown Energy  
5 Plan, and you responded to a question that  
6 that plan supports renewables, but if you were  
7 to look at that plan, is the bulk of it, in  
8 your estimation, dedicated to coal-type  
9 technologies, such as IGCC, or renewable  
10 technologies if you had to choose between  
11 those two?

12 A Well, certainly I think there is multiple  
13 pages that talk about clean coal technology,  
14 and the Governor's plan jumps right to IGCC as  
15 the answer for clean coal technology plants in  
16 Indiana, and I think, it's been a few days  
17 since I reviewed the report, there was half a  
18 page or maybe a page that did talk a little  
19 bit about renewables.

20 MR. MCGIMPSEY: No further  
21 questions, Your Honor.

22 JUDGE STORMS: Mr. Noland, thank  
23 you very much for your testimony. You're  
24 excused.

25 (WITNESS J. NATHAN NOLAND EXCUSED)

1 JUDGE STORMS: Let's go off the  
2 record.

3  
4 (Reporter marked documents for  
5 identification as Intervenor's -  
6 CATF and IWF Exhibit Nos. 1 and 2)

7  
8 JUDGE STORMS: Let's go back on  
9 the record.

10 Mr. Hartley, you may call your  
11 first witness.

12 MR. HARTLEY: Thank you, Your  
13 Honor. Call Mr. Douglas Cortez.

14 JUDGE STORMS: Mr. Cortez, you  
15 have not been previously sworn; is that  
16 correct?

17 WITNESS CORTEZ: No.

18 JUDGE STORMS: Please stand and  
19 raise your right hand.

20

21

22 (OATH DULY ADMINISTERED TO WITNESS)

23

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1     **DOUGLAS H. CORTEZ**, a witness appearing on behalf  
2                                 of the Intervenors, Clean Air  
3                                 Task Force and Indiana  
4                                 Wildlife Federation, having  
5                                 been first duly sworn,  
6                                 testified on Direct and  
7                                 Rebuttal as follows:

8

9     **DIRECT EXAMINATION,**

10       **QUESTIONS BY MR. HARTLEY:**

11    Q   What is your name?

12    A   Douglas H. Cortez.

13    Q   Mr. Cortez, what is your business address, and  
14       how are you employed?

15    A   My address is 412 North Coast Highway, Laguna  
16       Beach, California. I'm an independent  
17       consultant to the energy industry.

18    Q   You have before you what has been marked as  
19       Intervenors' - Clean Air Task Force and  
20       Indiana Wildlife Federation Exhibit No. 1; is  
21       that correct?

22    A   Yes.

23    Q   Is that a copy of your prefiled direct  
24       testimony in this matter?

25    A   Yes.

1 Q Do you have any changes or corrections that  
2 need to be made to that testimony before it is  
3 entered into the record?

4 A No.

5 Q And if I were to ask you all of the questions  
6 contained in that Exhibit 1, would your  
7 answers be the same?

8 A Yes.

9 Q Do you adopt that as your prefiled direct  
10 testimony in this matter?

11 A I do.

12 Q And attached thereto are two exhibits labeled  
13 Cortez 1 and Cortez 2. Are you sponsoring  
14 both of those exhibits as part of your direct  
15 testimony?

16 A Yes.

17 MR. HARTLEY: Your Honor -- Well,  
18 I'll just do the second one at the same time.

19 Q Do you have before you Exhibit No. 2 --

20 A Yes.

21 Q -- of the Clean Air Task Force and Indiana  
22 Wildlife Federation?

23 A Yes.

24 Q Is this a copy of your prefiled rebuttal  
25 testimony in this matter?

1 A Yes, it is.

2 Q Do you have any changes or corrections to make  
3 to that testimony before it is entered into  
4 the record?

5 A No.

6 Q And if I were to ask you all of the questions  
7 contained therein, would your answers be the  
8 same?

9 A Yes, they would.

10 Q Do you adopt that as your testimony -- your  
11 rebuttal testimony in this matter?

12 A I do.

13 MR. HARTLEY: Your Honor,  
14 Indiana -- I'm sorry -- the Clean Air Task  
15 Force and Indiana Wildlife Federation would  
16 offer into evidence their Exhibits 1 and 2  
17 including the two attachments to Exhibit No.  
18 1.

19 JUDGE STORMS: If there is no  
20 objection, we'll show Intervenors' - Clean Air  
21 Task Force and Indiana Wildlife Federation  
22 Exhibits 1 and 2 with attachments thereto  
23 admitted into this cause.

24

25

1 (INTERVENORS' - CATF AND IWF  
2 EXHIBIT NO. 1, BEING THE PREFILED  
3 DIRECT TESTIMONY OF MR. DOUGLAS H.  
4 CORTEZ, WITH EXHIBITS CORTEZ 1 AND  
5 CORTEZ 2 ATTACHED THERETO, AND  
6 INTERVENORS' - CATF AND IWF EXHIBIT  
7 NO. 2, BEING THE PREFILED REBUTTAL  
8 TESTIMONY OF MR. DOUGLAS H. CORTEZ,  
9 ADMITTED INTO EVIDENCE.)

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1                   MR. HARTLEY: Mr. Cortez is  
2     available for cross-examination.

3                   JUDGE STORMS: Thank you.  
4     Mr. Reed?

5                   MR. REED: Thank you, Your Honor.

6

7     **CROSS-EXAMINATION OF MR. DOUGLAS H. CORTEZ,**

8           **QUESTIONS BY MR. REED:**

9     Q Good morning, Mr. Cortez.

10    A Good morning.

11    Q Sir, I wonder if I could have you turn to Page  
12     15 of your testimony, please?

13    A The direct?

14    Q Your direct, yes, I'm sorry. Particularly,  
15     sir, I'm interested in the question that  
16     begins on Line 15.

17    A I'm there.

18    Q Excellent. Sir, the sentence that begins in  
19     the middle of Line 20 in response to that  
20     question says, "For Mesaba, Fluor estimated  
21     the cost impact would be \$200 per kilowatt  
22     hour (sic) in 3rd Quarter 2005 dollars." Do  
23     you see that, sir?

24    A I think it says \$200 per kilowatt.

25    Q I'm sorry, \$200 per kilowatt hour.

1 A Per kilowatt.

2 Q I'm sorry, per kilowatt. Excellent.

3 Sir, can you explain to me how  
4 that \$200 per kilowatt was calculated, where I  
5 might find in your testimony the figures that  
6 would help me make that calculation?

7 A The figures, I believe, are in the attached  
8 exhibit which is the non-confidential report  
9 that was filed in the Minnesota case. Without  
10 looking through it again, I'm not sure the  
11 exact figures are there to where you could  
12 make the calculation yourself because it may  
13 have been redacted for confidential reasons,  
14 but my testimony states that to calculate  
15 that, you look at the before and after  
16 capacity of the plant and the before and after  
17 investment. So, you take into account the  
18 changes in the capacity of the plant as well  
19 as the investment, and so that is reflected in  
20 the \$200.

21 Q Which is, I believe, the testimony that you  
22 have that begins on Lines 1 through 3 on the  
23 next page, on Page 16; is that correct? That  
24 sort of talks about the methodology?

25 A Yes.

1 Q Very good, sir. Can you tell me, sir, if the  
2 \$200 per kilowatt charge on Line 21 of Page 16  
3 includes FEED study costs?

4 A I think so, yes. I mean, the FEED study costs  
5 would be a negligible factor in that number,  
6 whether it included it or not.

7 Q Thank you, sir. I'd like to move on to Page  
8 16 where you were talking about the  
9 methodology in deriving this \$200 per  
10 kilowatt.

11 A I'm there.

12 Q At the end of Line 1, you use the acronym EPC.  
13 Am I correct, sir, that EPC stands for  
14 engineer, procure and construct?

15 A That's correct.

16 Q And that is a particular type of contract;  
17 correct?

18 A I don't think there is any contractual  
19 implications in that term. It is just the  
20 cost to build -- to engineer, procure the  
21 equipment and build those facilities. So, it  
22 would include all of the, what I would call,  
23 hard costs. It doesn't include AFUDC or  
24 financing costs or the owners costs.

25 Q Very well. Do you know, sir, then, when we

1        talk about the Edwardsport plant, I guess the  
2        costs -- the EPC cost estimates for  
3        Edwardsport that you discuss down on Line 6,  
4        you note at Line 7 that those costs are  
5        slightly lower than the estimates for Fluor;  
6        correct?

7    A    Yes.

8    Q    Now, the estimates that you're comparing them  
9        to, and now I need to kind of jump back up to  
10       Line 2, you say that -- you talk about a  
11       partial carbon capture case.

12                    Can you tell me in the Mesaba  
13       study what percentage partial carbon capture  
14       they were looking at?

15   A    In both cases, we're looking at removing most  
16       of the CO2 in the unshifted gas that comes  
17       from the gasification unit. Because Mesaba is  
18       using a subbituminous coal, that gas contains  
19       about twice the CO2 that the Edwardsport  
20       project would contain. So, the amount of  
21       carbon being captured both in terms of the  
22       tons per year and the percentage is about  
23       half.

24                    So, where Mesaba is looking at  
25       30 percent carbon capture, this particular

1       approach would maybe capture 15 to 20 percent  
2       of the carbon that is in the coal, and,  
3       therefore, the equipment required to do that  
4       would cost less, in my judgment.

5   Q   Understood.  So I'm clear, it is 30 percent at  
6       Mesaba; 15 to 20 at Edwardsport?

7   A   Correct.

8   Q   Thank you, sir.  Sir, have you had an  
9       opportunity to review Mr. Thompson's testimony  
10      in this case?

11  A   I believe I've looked through it, but it's  
12      been awhile.

13  Q   Do you recall Mr. Thompson estimating a cost  
14      of approximately \$10 million for FEED studies  
15      associated with carbon capture and  
16      sequestration?

17  A   I don't recall that.

18  Q   You do not?  Have you had, sir, an opportunity  
19      to review Mr. Zupan's testimony?

20  A   Yes.

21  Q   Are you familiar with Mr. Zupan's estimate of  
22      approximately \$80 million for 15 to 18 percent  
23      carbon capture and one sequestration well?

24  A   Yes.

25  Q   Would you agree with me -- Let me rephrase

1       that.

2                       Earlier when I asked you a  
3       question about the FEED study associated with  
4       the Mesaba plant, you said you believed those  
5       costs would be negligible?

6   A   I think your question was the FEED study that  
7       needed to be done to add the carbon capture  
8       equipment, not the FEED study to engineer the  
9       entire facility. There is a big difference  
10      there.

11   Q   Correct, I'm only focusing on the FEED studies  
12       regarding carbon capture and sequestration.

13   A   Yes.

14   Q   If you can, in your estimation, would \$10  
15       million for FEED studies for carbon capture,  
16       sequestration, test well, would that be  
17       reasonable or in the ballpark?

18   A   The only thing I feel qualified to talk about  
19       is the surface facilities. I don't have  
20       direct knowledge of the cost of the injection  
21       wells or the sequestration activities. So, if  
22       you're talking about just the FEED work that  
23       would need to be done to implement a  
24       modification to the plant to capture 15 to  
25       20 percent of the carbon, I cannot imagine

1       that costing \$10 million. That seems like a  
2       very high number for that.

3   Q   Thank you, sir. If Mr. Zupan's estimate of  
4       around \$80 million to do 15 to 18 percent, if  
5       that's close, would you be able to tell me how  
6       that would compare in terms of dollars per  
7       kilowatt relative to the \$200 per kilowatt at  
8       the Mesaba project?

9   A   Well, just doing the math here in my head, and  
10       I don't have the exact numbers plus I think  
11       the Mesaba numbers are confidential, but if  
12       one takes the 600 megawatt plant times 200,  
13       you have \$120 million, and if we're looking at  
14       \$80 million for the Edwardsport project, and  
15       in fairness to Mr. Zupan, I'm sure that's just  
16       a rough order magnitude estimate because they  
17       haven't done the detailed work yet, those  
18       numbers hang together to me, and my testimony  
19       says that in light of the lower amount of CO2  
20       that would be processed, it looks reasonable  
21       to me, the \$80 million.

22   Q   I think your testimony was you had estimated  
23       it would probably be somewhat lower?

24   A   Than the Mesaba case.

25   Q   Than the Mesaba case.

1 A And to me \$80 million is somewhat lower than  
2 the 120.  
3 Q Right.  
4 Thank you very much, Mr. Cortez.  
5 MR. REED: Nothing further, Your  
6 Honor.  
7 JUDGE STORMS: Thank you, Mr.  
8 Reed.  
9 Nucor?  
10 MS. BECKER: We have no questions,  
11 Your Honor.  
12 JUDGE STORMS: Mr. Stewart?  
13 MR. STEWART: Thank you, Your  
14 Honor. We have no questions for Mr. Cortez.  
15 JUDGE STORMS: Thank you, Mr.  
16 Stewart.  
17 Mr. Polk?  
18 MR. POLK: Thank you, Your Honor.  
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1     **CROSS-EXAMINATION OF MR. DOUGLAS H. CORTEZ,**

2             **QUESTIONS BY MR. POLK:**

3     Q   Good morning, Mr. Cortez.

4     A   Good morning.

5     Q   I understand you have a flight out this  
6         afternoon?

7     A   I have time.  Ask whatever you want.  I'd like  
8         to stay longer if I could.

9     Q   Well, we'll have to have you back again some  
10        day.

11    A   That would be great.

12    Q   Have you ever testified in a proceeding  
13         against a power plant?

14    A   The testimony I've given in previous cases  
15         since becoming an independent consultant is  
16         listed in my direct testimony.  I wouldn't  
17         describe any of those as being against a power  
18         plant.  I don't testify for or against power  
19         plants.  I testify as an expert witness in the  
20         technical area.

21    Q   Now, on Page 5 of your direct testimony, there  
22         is a brief discussion of the -- of how Vectren  
23         describes the proposed plant as being carbon  
24         capture ready.

25                         Would you classify the plant as

1 carbon capture ready?

2 A I'm sorry, say that again?

3 Q Would you classify the Edwardsport IGCC plant  
4 as designed to be carbon capture ready?

5 A Well, Duke and Vectren have described the  
6 plant as carbon capture ready, and they have  
7 defined what that means. I don't believe the  
8 term carbon capture ready has any generally  
9 accepted definition in the industry; so, I  
10 would certainly accept their definition the  
11 way that they've described it.

12 Q So you would accept carbon capture ready to  
13 mean exactly what?

14 A I think Duke and Vectren has described it as  
15 leaving the adequate space to add the  
16 equipment in stages.

17 Q And how --

18 A And looking at the FEED package, it appears  
19 that is exactly what they've done.

20 Q So it is essentially -- carbon capture ready  
21 means there is enough real estate to put the  
22 equipment on?

23 A I think so, yes.

24 Q And how much real estate is necessary to put  
25 the equipment on?

1 A I don't remember, but in looking at the FEED  
2 material, the work that they've shown me, I do  
3 recall looking at it, and it seemed adequate  
4 to me, but I don't remember the exact area  
5 that they've set aside.

6 Q So, given that definition, my backyard Weber  
7 grill would be carbon capture ready if it was  
8 on a sufficiently large plot of land?

9 A Your backyard what?

10 Q Weber grill, charcoal grill.

11 A You must have a very large home. Where I live  
12 that wouldn't work.

13 Q Well, if it was on a sufficiently large plot  
14 of land though?

15 A Looking at this drawing, which I would like a  
16 copy of, it doesn't look to me like real  
17 estate is a problem there.

18 Q All right. But in terms of being ready to  
19 capture carbon, you know, we could put  
20 anything out there, a Weber grill, an Edsel, a  
21 school teacher, and they all would be carbon  
22 capture ready because there is sufficient real  
23 estate to put them there?

24 A No, I think there is more to it than that.  
25 They thought about where it would go; what

1 parts of the plant it interconnects with, and  
2 I believe they've given the proper forethought  
3 to saving the space to add whatever equipment  
4 would be required. I think it is far more  
5 thought through than your backyard example.

6 Q But it is a bit more complicated than simply  
7 knowing how much space you need and where you  
8 would put it; right?

9 A I believe there are complications, of course,  
10 in doing this, but none of them are -- we  
11 understand what those complications are and  
12 how to do it.

13 Q If the Edwardsport facility was required to  
14 control more than 20 percent or to capture and  
15 sequester more than 20 percent of its carbon  
16 emissions, would there need to be significant  
17 redesign and re-engineering of the plant?

18 A As it is now represented in the FEED study?

19 Q Yes.

20 A Yes.

21 Q What would be the additional costs of that  
22 redesign and re-engineering?

23 A I don't know. It would be somewhere --  
24 something less than the cost of what they've  
25 spent to get to this point. I don't know if

1       that's been published or not.

2   Q   On Pages 10 and 11, the bottom of Page 10 and  
3       moving over to Page 11, you talk about  
4       equipment used for capturing carbon in an IGCC  
5       facility, and you state down there at Line 21  
6       that proven technology is already utilized on  
7       a large commercial scale.

8                   Can you tell me the largest  
9       facility that you're aware of and how many  
10      tons per year they are able to capture and  
11      sequester?

12   A   Give me a moment. Can you point to the line  
13       that you're referring to?

14   Q   Sure. And I can go ahead and read your --

15   A   Bottom of 10?

16   Q   It is starting at the bottom of 10, and on  
17       Line 19, you say, "No. The technology and  
18       equipment I have described for implementing  
19       carbon capture, including the use of water  
20       shift reactors to convert CO to CO<sub>2</sub>, and the  
21       CO<sub>2</sub> scrubbing, drying and compression  
22       equipment, is proven technology, already  
23       utilized on a large commercial scale in the  
24       petroleum and chemical process industries."

25                   Can you tell me what the largest

1 scale facility that uses that technology is  
2 that you're aware of?

3 A You know, virtually every hydrogen plant in  
4 the refining industry and every ammonia plant  
5 captures carbon and uses this same technology.  
6 The largest ammonia plant, I would have to  
7 look it up, but it is definitely equal to or  
8 larger than scale than what we're talking  
9 about here.

10 Q About how many tons per year do they capture  
11 and sequester?

12 A Ammonia plants are -- again, this would be a  
13 guess, but it is in the thousands of tons per  
14 day, and the equivalent of CO<sub>2</sub> is a similar  
15 range.

16 Q They capture --

17 A You have to capture CO<sub>2</sub> to make ammonia. It  
18 is part of the process, and it is practiced on  
19 a very large scale.

20 Q And they capture that from pole gas?

21 A No. They're capturing it from synthesis gas  
22 that is created in a steam methane reforming  
23 unit, but it is the same process. Whether it  
24 is coal or gas, the gas that's coming out has  
25 the same technology for capturing the CO<sub>2</sub>.

1 Q And they capture thousands of tons of CO2 a  
2 day?

3 A Yes.

4 Q And they sequester thousands of tons of CO2 a  
5 day?

6 A They do not sequester it. It's going to the  
7 atmosphere; although, people are looking at  
8 capturing it for EOR use. It will happen  
9 soon, I think.

10 There are gasification plants in  
11 Europe that are running on oil and some on  
12 coal that are capturing and making beneficial  
13 use of the CO2.

14 Q Are those 600 megawatt plants?

15 A No.

16 The oil-fired IGCC plants in Italy  
17 are 500 megawatts, and they do capture CO2 for  
18 the manufacture of hydrogen. So, those are  
19 very large scale, and, again, the actual tons  
20 per day of CO2, I don't know, but if you want  
21 me to get back to you, I can give you a number  
22 on that.

23 Q That would be nice to know.

24 A All right.

25 Q And how much of that carbon is sequestered?

1 A In the Italian plants, none, but the plant in  
2 Holland does make beneficial use of the CO2.

3 Q Moving on to Page 12 of your testimony --

4 A I'm there.

5 Q -- and looking at Line 15 where you state,  
6 "What is not known is the level of engineering  
7 and design changes in the upstream equipment  
8 to handle the syngas pressure loss that would  
9 result from the addition of a CO2 absorber and  
10 related drying equipment. However, the level  
11 of pressure loss should be modest and I  
12 believe the necessary changes to upstream  
13 equipment would also be modest."

14 Do you know what the costs of the  
15 engineering and design changes would be?

16 A No, but I believe they would be modest. You  
17 know, it is possible, after they've taken a  
18 first look at this, that upstream of the  
19 absorber, if you do a partial capture of 15 to  
20 20 percent, it may be that the design changes  
21 upstream are zero, but if there are some, I  
22 believe they would be modest.

23 Q That would be for the existing plant, but  
24 they'd still need to do the engineering and  
25 design to add additional capture?



1 A This is for the 15 to 20 percent case --  
2 Q Okay.  
3 A -- that I'm referring to.  
4 Q To get above 15 to 20 percent?  
5 A To go above 20 percent, then, they're going to  
6 need to make more substantial changes.  
7 Q Can the plant as designed actually capture  
8 20 percent of its carbon emissions?  
9 A Say that again.  
10 Q Can the plant as designed actually capture  
11 20 percent of its carbon emissions?  
12 A I believe Duke is now studying that, but it is  
13 my judgment that that plant is readily  
14 adaptable to add another CO2 absorber to the  
15 existing unit and capture 15 to 20 percent.  
16 Q Would that have any results on the efficiency  
17 of the plant?  
18 A It will have some impact on the efficiency of  
19 the plant. I believe that would be modest,  
20 but as part of the study, they could determine  
21 whether or not there are ways to mitigate that  
22 and restore it. I think it is more of an  
23 economic question than it is a technical  
24 question.  
25 Q Now, you talked about the Mesaba project a

1       little bit. Do you know the status of that  
2       project?

3    A   That project is now before the Minnesota  
4       Public Service Commission which is weighing  
5       the decision whether or not to give it a power  
6       purchase agreement.

7    Q   So, to your knowledge, they haven't made a  
8       decision yet?

9    A   They have not made a decision.

10   Q   Now, when you indicated earlier that there are  
11       facilities out there capturing thousands of  
12       tons a day, is that one or two thousands of  
13       tons a day, four or five thousands of tons a  
14       day?

15   A   I promised to get back to you on that.

16   Q   Okay.

17   A   I can't give you a more precise number, but it  
18       is a very large number.

19               There are gas processing plants  
20       in -- Natural gas contains CO<sub>2</sub>. There is  
21       natural gas being produced in America on a  
22       very large scale, and it is all capturing  
23       carbon. This is not a difficult technology  
24       for people in the process industry.

25   Q   Is it easier to do it from natural gas than it

1       is from coal?

2    A   I think at the point that the gas enters the  
3       absorber, that absorber doesn't know what the  
4       raw material was that it came from.

5    Q   How many tons of coal, or I'm sorry, how many  
6       tons of carbon per year would be 20 percent of  
7       the emissions from the Edwardsport plant?

8    A   I think we guesstimated 700,000 tons.

9    Q   And do you know what cost per ton of carbon it  
10       would be to remove those emissions?

11   A   I don't know that number for the Edwardsport  
12       project, but for other projects where this has  
13       been looked at, it is nominally in the \$20  
14       range is what other investigators have come up  
15       with.

16   Q   So how much would it cost per -- Okay.

17   A   The other studies have been for the full  
18       carbon capture. I would think in this case,  
19       it would be less than that, but I don't think  
20       it would exceed \$20 a ton.

21   Q   Now, is that for capture or is that for  
22       capture and sequestration?

23   A   That is to capture, dry it and compress it.  
24       As it leaves the compressor, it goes to a  
25       sequestration operation, and those costs were

1 not included.

2 Q Okay.

3 A Edwardsport is in a unique location where that  
4 would be very nearby and would be one of the  
5 lowest cost sequestration operations.

6 Q I thought earlier you said you only specialize  
7 in above the ground. Are you now saying that  
8 you understand the stuff that happens below  
9 the surface?

10 A I think common sense tells you if you don't  
11 have to build a hundred mile pipeline, that  
12 would be cheaper than building a one mile  
13 pipeline. I'm enough of an expert to know  
14 that.

15 Q And building no pipeline would be even cheaper  
16 than building a one mile pipeline?

17 A But even in your backyard, you could probably  
18 build a one mile pipeline.

19 Q Not in my backyard.

20 A And by the way, in California, they're going  
21 to be banning the Weber barbecues; so, you  
22 better feel lucky that you're living here.

23 Q My wife feels the same way when I use it.

24 A But we will make syn gas available if you need  
25 that for your barbecue.

1 Q Well, I suppose that raises a question.

2 That's an interesting point.

3 Is there something unique about  
4 the gasification process that requires that  
5 the gas be used in an electric generating  
6 facility?

7 A No. The syn gas coming out of a gasification  
8 plant can be used for a lot of different  
9 things. It can be used to manufacture  
10 methanol, SNG, ammonia, and it can be used as  
11 a fuel to a combined cycle power plant.

12 Q Could it then be used to be put out on a, say,  
13 traditional natural gas pipeline distribution  
14 network to be used --

15 A No.

16 Q -- in the manufacturing process?

17 A I'm sorry; no, it is not pipeline quality gas,  
18 but if you go to SNG, substitute natural gas,  
19 then, yes, and we're talking about doing that  
20 here in Indiana.

21 Q What additional costs would it take to go that  
22 route?

23 A There's been a lot of studies done of that,  
24 but I'm not sure that I have those numbers for  
25 you. I didn't come prepared to give that to

1       you, but, again, if you want me to dig out  
2       some information on that for you, I can do  
3       that.

4   Q   We might follow up on that.

5   A   You've got my number.

6   Q   Now, looking at your rebuttal testimony --

7   A   Okay.

8   Q   -- on Page 5, there is a question there  
9       referring to Mr. Schlissel's testimony, and it  
10      states, "Mr. Schlissel states on Page 6, Lines  
11      6 through 9, that Duke is not including  
12      technology for carbon capture and storage and  
13      there is no reason to expect construction of  
14      Edwardsport will lead to carbon capture. Do  
15      you agree?", and you answer no with a long  
16      explanation.

17               What I'd like to do is explore  
18      that a little bit, and I'd like to kind of  
19      break that sentence in two parts.

20               Is Duke including technology for  
21      carbon capture and storage at the Edwardsport  
22      facility as currently planned and designed?

23   A   My understanding is they're not.

24   Q   Okay. So, with respect to that particular  
25      point, Mr. Schlissel is, in fact, correct,

1       they're not including carbon capture and  
2       storage at their facility currently?

3   A   Not in this current filing, no.

4   Q   Okay.  Now, you disagree with Mr. Schlissel,  
5       believing that there is a reason to expect  
6       construction of Edwardsport will lead to  
7       carbon capture, and you seem to indicate that  
8       the reason that you believe that is that there  
9       is sufficient space, and that the technology  
10      is uniquely suited to capture carbon.

11                   Are there any other reasons which  
12      make you think that they might actually go  
13      ahead and capture and sequester carbon at this  
14      facility?

15   A   I didn't state it in that answer to that  
16       question, but I might have stated it elsewhere  
17       that if we do have carbon -- some form of  
18       carbon control coming, whether it is a carbon  
19       tax or a cap and trade system based on market  
20       conditions, it would be my testimony that a  
21       partial carbon capture facility at Edwardsport  
22       or any other similar IGCC plant would be one  
23       of the lowest cost sources of carbon to  
24       capture.  So, if there is an economic driving  
25       force to capture carbon or a regulation that

1 requires it, I think this project would be a  
2 prime candidate to do it, yes.

3 Q And you estimate that cost at how many dollars  
4 per ton?

5 A Under \$20 a ton.

6 Q That's at 20 percent?

7 A Yes, at 20 percent. Up to 90 percent would  
8 be -- We published a very nice study on this,  
9 and they're at \$20 a ton for 90 percent carbon  
10 capture. At 20 percent or 15 percent, I think  
11 it would be substantially less than that.

12 Q So the cost increases the more carbon you need  
13 to capture and sequester?

14 A If you go above 20 percent, which is what you  
15 can get from the unshifted gas, the native CO<sub>2</sub>  
16 that is in the syntheses gas, and you have to  
17 start shifting that, then you have to add  
18 equipment to shift that carbon monoxide to  
19 carbon dioxide. That costs more per ton.  
20 That incremental capture costs more per ton  
21 than the first step which is partial carbon  
22 capture.

23 Q And do you have any basis for belief that they  
24 would capture and sequester carbon at, for  
25 argument's sake, let's say \$20 a ton if



1 current regulations have a fail-safe  
2 protection built in that carbon emissions  
3 won't cost more than \$10 a ton?

4 A I'm not sure I understand the premise to that  
5 question.

6 Q Okay, and that's understandable. You weren't  
7 here yesterday or the day before for the  
8 testimony from Duke's other witnesses, were  
9 you?

10 A No, I was not.

11 Q Okay. There was some discussion on future  
12 carbon regulation, and that the cost of  
13 compliance wouldn't be too detrimental to the  
14 economy because there would be some cap that  
15 Congress would legislate on the cost of  
16 compliance. There would be emission  
17 allowances or whatever. I think there is  
18 still some disagreement over where that amount  
19 will be in the end, and there is different  
20 pieces of legislation where that amount will  
21 vary, but the premise here is that carbon  
22 capture and sequestration will only be done  
23 when it is cheaper than other options to  
24 comply.

25 A Right.

1 Q Do you generally agree with that?

2 A If it is based on market forces, and we should  
3 all want carbon to be captured at the cheapest  
4 possible location, I think given the size of  
5 the CO2 emission problem that we have in this  
6 country, it is inevitable, in my judgment,  
7 that we will be capturing carbon from  
8 coal-based power plants some day, and when  
9 that day comes, the IGCC plants will be much  
10 cheaper to capture carbon from than a  
11 pulverized coal plant.

12 Q Do you agree that an investor-owned utility  
13 that is responsible to shareholders is  
14 unlikely to engage in an environmental  
15 compliance strategy that costs more than other  
16 alternatives?

17 A I don't think anybody, investor-owned utility  
18 or otherwise, but especially a regulated  
19 investor-owned utility, should do anything  
20 that isn't prudent for the ratepayer, and the  
21 question, if I understood what you just asked,  
22 it would not be a prudent thing for them to  
23 do. If they know that there is a cheaper  
24 source of CO2 to capture, they ought to go  
25 after the cheapest source first.

1 Q So, if legislation is passed that caps the  
2 cost of complying with carbon regulations at  
3 \$10 a ton, and capture and sequestration cost  
4 more than \$10 a ton, it is unlikely to occur,  
5 and you would actually view that as being  
6 imprudent to require that?

7 A What I said is it would be imprudent to  
8 capture carbon at a higher cost when they have  
9 knowledge that there is a cheaper way to do  
10 it. Right now, given the volume of CO<sub>2</sub> that  
11 we're looking at in the years to come, I can't  
12 imagine what that other source would be, but  
13 it's probably not in my area of expertise.

14 Q And that's based on the science of what's  
15 needed to keep carbon at relatively or what  
16 some folks would view as sustainable levels in  
17 the environment?

18 A Again, this is a little bit outside of my  
19 area, but I understand there is a lot of  
20 discussion about a 2020-type concept where  
21 we're reducing greenhouse gas emissions by  
22 20 percent by the year 2020. This is being  
23 talked about in Congress and in the current  
24 administration. I can't imagine how we could  
25 ever get to that goal without capturing carbon

1 from coal-fired power plants, and should that  
2 happen some day, and I think it will, the IGCC  
3 plants will be the lowest cost initial way to  
4 do that.

5 Q And do you, then, believe that in order to get  
6 to that 20 percent reduction, you'd have to do  
7 more than a 20 percent reduction at one  
8 facility? You'd either have to do 20 percent  
9 at every facility or something greater than  
10 20 percent at certain facilities?

11 A My understanding is that the issue is not so  
12 much the carbon capture equipment and cost,  
13 but it is the sequestration side of it where  
14 more work needs to be done, and whether we go  
15 20 or 50 or 90 percent capture, we need to  
16 take the first step, and the DOE regional  
17 partnerships and the programs that they have  
18 for drilling test wells and gathering the data  
19 that is needed to get going with this is  
20 what's needed, and Edwardsport represents an  
21 excellent opportunity to be one of those test  
22 facilities, and I think the first step is to  
23 go 15 or 20 percent, which is low cost carbon  
24 capture, and let's get the data, and if that  
25 data says let's go to 50 percent or 90

1       percent, then, that's what we'll do in a few  
2       years, but I think you have to walk before you  
3       can run.

4   Q   But, again, that's subject to any cost  
5       constraints or cost limits or cost protections  
6       that legislation might --

7   A   Well, I'm from California.  The good people of  
8       Indiana need to make that decision whether or  
9       not this is an important enough project to get  
10      started on.  That's a policy decision that is  
11      probably above my pay rate.

12  Q   Now, one thing has been puzzling me a little  
13      bit.  You've been using an amount of \$20 a ton  
14      or less.  Yet when I look at your rebuttal  
15      testimony at Page 6, Line 22, the sentence  
16      that starts there, you say that, "The DOE  
17      estimated that the total avoided cost for CO2  
18      capture is \$32 a ton of CO2, versus \$68 a ton  
19      for SCPC and \$83 a ton for a natural gas  
20      combined cycle plant."

21  A   Can you tell me what page you're on again?

22  Q   Page 6 of your rebuttal testimony --

23  A   Thank you.

24  Q   -- Line 22, the sentence that starts about  
25      three words or four words into that line and

1 carries over to the next page.

2 A Right. I didn't bring the DOE report with me,  
3 but I believe the one that they issued last  
4 month where they updated all of this is closer  
5 to \$20 a ton. So, you'll have to forgive me,  
6 but I may be reaching back to a study that  
7 they published a year ago in '06. They just  
8 published and updated that study last month,  
9 and I'll have to check my report, but I think  
10 it is less than \$32 now.

11 Q But there is no question in your mind that we  
12 should be capturing and sequestering more than  
13 20 percent if we want to get to sustainable  
14 levels of CO2 in the atmosphere?

15 A I think that is coming some day. I think the  
16 way to get there is to start with the low  
17 hanging fruit which is the partial carbon  
18 capture case, and let's test a few injection  
19 wells and gather the data so we can get better  
20 numbers on the higher carbon capture cases.

21 Q But, again, you would only recommend that if  
22 that was the lowest cost option, most cost-  
23 effective option; correct?

24 A As a technology person, I think it is  
25 important to get this first phase going to

1       gather the data that we need. I think to go  
2       with higher carbon capture levels now, unless  
3       you have a secure place to put the CO<sub>2</sub>, could  
4       be an investment that wouldn't get utilized  
5       for awhile.

6   Q   Well, would it be prudent to make the  
7       investment if we never have the technology to  
8       store the CO<sub>2</sub>?

9   A   I believe the technology for storing the CO<sub>2</sub>  
10       is inevitable. I think we just need to go get  
11       the data and do it. I think all of the  
12       experts, and that's not my area, but all of  
13       the reports that I've read from all of the  
14       various regional partnerships, they all  
15       believe that this is doable. It is just a  
16       question of rolling up our sleeves and getting  
17       to work on it.

18   Q   My clients have heard the same thing with  
19       respect to the storage of nuclear waste at one  
20       facility for many years now.

21   A   I can't imagine how this would have anything  
22       to do with the storage of nuclear waste.

23   Q   Well, I think it is an environmental problem,  
24       in this case, of a global nature with folks  
25       saying the technology exists, even though

1       we've never used it and done it, but just give  
2       us time, and it will be there; just give us  
3       the money now.

4                   JUDGE STORMS:  Is that a question,  
5       Mr. Polk, for Mr. Cortez?

6                   MR. POLK:  I think I'm done with  
7       my questions, Your Honor.

8                   JUDGE STORMS:  Thank you, Mr.  
9       Polk.

10                  Mr. Pope?

11                  MR. POPE:  Brief questions.

12

13       **CROSS-EXAMINATION OF MR. DOUGLAS H. CORTEZ,**

14       **QUESTIONS BY MR. POPE:**

15   Q  You had a few discussions with Mr. Polk, and  
16       I'll refer you to Page 5 of your rebuttal  
17       testimony, sir.  On Line 18, you talk about  
18       Duke has shown sufficient space for future  
19       carbon capture equipment.

20   A  This is on Page 5?

21   Q  Page 5 of your rebuttal testimony, Line 18.

22   A  Yes, sir.  Go ahead.

23   Q  And, in fact, in your discussion with Mr.  
24       Polk, it's not only sufficient space, but it  
25       helps to have it sort of in the right location



1       within the plant footprint too, doesn't it?

2   A   Yes, and in my judgment, it is in the right  
3       spot.

4   Q   One other question, sir, again in response to  
5       Mr. Polk, you said on the Mesaba plant that  
6       the Minnesota Commission, that it was still  
7       pending in front of them. A few months ago,  
8       there was a lot of trade press about something  
9       coming out of the Minnesota Commission with  
10      respect to that project. Do you know what  
11      that was about?

12   A   I'm not an expert on the Minnesota utility  
13      regulatory process, but my understanding is it  
14      goes through an ALJ first who makes a  
15      recommendation or provides advice to the  
16      Commission, and then the Commission goes forth  
17      and makes their own decision. The ALJ issued  
18      an advice that he would not support the  
19      signing of a PPA.

20   Q   So that was the recommended decision about the  
21      PPA, not a recommended decision about the  
22      plant, first of all; is that correct?

23   A   That is correct.

24   Q   And it is still not final in front of the  
25      Commission yet; is that correct?

1 A It has yet to go to the Commission.

2 Q Thank you.

3 MR. POPE: That's all I have.

4 JUDGE STORMS: Mr. Hartley,

5 redirect?

6 MR. HARTLEY: Thank you, Your

7 Honor. Just one question.

8

9 **REDIRECT EXAMINATION OF MR. DOUGLAS H. CORTEZ,**

10 **QUESTION BY MR. HARTLEY:**

11 Q On Page 16 of your direct testimony, you were  
12 asked about -- by Mr. Reed, you were asked  
13 about your testimony here, and on Line 5 you  
14 indicate Duke has provided you with the  
15 results of a very preliminary analysis, and  
16 then I think you were asked about an \$80  
17 million number that had been contained in  
18 Duke's rebuttal testimony.

19 I just wanted to ask: Is that \$80  
20 million number the results of the preliminary  
21 analysis that Duke shared with you?

22 A I believe, yes, that number came from them.

23 MR. HARTLEY: No further  
24 questions.

25 JUDGE STORMS: Thank you.

1       Mr. Cortez, thank you very much for your  
2       testimony.

3                       WITNESS CORTEZ:   Thank you.

4                       JUDGE STORMS:   You are excused.

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13       (WITNESS DOUGLAS H. CORTEZ EXCUSED ON DIRECT  
14                       AND REBUTTAL)

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1 JUDGE STORMS: Mr. Hartley, I just  
2 want to touch base with you. You have -- I  
3 know we discussed this a little bit off the  
4 record, but you have a couple of other  
5 witnesses that you need to present perhaps  
6 either through stipulation or the parties are  
7 still discussing whether or not they'll have  
8 cross-examination; correct?

9 MR. HARTLEY: Yes, Your Honor.  
10 It is my understanding that with respect to  
11 Dr. Friedmann and Mr. Melzer, that the parties  
12 have all agreed to waive cross, and I'm simply  
13 in the process of getting affidavits from them  
14 that we can attach to their testimony and put  
15 those in the record. I should have those this  
16 afternoon so we can do that tomorrow.

17 With respect to Mr. Thompson, who  
18 is our last witness, I believe some of the  
19 parties do have questions for him, and he will  
20 be here tomorrow.

21 JUDGE STORMS: Okay. So we're in  
22 a position now to be able to hop around, and  
23 we'll then go to the CAC, and I believe the  
24 parties have questions for Grant Smith; so,  
25 he'll be our next witness.

1                   Let's go ahead and take about a  
2       ten-minute break, and then we'll resume with  
3       Mr. Smith's testimony.

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12                               (RECESS)

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25       (HEARING IN RECESS UNTIL 12:00 P.M., SAME DAY)

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