

# LARGE FILING SEPERATOR SHEET

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BEFORE THE OHIO POWER SITING BOARD

In the Matter of the :  
Application of American :  
Municipal Power - Ohio, :  
Inc. for a Certificate :  
of Environmental : Case No. 06-1358-EL-BGN  
Compatibility and Public :  
Need for an Electric :  
Generation Station and :  
Related Facilities in :  
Meigs County, Ohio. :

PROCEEDINGS

before Mr. Gregory A. Price and Ms. Kimberly W.  
Bojko, Hearing Examiners, at the Public Utilities  
Commission of Ohio, 180 East Broad Street, Room 11C,  
Columbus, Ohio, called at 9:00 a.m. on Tuesday,  
December 11, 2007.

VOLUME I

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22  
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1 Tuesday Morning Session,

2 December 11, 2007.

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4 EXAMINER PRICE: Good morning. The Ohio  
5 Power Siting Board has set this hearing for this time  
6 and this case, case number 06-1358-EL-BGN, In the  
7 Matter of the Application of American Municipal  
8 Power - Ohio, Inc. for a Certificate of Environmental  
9 Compatibility and Public Need for an Electric  
10 Generation Station and Related Facilities in Meigs  
11 County, Ohio.

12 My name is Gregory Price, with me is  
13 Kimberly Bojko, we are the administrative law judges  
14 assigned to preside over today's hearing.

15 Let's begin by taking appearances  
16 starting with the company.

17 MR. BENTINE: Thank you, your Honor. On  
18 behalf of American Municipal Power - Ohio, Inc., the  
19 applicant in this proceeding, the law firm of  
20 Chester, Willcox & Saxbe, LLP, 65 East State Street,  
21 Columbus, Ohio 43215, by John W. Bentine, April Bott,  
22 Stephen Fitch, Matthew White, and Nathaniel Orosz.  
23 Mr. White is the newest person on this, everybody  
24 else has already entered an appearance in this

1 proceeding, and Mr. White's brand-new today.

2 EXAMINER PRICE: Welcome.

3 MR. WHITE: Thank you.

4 EXAMINER PRICE: Citizens groups.

5 MR. FISK: Good morning, your Honor.

6 Shannon Fisk from the Natural Resources Defense  
7 Council, 101 North Wacker Drive, Chicago, Illinois.

8 MR. COLANGELO: Aaron Colangelo, also  
9 with NRDC, your Honor.

10 MR. DOUGHERTY: Trent Dougherty of the  
11 Ohio Environmental Council, 1207 Grandview Avenue,  
12 Columbus, 43212.

13 EXAMINER PRICE: Ms. Young.

14 MS. YOUNG: Elisa Young, Meigs County  
15 resident.

16 EXAMINER PRICE: Miss Young, you  
17 understand that you do have a right to be represented  
18 by counsel today and you're proceeding today without  
19 counsel on your own volition.

20 MS. YOUNG: I can't find counsel. I have  
21 searched. And what are my other options?

22 EXAMINER PRICE: I'll take that for a  
23 "yes." Thank you.

24 Staff.

1 MR. JONES: Your Honor, good morning. On  
2 behalf of the staff of the Ohio Power Siting Board,  
3 Ohio Attorney General Marc Dann, William Wright and  
4 John Jones, Assistant Attorneys General, 180 East  
5 Broad Street Columbus, Ohio 43215.

6 MS. MALONE: And Margaret A. Malone,  
7 Assistant Attorney General, 30 East Broad Street,  
8 Columbus, Ohio.

9 EXAMINER PRICE: Thank you.

10 Do we have any preliminary matters for  
11 the Bench before we begin our witnesses, Mr. Bentine?

12 MR. BENTINE: Couple things, your Honor.  
13 First of all, with regard to discovery, and thank  
14 your Honors for intervening when necessary in those  
15 disputes, as your Honors know there were massive  
16 amounts of documents exchanged between the parties in  
17 a very short period of time, given where we are in  
18 this proceeding and those exchanges I believe that we  
19 have agreement between the intervening citizens  
20 groups, NRDC, et al., and the applicant in this case  
21 at least to the extent that there will be no more  
22 motions to compel, that those respective parties are  
23 satisfied with the responses and there's no need for  
24 further motions to compel in that regard.



1 MR. COLANGELO: Your Honor, we agree. We  
2 don't have any more pending discovery motions.

3 EXAMINER PRICE: Thank you.

4 Mr. Bentine, you had an issue with  
5 respect to the deposition transcripts?

6 MR. BENTINE: Yes, your Honor. Again,  
7 given where we are on time frame and the time it  
8 takes to have deposition transcripts produced and  
9 verified by witnesses, we would suggest that we agree  
10 that we're going to waive the requirement in the  
11 Commission rules that depositions be filed three days  
12 before the proceeding and that unverified or verified  
13 transcripts be allowed to be used in  
14 cross-examination of witnesses, that the parties  
15 would further have the ability to enter in, as  
16 evidence, portions of those transcripts that they  
17 desire to use and would otherwise be admissible into  
18 evidence as part of the direct case.

19 And then any party would then have the  
20 right to file, as they would normally, the entire  
21 depositions in Docketing if that would be their  
22 desire at the end of this proceeding.

23 MR. COLANGELO: That's fine with us, your  
24 Honor.

1 EXAMINER PRICE: Miss Young?

2 MS. YOUNG: Do I need to state what I  
3 stated earlier?

4 EXAMINER PRICE: Yes.

5 MS. YOUNG: I need to restate that?

6 EXAMINER PRICE: Yes. We're on the  
7 record now.

8 MS. YOUNG: Okay. I would just like to  
9 say I object to my deposition being used without the  
10 three-day filing period, without up to ten days to  
11 review the document for accuracy, and I also have a  
12 motion to strike or in limine.

13 EXAMINER PRICE: We'll get to that in one  
14 second. We'll just consider the agreement between  
15 the citizen groups and AMP-Ohio to be binding at this  
16 time and we will deal with Miss Young's issues as  
17 they come up.

18 MR. BENTINE: If I might just for the  
19 record, your Honor, had we had Miss Young's  
20 deposition when we originally noticed it, she would  
21 have had time to review the transcript.

22 MS. YOUNG: Can I say that --

23 EXAMINER PRICE: I'm not asking for a  
24 back-and-forth. You've got a motion in limine and a

1 motion to strike, so let's go ahead and make that  
2 motion now and then we can have all these issues out  
3 on the table. Go ahead.

4 MS. YOUNG: You want me to read what I  
5 have?

6 EXAMINER PRICE: Yes.

7 MS. YOUNG: Okay. I believe the actions  
8 of AMP's attorney, Nate Orosz, Esquire, during the  
9 deposition process that I was required to sit for on  
10 Friday, December 7th was conducted with multiple  
11 procedure irregularities; that his behavioral was  
12 unethical to the point that it violated my civil  
13 rights and, ultimately, will not provide an accurate  
14 and complete representation of my testimony. As  
15 such, I am submitting a motion to strike or in limine  
16 for this deposition transcript.

17 I agreed to sit for AMP's deposition  
18 after I raised objections that I had been unable to  
19 get legal representation. I was told that I would  
20 need to sit for this deposition in order to remain a  
21 party to this proceeding.

22 Since I did not believe that the other  
23 parties who have filed petitions to intervene  
24 adequately addressed my concerns about impacts to my

1 immediate community and I disagreed with the argument  
2 that IGCC is the best available technology,  
3 participating in this proceeding is important to me  
4 to see that my concerns are addressed.

5 I want to be clear that I did not  
6 willingly waive my right to legal representation; I  
7 could not obtain it. I searched diligently for  
8 someone to represent me in the petitioning process,  
9 and I was unable to find an attorney to represent me.

10 I found that there are currently no free  
11 legal services available to community members  
12 regarding environmental law issues throughout  
13 Southeastern Ohio Legal Services or any of the other  
14 organizations or attorneys that I contacted across  
15 the state and outside of the state and, when I  
16 requested it, that no legal representation can be  
17 provided by the Ohio Power Siting Board to represent  
18 impacted community members who are attempting to  
19 raise objections and intervene against a proposed  
20 polluting industry that would impact their community.

21 Since I was unable to obtain an attorney  
22 and I had been informed that I will be required to  
23 sit for a deposition prior to the hearing beginning,  
24 I read the Ohio Power Siting Board's rules relating

1 to the deposition process that were posted on the  
2 internet. Chapter 4906-7(E), General provisions for  
3 filing some proceedings before the Ohio Power Siting  
4 Board.

5 I found that the Ohio Power Siting Board  
6 rules stated in section 4906-7(E)(3), "If any party  
7 shows that he or she is unable with the exercise of  
8 due diligence to obtain counsel to represent him or  
9 her at the taking of a deposition, the deposition may  
10 not be used against such party."

11 We had already spoken, but I called again  
12 after rereading this and asked specifically, since I  
13 couldn't find an attorney, if I would be required to  
14 sit for a deposition -- I'm sorry, I'm a little  
15 nervous. I've never been in court before -- since I  
16 couldn't find an attorney, if I would be required to  
17 sit for a deposition in order to remain a party to  
18 the proceeding.

19 It was expressed to me that since I had  
20 waived the right to representation by an attorney,  
21 which I believe is quite different from being unable  
22 to obtain it, that I was representing myself so I was  
23 the attorney, therefore, both I and the attorney  
24 would be present at the deposition. I disagree.

1 I am a community member with valid  
2 objections related to the siting permit application  
3 that AMP is proposing. I believe it is my right as  
4 an impacted community member to raise concerns and  
5 objections related to the siting permit that are  
6 within the scope of the criteria that the Ohio Power  
7 Siting Board exists to investigate.

8 And I am doing my best to respectfully  
9 participate in this legal process because the impacts  
10 of AMP's proposed power plant proposal would impact  
11 my community even beyond my foreseeable lifetime, but  
12 I am not a licensed attorney.

13 I consented to sit for the deposition  
14 even though I objected to it. AMP asked me to bring  
15 all of the information that I had used to prepare for  
16 the petitioning process. This was a hardship for me  
17 because I work full-time, but I did my best to  
18 respectfully comply with AMP's and the court's  
19 request. There were many loose papers, so I put them  
20 into a file to carry into the deposition. That file  
21 contained personal papers and belongings that were  
22 not relevant to this procedure because, let's see,  
23 because it wasn't anything that I had been storing  
24 papers relevant to the petition in up to that point.

1 I also took an outline of the deposition  
2 rules so that I could attempt to follow them during  
3 the deposition. These were in a binder that also  
4 contained copies of documents that I had submitted to  
5 the Ohio Power Siting Board related to this procedure  
6 and that AMP already had access to and had been  
7 referred to as a public record accessible through the  
8 Docketing division and had already been sent to them.

9 I also took a notepad to make notes  
10 during the deposition. When I was sworn in for the  
11 deposition, I made a statement for the record that  
12 again I objected to sitting for this deposition  
13 without a licensed attorney to represent me, and that  
14 I had searched diligently to attempt to obtain this  
15 representation.

16 AMP's attorney asked me if I'd ever given  
17 a deposition before, and I responded "No." He then  
18 said he wanted to go off the record. I thought he  
19 was going to explain some ground rules to me, but  
20 what followed was completely unexpected. He told me  
21 to give him everything that I had brought with me. I  
22 explained to him that not everything I had in my  
23 possession was relative to the proceeding.

24 EXAMINER PRICE: Miss Young. Miss Young.

1 MS. YOUNG: Yes.

2 EXAMINER PRICE: I don't think that the  
3 area you're about to go into is relevant to your  
4 motion. If you've got issues as to counsel's  
5 conduct, they're not going to be resolved by the  
6 Board, so if you've got issues as to unethical  
7 conduct, we're not going to take those today. If  
8 you've got issues as to failure to follow deposition  
9 rules --

10 MS. YOUNG: Yes.

11 EXAMINER PRICE: -- we will take those  
12 arguments today.

13 MS. YOUNG: The things that I saw in the  
14 Ohio Power Siting Board's list of rules that seemed  
15 to me had not been followed were that, partly, there  
16 seemed to be some discrepancy as to whether I was a  
17 witness or an attorney. And when I tried to object  
18 to things, I was told that they would be stricken  
19 from the record because this was not my deposition,  
20 it was his.

21 And I attempted to state up front some of  
22 my objections, and I was not allowed to read through  
23 the rest.

24 In rule 4906-7(E)(10) on page 8 it states



1 specifically "Any changes in form or substance which  
2 the witness desires to make shall be entered upon the  
3 deposition by the officer with a statement of the  
4 reasons given by the witness for making the changes.  
5 The deposition shall then be signed by the witness  
6 unless the signing is expressly waived by the parties  
7 or the witness is ill and cannot be found or refuses  
8 to sign.

9 "If the deposition is not signed by the  
10 witness within ten days after its submission to him  
11 or her, the officer shall sign it and state on the  
12 record the fact of the waiver or illness or absence  
13 of the witness, or the fact of the refusal to sign  
14 together with that reason, if any, given for such  
15 refusal."

16 I did not verbally or in writing waive  
17 the right to be given a reasonable time frame to  
18 receive, review for accuracy and completeness, and  
19 sign the draft transcript of AMP's deposition anymore  
20 than I waived the right to secure legal  
21 representation within the time limitations that the  
22 other parties had set and I had to comply with in  
23 order to participate in the petitioning process on  
24 AMP's siting permit.

1 I did ask the stenographer that AMP had  
2 provided when a draft of the transcript would be  
3 available for me to see, and she said the earliest  
4 would be Monday at 8:15, the same morning the hearing  
5 was scheduled to begin.

6 Aside from being a basic violation of my  
7 rights --

8 EXAMINER PRICE: Do you have a copy of  
9 the transcript now?

10 MS. YOUNG: Yes, I do.

11 EXAMINER PRICE: Thank you.

12 MS. YOUNG: There seems to be some  
13 discrepancy as to my role and the nature of the  
14 proceedings -- of my nature in the presence of this  
15 deposition.

16 What rights would I have as an attorney  
17 versus a witness other than attempting to follow the  
18 Ohio Power Siting Board's rules, which were taken  
19 from me during this deposition, and that was stricken  
20 from the record? I asked to have the rules given  
21 back to me, and they were not given back to me until  
22 the deposition was over, and that was the only thing  
23 that I had to work from.

24 My personal belongings were also taken

1 during this deposition, and I objected to it and I  
2 said that those were not mixed in with the papers  
3 that I had brought.

4 What went into the deposition was a  
5 statement that I had refused to give the documents  
6 that were relevant to this proceeding, that  
7 "Ms. Young refused to give the documents" -- I  
8 remember that. And I said, "No, I did not refuse to  
9 give you the documents. I refused to give you my  
10 personal belongings which you tried to take from me  
11 by force."

12 According to one of the sections I  
13 highlighted in the Ohio Power Siting Board's rules,  
14 4906-7(E)(6), it states that "Unless all of the  
15 parties expressly agree otherwise, no deposition  
16 shall be taken before any person who is a relative,  
17 employee, or attorney of any party, or a relative or  
18 employee of such attorney."

19 If I am interpreting this correctly,  
20 there was no reason for a high-level AMP official to  
21 be sitting at the table when I was giving my  
22 deposition. This felt intimidating to me. It was  
23 embarrassing to me. He was not introduced to me.  
24 And the only reason that I recognized who he was is

1 because he has come and traveled to our county to be  
2 there for several public hearings and public  
3 meetings. I did not give my permission for him to be  
4 there. He was not even introduced to me.

5 Under 4906-7(E)(8) the rule states that  
6 "All objections made at the time of the examination  
7 to the qualifications of the officer taking the  
8 deposition, or to the manner of taking it, or to the  
9 evidence presented, or to the conduct of any party,  
10 and any other objection to the proceedings shall be  
11 noted by the officer upon the deposition. Evidence  
12 objected to shall be taken subject to the  
13 objections."

14 I was told by Mr. Orosz that I was not  
15 allowed to do anything but answer his questions; no  
16 objections or notes to the record. This appears to  
17 me that I am entitled to be able to do this under the  
18 Ohio Power Siting Board's own rules.

19 So the rest that I have are simply  
20 statements that I have that I -- the second time it  
21 was requested to go off the record when the  
22 stenographer asked --

23 EXAMINER PRICE: I think we have enough.

24 MS. YOUNG: The stenographer asked for a

1 break.

2 EXAMINER PRICE: I understand. I think  
3 I'm going to give Mr. Bentine a chance to respond to  
4 what you've said now.

5 MR. BENTINE: Well, your Honor,  
6 Miss Young has chosen to intervene in this  
7 proceeding, to file testimony, to appear pro se. I  
8 understand that she may have diligently searched for  
9 an attorney to represent her for free, but that's not  
10 anybody's fault that there is no free legal  
11 representation for her.

12 She has chosen to do this. She has  
13 chosen to file things, she has chosen to file  
14 motions, so she has to be treated as a party. And I  
15 think most of the issues happening at this deposition  
16 happened, A, because she's not represented, and B,  
17 because she's not familiar with the process; that is  
18 the problem with pro se litigants.

19 She has the right to raise issues; she  
20 has raised those issues. We have the right to take  
21 her deposition; we took her deposition. If there are  
22 complaints about Mr. Orosz's conduct in that  
23 deposition, as the Bench already indicated, those can  
24 be raised in the proper forum.

1           We haven't attempted to use her  
2 deposition yet, I don't know that we will, so I think  
3 anything to do with that deposition right now is  
4 certainly premature. So if she has objections later  
5 on when she testifies, if we attempt to use that  
6 deposition in one way or another, I think she can  
7 raise those.

8           But acting as a witness and an attorney  
9 is very difficult and that's why, in fact, Ohio's  
10 ethical rules discourage that and, in fact, that's  
11 what she's doing, she's acting as an attorney-in-fact  
12 as well as her own client; I can't help that. But  
13 she has to be held to the same rules, basically, as  
14 everybody else.

15           Should she be given perhaps some slack in  
16 that? Of course. But I think basic fairness  
17 requires that the general rules of evidence, the  
18 general rules of civil procedure, and the general  
19 rules of this Board be applied to all parties  
20 equally, and unfamiliarity with the process does not  
21 excuse you from those obligations.

22           EXAMINER PRICE: Miss Young, response?

23           MS. YOUNG: I would like to say that if I  
24 am supposed to be treated the same, then I should

1 have had the right to object as things went through  
2 in this, and that was denied to me. I was told that  
3 this was his deposition and not mine, and that when  
4 the first objection and the note that I made to the  
5 record, that I had not refused to give him the  
6 documents he was entitled to, I refused to give him  
7 my personal property, he said that that needed to be  
8 stricken from the record, that I was there only to  
9 answer his questions.

10 MR. BENTINE: If I might, very briefly.  
11 Obviously, had she been represented, she would have  
12 known that she could have put -- her lawyer would  
13 have likely advised her that they can put any  
14 objection they want to on the record. It's the  
15 unfamiliarity of the witness with the process.

16 It was our deposition. We do get to ask  
17 questions. And the other parties have rights to  
18 object, and they have their rights to put those  
19 objections on the record, and simply because we said  
20 we didn't perhaps agree with those objections doesn't  
21 mean that she was commanded to. It's the  
22 unfamiliarity with the process which, I'm sorry, but  
23 everybody's got to live by the same rules.

24 EXAMINER PRICE: We're going to defer

1 ruling on the motion to strike and the motion in  
2 limine until a later time, if at all. We may not  
3 need to, as Mr. Bentine points out. Thank you,  
4 Miss Young.

5 Are there any other preliminary matters  
6 we have not otherwise addressed?

7 MR. COLANGELO: We have one motion we'd  
8 like to make, your Honor. There are witnesses in the  
9 courtroom who are going to be testifying as witnesses  
10 later in the proceeding and we'd like to move to  
11 exclude them from the courtroom while other witnesses  
12 are testifying.

13 EXAMINER PRICE: Mr. Bentine?

14 MR. BENTINE: Well, your Honor, certainly  
15 if we're going to have separation of witnesses, I'm  
16 entitled to have at least one company representative  
17 with me. We're going to designate Mr. Kieseewetter as  
18 our company representative.

19 Secondly, with regard to separation of  
20 witnesses, I don't believe that -- certainly the  
21 normal course in this board and its parent, the  
22 Public Utilities Commission, is that we wouldn't have  
23 to exclude all of our witnesses from hearing our  
24 cross of their witnesses. The separation of



1 witnesses, at least in my experience around here, has  
2 not gone to hearing witnesses on the other side, but  
3 I'll leave that to your Honor.

4 We will agree to a separation of  
5 witnesses when our witnesses are on the stand and  
6 that our other witnesses wouldn't hear it, but I  
7 think we ought to be entitled to hear what all their  
8 witnesses are saying.

9 MR. WRIGHT: Your Honor, inasmuch as I  
10 believe Mr. Bentine is correct that that is a highly  
11 unusual request in proceedings of this type absent a  
12 good reason for such a request, I believe we should  
13 follow the norm and not treat this as --

14 EXAMINER PRICE: It is out of the norm,  
15 Mr. Colangelo. Why don't you see if you can give us  
16 a very good reason why we will do this.

17 MR. COLANGELO: The reason, your Honor,  
18 is just to preserve the integrity of the process. We  
19 think that if the witnesses who are later testifying  
20 are present while witnesses on the same side are  
21 testifying, there may be an impulse or at least an  
22 opportunity to conform their testimony to that given  
23 by other witnesses on the same side.

24 So I would agree to the limitation that

1 Mr. Bentine suggested. It would be fine with us if  
2 all of their witnesses are present while our witness  
3 is testifying, but we are moving to exclude their  
4 witnesses while the other witnesses are testifying.

5 EXAMINER PRICE: We're going to defer  
6 ruling. I don't have to rule on this right at this  
7 moment because Mr. Furman's here.

8 MR. COLANGELO: Mr. Furman's up first,  
9 your Honor.

10 EXAMINER PRICE: That's an unusual  
11 request, and we'll have to take that under  
12 advisement.

13 MR. COLANGELO: All right, your Honor.

14 EXAMINER PRICE: Anything else?

15 EXAMINER BOJKO: Ready to call your first  
16 witness, Mr. Bentine?

17 MR. BENTINE: I would be, your Honor, but  
18 we're deferring to take Mr. Furman out of order.

19 EXAMINER BOJKO: I'm sorry. Ready to  
20 call your first witness?

21 MR. FISK: Yes, your Honor. The citizen  
22 groups would like to call our first witness, Richard  
23 Furman.

24 EXAMINER BOJKO: Mr. Furman, take the

1 stand. Will you please raise your right hand?

2 (Witness sworn.)

3 EXAMINER BOJKO: You may be seated.

4 MR. FISK: Your Honor, if I may approach  
5 the witness.

6 EXAMINER BOJKO: You may.

7 - - -

8 RICHARD C. FURMAN

9 being first duly sworn, as prescribed by law, was  
10 examined and testified as follows:

11 DIRECT EXAMINATION

12 By Mr. Fisk:

13 Q. Good morning.

14 A. Good morning.

15 Q. Could you take a look at this document,  
16 please? Let us know what that is.

17 A. That's my direct testimony presented in  
18 written form before the Ohio Power Siting Board.

19 Q. And is it a correct version? Are there  
20 any errors that need to be corrected?

21 A. No, there are not.

22 MR. FISK: I'd like to enter this as  
23 Exhibit 1.

24 EXAMINER BOJKO: Maybe we need to show

1 the other parties what you're presenting to the  
2 witness.

3 MR. FISK: Okay.

4 EXAMINER BOJKO: We will mark this as  
5 Exhibit 1. And for identification purposes we will  
6 mark it as Consumer Groups Exhibit 1?

7 MR. FISK: Citizen Groups.

8 EXAMINER BOJKO: Citizen Groups.

9 MR. FISK: Yes.

10 (EXHIBIT MARKED FOR IDENTIFICATION.)

11 EXAMINER BOJKO: And this one  
12 is submitted on behalf of all three?

13 MR. FISK: Yes, it is.

14 Your witness.

15 MR. BENTINE: Thank you.

16 - - -

17 CROSS-EXAMINATION

18 By Mr. Bentine:

19 Q. Good morning, Mr. Furman.

20 A. Good morning.

21 Q. My name's John Bentine.

22 EXAMINER PRICE: Mr. Bentine, just a  
23 moment, please.

24 MR. BENTINE: I'm sorry.

1 EXAMINER BOJKO: I'm sorry, just for the  
2 record, the copy that was filed on December 4th,  
3 2007, is the complete and accurate copy that we are  
4 discussing this morning; is that correct?

5 THE WITNESS: Excuse me, which date did  
6 you indicate?

7 EXAMINER BOJKO: December 4th. That's  
8 when it was date stamped in the record.

9 MR. FISK: Yes. This is dated -- the  
10 copy we filed on December 4th is substantively  
11 exactly the same as what we filed in our intervention  
12 brief, the only difference is exhibit numbers were  
13 added to the exhibits to comply with the table of  
14 contents that had previously been filed.

15 MS. MALONE: I'm confused because the  
16 copies that were provided to the parties as the  
17 exhibits electronically are still dated October  
18 25th, 2007. They have numbered exhibits, but --

19 MR. FISK: Yes.

20 MS. MALONE: -- it's dated October  
21 25th on the front.

22 MR. FISK: Right. And this copy still  
23 is.

24 MS. MALONE: The version you've marked is

1 also dated October 25th.

2 MR. FISK: Yes.

3 EXAMINER BOJKO: But it is time-stamped  
4 in the docket as of December 4th.

5 MR. FISK: Yes.

6 MR. WRIGHT: But substantively identical  
7 to the earlier version.

8 MR. FISK: Yes. It's exactly the same  
9 version, yes.

10 EXAMINER BOJKO: Mr. Furman, do you have  
11 any changes to that testimony?

12 THE WITNESS: No, I do not.

13 EXAMINER BOJKO: Okay. Now, Mr. Bentine.  
14 Thank you.

15 MR. BENTINE: Thank you, your Honor.

16 I don't recall, was the witness sworn?

17 EXAMINER BOJKO: Yes.

18 MR. BENTINE: Thank you.

19 Q. (By Mr. Bentine) Just to clear up a  
20 question very quickly, Mr. Furman, I think your  
21 counsel said "substantively" the same. It's  
22 identical to what was filed on December 4th,  
23 correct?

24 A. Yes.

1 Q. Okay. And that is identical, with the  
2 color exception, is identical to the earlier version.

3 A. Yes.

4 Q. Mr. Furman, in preparation for the  
5 testimony that you have filed in this as Citizen  
6 Groups' No. 1 could you tell me what investigation  
7 you did with regard to AMP-Ohio and the AMPGS being  
8 the AMP-Ohio generating station?

9 A. Yes. What I was asked to do was to look  
10 at the control technology that was being used and the  
11 emission levels that were then being proposed, and to  
12 determine if there were other pollution control  
13 equipment that was more efficient or other technology  
14 that could be used, such as IGCC, which is integrated  
15 gasification combined cycle technology, which would  
16 create less environmental impact.

17 And so I looked at the applied permit,  
18 the Ohio EPA staff determination of that draft  
19 permit, and also the draft permit that was issued by  
20 Ohio EPA to come up with the emission levels and the  
21 pollution control equipment that was being proposed  
22 for the plant, and then compared that with other  
23 utilities that were proposing coal-fired power plants  
24 to determine that the proposed pulverized coal plant

1 would not be the best control technologies available,  
2 as it is possible to achieve much greater reductions  
3 in emissions that other utilities are proposing, and  
4 that the use of IGCC technology would have  
5 substantially less emissions of all of the criteria  
6 pollutants.

7 Q. I saw you were reading from something  
8 there, Mr. Furman. What are you reading from; your  
9 testimony?

10 A. My testimony.

11 Q. Thank you.

12 Now, to go back to my question, my  
13 question was what investigation you did with regard  
14 to AMP-Ohio and the AMPGS, not what conclusions you  
15 reached. So hopefully we can get on the same  
16 wavelength here and you'll --

17 A. Sure.

18 Q. -- try to answer my questions as I pose  
19 them.

20 Mr. Furman, with regard to your answer,  
21 though, before we get into that previous question of  
22 mine, the permit you were talking about that you  
23 reviewed there was the air permit, correct?

24 A. Yes.



1 Q. Okay. And that's filed with the Ohio  
2 EPA; is it not?

3 A. Yes, it is.

4 Q. And you do understand, do you not, that  
5 the Ohio EPA will issue a final permit and that final  
6 permit then will be subject to the legal procedures  
7 under Ohio law for a determination as to whether best  
8 available control technology, et cetera, are used.  
9 You do understand that; do you not?

10 A. Yes.

11 Q. And that is a different proceeding  
12 procedurally than this proceeding; do you understand  
13 that?

14 A. Yes, I do. There is some, if I could  
15 explain, though, there is quite a bit of an overlap  
16 because, as I was instructed, one of the objectives  
17 of this hearing is to determine if the pulverized  
18 coal plant represents the minimum adverse  
19 environmental impact considering the state of  
20 available technology and the nature and economics of  
21 various alternatives.

22 So, therefore, that was the type of  
23 analysis that I was asked to do: Does the control  
24 technology and do other technology options provide

1 the opportunity for AMP-Ohio to have less of an  
2 environmental impact than the plant that they're  
3 proposing. So that was one of the three objectives  
4 that I was asked to try and indicate in my testimony.

5 MR. BENTINE: We may be at this for a  
6 long time. Could I have the question and answer  
7 reread, please?

8 (Record read.)

9 MR. BENTINE: That's enough, Maria, from  
10 my perspective.

11 I'm sorry, your Honor. I'm going to move  
12 to strike everything after "Yes, I do." If he wants  
13 to add that, they can add it on redirect, but it is  
14 no longer responsive to the question.

15 MR. FISK: Your Honor, I would say that  
16 that was responsive explaining the focus of his  
17 testimony.

18 EXAMINER BOJKO: I'm going to agree with  
19 Mr. Bentine to a point. I think we need to add in  
20 the "If I may explain, there's some overlap."

21 Could you read the rest of that sentence  
22 before Mr. Bentine stopped you?

23 (Record read.)

24 EXAMINER BOJKO: Okay, "There is quite a

1 bit of overlap." We're going to strike the rest of  
2 the answer.

3 If you could attempt to, please, try to  
4 answer the questions, and your attorney may ask  
5 redirect after we're done with cross-examination.

6 THE WITNESS: Yes.

7 Q. (By Mr. Bentine) Maybe to approach, then,  
8 going back to my original question, what do you know  
9 about AMP-Ohio, American Municipal Power - Ohio,  
10 Inc., the applicant in this proceeding?

11 A. Could you be more specific?

12 Q. Do you know whether or not it is an  
13 electric utility that is regulated by the Public  
14 Utilities Commission of Ohio?

15 A. I believe it's a group of municipals or  
16 supplying power to a group of municipal utilities  
17 and, therefore, some of the proceedings such as this  
18 Ohio Power Siting Board needs to be consulted, but  
19 the PUC Ohio, you do not need to get permission to  
20 set your rates.

21 Q. And when you say "your rates" there, are  
22 you talking about --

23 A. AMP-Ohio.

24 Q. -- AMP-Ohio's rates itself? What do you

1 understand the relationship of AMP-Ohio and its  
2 member -- well, strike that.

3 Do you know who AMP-Ohio's members are?

4 A. No, I do not.

5 Q. Do you know whether or not AMP-Ohio has  
6 any -- strike that.

7 Do you know whether or not AMP-Ohio is  
8 nonprofit or for profit?

9 A. No, I do not.

10 Q. Do you know its tax status?

11 A. No, I do not.

12 Q. Do you know what other generation  
13 AMP-Ohio or its members have available to it?

14 A. Yes. I've read some of the testimony of  
15 your witnesses and they indicated -- actually, I read  
16 the testimony of all four of your witnesses and in  
17 there it indicated the generation mix that the  
18 utility presently has and what their future  
19 generation plans are.

20 Q. Okay. And when you say "the utility"  
21 there, what are you talking about?

22 A. AMP-Ohio.

23 Q. Does that include its members?

24 A. There was discussion in your witnesses'

1 testimonies as to what generation was AMP-Ohio and  
2 some of which belonged solely to member companies.

3 Q. And you read that testimony obviously  
4 after you prepared your testimony and did your  
5 investigation and came to the conclusions that you've  
6 come to in what has now been marked Citizen Groups'  
7 Exhibit 1; is that correct?

8 A. Yes.

9 Q. What is your understanding of AMP-Ohio's  
10 generation mix at the current time?

11 A. I believe it has a number of older coal  
12 units and some natural gas combined cycle units, and  
13 also some gas turbines for peaking.

14 Q. What natural gas combined cycle unit does  
15 AMP-Ohio currently have?

16 A. I don't know.

17 Q. Do you know what the total of AMP-Ohio's  
18 current baseload generation is?

19 A. No, I do not.

20 Q. Do you know what its total load is?

21 A. No, I do not.

22 Q. Do you know how much it purchases on the  
23 market --

24 A. No, I do not.

1 Q. -- for its members?

2 Tell me this, Mr. Furman, in your view  
3 would it be important to know the current generation  
4 fleet of an entity and its current load in order to  
5 determine the most appropriate addition to its  
6 generation fleet?

7 A. Yes. Would you like me to expand on  
8 that?

9 Q. No.

10 Would you agree with me that electric  
11 power available to consumers should be reliable and  
12 it should be economic or cost-effective?

13 A. Yes.

14 Q. Now let's set a couple of ground rules,  
15 if we could, in going through your testimony,  
16 Mr. Furman. When we talk about IGCC in your  
17 testimony, integrated gas combined cycle, can we  
18 agree that when we say "IGCC," we're talking about an  
19 integrated gasification combined cycle for electrical  
20 generation and not for other purposes?

21 A. The term "IGCC" stands for integrated  
22 gasification combined cycle. A combined cycle is  
23 only used to generate power. So by definition of the  
24 word itself, it is for power generation.

1           There are places where an IGCC plant can  
2 also be used, a portion of that plant can be used to  
3 produce synthesis gas, the gasification portion of  
4 the plant, and that gas can be used for other  
5 purposes, so there are plants that are what's called  
6 polygen plants, they have poly, or many, products  
7 that are produced by the gasification process.

8           So the term "IGCC" by definition is power  
9 generation.

10          Q.   And would you try, and I'll try as well,  
11 whenever we're talking about something that is simply  
12 coal gasification, we talk about it as a coal  
13 gasification plant, when we talk about it as a --  
14 what did you call it, polygeneration plant?

15          A.   Uh-huh.

16          Q.   -- we'll identify that as polygeneration.  
17 And if we're saying "IGCC," that we just mean a power  
18 generating plant and not a polygenerating plant. Is  
19 that acceptable?

20          A.   Yes.

21          Q.   Now, I understand that you view your  
22 current analysis as, quote, preliminary; is that  
23 true?

24          A.   Yes.

1           Q.    Let's talk a little bit about what your  
2 experience is as you have set forth in your  
3 testimony, and in RCF-1, which is your résumé -- is  
4 it not?

5           A.    Yes.

6           Q.    -- you indicate that you managed Florida  
7 Power and Light's coal conversion program and fuels  
8 and research program. Do you see that?

9           A.    Yes.

10          Q.    Okay. How long were you with Florida  
11 Power and Light?

12          A.    Five years.

13          Q.    And what was your title while you were  
14 there?

15          A.    Senior Project Coordinator.

16          Q.    And you also had a stint with Southern  
17 California Edison; did you not?

18          A.    Yes.

19          Q.    And you were a chemical engineer there?

20          A.    Yes.

21          Q.    And you were there for eight months.

22          A.    Yes. Actually, that was a time -- the  
23 one year between my undergraduate and graduate  
24 education.



1           Q.    Other than that could you specify for me  
2 what experience you have had working directly for an  
3 electric utility or other entity that was considering  
4 building an electric generation station?

5           A.    I worked for the Center for Energy Policy  
6 in Boston, Massachusetts, and my major focus when I  
7 worked for them was working with New England Electric  
8 Company.

9                       New England Electric had the largest  
10 power plant in New England at the time, the Brayton  
11 Point plant, and it was right after the first oil  
12 embargo, which occurred in 1973, and because there  
13 was a limited supply of oil coming into the country  
14 the concern was that there wouldn't be an adequate  
15 supply of electricity to New England and, therefore,  
16 we did the first engineering study, in combination  
17 with the engineers at New England Electric, to  
18 convert that plant from an oil power plant to a  
19 coal-fired power plant.

20                      So that involved the conversion study and  
21 economic feasibility and it was really, I think, the  
22 first environmental trading agreement that was made  
23 between the EPA and the utility that allowed that  
24 plant to be converted from oil to coal, and it's

1 still operating that way now.

2 Q. Would you agree with me, Mr. Furman, with  
3 regard to that oil-to-coal conversion, that some  
4 folks have the same idea now about whether or not  
5 this nation should continue to go down a path of  
6 building more and more natural gas combined cycle?

7 A. Certainly that's a concern with  
8 availability and price.

9 Q. What other experiences have you had,  
10 other than you have now indicated, with regard to  
11 working directly for someone who was engineering,  
12 designing, constructing an electric generation  
13 facility?

14 A. After working for Florida Power and Light  
15 I started my own consulting business, which I did for  
16 22 years, and a large portion of that work was  
17 working on power plant related issues, primarily with  
18 the supply of fuels for power plants, working on  
19 coal-oil mixtures, coal-water slurries, and that also  
20 ties in with the gasification technology because the  
21 gasification technology uses a coal-water slurry for  
22 most of the gasification processes.

23 Q. And which of those assignments were  
24 directly for and associated with someone that was

1 designing, building, constructing an electric  
2 generation station?

3 A. Well, what we did is we used that  
4 coal-water slurry in a duPont plant in Memphis,  
5 Tennessee, so we, in essence, used that coal-water  
6 slurry as an alternative fuel to get off of oil in a  
7 boiler owned by the duPont company.

8 MR. BENTINE: I'm going to move to  
9 strike.

10 A. So I guess that would be a private  
11 industry effort, not a utility effort, but it  
12 involves the same technology of conversion of a  
13 boiler.

14 Q. And was that a boiler used for electric  
15 generation?

16 A. I don't know. I don't know what the  
17 boiler function was.

18 Q. So anything that we've missed, then, that  
19 you have done specifically for somebody that is  
20 designing, constructing, planning for an electric  
21 generation facility?

22 A. I also work in my consulting work quite a  
23 bit with cogeneration technology; this is where  
24 you're trying to be more energy efficient and in

1 addition to generating electricity you also make use  
2 of the waste heat coming off of the power plant for  
3 other industrial purposes. So I worked on the  
4 cogeneration feasibility study for Kennedy Space  
5 Center at Cape Canaveral, and also for the Miami  
6 International Airport.

7 Q. Anything else that you can think of now?

8 A. In my consulting work for Brazil's Center  
9 for Gas Technology I did a survey of their industries  
10 to find appropriate applications for cogeneration  
11 technologies in their industries. And for Trinidad's  
12 natural gas company I also did studies of the  
13 feasibility of cogeneration technologies to make --  
14 to find applications for their abundant supply of  
15 natural gas.

16 Q. In neither of those cases those entities  
17 that you worked for were actually building,  
18 constructing, designing, planning electric generation  
19 facilities, correct?

20 A. Cogeneration plant, so it was electricity  
21 and steam or heat. So it was, you might call it a  
22 polygeneration facility or cogeneration facility.

23 Q. Regardless of whether we call it a  
24 cogeneration facility or a generation facility, my

1 point is were the entities that you were engaged by  
2 the entities that were actually going to design,  
3 construct, and operate those plants?

4 A. Yes.

5 Q. Thank you..

6 As I understand your testimony, you have  
7 three areas that you looked at, minimum environmental  
8 impact, public need minimizing costs of future  
9 electricity, and the maximum degree of water  
10 conservation, correct?

11 A. Yes.

12 Q. First of all, let me ask you, do you have  
13 any reason to believe, based on what you have seen,  
14 that the AMPGS will violate any of its permits that  
15 are going to be required to be received from the Ohio  
16 Environmental Protection Agency as a part of the  
17 process to permit, construct, and operate this plant?

18 A. I believe that it will violate the BACT  
19 criteria of the Clean Air Act.

20 Q. I understand you've said that, and other  
21 than, as you've indicated, you see a tie to this  
22 proceeding, I understand that. But BACT, best  
23 available control technology, is an issue that is  
24 reviewed by the Ohio EPA in the air permit process,

1 correct?

2 A. Yes.

3 Q. I thought we agreed on that.

4 MR. BENTINE: Before we go any further,  
5 if I might, your Honor, I do have at least one motion  
6 to strike that I'd like to make.

7 EXAMINER BOJKO: Okay.

8 MR. BENTINE: I would move to strike, on  
9 page 14 of the testimony, the question and answer  
10 beginning on line 12 and the associated exhibit  
11 RCF-7. That testimony talks about an economic  
12 analysis of environmental and health costs associated  
13 with higher emissions. It is not something that --  
14 with regard to the testimony that is being proffered,  
15 this witness is clearly not qualified to render any  
16 opinion on that and, if one looks at Exhibit 7,  
17 RCF-7, will see that it was simply taken from a Clean  
18 Air Task Force document submitted to the Michigan  
19 Department of Environmental Quality.

20 So we would move to strike those as  
21 having no foundation, hearsay, and outside the  
22 expertise of this witness.

23 EXAMINER BOJKO: Response?

24 MR. FISK: Your Honor, we believe that

1 Mr. Furman is qualified to testify in this. He has  
2 reviewed the filing that he cited in his testimony  
3 and concluded that there are certainly different  
4 emission profiles of the proposal in an IGCC plant  
5 and that with those emission profiles, that we have  
6 associated environmental and health costs. And we  
7 believe, given his expertise and his background, that  
8 he's qualified to rely on that data and to present it  
9 to the Board, and it's clearly relevant to this  
10 proceeding.

11 EXAMINER BOJKO: What is the source of  
12 RCF-7?

13 THE WITNESS: The Clean Air Task Force  
14 presented their comments to the Michigan Department  
15 of Environmental Quality. When that department  
16 issued a fact sheet on the environmental permitting  
17 of coal-fired power plants, and they were actually at  
18 the time -- Michigan was in the discussion process of  
19 deciding whether to include IGCC in the BACT  
20 analysis.

21 EXAMINER BOJKO: I'm just asking was this  
22 chart created by you or is this chart or table, was  
23 this created by the Clean Air Task Force?

24 THE WITNESS: It was prepared by the

1 Clean Air Task Force and I guess I do have some  
2 expertise in that area of public health. I did take  
3 a course at Harvard School of Public Health on the  
4 consequences or environmental and health impacts of  
5 pollutant emissions when I was working for Walden  
6 Research Division of ABCOR, which is an environmental  
7 consulting firm.

8 So the point that I was trying to make  
9 from this diagram, that because IGCC technology  
10 produces so much lower --

11 EXAMINER BOJKO: I don't want to hear any  
12 testimony on it. There's a motion on the floor to  
13 strike the testimony, so I don't want to hear any  
14 more testimony.

15 Do you have a response? I thought you  
16 were starting to say something.

17 MR. BENTINE: Yes, your Honor, very  
18 briefly. Even though we didn't have any evidence of  
19 the one course, I've been here before, I don't think  
20 one course makes you an expert in this. There's  
21 certainly no qualifications for him to do this. This  
22 is not like much of the rest of the exhibits in this  
23 witness's and other witness's testimony where it's  
24 clearly related to things they have experience about



1 and, for the most part, are from sources that experts  
2 generally rely upon.

3 In fact, you'll see that many of our  
4 witnesses and many of the citizen groups' witnesses  
5 rely on some of the same reports from MIT or the EIA  
6 or other sorts of generally accepted places where you  
7 go to find stuff that experts all the time talk  
8 about; this is not one of those and this witness does  
9 not demonstrate the expertise to do that. It's  
10 hearsay, it's outside his area of expertise and,  
11 therefore, we think it's inappropriate.

12 MR. FISK: Your Honor, we believe  
13 certainly that this expert, Mr. Furman, has decades  
14 of experience in evaluating pollution control  
15 technologies and the costs and benefits of various  
16 technologies and this goes directly towards the point  
17 of the benefits and detriments of various types of  
18 technologies at issue here.

19 And hearsay is not a proper ground to  
20 object to this. It's perfectly appropriate for our  
21 expert to rely on these sorts of studies and  
22 evaluations done by others and to make his expert  
23 judgment that those are correct and that those are  
24 appropriate to be filed with testimony.

1           We believe it goes directly to the issues  
2 that are relevant here and that he's experienced and  
3 are valid for him to rely on.

4           EXAMINER BOJKO: I'm going to grant the  
5 motion to strike and we're going to strike lines 12  
6 through 24 as well as table or Exhibit, I'm sorry,  
7 RCF-7, the table that was created by the Clean Air  
8 Task Force.

9           Q. (By Mr. Bentine) I'm going to go back to  
10 page 2 of your testimony. You indicate there that  
11 your master's degree at MIT was a technical and  
12 economic evaluation of coal gasification; do you see  
13 that?

14          A. Yes.

15          Q. That did not include electric generation,  
16 did it?

17          A. No, it did not.

18          Q. Turn to page 3 of your testimony. On  
19 line 17 there you indicate that your testimony shows  
20 an IGCC plant can eliminate between 40 and 93 percent  
21 of the air pollutants that the proposed PC plants  
22 will emit. Do you see that?

23          A. Yes.

24          Q. What plants are you talking about there?

1 A. The Taylorville IGCC plant.

2 Q. I'm sorry, I'm talking about the proposed  
3 PC plants that you're talking about there.

4 A. You're on line 17?

5 Q. Starts on line 17, "the proposed PC  
6 plants" piece that I read.

7 A. Oh, the proposed PC plants are the  
8 AMP-Ohio plants.

9 Q. Okay. And by "plants," are you using  
10 plants synonymous with "units"?

11 A. Yes. I'm sorry.

12 Q. Okay.

13 A. PC units.

14 Q. Thank you.

15 And that would be true for the rest of  
16 your testimony, I assume, where you're talking  
17 about --

18 A. Right.

19 Q. -- the proposed PC plants --

20 A. Right.

21 Q. -- you're talking about AMPGS and the two  
22 units at AMPGS.

23 A. Yes.

24 Q. Okay. Thank you.

1                   Just so we're clear on the status of IGCC  
2 technology, how many IGCC plants are currently  
3 operating in the United States?

4                   A.    I need to refer to one of my exhibits --

5                   Q.    Okay.

6                   A.    -- which is Exhibit RCF-19. This shows  
7 that there are 17 IGCC plants currently operating in  
8 the world, and if we go down that list, we will see  
9 that I believe 3 of them are IGCC plants in the  
10 United States.

11                  Q.    Okay. And those would be the Tampa  
12 Electric Polk County plant?

13                  A.    Yes.

14                  Q.    And the Wabash plant?

15                  A.    Yes. And the Valero refinery.

16                  Q.    Now, the Valero refinery, that's in  
17 Delaware City?

18                  A.    Yes.

19                  Q.    What state's that?

20                  A.    I assume Delaware.

21                  Q.    In any event, you're sure that the Valero  
22 is in the United States.

23                  A.    Yes.

24                  Q.    Thank you.

1           A.    It says that.

2           Q.    And by the way, this is from Gas Turbine  
3 World?

4           A.    Yes, it is.

5           Q.    This exhibit.

6           EXAMINER BOJKO:  The entire table is from  
7 Gas Turbine World, not created by you?

8           THE WITNESS:  Actually, I hired the  
9 fellow at Gas Turbine World who is the editor of  
10 gasification technologies, I hired him to compile  
11 this list and the other lists that are in my  
12 testimony of IGCC and gasification plants.

13          Q.    The Valero -- I'm sorry.

14          A.    Subsequent to me hiring him to compile  
15 this list he then published it as in Gas Turbine  
16 World.

17          EXAMINER BOJKO:  But in 2006, prior to  
18 this case?

19          THE WITNESS:  Prior to this testimony for  
20 prior testimony that I was asked to prepare.

21          EXAMINER BOJKO:  Thank you.

22          Q.    Are you aware of any additional IGCC  
23 plants that have come on line since this was listed,  
24 in the United States?

1 A. No.

2 Q. Let's talk about the Valero plant first.  
3 This indicates that the Valero plant's 160 megawatts;  
4 is that correct?

5 A. Yes.

6 Q. And is it a polygenerating IGCC?

7 A. I don't know. But it certainly is an  
8 IGCC plant because it's gasifying and it's producing  
9 power.

10 Q. So you don't know whether or not it's  
11 utilizing --

12 A. Some of the syngas for other products, I  
13 do not know.

14 Q. And if you know, is it supplying power  
15 outside the fence, so to speak?

16 A. I do not know.

17 Q. Is it capturing and sequestering carbon?

18 A. I don't believe so.

19 Q. And just so the record is clear, I'm  
20 going to talk about CCS, and by "CCS" I mean CO2  
21 capture and sequestration. You understand "CCS" to  
22 mean that?

23 A. Yes.

24 Q. And generally that's what it's called in

1 the literature is "CCS"?

2 A. Yes.

3 Q. So the Valero plant does not have CCS  
4 capability, correct?

5 A. To my knowledge, it does not.

6 Q. Okay. And let's talk about the Tampa  
7 Electric Polk County plant for a moment. It's a  
8 250-megawatt unit?

9 A. Yes. That's net capacity.

10 Q. And it is a utility unit as opposed to an  
11 industrial unit, at least that's what I would call  
12 the Valero plant.

13 A. Yes.

14 Q. And the Wabash unit is a 260-megawatt  
15 unit in Indiana, correct?

16 A. Yes.

17 Q. What load does that serve? Where's the  
18 megawatts on that one go?

19 A. I believe that's presently owned by Duke  
20 Energy, so it would go to their system.

21 Q. Let's talk a minute about those two  
22 plants. Both of those plants, you would agree, do  
23 not have CCS.

24 A. Not presently.

1 Q. Well, are there any current plans with  
2 regard to those two plants to add CCS?

3 A. Yes. The one I'm most familiar with is  
4 the Tampa Electric plant. What they have done is  
5 they have hired the geologists that are professors at  
6 the University of South Florida to study the geology  
7 immediately under the plant and have determined that  
8 it looks like it would be feasible to sequester the  
9 CO2 directly under the plant.

10 Q. Have they issued any plans, done design  
11 engineering, looked for an EPC contractor to do this,  
12 or are they still investigating?

13 A. They're still investigating.

14 Q. What about at Wabash?

15 A. Wabash, I'm not familiar with any plans  
16 there.

17 Q. Now, would you also agree with me that  
18 with regard to carbon dioxide, with the exception of  
19 the differences in efficiency that there may be  
20 between a PC plant, whether subcritical or  
21 supercritical or CFB in an IGCC plant, that all of  
22 those kinds of different plants and technologies all  
23 produce carbon as a part of the process to create  
24 electricity? Carbon dioxide.



1 A. Yes.

2 Q. Now, Tampa Electric and Duke are both  
3 large vertically integrated utilities; are they not?

4 A. Certainly Tampa Electric is not what I  
5 would classify as large. Probably an intermediate  
6 size utility.

7 Q. Well, with that distinction, both are  
8 vertically integrated utilities.

9 A. Yes.

10 Q. And when we talk about vertically  
11 integrated utilities, what do you mean or what did  
12 you understand me to mean with "vertically integrated  
13 utilities"?

14 A. That they're not a merchant plant, that  
15 they have a regulated franchise for a certain area to  
16 service, that they're regulated by the Public Service  
17 Commission.

18 Q. And would you also agree that when we use  
19 the term "vertically integrated utility," we're  
20 usually talking about a utility that has generation,  
21 transmission, and distribution, in other words --

22 A. Yes.

23 Q. -- it creates the electricity and then it  
24 sells it, it has a load to serve you?

1 A. Yes.

2 Q. So from that standpoint both Tampa  
3 Electric and Duke are vertically integrated  
4 utilities.

5 A. Yes.

6 Q. And would you also agree with me that  
7 both Duke and Tampa Electric have a fleet of  
8 generation of various types --

9 A. Yes.

10 Q. -- to serve that load?

11 A. Yes.

12 Q. And would you also agree with me that  
13 both of those entities have generation assets which  
14 are at least equal to their current load?

15 A. I don't know how much they have to buy  
16 outside, so whether their load always equals their  
17 generation, I'm not sure.

18 Q. But they have significant assets as  
19 compared to their load, in terms of generating  
20 assets.

21 A. Yes.

22 Q. Now, Tampa Electric at the Polk County  
23 plant had significant subsidies when they built this  
24 plant; did they not?

1           A.    Yes.  It was actually one of two  
2 demonstration projects which were funded by the  
3 Department of Energy.

4           Q.    What was the other demonstration project?

5           A.    The Wabash.

6           Q.    The Wabash.  So both of those had some  
7 federal help in the costs associated with them.

8           A.    Yes.

9           Q.    And with regard to Tampa Electric, I  
10 think, as you indicate in your testimony, Tampa  
11 Electric had planned a second IGCC unit; had it not?

12          A.    Yes.

13          Q.    And they have cancelled that plan; have  
14 they not?

15          A.    I believe their wording was "delayed."

16          Q.    And you talk about that in your direct  
17 testimony.

18          A.    I do.

19          Q.    Perhaps you can point me to it.  Do you  
20 have something in your testimony on the number of  
21 IGCC plants that are currently planned in the United  
22 States?

23          A.    Exhibit 20, 21, and 22.

24          Q.    And those exhibits are not just the

1 United States, correct?

2 A. It says at the top "North America," so it  
3 would be also Canada.

4 Q. How many of those are under construction?

5 A. I don't know.

6 Q. Are there any?

7 A. It's interesting, I just called up this  
8 morning because I was trying to find out information  
9 on local IGCC plants in this area of the country and  
10 there's one in Lima, Ohio, being developed by Global  
11 Energy. Global Energy is the same company that owned  
12 the Wabash plant, and they have plans for an IGCC  
13 plant in Lima, Ohio, they're calling it the Lima  
14 Energy Center. They already have a permit, and on  
15 their website this morning I noticed that they've  
16 started construction at least on the fuel handling  
17 portion of that plant.

18 Q. Do you know when that plant was  
19 originally -- how do I want to say this? -- that  
20 plant was originally announced?

21 A. No, I don't.

22 Q. Do you know whether or not AMP-Ohio  
23 originally had a contract to take power out of that  
24 plant as it was originally proposed?

1           A.    I don't know.

2           Q.    Do you know whether or not that plant was  
3 originally proposed as a municipal solid waste IGCC?

4           A.    I do not know that.

5           Q.    Do you know whether or not that plant has  
6 ever been financed?

7           A.    I don't know.

8           Q.    Other than the Lima Global facility then,  
9 Mr. Furman, can you tell me what other IGCC plants  
10 are currently under construction in the United  
11 States?

12          A.    No; I don't know.

13               MR. BENTINE:   Could we go off the record  
14 a second?

15               EXAMINER BOJKO:   Yes.

16               (Discussion held off the record.)

17               EXAMINER BOJKO:   This is a good stopping  
18 place, I would like to stop for a break.  Let's take  
19 a ten-minute break.  Is that enough time?

20               MR. BENTINE:   Certainly.

21               (Recess taken.)

22               EXAMINER BOJKO:   Let's go back on the  
23 record.

24               Mr. Bentine, if would you like to

1 continue.

2 MR. BENTINE: Thank you, your Honor.

3 Q. (By Mr. Bentine) Mr. Furman, we were  
4 talking a bit about Wabash and the Polk IGCC units.  
5 I want to focus on Polk just for a minute for  
6 purposes of this question. If you know, is there  
7 some special rate treatment that Tampa Electric got  
8 in Florida associated with its construction and  
9 operation of the Polk County unit?

10 A. The proposed new unit or the existing  
11 unit?

12 Q. Well, both.

13 A. I'm not familiar with any special rate  
14 treatment for the existing unit. For the proposed  
15 new unit the Florida legislature passed a bill trying  
16 to encourage IGCC technology because of its  
17 environmental advantages, and to do that they allowed  
18 them faster capital cost recovery on their new IGCC  
19 plant or any new IGCC plant built in the state.

20 Q. And that plant, did it not, had  
21 significant tax incentives as well?

22 A. Yes.

23 Q. The new plant.

24 A. The new plant was granted 133.5 million

1 dollars in tax credits from the Department of Energy.

2 EXAMINER BOJKO: And that's the plant  
3 that's on hold?

4 THE WITNESS: Yes.

5 Q. Let's explore that hold/deferral. Tampa  
6 Electric called it a deferral; did they not?

7 A. Yes.

8 Q. And Tampa Electric did not have any  
9 particular time frame that they were deferring it to.  
10 In other words, they didn't say "We're deferring it  
11 and we're going to start it two years later than we  
12 had planned." The deferral was an indefinite  
13 deferral; was it not?

14 A. They didn't say that. If I can read from  
15 my testimony, which is a quote from their press  
16 release, it reads --

17 EXAMINER BOJKO: Which page?

18 THE WITNESS: Page 24.

19 EXAMINER BOJKO: Line?

20 THE WITNESS: Line 12. "Tampa Electric  
21 defers use of clean coal generating unit beyond 2013  
22 needs." They state that their primary drivers for  
23 the decision, on line 17, quoting, "Primary drivers  
24 of the decision announced today include continued

1 uncertainty related to carbon dioxide regulations,  
2 particularly capture and sequestration issues, and  
3 the potential for related project cost increases."

4           Line 22, I continue the quote, "The  
5 company remains steadfast in its support of IGCC as a  
6 critical component of future fuel diversity in  
7 Florida and the nation, and believes the technology  
8 is the most environmentally responsible way to  
9 utilize coal, an affordable, abundant and domestic  
10 produced fuel," end quotes.

11           And this is coming from a utility that  
12 has a significant experience with coal. They have a  
13 number of existing coal-fired units and they've been  
14 operating an IGCC unit for over ten years now.

15           Q. Tell me, do you know, Mr. Furman, whether  
16 or not AMP-Ohio would be entitled to significant tax  
17 benefits or special rate treatment from the state of  
18 Ohio if it built an IGCC instead of its proposed  
19 AMPGS?

20           A. I don't know that.

21           MR. BENTINE: May I approach the witness,  
22 your Honor?

23           EXAMINER BOJKO: Yes, you may.

24           MR. BENTINE: Can we go off the record?



1 EXAMINER BOJKO: Yes.

2 (Discussion held off the record.)

3 (EXHIBIT MARKED FOR IDENTIFICATION.)

4 EXAMINER BOJKO: Let's go back on the  
5 record.

6 Q. Mr. Furman, I've handed you what has now  
7 been marked for identification purposes as AMP-Ohio  
8 Exhibit 5. Do you have that in front of you?

9 A. Yes, I do.

10 Q. Does that exhibit constitute the press  
11 release, a portion of which you quoted in your  
12 testimony?

13 A. Yes, it does.

14 Q. And your testimony did not quote the  
15 entire press release, did it?

16 A. No, it did not.

17 Q. Okay. And what portions of the press  
18 release did you not quote?

19 EXAMINER BOJKO: I'm sorry, Mr. Bentine,  
20 have you provided copies to everybody?

21 MR. BENTINE: Yes.

22 EXAMINER BOJKO: Did Miss Young get a  
23 copy?

24 MR. BENTINE: Oh, I'm sorry.

1 EXAMINER BOJKO: Here, do you need a  
2 copy? You can have the Bench's.

3 MR. BENTINE: Yes, I'm sorry. I  
4 apologize, Ms. Young.

5 Q. (By Mr. Bentine) I believe, basically,  
6 your quote was from the first two paragraphs,  
7 Mr. Furman; is that correct?

8 A. Yes, it is.

9 Q. And could you read the third paragraph  
10 into the record, please?

11 A. "President Chuck Black said, 'We believe  
12 there is a role for IGCC in Tampa Electric's future  
13 generation plans, but with the uncertainty of carbon  
14 capture and sequestration regulations being discussed  
15 at the federal and state levels, the timing is not  
16 right to utilize it for a baseload facility needed by  
17 2013. We are not prepared to expose our customers  
18 and shareholders to that risk.'"

19 Q. And in the next paragraph would you agree  
20 that Mr. Black goes on to say that they appreciate  
21 133-1/2 million dollars in federal tax credits, but  
22 ". . . we are concerned that IGCC may not be the most  
23 cost-effective technology to use at this time?"

24 A. Yes, and there I don't believe he says

1 it's not -- to put it in its proper context, I think  
2 those same concerns apply even more so to a  
3 pulverized coal plant because the need for carbon  
4 capture and sequestration exists whether you have a  
5 PC plant or whether you have an IGCC plant.

6 As you asked me before, they both have  
7 CO2 emissions, about the same quantity, so it enters  
8 into the "more" discussion; which of those two plants  
9 is capable of capturing the CO2. My testimony  
10 demonstrates that it's the IGCC plant. So, in  
11 effect, the risk that they're not willing to take for  
12 their stockholders and their customers is even a  
13 greater risk that AMP-Ohio is taking on by proposing  
14 a PC plant.

15 MR. BENTINE: Your Honor, I need to move  
16 to strike everything after he answered the question  
17 about whether or not that's what he said. I didn't  
18 ask him for an interpretation of what was said there  
19 or anything else.

20 EXAMINER BOJKO: It's granted. Move to  
21 strike everything after -- actually, I don't believe  
22 he ever answered your question, Mr. Bentine.

23 MR. BENTINE: Well, in that case I move  
24 to strike all of it.

1 EXAMINER BOJKO: Granted.  
2 Could you please reread the question?  
3 And may the witness respond to the  
4 question.

5 (Question read.)

6 A. And I would just like to add the  
7 remaining portion of his quote --

8 EXAMINER BOJKO: Mr. Furman, can you  
9 answer the question? I'm sorry.

10 THE WITNESS: I believe it's taking it  
11 out of context without concluding the quote.

12 EXAMINER BOJKO: How about this, could  
13 you read that paragraph into the record for us?

14 THE WITNESS: Yes. "'We sincerely  
15 appreciate the 133.5 million in federal tax credits  
16 awarded for this project, but with regulatory  
17 uncertainty and related potential cost increases, we  
18 are concerned that IGCC may not be the most  
19 cost-effective technology to use at this time,' said  
20 Black. 'We're going to take a step back and  
21 reevaluate how best to meet our 2013 needs.'"

22 EXAMINER BOJKO: Thank you.

23 Mr. Bentine.

24 MR. BENTINE: Thank you, your Honor.

1           Q.     (By Mr. Bentine) The next paragraph,  
2 Mr. Black indicates that "While technology exists for  
3 carbon capture, there remain many uncertainties about  
4 carbon sequestration to be resolved before a  
5 significant investment like the IGCC unit can occur."  
6 Did I correctly quote that?

7           A.     Yes.

8           Q.     And in the second page of that press  
9 release Mr. Black discusses that advanced cost  
10 recovery legislation that I think you and I discussed  
11 earlier; is that correct?

12          A.     Yes.

13                 MR. BENTINE: Do you want to move  
14 exhibits at the end, your Honor?

15                 EXAMINER BOJKO: Yes, please.

16          Q.     On page 5 of your testimony I'm going to  
17 refer you to line 7 there, lines 7 through 9, you  
18 indicate "Various studies have shown that CO2 capture  
19 would be less costly from an IGCC plant than from a  
20 PC plant."

21          A.     Yes.

22          Q.     Then you go on to make two citations  
23 there. Have you done any -- let me ask this: Have  
24 you done any independent evaluations of the cost

1 differential between a PC plant and an IGCC plant in  
2 any particular application?

3 THE WITNESS: Could you repeat that  
4 question, please?

5 (Question read.)

6 A. Could you define what you mean by  
7 "independent"?

8 Q. I mean what -- excuse me.

9 MR. BENTINE: May I approach the witness,  
10 your Honor?

11 EXAMINER BOJKO: Yes, you may.

12 MR. BENTINE: I'm going to show the  
13 witness his deposition if I might, and I don't have  
14 copies of this for everybody. I'm going to show him  
15 this question and answer.

16 MR. FISK: Which page are you at?

17 MR. BENTINE: We're on 126, the question  
18 and answer beginning on line 5.

19 EXAMINER BOJKO: At the break we'll make  
20 copies of that.

21 MR. BENTINE: If we need to, I certainly  
22 will. And I'll show you this after I show the  
23 witness, your Honor.

24 A. Which line?

1 Q. Line 5, please.

2 Mr. Furman, do you recall having your  
3 deposition taken by Ms. Bott of my office?

4 A. Yes.

5 Q. And I've handed you page 126 of what I  
6 will represent to you to be the unverified transcript  
7 of that deposition and ask you to look at the  
8 question beginning on line 5 and read that, please.

9 A. "Have you done any independent study on  
10 the cost differential between IGCC and PC?

11 "Answer: No."

12 Q. And I understand that you may have had a  
13 rushed review of that transcript, but do you wish to  
14 change that answer?

15 A. No. I would perhaps like the opportunity  
16 to explain in what context I defined "independent"  
17 when I answered that question.

18 Q. This is one time I'll say "go for it," so  
19 thank you.

20 A. All right. The reason I answered "no" is  
21 because I relied on the evaluations of others, in  
22 this case the MIT study and, to a greater degree, the  
23 Department of Energy study that I reference in my  
24 testimony as -- and the prior EPA study as my sources

1 of information for the capital costs, operating  
2 costs, and fuel costs for PC and IGCC plants.

3 I did not do what I would call an  
4 independent verification, in other words, go back to  
5 the vendors and get all of the capital costs,  
6 et cetera. So by relying upon those I define  
7 "independent" as a strict definition of the word  
8 meaning that I actually created all of those numbers  
9 myself.

10 Q. So, stated another way, you reviewed what  
11 you believe to be --

12 A. Reliable.

13 Q. -- credible, reliable sources and then  
14 after reviewing those you came to a conclusion based  
15 on those but not necessarily going back and doing the  
16 additions and subtractions and estimations that those  
17 folks may have done to get there; is that right?

18 A. Right. And if I might add, also  
19 verification that those sources corroborate one  
20 another.

21 Q. I understand. It's the kind of stuff  
22 that experts do consistently in this proceeding and  
23 others, correct?

24 A. Yes. I would hope so.



1           Q.    Now, what do you estimate, based on that  
2 review, or at least what conclusion have you come to  
3 with regard to the cost of CCS on an IGCC unit?

4           A.    I believe that that was shown or I tried  
5 to show it most simplistically in one of my exhibits;  
6 RCF-5. And, if I might explain RCF-5 --

7           Q.    Absolutely. Go right ahead.

8           A.    -- what this is is a direct copy from the  
9 MIT report "The Future of Coal," their table 3.7  
10 which shows the relative cost of electricity from  
11 both PC and IGCC units both with and without carbon  
12 capture.

13                   On the left-hand column what you see is  
14 three cases, excuse me, four cases, the first one  
15 being the reference case, and that is what would the  
16 cost of electricity be for a generic plant using  
17 pulverized coal with no carbon capture, and the cost  
18 of electricity since it's the reference is indicated  
19 as 1.0. Everything else is compared relative to that  
20 number.

21                   So if we go down to the next number, the  
22 next item, it's IGCC also with no capture, so that  
23 would be comparable to a PC plant, but the cost of  
24 electricity is now 1.05. So what the MIT study is

1 saying is that the cost of electricity would be 5  
2 percent higher coming from an IGCC plant with no  
3 capture versus a PC plant with no capture.

4 I think that that is a relatively small  
5 cost for ratepayers to pay for the significant  
6 environmental benefits that I then show IGCC gets us  
7 because it's able to get much, much lower emission  
8 levels.

9 The third item is --

10 Q. Could we stop there? I apologize for  
11 interrupting, but it may save us some time.

12 MR. BENTINE: If I might, your Honor.

13 EXAMINER BOJKO: Please.

14 MR. BENTINE: Everything up to "I think"  
15 was responsive to the question, and I have no problem  
16 his explaining what's on here. I would ask that the  
17 witness be admonished to answer the questions, and to  
18 answer that question he didn't have to go into why he  
19 thinks and has concluded that IGCC is better.

20 MR. FISK: Your Honor, Mr. Bentine asked  
21 him to explain this chart, and that's part of the  
22 explanation of the chart and the cost figures  
23 represented here.

24 EXAMINER BOJKO: Again, is this your

1 chart or is this the chart reproduced from MIT?

2 THE WITNESS: It's the chart reproduced  
3 from MIT, and my testimony goes on to explain what I  
4 just said. So I think I'm responding in like fashion  
5 to what I've included in my testimony.

6 EXAMINER BOJKO: I believe Mr. Bentine's  
7 questions, though, I mean your testimony is your  
8 testimony -- you can ask follow-up questions -- but  
9 Mr. Bentine's question was what is this chart, I  
10 believe. So I think the explanation of the chart is  
11 okay for now. We'll let him explain as need be on a  
12 going-forward basis, but this will go a lot faster if  
13 we try to answer the questions.

14 THE WITNESS: Okay.

15 A. Would you like me to continue?

16 Q. Well, let me ask a question, and it may  
17 be easier. And to the extent you need to explain  
18 this chart in the context of the answers, I have no  
19 problem with that. The conclusions that one draws,  
20 however, from the numbers that are on there I'm not  
21 asking you about, just to make things clear.

22 I understand, I think, what this means  
23 and I have read your testimony, and we'll come back  
24 to the numbers that are on here perhaps later, but my

1 question, and perhaps I was inartful in phrasing it,  
2 but to get away from this for a moment is there a  
3 dollar per ton number or a dollar per megawatt-hour  
4 number or some estimate that from your review of the  
5 literature you think is a reasonable amount of cost  
6 that is added for CCS capture on a PC unit or on an  
7 IGCC unit?

8 In other words, not relative to each  
9 other, but what the actual estimated dollars per  
10 megawatt-hour in cost of electricity, for example,  
11 might be to capture and compress or capture and  
12 compress and sequester carbon dioxide.

13 A. I would answer that question by  
14 referring, again, to this exhibit which shows in the  
15 third item IGCC with capture, which is a relative  
16 cost of electricity of 1.35. So if we subtract the  
17 number above that, the 1.05, from the 1.35, we see  
18 that by adding carbon capture to the IGCC plant we've  
19 increased the cost of electricity to the consumer by  
20 30 percent.

21 Let's do the same thing for a PC plant  
22 which is shown in item 4. PC with capture is 1.6,  
23 the cost of electricity is 1.6 times the base case  
24 which is the PC without capture. So if we subtract

1 the base case, 1.0, from 1.6, we see that the cost of  
2 carbon capture for a PC plant is going to increase  
3 the cost of electricity to the consumer by  
4 60 percent.

5 So the conclusion that I would draw from  
6 these numbers is that carbon captured, and the  
7 conclusion that MIT comes to, is that the cost of  
8 carbon capture for an IGCC plant increases the cost  
9 of electricity by 30 percent and increases the cost  
10 of electricity for a PC plant by 60 percent.

11 MR. BENTINE: Move to strike everything  
12 after "the conclusion."

13 A. And I would --

14 EXAMINER BOJKO: Hold on.

15 First of all, for the record, could  
16 you -- are these numbers dollars per megawatts?

17 THE WITNESS: No, they're not. They're  
18 all relative numbers on the basis of what electricity  
19 would cost from a PC plant, and that's the 1.0.  
20 That's the baseline.

21 EXAMINER BOJKO: Okay. I'm going to deny  
22 your motion to strike for this one. I think that he  
23 was answering your question.

24 Q. Let me go at it this way; with regard to

1 the -- I was going to save this, but let's just do it  
2 now. MIT refers to the MIT "Future of Coal" study?

3 A. Yes.

4 Q. Okay. GTC refers to the Gasification  
5 Technology Council estimates that they have put  
6 forth?

7 A. Yes.

8 Q. And the Gas Technology Council is what?

9 A. An industry group made up of utilities,  
10 the Electric Power Research Institute which is the  
11 electric utility group, various industry companies  
12 developing gasification technology.

13 Q. It is a group --

14 A. Anyone interested in gasification  
15 technology.

16 Q. And is it your opinion that such a group  
17 that is directed toward gasification technology is  
18 necessarily going to be unbiased in their estimations  
19 of cost of that technology versus other technology?

20 A. I believe that -- I believe that their  
21 analysis was unbiased, and I would submit as evidence  
22 that their estimate of IGCC cost is the highest of  
23 all four of these.

24 Q. Okay. Let's explore, the next line is

1 AEP?

2 A. Yes.

3 Q. And from where at AEP did these numbers  
4 come from; do you know?

5 A. I do not know.

6 Q. So you don't know whether or not these  
7 numbers came from AEP studies that were seeking to  
8 justify construction of either the Ohio IGCC plant  
9 proposed for Meigs County or the Mountaineer IGCC  
10 plant proposed for West Virginia.

11 A. Or whether they were being used to  
12 discredit IGCC for their Arkansas plant which is a PC  
13 unit.

14 Q. That saves me a question later.

15 What about the numbers from GE? That's  
16 the General Electric Company?

17 A. Yes.

18 Q. And the General Electric Company is a  
19 company that is heavily involved and has a big  
20 financial stake in the success of IGCC in the United  
21 States, among other things of course?

22 A. Also in all types of different power  
23 plant equipment, natural gas combined cycle units and  
24 conventional power equipment. PC plants.

1           Q.   Mr. Furman, you've been around this  
2 industry a long time. Are you telling me that GE is  
3 not promoting IGCC technology?

4           A.   They are.

5           Q.   Thank you.

6           A.   They also promote other technologies.

7           Q.   Now, with regard to the 1 in the MIT  
8 study, do you know what number in dollars per  
9 megawatt-hour that 1 represents?

10          A.   Not without referring back to the MIT  
11 report.

12          Q.   Could you do that?

13          A.   If you would give me a copy of the MIT  
14 report.

15          Q.   Just happen to have one. If we want to  
16 do this later, I can go on and come back to something  
17 or we can get out -- I believe your counsel can  
18 probably give you an MIT report over the luncheon  
19 break.

20          A.   I have it on my computer.

21               MR. FISK: It's fine to do it now if you  
22 have a copy of it.

23               MR. BENTINE: Okay.

24          A.   Would you prefer, my next exhibit shows



1 that same data by the Department of Energy.

2 Q. Those are different estimates, though,  
3 are they not?

4 A. Yes.

5 Q. All right. Do you know how the DOE  
6 numbers that are in your Exhibit RCF-6 compare to the  
7 raw numbers that were used by MIT in RCF-5 without  
8 referring to the MIT study at this time?

9 A. How they relate? Relatively, yes,  
10 they're shown in Exhibit 5.

11 EXAMINER BOJKO: Mr. Bentine, I actually  
12 would like to have the answers to the questions  
13 specifically for the MIT report.

14 MR. BENTINE: Do you want to take a short  
15 break, I'll give him --

16 EXAMINER BOJKO: Sure.

17 MR. BENTINE: I don't have copies of the  
18 entire study for everybody, but I can let the witness  
19 have it. It was produced in discovery by everybody I  
20 think.

21 EXAMINER BOJKO: Let's go off the record,  
22 take a five-minute break or however long you need to  
23 refresh your recollection.

24 (Recess taken.)

1 EXAMINER BOJKO: Let's go back on the  
2 record.

3 Mr. Bentine, I believe before we went off  
4 the record you had a pending question regarding some  
5 numbers in Exhibit RCF-5. Could you maybe repeat  
6 that question or we'll have it reread just so we're  
7 on the same page?

8 MR. BENTINE: I think I can repeat it  
9 pretty quickly.

10 Q. (By Mr. Bentine) The question was: Do we  
11 know what numbers really went up to make the 1.0 in  
12 the Exhibit RCF-5 out of the MIT study?

13 A. On page 30 of the MIT report, table 3.5,  
14 there is a table which lists the cost of electricity  
15 for supercritical PC at 4.78 cents per kilowatt hour.

16 Q. And that, then, is the equivalent of the  
17 1.0 under the MIT "PC no-capture, reference" there?

18 A. Yes.

19 Q. That's a good number. Thank you.

20 Now, then can you tell me while you've  
21 got that there in front of you, Mr. Furman, what the,  
22 and is it just math then, the PC capture number of  
23 1.6 represents?

24 A. 7.69.

1           Q.    So would I be correct in assuming, then,  
2   that for purposes of the MIT 1.0 and 1.6, that the  
3   number, then, that was -- the implicit number used by  
4   MIT was the difference between 7.69 and 4.78 or  
5   approximately a little less than 3 cents a kWh that  
6   they were adding for carbon capture and  
7   sequestration?

8           A.    Yes; if they did their math correct.

9           Q.    Okay. I'll relieve you of that MIT study  
10   right now although we may get back to it later.

11                So, similarly, if one is at least  
12   moderately facile with a calculator, we can figure  
13   out the rest of these numbers, then, using the 4.78  
14   as the base.

15           A.    Yes.

16           Q.    Okay.

17                MR. BENTINE: Your Honor, actually this  
18   is as good as any, but I can go on to a few more  
19   things.

20                EXAMINER BOJKO: Let's go off the record.

21                (Discussion held off the record.)

22                (Luncheon recess taken.)

23                               - - -

24

1 Tuesday Afternoon Session,  
2 December 11, 2007.

3 - - -

4 EXAMINER PRICE: Back on the record. At  
5 this time we're going to take somewhat out of order  
6 the witness Guy Rose. At this time the Bench will  
7 mark his statement as Rose Exhibit 1.

8 (EXHIBIT MARKED FOR IDENTIFICATION.)

9 (Witness sworn.)

10 EXAMINER PRICE: Please state your name  
11 and address for the record.

12 THE WITNESS: Guy Rose, and my address  
13 is -- I'm sorry, sir, but I'll have to look it up.  
14 They changed that two or three times in one year's  
15 time.

16 EXAMINER PRICE: That's okay, we'll make  
17 due without it. That's fine.

18 Have you got it?

19 THE WITNESS: 31984 Rose Road, Long  
20 Bottom, Ohio 45743.

21 EXAMINER PRICE: Thank you.

22 Do you have in front of you a copy of  
23 your notarized statement which we have now marked  
24 Rose Exhibit 1?

1 THE WITNESS: Yes, sir, I do.

2 EXAMINER PRICE: Do you swear that this  
3 statement is the truth, the whole truth, and nothing  
4 but the truth?

5 THE WITNESS: Yes, sir, I do.

6 EXAMINER PRICE: And this constitutes  
7 your direct testimony in this case?

8 THE WITNESS: Yes, sir, it does.

9 EXAMINER PRICE: Thank you.

10 Do you have any additions or corrections  
11 to this statement?

12 THE WITNESS: Not as I know of at the  
13 present time, nothing of any additions anyway. No  
14 corrections, I know that. That's just it.

15 EXAMINER PRICE: Miss Young, do you have  
16 any questions that I've not covered with Mr. Rose?

17 MS. YOUNG: Well, after Ms. Bott  
18 questions him.

19 EXAMINER PRICE: I wanted to make sure  
20 there was nothing I had not covered in direct in  
21 terms of getting a statement.

22 MS. YOUNG: No, it's basically a  
23 transcript. He read his concerns, I transcribed it,  
24 and we had it notarized.

1 EXAMINER PRICE: Citizen groups, cross?

2 MR. COLANGELO: Nothing from us, your

3 Honor.

4 EXAMINER PRICE: Thank you.

5 Company?

6 - - -

7 GUY ROSE

8 being first duly sworn, as prescribed by law, was

9 examined and testified as follows:

10 CROSS-EXAMINATION

11 By Ms. Bott:

12 Q. Good afternoon, Mr. Rose. Can you hear  
13 me?

14 A. Yes, ma'am.

15 Q. Okay. Let me know if you can't.

16 You stated that you live in Long Bottom,  
17 Ohio; is that correct?

18 A. Yes, ma'am. Not right in Long Bottom,  
19 but my rural route is a Long Bottom route.

20 Q. Are you in a township?

21 A. Yes, ma'am. I'm in Lebanon Township.

22 Q. Lebanon Township?

23 A. Yes, ma'am.

24 Q. Can you tell me how far that is from the

1 proposed AMP-Ohio plant?

2 A. Nothing foggy, but I'd say probably five  
3 mile, four-and-a-half, five mile in a direct line.

4 Q. Did you write your own testimony that's  
5 been presented?

6 A. Yes, ma'am, I did. That is definite.

7 Q. Did you attend the Power Siting hearing  
8 in Meigs County on this project?

9 A. Yes, ma'am.

10 Q. Did you provide testimony at that hearing  
11 as well?

12 A. Yeah, to a certain extent. I did not, I  
13 guess that's the one they had down at the fairgrounds  
14 I guess or down there by the --

15 Q. Let me clarify. The one that took place  
16 at the high school.

17 A. Yes.

18 Q. Did you attend that one?

19 A. Yes.

20 Q. Did you testify at that hearing?

21 A. Yes, ma'am.

22 Q. You're not testifying here today as an  
23 expert in any area, are you?

24 A. No. Good Lord, no. I'm not an expert in

1 anything.

2 Q. You stated that adding any industry would  
3 worsen the situation. Not just power plants; is that  
4 correct?

5 A. That's right. Anything concerning  
6 pollution and like that will worsen the situation in  
7 that area.

8 Q. Are there any power plants in Meigs  
9 County right now?

10 A. Only one I know of is up there on the dam  
11 on the river, I guess it generates electricity. I  
12 don't know how much or anything else.

13 Q. When you talk about the one on the river,  
14 are you talking about the Racine hydro plant?

15 A. Yes, ma'am.

16 Q. In your testimony you state that vets say  
17 there is a possibility of nitrate poisoning; can you  
18 tell me who those vets are?

19 A. Yes, ma'am. Mr. Grueser is a  
20 veterinarian down in Pomeroy, and also Dr. Shocky  
21 from over in West Virginia.

22 Q. Mr. Rose, that document that you're  
23 looking at, is that your testimony?

24 A. Yes, ma'am, it is.



1 Q. Is there anything else there that you're  
2 looking at?

3 A. It's all mine.

4 Q. Okay.

5 A. Nobody else's, I grant you that.

6 Q. But just your testimony.

7 A. Yes, ma'am.

8 MS. BOTT: I don't have --

9 A. I don't let other people make up stuff  
10 for me.

11 MS. BOTT: I don't have any other  
12 questions.

13 Thank you, Mr. Rose.

14 EXAMINER PRICE: Staff?

15 MR. JONES: No questions, your Honor.

16 EXAMINER PRICE: Miss Young, redirect?

17 - - -

18 REDIRECT EXAMINATION

19 By Ms. Young:

20 Q. Guy, when you said that any other  
21 industry would further worsen the situation, can you  
22 say a little bit more about that?

23 A. Well, any industry has a pollution  
24 substance like we have got in that area down there,

1 that is if there would be some industry that wouldn't  
2 have the pollution and so on, why, I'd be all for it  
3 as far as that goes.

4 But anything -- right now that's the  
5 reason I can't halfway talk, it's because of dust and  
6 stuff this spring was on the hay when I was trying to  
7 cut hay. I'm not saying it come from the power  
8 plants, I want you to all understand that, but it  
9 come from something, some of the factories around  
10 someplace in that area. And it got in my lungs and  
11 I've coughed up stuff, had like a cold ever since.  
12 Sometimes it gets me pretty choked up so I can't  
13 hardly breathe.

14 Q. Just from casual observation, I mean I  
15 know that you're not an expert, you're not a medical  
16 expert, but just in your daily life do you see other  
17 people around you getting sick and --

18 EXAMINER PRICE: Miss Young, that is  
19 outside of the scope of questions. You have to  
20 ask -- your redirect has to stay within the questions  
21 that Miss Bott asked.

22 MS. YOUNG: Okay. I'm trying to remember  
23 what she asked. You asked where he lived. Okay.

24 Q. How long has your family lived there?

1           A.    My Grandmother Rose bought that property  
2 when my grandfather was in the Civil War, and on the  
3 front step of the house, anybody can come and visit  
4 me and see it, is a date wrote on the front step  
5 carved in the rock in front of the house. When my  
6 grandfather came back from the Civil War, he bought  
7 the other piece of 40 acres on back. Since then my  
8 son has added to it with other property. But we have  
9 lived there ever since. It's been handed down from  
10 generation to generation ever since.

11           Q.    Do you feel that having another power  
12 plant in the vicinity would have any impact on your  
13 being able to stay there?

14                   EXAMINER PRICE: Miss Young.

15                   MS. BOTT: Okay.

16                   EXAMINER PRICE: That's outside of --

17                   MS. YOUNG: I'm sorry, I don't understand  
18 the rules.

19                   EXAMINER PRICE: I understand. We're all  
20 trying to help you get through this.

21                   MS. YOUNG: I appreciate it. I guess  
22 those are all my questions then.

23                   EXAMINER PRICE: Thank you.

24                   Citizen groups?

1 MR. COLANGELO: Nothing, your Honor.

2 MS. BOTT: Nothing further.

3 EXAMINER PRICE: Staff?

4 MR. JONES: Nothing, your Honor.

5 EXAMINER PRICE: Thank you, sir. You're  
6 excused.

7 THE WITNESS: You're mighty welcome, sir.  
8 (Witness excused.)

9 EXAMINER PRICE: At this time on my own  
10 motion I'm going to move the admission of Rose 1. Do  
11 you have any objections?

12 (No response.)

13 EXAMINER PRICE: Rose 1 will be admitted.

14 (EXHIBIT ADMITTED INTO EVIDENCE.)

15 MS. YOUNG: There's also Lola Proffitt.  
16 I just wanted to make sure we understood that there  
17 were two people.

18 EXAMINER PRICE: I understand there are  
19 two people. I don't want to be -- I think there are  
20 extraordinary circumstances with Mr. Rose in terms of  
21 taking him in the middle of Mr. Furman's testimony.  
22 We'll take Miss Proffitt on the next slot we have,  
23 but I think we ought to go ahead with Mr. Furman at  
24 this point.

1 I appreciate the company's patience  
2 working with us on this.

3 EXAMINER BOJKO: Mr. Furman, do you  
4 realize that you are still under oath?

5 THE WITNESS: Yes, I do.

6 EXAMINER BOJKO: Mr. Bentine.

7 MR. BENTINE: Thank you, your Honor.

8 - - -

9 RICHARD C. FURMAN

10 being previously duly sworn, as prescribed by law,  
11 was further examined and testified as follows:

12 CROSS-EXAMINATION (continued)

13 By Mr. Bentine:

14 Q. I believe where we ended up, we were  
15 talking about the numbers that the MIT study was  
16 based on to get to that 1.0 number.

17 A. Yes.

18 Q. In terms of a percentage increase in cost  
19 from the 1.0 to the 1.6 --

20 A. Yes.

21 Q. -- that's a 60 percent increase in the  
22 cost of electricity that's projected in that --

23 A. Yes.

24 Q. -- particular study?

1 I believe you have quoted information  
2 from the National Energy Technology Laboratory; have  
3 you not?

4 A. Yes, I have.

5 Q. And what is the National Energy  
6 Technology Laboratory?

7 A. That is a laboratory that's funded by the  
8 Department of Energy.

9 Q. And they do studies from time to time  
10 that many people in the industry rely upon in making  
11 determinations and in making testimony; is that  
12 correct?

13 A. Yes.

14 Q. In fact, you have relied on their studies  
15 in the past, have you not?

16 A. Yes.

17 MR. BENTINE: May I approach, your Honor?

18 EXAMINER BOJKO: Yes, you may.

19 MR. BENTINE: I'll have one extra of  
20 these in a few moments. It's on its way.

21 We ask that the document that I've just  
22 distributed, your Honor, titled "An Economic Scoping  
23 Study for CO2 Capture Using Aqueous Ammonia" be  
24 marked as AMP-O 5, please.

1 EXAMINER BOJKO: I believe you already  
2 have an AMP-O 5.

3 MR. BENTINE: AMP-O 6, please.

4 EXAMINER BOJKO: It will be so marked.

5 (EXHIBIT MARKED FOR IDENTIFICATION.)

6 Q. Mr. Furman, do you have in front of you  
7 what has now been marked as AMP-O 6?

8 A. Yes, I do.

9 Q. Have you ever seen that before?

10 A. Yes, I have.

11 Q. And where did you see it?

12 A. I work a lot with NETL, I have spoken  
13 quite a bit with the author of this report, I may  
14 have gotten it directly from him or I may have gotten  
15 it from the DOE website.

16 Q. Would you look on page 2 of that  
17 document, please?

18 A. Yes.

19 Q. And would you read in paragraph 4 on that  
20 page the first full sentence?

21 A. "In a supercritical power plant with a  
22 multi-pollutant control system, aqueous ammonia has  
23 the potential to provide a net cost of CO2 capture of  
24 \$14 per metric ton of CO2 emissions avoided (a

1 21 percent increase in cost of energy compared to a  
2 pulverized coal plant without CO2 capture)."

3 Q. And if I might, perhaps to save your  
4 counsel some redirect, that would be capture and  
5 compression only and not sequestration, correct? If  
6 you know.

7 A. I think it may just be capture. I'm not  
8 sure if they looked at compression in this or not.

9 Q. Okay. If you don't know, that's fine.  
10 That is different than the 60 percent  
11 increase projected on your RCF-8, correct?

12 A. Yes.

13 Q. And if I might, generally speaking, the  
14 literature would indicate the sequestration and  
15 storage piece is maybe 25 percent of the total cost  
16 of CCS?

17 A. Yes.

18 Q. It was RCF-5. I'm sorry, I misled you.

19 A. Yes.

20 Q. Next I'd like to direct your attention to  
21 page 5 of your testimony, and beginning in line 15  
22 you refer to an NETL study on CO2 capture with a  
23 projected 32 percent increase in cost from an IGCC  
24 plant?



1           A.    Yes.

2           Q.    Now, would I be correct, Mr. Furman, that  
3 regardless of whether carbon is captured and  
4 compressed at a PC plant or it's captured and  
5 compressed at an IGCC plant, after it's captured and  
6 compressed, the costs on either plant with regard to  
7 sequestration are going to be similar?

8           A.    That's generally true assuming that  
9 they've been cleaned up adequately for the storage  
10 method that's going to be used.

11          Q.    At the top of page 6 you indicate that  
12 installation of CO2 capture equipment, this is  
13 beginning on line 4, at IGCC plants has not occurred  
14 due primarily to the cost of the equipment, impact on  
15 the unit's operation and the belief that there is no  
16 regulatory requirement for CO2 emissions. Do you see  
17 that?

18          A.    Yes.

19          Q.    Are there currently any planned units to  
20 generate electricity in the United States that have  
21 proceeded to the financing or construction stage  
22 which has IGCC with carbon capture and sequestration  
23 other than experimental?

24          A.    There have been various IGCC plants that

1 people have announced that they will be using carbon  
2 capture and sequestration; whether those are to the  
3 financing stage or not, I don't know.

4 Q. Would you agree with me that there are a  
5 lot of plants announced that never get built?

6 A. For both pulverized coal and IGCC.

7 Q. And would you also agree with me that  
8 financing is usually a stage in which you know  
9 whether a project's going to go or not?

10 A. Yes.

11 Q. And just so we're all clear here there's,  
12 at least in the state of Ohio applicable for the  
13 AMPGS plant, there's no current regulatory  
14 requirement to control CO2 emissions; is that  
15 correct?

16 MR. FISK: Objection, your Honor. That  
17 requires a legal conclusion. Mr. Furman is not being  
18 presented as an expert on the legal standards in  
19 Ohio.

20 EXAMINER BOJKO: Can you read the  
21 question back, please?

22 (Question read.)

23 EXAMINER BOJKO: Well, I'm sorry,  
24 Mr. Fisk, he talks about regulatory requirements in

1 his testimony so to the extent he talks about them, I  
2 think that these questions are appropriate.

3 MR. FISK: If I may, your Honor.

4 EXAMINER BOJKO: Sure.

5 MR. FISK: He says it's on the belief.  
6 He's referring to other people's beliefs. But the  
7 question of whether or not there are actually  
8 regulatory requirements he is not testifying on, and  
9 that's --

10 EXAMINER BOJKO: Mr. Furman, you can  
11 answer the question of whether you know whether there  
12 are any regulatory requirements.

13 How about we leave it at that, whether he  
14 knows whether there's regulatory requirements.

15 Do you know?

16 THE WITNESS: I don't know if there are  
17 any regulatory requirements in Ohio for CO2  
18 emissions.

19 Q. (By Mr. Bentine) Still on page 6 of your  
20 testimony where you start talking about water  
21 requirements there.

22 EXAMINER BOJKO: I'm sorry, which page?

23 MR. BENTINE: Page 6. I'm sorry.

24 A. Which line?

1 Q. Lines 14 through 20.

2 A. Uh-huh.

3 Q. Have you examined the NPDES permit for  
4 the AMPGS station?

5 A. No, I have not.

6 Q. Do you know what the flow of the Ohio  
7 River is at the proposed site?

8 A. No, I do not.

9 Q. You're not in any position, then, are  
10 you, to make any determination about whether or not  
11 the AMPGS project is making any significant or  
12 material adverse environmental impact on the Ohio  
13 River with regard to its withdrawals therefrom?

14 A. I know that one of the requirements of  
15 the Ohio Power Siting Board is to consider water  
16 conservation measures, therefore, that would indicate  
17 to me that the amount of water that's being used  
18 should be considered. And if there's a technology  
19 that uses significantly less water, then that would  
20 be a water conservation practice.

21 MR. BENTINE: Could I have my question  
22 read back?

23 (Question read.)

24 A. Asked and answered.

1           Q.    The only thing you have concluded, have  
2 you not, is that AMPGS, in your estimation, would use  
3 more water than an IGCC unit?

4           A.    Correct.

5           Q.    On the top of page 7 you quote Mr. Black,  
6 who we talked about earlier in that press release,  
7 the president of Tampa Bay Electric, saying in  
8 November of 2006 that the IGCC plant -- and we're  
9 there talking about Tampa Bay Electric's Polk plant,  
10 correct?

11          A.    Yes.

12          Q.    -- is their least-cost generating  
13 resource and they count on it every day. Do you see  
14 that?

15          A.    Yes, I do.

16          Q.    He's obviously changed his opinion; has  
17 he not?

18          A.    No, he hasn't.

19          Q.    They did defer the Polk unit 2; did they  
20 not?

21          A.    That's only because of uncertainties in  
22 the future cost of CO2 which is related both to  
23 pulverized coal and CO2 -- excuse me, pulverized coal  
24 and IGCC.

1 Q. By implication he's not sure that IGCC is  
2 still their least-cost route, correct?

3 A. Correct.

4 Q. On page 10 of your testimony you talk  
5 about other advantages on lines 17 and 18 of a wide  
6 range of products that can be produced in addition to  
7 electricity. Do you see that?

8 A. What line?

9 Q. Line 18 and 19.

10 A. Yes.

11 Q. Am I correct that whenever you make some  
12 other product out of a gasification process and  
13 you're going to make electricity, that that would  
14 decrease the amount of energy available to make  
15 electricity?

16 A. No.

17 Q. Other than slag that might be sold or  
18 other by-products of the gasification process can you  
19 give me examples of what would not decrease the  
20 energy creating -- excuse me, the electric-creating  
21 capability when you make a by-product?

22 A. The gasifier portion of the system, the  
23 front end that converts coal into a synthetic gas,  
24 can be sized large enough to supply fuel to the

1 combined cycle portion of the plant and it can also  
2 be sized adequately enough to have sufficient  
3 capacity to supply syngas to make chemicals or other  
4 products.

5 Q. But you're putting more energy in the  
6 front end to get that out of the back end if you do  
7 that.

8 A. Obviously.

9 Q. Now, again in reference to the MIT study,  
10 on pages 11 and 12 you talk about the 5 percent  
11 projected higher cost of electricity from an IGCC  
12 than a PC plant. Do you see that?

13 A. Yes.

14 Q. You will agree with me, will you not,  
15 that others estimate higher costs than that out of an  
16 IGCC as compared to a PC, in other words, higher than  
17 5 percent.

18 A. Slightly higher. I believe that exhibit  
19 shows the other comparisons as well.

20 Q. And there are other comparisons other  
21 than is contained in that exhibit, correct?

22 A. Yes.

23 Q. We'll go to RCF-5 in just a little bit.

24 You note on the bottom of 13 and the top

1 of 14 that National Electric -- that NETL, let me put  
2 it that way, has discontinued funding for chilled  
3 ammonia.

4 A. Yes.

5 Q. Do you know whether or not AEP and others  
6 have recently announced a fairly significant project  
7 utilizing Alstom's chilled ammonia?

8 A. Yes, to my understanding that's true.

9 Q. So at least some people believe the  
10 technology for the chilled ammonia in Alstom is  
11 promising.

12 A. I'm not sure what their motives are as  
13 far as pursuing that. I don't know whether it . . .

14 MR. BENTINE: May I approach, your Honor?

15 EXAMINER BOJKO: Yes.

16 MR. BENTINE: Could I ask that be marked  
17 as AMP 7, please?

18 EXAMINER BOJKO: It will be so marked.

19 (EXHIBIT MARKED FOR IDENTIFICATION.)

20 Q. Mr. Furman, I've handed you a copy of  
21 what's been marked as AMP 7. Do you have that in  
22 front of you?

23 A. Yes.

24 Q. Have you ever seen that before?



1 A. No, I have not.

2 Q. Okay.

3 MR. FISK: Your Honor, I'd like to  
4 object. I don't believe that we've seen this  
5 document before. I don't believe it was produced to  
6 us in discovery.

7 EXAMINER BOJKO: Objection overruled. I  
8 don't know if --

9 MR. FISK: Well, we've never had a chance  
10 to review this.

11 EXAMINER BOJKO: Well, we'll take a  
12 couple minutes for you to review it now, but if you  
13 didn't ask for it in discovery, it didn't have to be  
14 produced.

15 MR. FISK: Well, I believe we did ask for  
16 their documents relevant to -- well, let me see what  
17 we requested.

18 Okay. We'll take a minute to review it.

19 EXAMINER BOJKO: The witness will take a  
20 minute to review as well.

21 Please proceed, Mr. Bentine.

22 MR. BENTINE: Thank you.

23 Q. (By Mr. Bentine) You've had a chance to  
24 glance at this now?

1 A. Yes.

2 Q. Okay. And this is a press release, would  
3 you agree, announcing some sort of partnership,  
4 without putting any definition on that, between RWE,  
5 Alstom, and AEP with regard to a chilled ammonia  
6 project?

7 A. Yes.

8 Q. And RWE, are you familiar with who they  
9 are?

10 A. Yes.

11 Q. Who are they?

12 A. They're a large electric utility in  
13 Germany.

14 Q. Thank you.

15 On page 14 of your testimony just down  
16 from the discussion about chilled ammonia you say  
17 "For gasification plants the technology is already in  
18 commercial operation for CO2 capture . . . ." And  
19 again, we're talking about gasification plants, not  
20 IGCC plants, correct?

21 A. If I might be able to explain the  
22 difference.

23 Q. You're putting a burden on me here,  
24 Mr. Furman, but go ahead.

1           A.     Either the want the information or you  
2 don't.

3                     You made an example before about the CO2,  
4 you gave the example that once you have the CO2  
5 captured, then it's immaterial where that CO2 came  
6 from, you still have to store it. Well, it's the  
7 same with a gasification plant.

8                     There are a series of three steps. The  
9 first step is the gasification of the coal that takes  
10 it from coal to a synthesis gas. The second step is  
11 cleaning up that gas which includes the removal of  
12 the CO2. The third step is the generation of  
13 electricity from that clean fuel.

14                    Just like your CO2 that you talked about  
15 being sequestered, that power plant doesn't care  
16 where that fuel came from, so the fact that a plant  
17 has demonstrated that you can gasify coal, that you  
18 can commercially, at a commercial scale, remove the  
19 CO2, has been demonstrated on a commercial scale at a  
20 number of plants, one of which is the North Dakota  
21 synfuels plant.

22                    So I just want to make that similarity  
23 between the two analogies.

24           Q.     Okay. Are you saying, then, Mr. Furman,

1 that one could simply change the front end on the gas  
2 cleanup on a current IGCC plant and then take the  
3 resulting CO2 and go sequester it and without doing  
4 anything else take the syngas and put it through the  
5 current turbine generator set that's sitting on that  
6 IGCC plant?

7 A. There would have to be additional  
8 modifications made.

9 Q. And that's because the gas --

10 A. Is a different --

11 Q. -- after you take the CO2 off is too  
12 hydrogen rich to stick directly in that current  
13 turbine generator, correct?

14 A. The current design is designed for syngas  
15 and natural gas. The turbine manufacturers have  
16 commercial experience with high hydrogen fuels also.

17 Q. Thank you.

18 What's the largest size of those  
19 hydrogen-capable turbines that is currently operating  
20 in the United States?

21 A. I don't know offhand. I've read several  
22 articles by both General Electric and Siemens that  
23 list a whole series of plants that they have  
24 operating on high hydrogen-rich syngas.

1 Q. In the United States?

2 A. I don't know. I don't know where -- I  
3 don't remember the exact references.

4 Q. You mention on page 16 the BP Carson IGCC  
5 plant in California.

6 A. Yes.

7 Q. And you also mention that again over on  
8 page 17?

9 A. Yes.

10 Q. And that BP, is that British Petroleum?  
11 That BP corporation.

12 A. Or perhaps Beyond Petroleum.

13 Q. Or Beyond Petroleum, yeah, you're  
14 absolutely right.

15 You are aware, are you not, that BP has  
16 an interest or a partnership in Powerspan?

17 A. Yes.

18 Q. Now, on page 17 on line 19 you have an  
19 interesting word. You say Exhibit RCF-10 -- and  
20 maybe we ought to turn to that -- shows the lower  
21 emission levels of IGCC versus supercritical PC.

22 A. Yes.

23 Q. And you say RCF-10 shows the much lower  
24 emissions that are "produced." Now, what actual data

1 from an operating IGCC plant was used to create this  
2 chart?

3 A. I don't know because I used this  
4 reference directly from EPRI, the Electric Power  
5 Research Institute.

6 Q. And the chart itself says "Values  
7 represent technology capability, not permit levels."

8 A. Correct.

9 Q. So you don't know whether or not this is  
10 what somebody says the technology is capable of, a  
11 permit level, or whether or not this is actually  
12 achieved emission levels on an operating plant.

13 A. No. I would assume from his statement,  
14 from Dr. Phillips' statement, that this is his  
15 assessment having looked at what the two technologies  
16 are capable of, that this is his snapshot at that  
17 point in time as to what he believes the technologies  
18 are capable of.

19 Q. Again, to answer my question, from the  
20 face of this it looks like technology assessment, not  
21 actual operating experience.

22 A. Correct. And what I'm trying to show  
23 here is multiple sources coming to the same  
24 conclusion.

1 MR. BENTINE: I move to strike "What I'm  
2 trying to show here."

3 EXAMINER BOJKO: Granted.

4 Mr. Furman, could you try to just answer  
5 the questions?

6 THE WITNESS: Certainly.

7 EXAMINER BOJKO: We'll get through this  
8 much quicker.

9 Q. I'm interested in the question beginning  
10 on line 22 of page 18, Mr. Furman, the question is,  
11 "Do recent IGCC plants' permit levels and proposed  
12 permit levels confirm that these significantly lower  
13 levels of emissions can be produced in actual  
14 plants?" And your answer is "Yes" and then you go on  
15 to say why.

16 At the end of that answer then, you say  
17 "In deciding which emission rates to compare" -- this  
18 is on line 24 on page 19 -- "to compare to the  
19 AMP-Ohio plant's proposed emission rates, the highest  
20 weight should be placed on recently proposed IGCC  
21 plants because they represent the most current view  
22 of IGCC permit levels." Do you see that?

23 A. Yes.

24 Q. Okay. That's got nothing to do with

1 any -- strike that.

2 That's not reflective of the current  
3 operating results of current IGCC, is it?

4 A. No.

5 Q. And when you say in that last sentence  
6 "The least weight should be placed on existing IGCC  
7 plants and IGCC plants with permits issued prior to  
8 2003 because they do not represent the capabilities  
9 of current IGCC technology" -- do you see that?

10 A. Yes.

11 Q. -- shouldn't we really be saying they do  
12 not represent the expected capabilities of current  
13 IGCC technology?

14 A. No.

15 Q. Turn to page 21.

16 THE WITNESS: Could you reread that last  
17 question? I want to make sure I understood what you  
18 were asking and that I answered it appropriately.

19 EXAMINER BOJKO: Sure. Please reread the  
20 question.

21 (Question read.)

22 A. Could you explain "they"?

23 Q. I was paraphrasing your answer, the  
24 "they" in line 3 of page 20. I was suggesting that



1 you ought to have the word "expected" before  
2 "capabilities" in that answer on line 4.

3 A. Can I just read my sentence? "The least  
4 weight should be placed on existing IGCC plants and  
5 IGCC plants with permits issued prior to 2003 because  
6 they do not represent the capabilities of current  
7 IGCC technology."

8 I would still say that statement is  
9 correct.

10 Q. But that's --

11 A. Would you like me to explain why?

12 Q. No. Let me ask you a follow-up question.  
13 Can you point to a United States IGCC plant that is  
14 achieving and operating today under those emission  
15 levels?

16 A. Can you point to a 20-year old pulverized  
17 coal plant that is --

18 EXAMINER BOJKO: Wait, Mr. Furman --

19 A. -- meeting current emission standards?

20 EXAMINER BOJKO: Mr. Furman, can you  
21 please answer the questions and not ask questions of  
22 counsel?

23 THE WITNESS: The answer is "no," and if  
24 I'm allowed to explain why.

1 EXAMINER BOJKO: No. That answers his  
2 question for now. Thank you.

3 Q. On page 21 at the top beginning on line 1  
4 you talk about your Exhibit RCF-14.

5 A. Yes.

6 Q. And you discuss there if you compare  
7 AMPGS with two 480-net megawatt units, you compare  
8 that to a three 320-megawatt IGCC facility; do you  
9 see that?

10 A. Yes.

11 Q. What was the megawatt-hours that you used  
12 for those emissions for each of these?

13 A. The same.

14 Q. And the Taylorville IGCC plant is in  
15 Illinois, that -- who's the developer on that? Is  
16 that ERORA?

17 A. Yes, I believe so.

18 Q. And that plant is a two 320-megawatt  
19 facility as proposed?

20 A. I believe so.

21 Q. Has that --

22 A. I think they may also be -- part of that  
23 plant may also be used as a polygen plant. They may  
24 be making some syngas from that also.

1 Q. And would I be correct in assuming that's  
2 a merchant plant, not a vertically integrated utility  
3 plant?

4 A. Yeah, I'm not that familiar with the  
5 business arrangements.

6 Q. Do you know whether or not that plant's  
7 been financed?

8 A. I do not know.

9 Q. Do you know whether or not the air permit  
10 that you're talking about there has been appealed?

11 A. I believe they received a final permit.

12 Q. I'm sorry, I didn't make it clear. Do  
13 you know whether or not that final permit has been  
14 appealed?

15 A. I do not know.

16 Q. Okay. Does Taylorville have CCS  
17 equipment as proposed?

18 A. I don't know.

19 Q. Would you be surprised to learn that  
20 Sierra Club is appealing the Taylorville permit on  
21 carbon dioxide issues?

22 A. No, I wouldn't be surprised.

23 Q. On page 23 at the top you talk about the  
24 Polk Power Station there, and you make the statement

1 beginning on line 4 that "During the summer peak  
2 power months, availability is greater than 90 percent  
3 when using back-up fuel." Do you see that?

4 A. Yes.

5 Q. What's the purpose of the baseload power  
6 plant?

7 A. To produce power for the maximum number  
8 of hours per year and at the minimum cost.

9 Q. And if one were looking at technology to  
10 serve peak loads, isn't there less-expensive  
11 technology like combustion gas -- natural gas  
12 turbines that might be used to provide peak load?

13 A. Yes.

14 Q. And would you also agree that -- strike  
15 that, let me ask it this way. What does the Polk  
16 station use as its backup fuel?

17 A. I believe it's natural gas.

18 Q. And when we say "backup fuel," what we're  
19 really saying is it backs up the lack of availability  
20 of the gas supplier when the gas supplier's down,  
21 correct?

22 A. Yes. But it's still able to produce the  
23 power output that's required of a baseload unit.

24 Q. And on an MMBtu basis is diesel or

1 natural gas higher, lower, or the same as coal?

2 A. Higher.

3 Q. On page 24 of your testimony, and this is  
4 also mentioned on page 28, you talk about 33 IGCC  
5 plants being planned in the United States by  
6 utilities and independent power producers. Do you  
7 see that?

8 A. Yes.

9 MR. BENTINE: May I approach, your Honor?

10 EXAMINER BOJKO: Yes, you may.

11 MR. BENTINE: I'd like to ask that this  
12 document be marked as AMP 8, please.

13 EXAMINER BOJKO: It will be so marked.

14 (EXHIBIT MARKED FOR IDENTIFICATION.)

15 Q. Mr. Furman, I've handed you what has now  
16 been marked as AMP-Ohio Exhibit 8. Do you have that  
17 in front of you?

18 A. Yes, I do.

19 Q. What is that?

20 A. That's an ongoing survey the DOE/NETL  
21 provides on line for tracking new coal plants.

22 Q. And this is the document that you  
23 referred to on both pages 24 and 28 of your  
24 testimony?

1 A. Yes.

2 Q. I'd like to examine that document with  
3 you for a few moments if we could. First of all,  
4 Mr. Furman, would you look at, and I think these  
5 pages may be unmarked, the third page in, the page  
6 that begins "Tracking New Coal-Fired Power Plants"?

7 A. Yes.

8 Q. And would you read the third bullet  
9 there?

10 A. "Project announcements do not necessarily  
11 lead to a new operating coal-fired power plant and  
12 can be a misleading indicator of capacity additions."

13 Q. Do you believe they could be misleading  
14 indicators of other things as well as capacity  
15 additions?

16 A. Such as?

17 Q. Whether certain actual emission levels  
18 might be achievable in somebody's permit.

19 A. No. I wouldn't go as far as to infer  
20 that from that statement, no. And I don't think --

21 Q. Well -- go ahead. I'm sorry.

22 A. If somebody is going to go through the  
23 trouble and effort of permitting a power plant, I  
24 don't think they're going to do it with the intention

1 of violating the air permit levels.

2 Q. Could they do it with the intention of  
3 getting a, say, a merchant plant financed after they  
4 have the permit and then have the expectation that  
5 they might be able to modify that permit in the  
6 future?

7 A. That wouldn't be advisable.

8 Q. Would you read the last bullet on that  
9 page?

10 A. "Halted or deferred project development  
11 may result in insufficient electricity capacity  
12 growth, which could impact regional economic growth."

13 Q. Thank you.

14 Would you turn to the next page, please?  
15 And could you tell me what that chart is?

16 A. Past Capacity Announcements versus  
17 Actual.

18 Q. And would you read the, I would say it's  
19 a footnote but it's not marked as such, but the text  
20 which is right under the years on --

21 A. "Historically, actual capacity has been  
22 shown to be significantly less than proposed  
23 capacity. For example, the 2002 report listed  
24 11,455 megawatts of proposed capacity for the year

1 2005 when actually only 329 megawatts were  
2 constructed."

3 Q. Thank you.

4 Now we're going to turn a few pages here  
5 and, again, we're going to go to the page that's  
6 Current Capacity Additions by Years, and I'd like you  
7 to read the last bullet on that page.

8 A. Under Announced?

9 Q. I think we're on the wrong page. The  
10 page I'm referring to is Current Capacity Additions  
11 by Years, and then the subtext under that, "Refer to  
12 Table 1 and Figure 2."

13 I'm sorry these pages aren't numbered. I  
14 apologize.

15 A. Do you want the -- is yours a chart  
16 labeled figure 2 or table 1?

17 Q. No, it's after the chart and figure 2, it  
18 would be a slide or a presentation with only --

19 A. "EIA" --

20 Q. Yes.

21 A. -- "currently projects the need for an  
22 average of 6,000 megawatts per year for 23 years  
23 through 2030."

24 Q. And EIA is who, please?



1           A.    A part of the Department of Energy,  
2           that's an abbreviation for Energy Information  
3           Administration.

4           Q.    And Energy Information Administration is  
5           regularly relied on by you and others in this  
6           industry, correct? Well, strike that. Since you're  
7           hesitating, let me ask it this way: You have used  
8           EIA data in your analyses; have you not?

9           A.    Yes.

10          Q.    Thank you.

11                   And then rather than having you read it,  
12          would you agree that top bullet on the next page  
13          indicates that actual plants commissioned in '97  
14          through 2006 have averaged 293 megawatts per year?

15          A.    Yes.

16                   EXAMINER BOJKO: I'm sorry, I have to  
17          interrupt. Are you stating that you don't believe  
18          that EIA is reliable, or what was your hesitation?  
19          Could you explain that?

20                   THE WITNESS: No. No. I just -- EIA,  
21          like many others, makes projections into the future.  
22          One of those that have been tremendously inaccurate  
23          is fuel price projections. That's an area that you  
24          certainly don't want to rely upon as accurate data.

1 Certain other data like this where they're actually  
2 reporting what actually happened rather than trying  
3 to make projections is far more accurate and  
4 reliable; that's why I laughed. You have to know the  
5 background to understand whether it's reliable or  
6 not.

7 EXAMINER BOJKO: Thank you.

8 I apologize. Do you have a question  
9 pending, Mr. Bentine?

10 MR. BENTINE: I don't know whether I --

11 Q. My question was we talked about the  
12 293 megawatts per year, and I think you answered  
13 "yes."

14 A. Yes.

15 Q. Three pages past that there is a page  
16 like this headed "Evaluating Added Capacity on a  
17 Regional Basis, Refer to Figure 3 and Table 2."

18 A. Uh-huh.

19 Q. What's the bottom bullet on that?

20 A. "Additional evaluation should take into  
21 consideration NERC's forthcoming 2007 Long Term  
22 Reliability Assessment."

23 Q. And "NERC" is what?

24 A. National Energy Regulatory Commission.

1 MR. BENTINE: Could I have just a moment?

2 Q. Would you accept it's North American  
3 Reliability?

4 A. Yes.

5 EXAMINER BOJKO: Electric Reliability  
6 Council.

7 Q. We're all confused, Mr. Furman. Thank  
8 you, though.

9 And that assessment has now been issued;  
10 has it not? If you know.

11 A. I don't know.

12 Q. Next turn to the next page and there's a  
13 chart that's Proposed Technologies of New Plants,  
14 Figure 4 --

15 A. Uh-huh.

16 Q. -- do you see that? And that's actually  
17 the chart that you took your 33 from, correct?

18 A. Yes.

19 EXAMINER BOJKO: 33 IGCC plants?

20 THE WITNESS: Yes.

21 Q. Now, there are 51 PC subcritical plants  
22 on there; are there not?

23 A. Yes.

24 Q. And 25 of those are in the Progressing

1 category?

2 A. Yes.

3 Q. And ten have been commissioned since  
4 2000?

5 A. Yes.

6 Q. And 26 are announced?

7 A. Yes.

8 Q. And the next category is CFB and that's  
9 circulating fluidized bed, correct?

10 A. Yes.

11 Q. And there have been eight of those  
12 operational since 2000?

13 A. Yes.

14 Q. And 12 are in the progress mode?

15 A. Yes.

16 Q. And 12 announced?

17 A. Yes.

18 Q. Total of 24.

19 A. Uh-huh.

20 Q. And PC supercritical, there's been one  
21 operational since 2000?

22 A. Yes.

23 Q. Four progressing?

24 A. Yes.

1 Q. Nine announced?

2 A. Yes.

3 Q. For a total of 13.

4 A. Uh-huh.

5 Q. With regard to IGCC, there's one, and do  
6 you know which one that is?

7 A. That was probably the Valero.

8 Q. And there's four listed as Progressing.

9 Do you know what four those are?

10 A. I could only guess.

11 Q. Was one of them Polk?

12 A. Probably.

13 Q. Was one of them Taylor?

14 A. Taylor was the PC plant.

15 Q. Excuse me; Taylorville.

16 A. I really, without knowing what criteria  
17 they used to determine Progressing, I really can't  
18 determine which of those plants they are of the 33.

19 Q. Okay, let's maybe back into that. There  
20 are four that at least have to be permitted to make  
21 that category, correct? If there were five  
22 permitted, there would be a 5 there, because it's --

23 A. Yes.

24 Q. Okay. So how many permitted but not

1 operating IGCC plants did you look at to come up with  
2 your testimony? And which ones were they?

3 A. I have an exhibit in my testimony which  
4 lists them.

5 Q. Okay. Let's go to that. Is that RFC-12?

6 A. Yes.

7 Q. Could you tell me the permitted IGCC  
8 plants on that page?

9 A. The permitted ones are the ones listed in  
10 green, and since this was tabulated in 2006 the  
11 Taylorville plant in the middle of the yellow section  
12 went from applied for a draft to a final permit.

13 Q. So that's probably four?

14 A. Yes.

15 EXAMINER BOJKO: Mr. Furman, just for the  
16 record, we don't have colored copies so could you --  
17 the three under the green, it says under "Approved  
18 Permit," you're speaking of the Global Energy Lima,  
19 Ohio, Kentucky Pioneer Energy, and Wisconsin  
20 Electric?

21 THE WITNESS: Yes.

22 MR. BENTINE: I'm sorry, your Honors, I  
23 didn't realize you folks had black and white ones.

24 EXAMINER PRICE: Budget cuts.

1 Q. The Elm Road plant, I believe you'll  
2 agree there's no plans to complete that currently.

3 A. Not to my knowledge.

4 Q. Your answer is you agree, not to your  
5 knowledge, no plan is to complete that?

6 A. Correct.

7 Q. And Global Energy we talked about  
8 earlier, you're not sure about that other than you  
9 thought you saw something in the paper that they may  
10 have started construction.

11 A. Their website today indicated that they  
12 had started construction.

13 EXAMINER BOJKO: They had or had not yet?

14 THE WITNESS: Have. They have started  
15 construction on their fuel supply system.

16 Q. And what about the Kentucky Pioneer  
17 Energy, what's the status of that, do you know?

18 A. I'm not familiar with that one, no.

19 Q. Okay. Thank you.

20 A. If you'd like, I can add some PC plants  
21 that have been changed over to now IGCC units.

22 Q. Your counsel will be happy to do that on  
23 redirect.

24 A. Thank you.

1           Q.   Now, you also talk about, then, outside  
2 of the U.S. you talk about the Nuon plant and that  
3 they have recently announced what you call the phase  
4 construction or what the questioner calls the phased  
5 construction of that plant?

6           A.   Yes.

7           Q.   And that's on page 25?

8           A.   Yes.

9           Q.   And that phased construction, they're  
10 building it as a combined cycle gas -- excuse me,  
11 natural gas combined cycle in phase 1 and then  
12 sometime later they're adding a gasifier?

13          A.   I don't believe it's that long  
14 afterwards. It's basically because of availability  
15 of equipment that it's easier to build in phases  
16 because of long lead-time items.

17          Q.   Page 28 of your testimony, you indicate  
18 on line 15 that "The gasification industry has  
19 undergone many changes in the past few years that  
20 have given confidence to industry and lenders that  
21 IGCC can obtain sufficient performance warranties to  
22 build new IGCC plants." Do you see that?

23          A.   Yes.

24          Q.   Is that with or without CCS?



1           A.     Probably both because plants like the BP  
2 plant in California is going to have carbon capture  
3 and others.

4           Q.     Do you know -- have you examined the  
5 construction contracts and original equipment  
6 manufacturer contracts for that plant?

7           A.     No, I have not.

8           Q.     Would you agree with me that there are  
9 many connotations to the words "guarantee" and  
10 "warranty"?

11          A.     Yes.

12          Q.     Do you know whether guarantees and  
13 warranties are offered with sufficient financial  
14 surety or bonds in the context of what you're talking  
15 about here?

16          A.     I believe the companies that I've talked  
17 to have enough resources to stand behind their  
18 warranties and guarantees.

19          Q.     That depends on what those warranties  
20 say, doesn't it, Mr. Furman?

21          A.     It certainly does.

22          Q.     And I believe we've established you don't  
23 know what those warranties say.

24          A.     Correct.

1           Q.    Now, you talk about recent coal  
2 gasification plants, this is on page 32, line 14, the  
3 question "Have recent coal gasification plants . . .  
4 demonstrated reliability above 90 percent required by  
5 the utility industry?" And you say "Yes" and then go  
6 on. Do you see that?

7           A.    Yes.

8           MR. BENTINE: May I approach, your Honor?

9           EXAMINER BOJKO: Yes, you may.

10          MR. BENTINE: Can I ask a document that I  
11 will represent to the parties is a selection of pages  
12 out of that big, fat MIT study that we talked about  
13 earlier, in color, that it be marked as AMP 9?

14          EXAMINER BOJKO: It will be so marked as  
15 AMP-Ohio 9.

16                (EXHIBIT MARKED FOR IDENTIFICATION.)

17          Q.    Assuming I have taken the pages out of  
18 the right document for a moment, Mr. Furman, could  
19 you tell me what AMP 9 appears to be?

20          A.    The MIT study "The Future of Coal."

21          EXAMINER BOJKO: Just an excerpt, right?

22          THE WITNESS: Yes.

23          Q.    I want you to turn to what is the last  
24 page of that exhibit, it's page 34 out of that MIT

1 exhibit. Have you got that?

2 A. Yes.

3 Q. And there's a Box 3.1 on the top of that  
4 page.

5 A. Yes.

6 Q. And what is that box?

7 A. The box shows IGCC availability history  
8 excluding operation on backup fuel.

9 Q. And there are six different IGCC plants  
10 there?

11 A. Uh-huh, yes.

12 Q. And their availability is charted in that  
13 from their first-year availabilities up to, in the  
14 case of Nuon, the eleventh year.

15 A. Yes.

16 Q. With regard to the Nuon plant, how long  
17 did it take to reach a reported 80 percent  
18 availability factor?

19 A. Looks like they haven't reached it.

20 Q. And the TECO plant, what plant is that?  
21 That's the Tampa Electric Company plant, the Polk  
22 plant?

23 A. Yes.

24 Q. And it got up to 80 in about the fifth

1 year of operation?

2 A. Yes.

3 Q. And at least from this chart it appears  
4 that there is a significant ramp-up time to get up to  
5 an 80 percent availability factor?

6 A. Yes. And that's the purpose of a  
7 demonstration plant is to demonstrate at commercial  
8 scale how you overcome these problems.

9 MR. BENTINE: Move to strike everything  
10 after "that's the purpose."

11 EXAMINER BOJKO: Granted.

12 Q. Now, had there been IGCC plants that have  
13 been cancelled or mothballed or put out of service in  
14 the United States?

15 A. Yes; pilot plants.

16 Q. The Pinon Pine plant was put out of  
17 service.

18 A. I'm not familiar with that plant.

19 Q. Are you familiar with a Sierra Pacific --

20 A. No, I am not.

21 Q. -- utility? So you don't know whether or  
22 not they built a hundred megawatt IGCC that they  
23 later retired?

24 A. No, I don't.

1           Q.    You talk in your testimony about one of  
2 the good things about IGCC is that it has alternate  
3 fuel capability; do you not?

4           A.    Yes.

5           Q.    And that can help its availability  
6 factors.

7           A.    Certainly.

8           Q.    Now, as I understand it, an IGCC electric  
9 generating plant in very simple terms has a gasifier,  
10 a combustion turbine that utilizes the syngas  
11 produced by the gasifier that is a regular combustion  
12 turbine, it's a big jet engine with an electric  
13 generator on it.

14          A.    Uh-huh.

15          Q.    And then there's waste heat recovery  
16 boilers that take the waste heat, make steam and turn  
17 another standard steam turbine generator, correct?

18          A.    Correct.

19          Q.    In a PC plant, a pulverized coal plant,  
20 there's the boilers and there's the steam turbine  
21 generator.

22          A.    Correct.

23          Q.    At least generally. Sometimes there's  
24 bottoming turbines, but let's just talk standard

1 design, okay?

2 A. Yes.

3 Q. In a PC plant if you have a 90 percent  
4 availability on the boiler and a 95 percent  
5 availability on the steam turbine generator, to get  
6 your expected overall availability you would take .9  
7 times .95; would you not?

8 A. There may be some overlap.

9 Q. But given that, generally speaking --

10 A. Yes.

11 Q. -- that's correct?

12 In an IGCC plant you have a three-step  
13 process to get full availability; do you not? So if  
14 you have 90 percent on the gasifier, 90 percent on  
15 the combustion turbine, and 90 percent on the steam  
16 generator -- excuse me, on the waste heat recovery  
17 boiler and that steam generator that may be at  
18 95 percent, it's .9 times .9 times .95, correct?

19 A. I think you've gotten to the point where  
20 you've oversimplified the process --

21 Q. Okay.

22 A. -- to try and identify more parts  
23 associated with one technology than parts associated  
24 with another. I could argue that the pulverized coal

1 plant has additional parts, all the additional  
2 pollution control equipment that gets added on the  
3 back end that has availability --

4 Q. Fair enough.

5 A. -- associated with it.

6 Q. Fair enough. I understand.

7 A. So I think you have to look at the system  
8 as a whole and come up with an availability.

9 Q. Now, IGCC availability is enhanced by a  
10 spare gasifier; is it not? Or alternate fuel. One  
11 or the other.

12 A. Or both.

13 Q. Or both.

14 Spare gasifiers increase capital costs?

15 A. Correct.

16 Q. Alternate fuel probably, in most cases,  
17 would increase the cost out the other end rather than  
18 the syngas, correct?

19 A. Correct.

20 Q. Page 38 of your testimony, on line 121  
21 you were asked a question "Does the higher capital  
22 cost of the super-critical PC plants increase the  
23 cost of electricity by more than its fuel cost  
24 savings?" Do you see that?

1 A. Yes.

2 Q. Do you believe that supercritical  
3 pulverized coal units can be built at any size?

4 A. No.

5 Q. So a 300-megawatt coal-fired unit might  
6 not be cost efficient to build as a supercritical  
7 unit?

8 A. Perhaps.

9 Q. Indeed you may not be able to get anybody  
10 to build a supercritical at 300 megawatts; would you  
11 agree with that?

12 A. That's possible.

13 MR. BENTINE: I'm going to switch gears.  
14 I can keep going. I don't know when you wanted to  
15 take an afternoon break, if at all. I thought I'd  
16 tell you I'm switching gears.

17 EXAMINER BOJKO: Let's go off the record  
18 for a minute.

19 (Discussion held off the record.)

20 EXAMINER BOJKO: Let's take a five-minute  
21 quick water/restroom break.

22 (Recess taken.)

23 EXAMINER BOJKO: Let's go back on the  
24 record. Mr. Bentine, you would like to proceed?



1 MR. BENTINE: Yes, your Honor. If I  
2 could, please.

3 Q. (By Mr. Bentine) Mr. Furman, we're going  
4 to run through your exhibits now just quickly and I'm  
5 going to ask you a few questions about each one  
6 starting with RCF-2.

7 A. Yes.

8 Q. RCF-2 you have sourced at the bottom as  
9 an EPRI presentation.

10 A. Yes.

11 Q. Did you make any changes or alterations  
12 to this?

13 A. I added the top three lines to that  
14 slide, and originally this was presented as two  
15 separate slides, the coal boiler and the gasifier; I  
16 put them together as one slide.

17 Q. Okay. And did you attend this  
18 presentation?

19 A. Yes. Yes, I did.

20 Q. And what is RCF-3? That's got "Eastman"  
21 in the corner.

22 A. Yes.

23 Q. That was an Eastman presentation?

24 A. Yes, Eastman Chemical Company made a

1 presentation on gasification technologies.

2 Q. And did you make any alterations to that?

3 A. No, except for the exhibit number on  
4 this.

5 Q. I'm sorry, were you at that presentation  
6 or did you just use this as --

7 A. I was at many of their presentations,  
8 yes.

9 Q. RCF-4.

10 A. I added the title up at the top, the  
11 exhibit number, and I eliminated a portion of the  
12 chart which was irrelevant, it was the taking the  
13 syngas and making synthetic liquids.

14 Q. And where would that have been?

15 A. When you see the shift reactor, you see  
16 the line going down from the shift reactor, so in  
17 addition to making chemicals I can also use the  
18 syngas to make liquid fuels. Coal from liquids.  
19 Excuse me, liquids from coal.

20 Q. You said you removed that because it was  
21 irrelevant.

22 A. And counsel asked me to remove it because  
23 of objections from the Sierra Club.

24 Q. And that's because the production of

1 synthetic liquid fuels added CO2 emissions?

2 A. Yes. Depending on how you do the  
3 production of liquids from coal you can actually be  
4 generating more CO2 than you would from liquid fuels  
5 from oil.

6 MR. BENTINE: I'm going to move to strike  
7 RCF-4.

8 EXAMINER BOJKO: Let's wait until we get  
9 to the testimony. We'll take all the -- whether  
10 admitted or moved when we go through the testimony.

11 MR. BENTINE: Okay.

12 Q. RCF-5, we've talked about where that came  
13 from, so let's go to RCF-6.

14 A. I added the exhibit number at the top and  
15 the source down at the bottom.

16 Q. And that's a Department of Energy/NETL  
17 document.

18 A. Yes.

19 I added the exhibit number and the source  
20 down at the bottom, you've already excluded this.

21 Q. Yeah, I'm still on 6. I'm sorry, it was  
22 a head fake. I acted like I was flipping the page,  
23 but I didn't. Let me just make sure I understand  
24 what is portrayed on this RCF-6. We're talking about

1 each of the bars as we go from the left to the right.  
2 GEE without CCS is an estimate of the General  
3 Electric IGCC without CCS costs?

4 A. Correct.

5 Q. And E-Gas, the third column, that's  
6 Shell? I'm sorry.

7 A. ConocoPhillips.

8 Q. ConocoPhillips, I'm sorry. If I would  
9 have looked further, I would have seen the next one  
10 is Shell.

11 And those are specific technologies; are  
12 they not?

13 A. Yes. What you have there are three  
14 different gasification technologies that are  
15 commercially available.

16 Q. Now, are each of those technologies  
17 materially different?

18 A. What do you mean by "materially"?

19 Q. Is it a different chemical process?

20 A. No. They're quite similar. If you're  
21 someone like myself that's interested in  
22 gasification, they're quite different.

23 Q. Fair enough.

24 A. From your viewpoint there's no

1 difference.

2 Q. Fair enough. Fair enough.

3 Subcritical is not identified with a  
4 specific manufacturer, correct?

5 A. Correct.

6 Q. So do you know, for example, is that  
7 estimating using BMW boilers or --

8 A. I don't know.

9 Q. And supercritical, the same?

10 A. Yes.

11 Q. And I assume, then, you wouldn't know  
12 what kind of turbine generator would be hooked onto  
13 any of these?

14 A. No.

15 Q. What kind of back-end equipment?

16 A. No. It was a generic study, not  
17 manufacturer specific, I believe, for the PC.

18 Q. So these are generic estimates that one  
19 would have to see how a generic plant compared to  
20 actual plant to make a determination about whether or  
21 not these costs are necessarily representative,  
22 correct?

23 A. Yes.

24 Q. And with regard to the last NGCC there,

1 do you know what the F-class refers to?

2 A. That's a progression in the development  
3 of gas turbines. The next class is going to be an H.

4 Q. Does that refer to any particular  
5 manufacturer?

6 A. Normally, General Electric.

7 Q. On 8, what is this chart?

8 A. This is a chart that I thought would be  
9 useful that I presented in Florida showing how the  
10 increased flexibility of an IGCC plant allows you to  
11 use lower-cost fuels like petroleum coke, and what  
12 this chart is showing is the cost of electricity for  
13 the three different types of pulverized coal plants  
14 and how an IGCC plant using petcoke can have a lower  
15 cost due to the lower fuel cost.

16 Q. Let's look at the fuel cost on that chart  
17 for a moment, first for the subcritical,  
18 supercritical, and ultra-supercritical. What kind of  
19 coal did you utilize to come up with your 2.38 per  
20 MMBtu?

21 A. Eastern bituminous.

22 Q. And that was a delivered cost to --

23 A. Yes.

24 Q. -- someplace in Florida?

1 A. Tampa Electric.

2 Q. So this was specific to Tampa Electric.

3 A. Yes.

4 Q. Do you know how that might compare to  
5 delivered costs on barge to Meigs County, Ohio?

6 A. No, I do not.

7 EXAMINER BOJKO: I'm sorry, is this your  
8 exhibit? You created this?

9 THE WITNESS: Yes.

10 Q. With regard --

11 MR. BENTINE: I'm sorry, your Honor. Is  
12 that it?

13 EXAMINER BOJKO: Yes.

14 Q. With regard to the aqua portion of the  
15 bar --

16 A. The bottom portion?

17 Q. Yes. On subcritical you have a number of  
18 3.73 cents per kWh there?

19 A. Yes.

20 Q. Okay. What capital cost does that  
21 represent?

22 A. The capital component was taken from the  
23 DOE study, NETL.

24 Q. Okay. And what O&M was included in that?

1           A.    That was also taken from the DOE study.

2           Q.    And the same would be true for the  
3 supercritical and the ultra-supercritical?

4           A.    Yes.

5           Q.    Do you know what implicit interest rate  
6 or financing cost was included at the capital cost  
7 associated with any of these bottoms here?

8           A.    I'd have to refer to the DOE document.

9           Q.    Do you know what financing period that  
10 implicit interest cost may have been utilized over?

11          A.    Twenty-year levelized.

12          Q.    Are you sure about that, or are you  
13 speculating?

14          A.    I'm pretty sure that's what it was.

15          Q.    Do you know how long AMP-Ohio would  
16 propose to finance the AMPGS plant?

17          A.    No, I do not.

18          Q.    Does that make a difference in the  
19 overall levelized cost?

20          A.    It would make a difference, but I think  
21 what I'm trying to show here is relative economics of  
22 one technology versus another, not with different  
23 financing. This all has the same financing.

24          Q.    But it all adds up to the same top of the



1 bar chart; does it not?

2 A. Yes.

3 Q. Okay. Do you know whether or not petcoke  
4 is a viable alternative for generation here in Ohio?

5 A. I believe it is.

6 Q. Did you do a study to make that  
7 determination?

8 A. No. I've asked some people if petcoke is  
9 available, and I believe the Lima IGCC plant is  
10 proposing using petcoke.

11 Q. And assuming that Lima plant gets built,  
12 are you aware of whether or not there would be  
13 additional petcoke available by barge to Meigs  
14 County, Ohio, or anyplace else in Ohio, petcoke at  
15 reasonable prices to fire a thousand megawatts of  
16 IGCC?

17 A. I haven't looked into the site-specific  
18 analysis, but I know that there's 43 million tons of  
19 petcoke throughout the country that could be used and  
20 that would equate to 17,000 megawatts of capacity.

21 Q. Now, you talk about availability of  
22 petcoke. How is petcoke derived? How is it made?  
23 It's a by-product of --

24 A. It's a waste product of the petroleum

1 refinery.

2 Q. And where are most of the petroleum  
3 refineries in the United States?

4 A. In the gulf coast, the east and west  
5 coast, and some in the midwest.

6 Q. Where's the closest refinery to Ohio of  
7 any size --

8 A. I don't know.

9 Q. -- that's currently operating; do you  
10 know?

11 A. I don't know.

12 Q. Okay.

13 MR. BENTINE: I'm going to move to strike  
14 RCF-8 on the basis of relevance to this proceeding.

15 EXAMINER BOJKO: Let's take these, again,  
16 all together when we --

17 MR. BENTINE: I'm sorry, your Honor. I  
18 got carried away. Sorry.

19 EXAMINER BOJKO: I had a feeling there  
20 would be more than one.

21 Q. RCF-9.

22 A. I added the title at the top and the  
23 source down at the bottom.

24 Q. And this is simply a depiction of how CO2

1 capture and enhanced oil recovery would work.

2 A. This is from a presentation made by  
3 British Petroleum on their Carson IGCC plant.

4 Q. Do you know whether or not there's an  
5 opportunity for enhanced oil recovery at any place in  
6 Ohio?

7 A. I believe there might be. I was reading  
8 a report on a coal-to-liquids project that was being  
9 developed for Ohio that is planning on using carbon  
10 capture, and I believe they indicated that they were  
11 going to use the CO2 for enhanced oil recovery or a  
12 portion thereof.

13 Q. Do you know whether or not Sierra Club is  
14 appealing the permits for that particular operation?

15 A. I do not know.

16 Q. RCF-10.

17 A. Again, I just added the exhibit number  
18 and the source.

19 Q. And this is an EPRI document? Electric  
20 Power Research Institute?

21 A. Yes.

22 Q. Do you know what capital costs for the  
23 various technologies went into this?

24 A. No, I do not.

1 Q. Do you know what operating costs went  
2 into this?

3 A. No, I do not.

4 Q. RCF-11.

5 A. Added the source down at the bottom.  
6 It's from an EPA report.

7 Q. Let me ask you this, there's a source  
8 line on the middle of this, Environmental Footprints  
9 and Cost of Coal-Based, et cetera, U.S. EPA, and then  
10 it's got a document number there. Can I ask why you  
11 didn't source it to that direct document rather than  
12 taking a page out of Mr. Carpinone or -- I won't  
13 mispronounce his name anymore -- his testimony?

14 A. Oh, yes. He derived the numbers in this  
15 table from that EPA report and he added these  
16 footnotes down at the bottom to give more  
17 clarification.

18 Q. Okay. Do you know how he derived these  
19 numbers from that EPA report?

20 A. They're directly in the EPA report. They  
21 give what the emission factors are for those types of  
22 generation.

23 Q. Well then did he compile them, or did he  
24 derive them?

1           A.    He compiled them.

2           Q.    So let me ask again, why don't you just  
3 use the EPA direct numbers?

4           A.    He had already done it for me.

5           Q.    And did you verify that these were the  
6 numbers that he compiled correctly?

7           A.    I didn't look up every number, but I'm  
8 familiar with some of them.

9           Q.    Which ones?

10          A.    I don't recall at the moment.

11          Q.    Do you know what kind of bituminous coal  
12 is used in this state?

13          A.    No, I don't know.

14          Q.    RCF-12 I think we talked about, and here  
15 again, you have cited to Mr. John Thompson.

16          A.    Yes.

17          Q.    And who is John Thompson?

18          A.    He's director of the Clean Air Transition  
19 Project for the Clean Air Task Force.

20          Q.    And who is the Clean Air Task Force?

21          A.    It's an environmental group that moves  
22 for incorporation of technologies that will provide  
23 less emissions.

24          Q.    Okay.

1 A. It's an environmental group.

2 Q. Is that a group that regularly publishes  
3 treatises and other documents that people in the  
4 electric industry generally rely on?

5 A. Yes.

6 Q. At least you do.

7 A. And the regulatory agencies rely on.

8 Q. Okay. Did you independently determine  
9 whether or not these numbers are right that are  
10 presented in these charts?

11 A. I checked some of them, yes.

12 Q. Some of them.

13 A. Yes.

14 Q. How many of them?

15 A. Half a dozen.

16 Q. Out of? Out of about 12, and 8 numbers,  
17 7 numbers for each one?

18 A. Right. And I didn't find any errors.

19 Q. So on this one you spot-checked it.

20 A. I checked 50 percent and I didn't find  
21 any errors.

22 Q. Do you know how many of these projects  
23 are currently going forward? By that I mean actually  
24 financed or under construction.

1 A. No, I do not know.

2 Q. RCF-13.

3 A. This was also an exhibit that was  
4 prepared by John Thompson from the Clean Air Task  
5 Force. He presented it as testimony to the EPA in a  
6 air permit hearing for the Desert Rock pulverized  
7 coal plant. The portion of the table that I used  
8 from his testimony is the portion labeled "IGCC" and  
9 then as a comparison I added the proposed emission  
10 rates from the AMPGS.

11 And from that I then calculated the  
12 portion of emissions that an IGCC plant would emit  
13 compared to the AMPGS plant so that, as an example,  
14 the sulfur control using the Selexol, the current  
15 technology for IGCC, would only emit 8 to 13 percent  
16 of the SO2 emissions that AMPGS is asking for in  
17 their permit.

18 Q. I think I understand what you did, now I  
19 want to try to understand where the numbers in the  
20 right portion of this chart under "IGCC" came from  
21 other than from Mr. Thompson's testimony.

22 Let's look under "Sulfur control using  
23 MDEA." First of all, what is MDEA?

24 A. That's a chemical that's used to remove

1 acid gases like hydrogen sulfide from syngas.

2 Q. What kind of fuel was used to -- well,  
3 strike that. Let me ask this: What plant or plants  
4 or permits or estimates were used to come up with  
5 this range of .025 to .033 pounds per million Btu?

6 A. That was the -- an easier one to do would  
7 be the Selexol; do you want to do that one?

8 Q. No. I want to do this one. We'll get to  
9 the Selexol.

10 A. If you go to the preceding exhibit from  
11 the testimony of John Thompson, you'll see under  
12 "SO2" --

13 Q. Excuse me. Can I get my glasses so I can  
14 see?

15 Okay.

16 A. Down at the very bottom of the table  
17 you're going to see the next-to-the-last line says  
18 "Sulfur Control Technology."

19 Q. Yes.

20 A. And you'll see, let's say for Global  
21 Energy, they were proposing MDEA, that's an older  
22 sulfur removal technology that was used in the Tampa  
23 plant. And then if you go across there, if you go  
24 across that line, you'll see a number of the newer



1 plants that are being proposed are being proposed  
2 with Selexol. That's a more efficient sulfur removal  
3 process, also commercially available, and the newer  
4 plants that are being permitted are going that way  
5 because of encouragement from the environmental  
6 organizations that if you can obtain lower sulfur  
7 levels, why not spend a little bit additional cost to  
8 get that.

9           So the majority of the IGCC plants are  
10 now going with Selexol. So if you look at the MDEA  
11 levels of emissions, you have them represented by  
12 this range, .025, in Exhibit 13, to .033. Those  
13 would be the MDEA plants, the older technology that's  
14 been used for the last 10 to 15 years.

15           Q. I'm sorry, I see under Global Energy in  
16 Lima, maybe I'm looking at the wrong place for SO<sub>2</sub>, I  
17 see .021 --

18           A. Right.

19           Q. -- and then I see .032, 3-hour average,  
20 and .03, 24-hour average for those three across the  
21 top. How do we get, then, from .025 to .033 there?

22           A. Because we're talking about just like  
23 different people using the same control technology  
24 will try to permit different levels of emission. So

1 they're within that range that I represented on  
2 Exhibit 13.

3 Q. I hear what you're saying, but I look  
4 at -- if I what heard was right, under MDEA we would  
5 be looking at the three MDEA -- there's four, I'm  
6 sorry, the four MDEA --

7 A. Actually, five.

8 Q. Okay, five MDEA columns, and looking at  
9 the sulfur emissions on those five to come up with  
10 the .025 to .033.

11 A. Right. And they fall --

12 Q. And I see one at .021, which is lower  
13 than .025.

14 A. So it's going to make IGCC look better.

15 Q. I understand that. I'm looking at the  
16 accuracy of these numbers and how they were derived,  
17 Mr. Furman.

18 A. If you go back to my text, you will see  
19 what John Thompson's explanation is of why he picked  
20 certain ones.

21 Q. I'm not interested in --

22 A. As to be more representative.

23 Q. I'm sorry. I'm not interested  
24 necessarily in Mr. Thompson's explanation. I'm

1 interested in your explanation as we sit here today  
2 about these exhibits.

3 EXAMINER BOJKO: Well, whose chart is  
4 this? Is this John Thompson's?

5 THE WITNESS: Yes.

6 EXAMINER BOJKO: So you're saying John  
7 Thompson did the right portion of this chart  
8 referencing IGCC or the entire chart?

9 THE WITNESS: He did the IGCC portion.  
10 He's nitpicking the fact that this isn't a third  
11 decimal point.

12 EXAMINER BOJKO: I know what  
13 Mr. Bentine's doing.

14 Did you add, then, the left column and --

15 THE WITNESS: Yes. That's all I added  
16 was the left column and then calculated the  
17 percentages based on that.

18 EXAMINER BOJKO: Okay. So Mr. Thompson  
19 came up with the .025-.033 and then you did the math  
20 underneath it to say 17 percent and 22 percent?

21 THE WITNESS: Yes.

22 EXAMINER BOJKO: Okay. Thank you for  
23 that clarification. Now I think Mr. Bentine's trying  
24 to figure out something further about the numbers

1 based on the previous chart. Do the two charts  
2 relate to each other?

3 THE WITNESS: Yes. This comes up with a  
4 range. These are 12 numbers, and this chart  
5 represents the range of those numbers over the 12  
6 plants.

7 EXAMINER BOJKO: Sorry.

8 THE WITNESS: And he's nitpicking a  
9 number --

10 EXAMINER BOJKO: Okay, Mr. Bentine, go  
11 ahead.

12 Q. (By Mr. Bentine) If I could continue to  
13 nitpick, I'm trying to figure out how the numbers  
14 that are listed for SO2 in --

15 EXAMINER BOJKO: Do you know how  
16 Mr. Thompson got those numbers?

17 THE WITNESS: Yes, and it's explained in  
18 my text. He used a judgment of the plants that are  
19 most representative which are the newer plants. So  
20 he used a judgment factor which he thought would make  
21 the data more representative of what is currently  
22 available.

23 EXAMINER BOJKO: Okay. Go ahead.

24 Q. Now, do you know how -- some of these are

1 stated in 24-hour averages and some of them are  
2 stated in 3-hour averages, and some are stated in  
3 30-day averages. Do you know how he compensated for  
4 those different time period averages in coming up  
5 with what is the pounds per million Btu without any  
6 time period in his IGCC calculations as shown on  
7 RFC-13?

8 A. Knowing Mr. Thompson I can only assume  
9 that what he tried to do was put it on a comparable  
10 basis and --

11 Q. So you don't know.

12 A. Probably in an annual basis.

13 Q. You don't know, is that --

14 A. I don't know definitely.

15 Q. Thank you.

16 A. No, I do not.

17 Q. And the same would be true if I were to  
18 ask you about the Selexol numbers, the nitrogen  
19 numbers using diluent injection, and the nitrogen  
20 numbers using diluent injection and SCR, and the PM  
21 numbers and the CO numbers and the mercury numbers;  
22 is that correct?

23 A. I believe they're all on an annual  
24 average basis. To the best of my recollection.

1 Q. To the best of your recollection do you  
2 know what hours are on AMPGS? Is that an annual  
3 basis or something other than an annual basis?

4 A. That is annual. I did that.

5 Q. I'm sorry, Mr. Furman, but I'm having a  
6 problem here going from "I'm going to assume because  
7 I know him" to "That's what I believe." Now, which  
8 is it? Did you verify these and can you testify  
9 about it, or are you assuming that he did it right?

10 A. If you were to review all of the permit  
11 applications and all of the forms that you see the  
12 different utilities represent their emission numbers  
13 in, you would understand how difficult it is to  
14 confirm that all are on the same basis.

15 EXAMINER BOJKO: Mr. Furman, I think you  
16 need to answer the question.

17 A. To the best of my knowledge, I believe  
18 they're on an annual average basis. That's the best  
19 I can do.

20 EXAMINER BOJKO: I don't think that was  
21 the question. I think the question is did you verify  
22 these numbers, or are you just taking Mr. Thompson's  
23 word for these numbers?

24 THE WITNESS: I indicated that I verified

1 50 percent of the numbers.

2 Q. And when you say you --

3 MR. BENTINE: If you're done, I'm sorry,  
4 your Honor.

5 Q. When you say you verified 50 percent of  
6 the numbers, I think what you were referring to when  
7 you said that is the number that went in RCF-12 in  
8 each one of those boxes.

9 A. Yes.

10 Q. Did you verify the numbers that went into  
11 the calculations that used those numbers of which you  
12 verified 50 percent to come up with the numbers in  
13 the IGCC portion of this chart on RCF-13?

14 A. Let's take, as an example --

15 EXAMINER BOJKO: Mr. Furman, answer the  
16 question.

17 A. It's not possible to verify all of the  
18 numbers because that data may not be available.

19 Q. I didn't ask you if it was possible. I  
20 asked you if you did it.

21 A. No, I did not.

22 Q. Thank you.

23 Turn to RCF-14.

24 A. I compiled this from the sources as

1 indicated.

2 Q. And I believe we've established that  
3 Taylorville is a proposed plant, and I take it you  
4 looked at the permit.

5 A. Yes.

6 Q. And I'm sorry, we've been here a while,  
7 Taylorville is about a 630-megawatt plant?

8 A. Yes.

9 Q. And I can't recall, and I do apologize,  
10 Mr. Furman, I can't recall whether or not you said  
11 you remembered whether or not that permit was on  
12 appeal.

13 A. I don't remember.

14 Q. And what about the final column, IGC --  
15 excuse me. I'll withdraw that.

16 RCF-15.

17 A. I prepared this slide from the sources  
18 listed below.

19 Q. And I believe we have established that  
20 the Glades plant has been cancelled?

21 A. Actually denied by the Public Service  
22 Commission.

23 Q. I stand corrected. It's been denied, so  
24 it's not going forward?



1 A. Correct.

2 Q. And the Taylor Energy Center has been, in  
3 your words, deferred?

4 A. No. You're confusing Taylor with TECO.

5 Q. You're absolutely right.

6 A. And you've done it two times and that's  
7 all you get.

8 Q. Okay.

9 A. Taylor is a PC plant that was also denied  
10 by the Public Service Commission.

11 Q. Ah-ha, I knew there was something going  
12 on there. So neither of those plants are going  
13 forward, correct?

14 A. Correct.

15 Q. RCF-16.

16 A. This was a slide that I took in total  
17 from the source listed below.

18 Q. RCF-17?

19 A. This was an exhibit I prepared as a  
20 source of references of regulators and a plant  
21 operator of an IGCC plant who have had to make  
22 decisions on whether to go with PC or IGCC or some  
23 other alternative and have been intimately involved  
24 in the decision-making process.

1           Q.    Okay.  So if I were to tell you that a  
2 number of municipal officials that are representing  
3 members of AMP-Ohio have toured the Polk energy  
4 center, the Wabash center, the Eastman center and  
5 have been involved in the planning of AMPGS and more  
6 than 70 city councils have authorized their  
7 participation in this agreement, do you think that  
8 outweighs your mayor and county commissioner and  
9 mayor on here?

10               I'll withdraw that.

11           A.    No, that's okay, I'll --

12           Q.    I'll withdraw it.

13           A.    I'd like to answer it.

14           Q.    Well, it's withdrawn.

15               RCF-18.

16           A.    This is directly taken from the report  
17 that the Gasification Technology Council made for the  
18 Department of Energy as their report on the status of  
19 gasification technology as of 2004.

20           Q.    And this is that same gasification  
21 technology that we talked about earlier?

22           A.    Yes.

23           Q.    RCF-19.  And I believe you've already  
24 really given us the background on RCF-19, this is the

1 compilation that ended up being done by the fellow  
2 that you hired; is that correct?

3 A. Yes.

4 Q. Okay. And that goes through RCF-23.

5 A. Actually --

6 Q. And -24.

7 A. -- through -24.

8 Q. What about RCF-25?

9 A. He compiled that on his own subsequent to  
10 my hiring him.

11 Q. Now, let's look at RCF-25. That has two  
12 United States projects in it?

13 A. Yes.

14 Q. One is BP Carson we talked about earlier.

15 A. Yes.

16 Q. And the other is FutureGen?

17 A. Yes.

18 Q. And FutureGen is the Department of Energy  
19 sponsored project.

20 A. Yes.

21 Q. And that is being funded by what; do you  
22 know?

23 A. A consortium of the Department of Energy,  
24 utilities, and other government entities also outside

1 the United States.

2 Q. With regard to FutureGen, has a site been  
3 selected for FutureGen yet?

4 A. It's been narrowed down to four.

5 Q. Illinois, Texas, and where else?

6 A. Two in Illinois, two in Texas.

7 Q. And if you know, were there sites in Ohio  
8 that were on the short list?

9 A. There were sites in Ohio, I don't know if  
10 you'd classify it as short list.

11 Q. Let's go back up to the BP. Is BP going  
12 to use the carbon capture for enhanced oil recovery?

13 A. That's what they've indicated.

14 Q. And it will be located at a refinery?

15 A. Yes. Their Carson refinery.

16 Q. RCF-26.

17 A. This is a diagram that I took from the  
18 Nuon utility in The Netherlands and enhanced it by  
19 adding the bold print to try to identify what didn't  
20 come out clearly which is the "Coal and Biomass,"  
21 "Natural Gas," and that it's for four 300-megawatt  
22 units.

23 Q. And as we've discussed earlier, can I  
24 assume that the, what I will call sort of the blue

1 portion on the lower right-hand side which consists  
2 of the 4 times 300 megawatts, flue gas boiler, steam  
3 turbine generators, transformers, electricity, is  
4 phase 1?

5 A. Yes.

6 Q. And then the other part is phase 2?

7 A. Correct.

8 Q. RCF-27.

9 A. This is a photo taken from the book  
10 called The New Synfuels Energy Pioneers. I added the  
11 text at the top and the bottom based on information  
12 presented in the book.

13 Q. And this is a plant that has a  
14 gasification plant next to a lignite PC plant?

15 A. Yes. The gasification plant is shown in  
16 the lower portion, and the two blue plants with the  
17 large stacks are the PC plants.

18 Q. And RCF-28?

19 A. This is the 205-mile pipeline shown in  
20 red or orange that goes from Beulah, North Dakota, to  
21 Saskatchewan to the Weyburn oil fields that's being  
22 used -- has been in operation since 2000 being used  
23 for enhanced oil recovery.

24 Q. And this is just a slide you picked up

1 from a presentation, is that right, to depict this?

2 A. Yes. To show the commercial status of  
3 CO2 pipeline transport and also sequestration.

4 Q. RCF-29, could you tell me where that came  
5 from?

6 A. That came from the Department of  
7 Energy/NETL study "Fossil Energy Power Plant Desk  
8 Reference."

9 Q. With regard to without CCS either on a  
10 supercritical or on a subcritical or those numbers  
11 there, do you know what kind of -- strike that.

12 With regard to any of the depictions of  
13 subcritical or supercritical PC on this chart, do you  
14 know whether or not any of those were estimated using  
15 ammonia technology such as Powerspan for either SO2  
16 capture or carbon capture?

17 A. No, they were not.

18 EXAMINER BOJKO: Mr. Bentine, just for  
19 the record, I don't have that color copy, can you  
20 tell me which ones are the supercritical and which  
21 ones are the subcritical?

22 MR. BENTINE: The taller ones. The  
23 subcritical is the one with the 6,212 -- and you  
24 correct me if I'm wrong, Mr. Furman, which I'm sure

1 would you delight to do -- but 6,212 is subcritical  
2 PC Without CCS, and the supercritical is the 5,441.  
3 Similarly on the With CCS, the supercritical is the  
4 14,098, and the subcritical is 12,159.

5 EXAMINER BOJKO: Thank you.

6 Q. Would you turn to --

7 MR. COLANGELO: I'm sorry, let me just  
8 correct the record on that. I think you said  
9 supercritical is 14,098, but at least on the copy I'm  
10 looking at supercritical is light blue which -- I'm  
11 sorry, the bar that ends with 14,098 is in light blue  
12 which is Subcritical.

13 MR. BENTINE: Subcritical. I must have  
14 misread; I'm sorry. Mr. Colangelo is absolutely  
15 right. Subcritical is the 14,098, and supercritical  
16 is the 12,159.

17 MR. COLANGELO: Thanks. Just to clear  
18 that up.

19 Q. RCF-hard-to-read-30.

20 A. This is a direct copy from the source  
21 listed below.

22 Q. And this was a presentation by Black &  
23 Veatch?

24 A. Yes.

1 Q. And, by the way, do you know whether or  
2 not Black & Veatch did any work with AMP-Ohio with  
3 regard to its determinations to build AMPGS?

4 A. I wasn't supplied with any of those  
5 documents.

6 Q. That wasn't my question. My question  
7 was: Do you know?

8 A. No, I don't know.

9 Q. Do you know the assumptions that went  
10 into his net heat rate for each of those kind of --

11 A. No, I don't.

12 Q. Okay. Hard-to-read RCF-31.

13 A. Yes.

14 Q. The same is true for that one?

15 A. Yes.

16 Q. And the same for 32?

17 A. Yes.

18 MR. BENTINE: If I could have about five  
19 minutes, your Honor, to go through my notes, I've  
20 probably got some cleanup that I need to do, but I'm  
21 very close to being done.

22 EXAMINER BOJKO: Sure. Go off the record  
23 for five minutes.

24 (Recess taken.)



1 EXAMINER BOJKO: Let's go back on the  
2 record.

3 Q. A little bit of cleanup, and I apologize,  
4 I'm going to bounce around a little bit, Mr. Furman.  
5 First of all, would you agree that anybody that  
6 claims to be an expert on projecting prices is not  
7 really an expert because all the projections in the  
8 past have been wrong?

9 A. In terms of fuel costs, yes.

10 Q. Okay. Been wrong about a lot of things,  
11 haven't they?

12 A. Yep.

13 Q. I'm sorry if I repeat any of this. With  
14 regard to your efforts at Sanford and Brayton that we  
15 talked about earlier on the coal conversions at those  
16 plants, you were not the primary engineer on those  
17 and you didn't sign as a PE; is that correct?

18 A. That's correct.

19 Q. And you're not a PE; is that correct?

20 A. No; that's correct.

21 Q. Is it your belief or understanding that  
22 approximately 85 to 90 percent of the current natural  
23 gas used in the United States is imported?

24 A. Yes. Excuse me. Domestic, not imported.

1 Q. Domestic. By that you mean North  
2 American.

3 A. Yes.

4 Q. Yeah, I'm sorry.

5 A. Do we need to clear up the record on  
6 that?

7 Q. I think we need to clear it up now that  
8 I've messed it up completely.

9 A. Probably something like 85 to 90 percent  
10 of the natural gas used in this country is domestic.

11 Q. Thank you.

12 In your testimony you offer no opinions  
13 on energy efficiency, do you?

14 A. No.

15 Q. And you offer no analysis of natural gas  
16 combined cycle.

17 A. Actually, there is some in the DOE  
18 report.

19 Q. But other than that you didn't make any  
20 conclusions with regard to natural gas combined  
21 cycle.

22 A. Other than it's an option that should be  
23 considered.

24 Q. I understand your testimony to be that

1 you believe that carbon capture at an IGCC electric  
2 facility is commercially viable; is that correct?

3 A. Yes.

4 Q. Would you agree with me that the --

5 A. Commercially available.

6 Q. Available. Is it commercially viable?

7 A. What is your definition of "viable"?

8 Q. Can it be done at a reasonable cost?

9 A. It can be done at the lowest cost of any  
10 option.

11 Q. I want to go back to what -- do you still  
12 have a copy of AMP-O 9?

13 A. Yes.

14 Q. Does MIT agree with your conclusion with  
15 regard to the commercial availability of IGCC with  
16 carbon capture?

17 A. In what context?

18 Q. Do they believe that the technology for  
19 IGCC for CCS needs additional work before it is  
20 commercially viable?

21 A. I believe since I met with their project  
22 team after they produced this report and gave them my  
23 critique that I have an understanding of what they  
24 meant by their report, and I believe that the aspect

1 of CCS that needs the most development work is the S  
2 portion, the sequestration or the storage portion,  
3 and that's what they're indicating needs the most  
4 work.

5 Q. Well, their words are going to speak for  
6 themselves, Mr. Furman.

7 A. Okay.

8 Q. Have they put out an addendum, based on  
9 your comments?

10 A. No, that's why if you would read me what  
11 conclusion they came to, I can put it in its proper  
12 context for you.

13 MR. BENTINE: I'm going to refer the  
14 witness to page 111 and 112 of his deposition. May I  
15 approach the witness, your Honor?

16 EXAMINER BOJKO: You may.

17 Q. I'm going to refer you again -- I believe  
18 you said you recalled before having your deposition  
19 taken by Ms. Bott.

20 A. Yes.

21 Q. I'm going to hand you pages 111 and 112  
22 of that, and would you please read beginning line 24  
23 to yourself just to familiarize yourself, line 24 on  
24 page 111 going on to line 8 on page 112?

1 A. Do you want me to read it?

2 Q. Well, let me ask you --

3 MR. FISK: Your Honor, in Mr. Furman's  
4 deposition he talks about this issue and the MIT  
5 report up through page 117 of deposition transcript,  
6 so I believe he should be able to read that far back.

7 MR. BENTINE: I have no problem with  
8 that. Do you want to give him a copy or do you want  
9 him to take mine?

10 A. I guess I'm having trouble understanding  
11 the question. Could you rephrase the question?

12 Q. Right now my question is I wanted you to  
13 read portions of your deposition so I could ask you a  
14 question about it, and I'm certainly fine with your  
15 counsel's request to have you read what they believe  
16 to be --

17 A. The context.

18 Q. -- the entire portion to put it in  
19 context.

20 EXAMINER BOJKO: Could you please provide  
21 counsel -- I believe that's Mr. Bentine's copy. Are  
22 you willing to give that up?

23 Mr. Bentine, did you say we're starting  
24 on line 24 or on line --

1 MR. BENTINE: Well, that's where I  
2 referred him to, it really starts before that, so  
3 perhaps his counsel will point out where he ought to  
4 be reading.

5 A. Do you want me to read starting at --

6 Q. Why don't you start the beginning of page  
7 111 and read on through whatever your counsel gave  
8 you.

9 MR. FISK: Through 117.

10 A. "With respect to" --

11 EXAMINER PRICE: He doesn't want you to  
12 read it out loud. Just familiarize yourself with it.  
13 Mr. Bentine will ask you questions about it.

14 EXAMINER BOJKO: Are you finished,  
15 Mr. Furman?

16 THE WITNESS: Yes.

17 Q. Do you recall being asked a question on  
18 page 112 with regard to the MIT study, "Did they draw  
19 the same conclusion that you did?" Your answer was:  
20 "I don't believe they did."

21 A. Okay.

22 Q. Is that correct?

23 A. Yes.

24 Q. Do you wish to change that answer?

1           A.    No.  They -- I could clarify it if you  
2 wanted.

3           Q.    In this case I don't have any problem  
4 since he just did receive his deposition, so I don't  
5 have a problem with that.  Go ahead.

6           A.    The conclusion that they came to, one of  
7 the -- they came to many conclusions.  One of the  
8 major conclusions that they came to is listed in  
9 Exhibit 9 on page x, which is in bold type, which is  
10 "We conclude that CO2 capture and sequestration . . .  
11 is the critical enabling technology that would reduce  
12 CO2 emissions significantly while also allowing coal  
13 to meet the world's pressing energy needs."

14                   So what they've done there is they've  
15 combined the CO2 capture together with the  
16 sequestration, and the critical path item is the  
17 sequestration portion.  The CO2 capture has been  
18 demonstrated for IGCC plants, it has not been  
19 demonstrated at commercial scale for PC plants, and  
20 that's where I don't think we differ so much as far  
21 rather than trying to be more specific and more  
22 definitive.

23           Q.    Okay.  Let's explore that a little bit.  
24 On the excerpt that I have given you, the thing you

1 just quoted is on page x of that which is, and I  
2 apologize, it's the fourth page in; is that correct?

3 A. What I read from?

4 Q. Yes. What you just quoted was the --

5 A. What I quoted was the fourth page.

6 MR. FISK: Can we just clarify for the  
7 record that you're talking about "The Future of  
8 Coal"?

9 MR. BENTINE: Yes. I'm sorry, our  
10 Exhibit 9. Awful to get old.

11 Q. Would you turn to the next page which is  
12 in that exhibit, and would you read for us the second  
13 paragraph on that page?

14 A. "Today, and independent of whatever  
15 carbon constraints may be chosen, the priority  
16 objective with respect to coal should be the  
17 successful large-scale demonstration of the  
18 technical, economic, and environmental performance of  
19 the technologies that make up all of the major  
20 components of a large-scale integrated CCS system -  
21 capture, transportation, and storage."

22 Q. Would you continue, please?

23 A. "Such demonstrations are a prerequisite  
24 for broad deployment at gigatonne scale in response



1 to the adoption of a future carbon mitigation policy,  
2 as well as for easing the trade-off between  
3 restraining emissions from fossil resource use and  
4 meeting the world's future energy needs."

5 Q. Anyplace in that paragraph does that make  
6 a distinction between IGCC and PC?

7 A. No, it does not.

8 Q. Would you start at the last paragraph on  
9 the bottom of that page and that starts "What is  
10 needed" and read that for us, please?

11 A. "What is needed is to demonstrate an  
12 integrated system of capture, transportation, and  
13 storage of CO2 at scale."

14 Q. And go on to the next page and the  
15 paragraph on the top.

16 A. "A second high-priority requirement is to  
17 demonstrate CO2 capture for several alternative coal  
18 combustion and conversion technologies."

19 Q. Please go on.

20 A. "At present Integrated Gasification  
21 Combined Cycle is the leading candidate for  
22 electricity production with CO2 capture because it is  
23 estimated to have lower cost than pulverized coal  
24 with capture; however, neither IGCC nor other coal

1 technologies have been demonstrated with CCS. It is  
2 critical that the government RD&D program not fall  
3 into the trap of picking a technology 'winner,'  
4 especially at a time when there is great coal  
5 combustion and conversion development activity  
6 underway in the private sector in both the United  
7 States and abroad."

8 Q. And the beginning sentence in the next  
9 paragraph, because you've been reading for a while,  
10 states "Approaches with capture other than IGCC could  
11 prove as attractive with further technology  
12 development" and then it goes on; is that correct?

13 A. Yes.

14 Q. Would you turn the page, then, and go on  
15 to the top of the next page which is marked as xiv on  
16 the bottom? And could you read that paragraph to us?

17 A. On the next page in red?

18 Q. It starts "From the standpoint."

19 A. "From the standpoint of a power plant  
20 developer, the choice of a coal-fired technology for  
21 a new power plant today involves a delicate balancing  
22 of considerations."

23 Q. You can stop there. No, go ahead, I'm  
24 sorry, I shouldn't have stopped you.

1 MR. FISK: Your Honor, I'd like to  
2 object. This document is not in evidence as of now  
3 and Mr. Bentine is having the expert read entire  
4 portions of it into the record.

5 EXAMINER BOJKO: Actually, your witness  
6 referenced it in his testimony, I believe.

7 Is that correct, did you reference this  
8 in your testimony?

9 THE WITNESS: Yes, I did.

10 EXAMINER BOJKO: Then it's allowed.

11 MR. BENTINE: And for your Honor, this is  
12 the last thing I'm going to have him read.

13 THE WITNESS: It's okay, I need practice  
14 reading.

15 Q. (By Mr. Bentine) I know perhaps "tedium"  
16 is not a recognized objection, but I understand it,  
17 so if you'll just read from then -- go on from  
18 "involves a delicate balancing of considerations."  
19 "On the one hand."

20 A. "On the one hand, factors such as the  
21 potential tightening of air quality standards for  
22 SO<sub>2</sub>, NO<sub>x</sub>, and mercury, a future carbon charge, or the  
23 possible introduction of federal or state financial  
24 assistance for IGCC would seem to favor the choice of

1 IGCC. On the other hand, factors such as near-term  
2 opportunity for higher efficiency, capability to use  
3 lower cost coals, and the ability to cycle the power  
4 plant more readily in response to grid conditions,  
5 and confidence in reaching capacity factor/efficiency  
6 performance goals would seem to favor the choice of  
7 super critical pulverized coal. Other than  
8 recommending that new coal units should be built with  
9 the highest efficiency that is economically  
10 justifiable, we do not believe that a clear  
11 preference for either technology can be justifiable."

12 Q. Thank you.

13 A. "Can be justified."

14 Q. Would you agree with me, Mr. Furman, that  
15 if AMP-Ohio had the desire and ability to change its  
16 plans and go to IGCC for this particular project,  
17 that that would be without risk?

18 A. I believe less risk.

19 Q. I understand that. But it would have  
20 risks.

21 A. Obviously.

22 Q. By the way, what's the target for CO2  
23 removal on most of these that I think DOE has  
24 established as the target for percentage removal of

1 CO2 for CCS?

2 A. For the studies it's 90 percent.

3 Q. 90 percent. And when you were talking  
4 about, earlier today, those hydrogen-rich combustion  
5 turbines that could stand the hydrogen-rich gas, have  
6 any of those run on syngas that has had 90 percent  
7 carbon dioxide removal?

8 A. I don't know.

9 Q. To get to 90 percent you need two shifts,  
10 do you not?

11 A. Yes.

12 Q. And would you agree that one shift gets  
13 you something around 60 percent?

14 A. Yes.

15 Q. Are you aware -- well, I've asked that.  
16 I'll withdraw that.

17 Going back to my hypothetical, if  
18 AMP-Ohio had the desire and the ability to build its  
19 need for baseload generation, part of its need, let  
20 me put it that way, for baseload generation by  
21 building a thousand megawatts of IGCC, do you know  
22 whether or not your clients would support that?

23 A. I believe the different clients have  
24 different positions.

1 Q. Sierra Club wouldn't support it, would  
2 they?

3 A. No, not without -- they probably would  
4 not support any coal plant.

5 Q. And NRDC?

6 A. Would probably support a coal plant that  
7 had carbon capture.

8 Q. Okay. And what about --

9 A. And sequestration.

10 Q. Okay. And what about OEC?

11 A. I believe they would probably . . .

12 Q. If you don't know, that's fine.

13 A. I don't know.

14 MR. BENTINE: That's all I have, your  
15 Honor.

16 Thank you, Mr. Furman.

17 THE WITNESS: You're welcome.

18 EXAMINER BOJKO: Staff, do you have any  
19 questions?

20 MR. JONES: No questions, your Honor.

21 EXAMINER BOJKO: Redirect?

22 MR. FISK: I just wanted to make sure any  
23 other --

24 EXAMINER BOJKO: If you recall, we

1 stated -- Mr. Bentine raised the issue earlier about  
2 that Miss Young would have to go before him. We  
3 asked her at that time if she had any questions and  
4 she said "No." So at this time she will have an  
5 opportunity to recross after you go.

6 MR. FISK: Okay.

7 EXAMINER BOJKO: So the order will be you  
8 will redirect, then Miss Young may ask recross, and  
9 then we'll go back to Mr. Bentine.

10 MR. FISK: Could I ask for five minutes?

11 EXAMINER BOJKO: Sure. Five minutes.

12 (Recess taken.)

13 EXAMINER BOJKO: Mr. Fisk.

14 MR. FISK: Thank you, your Honor.

15 - - -

16 REDIRECT EXAMINATION

17 By Mr. Fisk:

18 Q. Hello, Mr. Furman.

19 A. Hi.

20 Q. I'd like to ask you a few questions on  
21 redirect regarding your testimony here. The first is  
22 if you could refer to AMP-Ohio Exhibit 5 which is the  
23 Tampa Electric press release.

24 A. Yes.

1           Q.    Do you recall being asked about this by  
2 Mr. Bentine?

3           A.    Yes, I do.

4           Q.    Okay.  If you could refer to paragraph 3,  
5 the one that starts with "President Chuck Black."

6           A.    Yes.

7           Q.    And do you recall earlier discussing that  
8 there was a -- the sentence there about the risks  
9 involved?

10          A.    Yes, I do.

11          Q.    And could you explain your view of what  
12 is being discussed there?

13          A.    Yes.  There are obviously going to be  
14 risks associated with either technology, whether you  
15 choose pulverized coal or IGCC.  And the problem is  
16 trying to quantify that risk and decide where there  
17 is more risk.

18                   Fortunately for us the technology for  
19 capturing -- the greatest risk, I believe, is  
20 building a plant, building a PC plant and then us  
21 having to meet stringent CO2 requirements for that  
22 plant that's going to add an extra burden to the  
23 ratepayers that, as we saw, increasing the cost  
24 anywhere from 60 to 85 percent to the cost of



1 electricity for the production of that electricity at  
2 the power plant.

3           That's a significant economic risk that a  
4 utility is taking by building a coal-fired power  
5 plant. Well, how do you minimize that risk? You  
6 minimize that risk by at least having a commercially  
7 available technology that you can add to that plant  
8 to control the CO2.

9           There happens at the present time not to  
10 be any commercially viable technology that's been  
11 demonstrated at commercial scale to capture CO2 from  
12 a PC plant. There's technology that's being  
13 developed, it's at the laboratory scale, or maybe  
14 it's going to be tried at a 1 megawatt scale, but  
15 that's a far cry from something that's commercially  
16 available and can be used at a thousand megawatt  
17 scale.

18           Fortunately, we don't have that problem  
19 with an IGCC plant because we do have commercially  
20 available technology that's in use that has been  
21 operating that can capture carbon dioxide from a  
22 gasification plant.

23           And as I was trying to describe it  
24 before, it's really a three-step process, the first

1 step is gasifying the coal to make the syngas, the  
2 second process is cleaning up the syngas to remove  
3 the CO2, and the third step is using that syngas,  
4 that clean syngas, as a fuel in a combined cycle  
5 power plant.

6 Well, we have all of those process steps  
7 already demonstrated at commercial scale, so when the  
8 MIT report says, or anyone else says it hasn't been  
9 demonstrated on an IGCC plant, that's correct, all of  
10 those pieces have never been put together, but  
11 there's very little risk in putting those three  
12 pieces together because they've all been done on a  
13 commercial scale already.

14 I can take you to a plant in North Dakota  
15 that's gasifying coal, that's removing the CO2, and  
16 they happen to be using that clean syngas as a  
17 starting material for them to make synthetic natural  
18 gas, which they've been doing since 1984.

19 It just so happens that what we want to  
20 do in this application is use that syngas to fuel a  
21 combined cycle power plant. So there's very little  
22 risk in us going down that path knowing that we have  
23 the technology to do it.

24 Yes, it will cost additional money, but

1 at least if we have an environmental urgency, which I  
2 believe we do have, we have a technological solution  
3 to it.

4 EXAMINER BOJKO: So you're basically  
5 saying you disagree with President Chuck Black's  
6 statement that his customers and shareholders will be  
7 exposed to risk?

8 THE WITNESS: No; I don't disagree with  
9 him. I wholeheartedly agree with him that he's not  
10 willing to take that risk yet because he does not  
11 know the cost. No utility executive wants to take  
12 the risk of an unknown future cost. He doesn't know  
13 if once he builds this plant the legislature in  
14 Florida may say "You have to capture 90 percent of  
15 the CO2" and that's going to increase the cost of his  
16 electricity production by 30 percent. He doesn't  
17 want to take that risk.

18 EXAMINER BOJKO: Okay.

19 THE WITNESS: So they're going to go back  
20 to the drawing board and try and decide is it  
21 conservation, is it renewables, is it a combined  
22 cycle natural gas plant. All are options that I  
23 would recommend they look at, but also they could  
24 look at putting in a natural gas combined cycle unit

1 that has future coal capability, that means choosing  
2 the site so it can bring in coal at a later date,  
3 gasify it, and feed it to the combined cycle natural  
4 gas unit.

5 So there are really a myriad of options  
6 that can be narrowed down to probably three or four  
7 options that utilities ought to be looking at more  
8 aggressively now that we have this new criteria that  
9 we look like we're going to have to meet which is CO2  
10 control.

11 Q. (By Mr. Fisk) So you stated that there is  
12 a risk with the pulverized coal plant, correct?

13 A. That is there is a?

14 Q. There is a risk with a pulverized coal  
15 plant, correct?

16 A. Yes, which I believe is far greater than  
17 an IGCC plant.

18 Q. And why is that far greater?

19 A. Because the technology that's presently  
20 available to capture CO2 in a pulverized coal plant  
21 is only in its infancy. As an example, the Powerspan  
22 technology, it looks like it's very good technology  
23 and I wholeheartedly endorse the development of that  
24 technology, but it's only in its infancy. It's only

1    been done in a laboratory on laboratory-size  
2    equipment.

3                   The stages that technology has to go  
4    through is it's got to then be done in a pilot plant  
5    which they're proposing at 1 megawatt, which may be  
6    done in 2008, and then in 2012 it may be done at  
7    125 megawatts. That's their development plan. Each  
8    of those steps take time and have hurdles that have  
9    to be overcome because there are many technologies  
10   that are successful in the laboratory that never see  
11   the light of day in commercial applications.

12                   So the likelihood of that being  
13   successful is fairly small and we shouldn't be  
14   counting on things that aren't commercially available  
15   if we have an urgent problem to solve.

16                   Q.   And how many years do you believe that  
17   process will take to show that Powerspan could be  
18   commercially available?

19                   MR. BENTINE: I'm going to object, this  
20   is outside the scope of my cross.

21                   MR. FISK: I think it's --

22                   EXAMINER BOJKO: Can you read the  
23   question?

24                   (Question read.)

1 MR. FISK: Your Honor, it's relevant to  
2 Powerspan which was brought up by Mr. Bentine.

3 MR. BENTINE: I said the words, but I  
4 didn't say anything about how long it was going to be  
5 to develop.

6 MR. FISK: And it's also relevant to this  
7 discussion regarding the MIT study regarding  
8 pulverized coal versus IGCC coal.

9 EXAMINER BOJKO: I'll give you a little  
10 bit of leeway because alternate technologies were  
11 discussed, but actually I don't even remember hearing  
12 the word "Powerspan," so --

13 MR. FISK: I believe Powerspan --

14 EXAMINER BOJKO: -- short leash.

15 MR. FISK: I believe Powerspan is the  
16 same as aqueous ammonia.

17 EXAMINER BOJKO: What?

18 MR. FISK: Aqueous ammonia, which was  
19 discussed earlier.

20 EXAMINER BOJKO: You may answer.

21 THE WITNESS: It was Exhibit 6.

22 EXAMINER BOJKO: Go ahead and answer.

23 THE WITNESS: Could you repeat the  
24 question?

1 MR. FISK: Could you please repeat the  
2 question?

3 (Question read.)

4 A. My experience has been that in developing  
5 new technologies it takes anywhere from five to ten  
6 years to go through each step in the process, and  
7 here we have three or more steps, so it's going to  
8 take a minimum of probably 15 years before we know  
9 whether this would be a commercially viable  
10 technology to even consider for a plant the size of  
11 AMPGS.

12 Q. And to be clear, we're talking about  
13 Powerspan for CO2 capture, correct?

14 A. Correct.

15 Q. If I could refer you to AMP-Ohio Exhibit  
16 6.

17 A. Yes.

18 Q. Which discusses aqueous ammonia, correct?

19 A. Yes.

20 Q. Do you remember Mr. Bentine asking you  
21 about this study?

22 A. Yes.

23 Q. And do you remember a reference on page 2  
24 of that study regarding a cost at \$14 per metric ton

1 for capturing CO2?

2 A. Yes.

3 Q. And in your opinion what is your opinion  
4 of that cost figure?

5 A. It's a very preliminary cost figure  
6 because all they have to rely on is laboratory data  
7 and they have to make projections from that of what  
8 they think it will look like in the future in a  
9 commercial size.

10 Since then the president of Powerspan has  
11 come out and indicated a cost figure of \$20 per  
12 metric ton, so I think it's difficult to project what  
13 those costs would be and I would hesitate to put any  
14 reliance on those numbers.

15 Q. Are those numbers likely to be higher?

16 A. Yes. My experience has been that the  
17 costs always increase as you go through the -- almost  
18 always increase as you go through the development  
19 cycle.

20 Q. Mr. Furman, do you remember Mr. Bentine  
21 asking you a question about the size of Duke Energy?

22 A. Yes.

23 Q. And Duke Energy has proposed an IGCC  
24 plant?



1           A.    Yes.

2           Q.    Do you know of small utilities that are  
3 considering IGCC technology?

4           A.    Yes.  Actually, it runs the whole gamut  
5 from large utilities like Duke to intermediate size  
6 utilities like Tampa Electric to small municipals  
7 like Gainesville Regional Utilities.  Gainesville  
8 Regional Utilities is considering adding an  
9 additional coal unit and their evaluation -- their  
10 independent evaluation indicated that IGCC would be  
11 the best option for them, so they're pursuing that at  
12 the 200- to 300-megawatt scale.

13          Q.    When you refer to "small utilities," what  
14 size are you --

15          A.    That municipal utility is certainly  
16 smaller than AMP-Ohio.

17          Q.    If you could turn to Exhibit RCF-5 in  
18 your testimony.

19          A.    Yes.

20          Q.    And just to make sure we're on the same  
21 page, just briefly what is that exhibit?

22          A.    That's the MIT relative cost of  
23 electricity comparison for PC and IGCC units with and  
24 without CO2 capture.

1 Q. And why is relative cost relevant?

2 A. What you'll find is that different  
3 studies were done at different points of time, and  
4 also used different input assumptions, therefore,  
5 it's very useful to compare the studies on a relative  
6 basis as opposed to an absolute basis. You'll see  
7 that the prices of electricity that were used in the  
8 MIT study were quite low; I think we talked about  
9 4.69 cents per kilowatt-hour. That's a very low  
10 number and that's because of the time frame that they  
11 used was fairly early on and before we went through a  
12 lot of the construction cost price increases.

13 So another reference point that I  
14 included was Exhibit RCF-6 which shows a more current  
15 price for IGCC and PC plants which shows, as an  
16 example, the subcritical PC without carbon capture at  
17 6.4 cents. So you see a higher price, a higher  
18 baseline that they used because of the time frame  
19 that they did their study.

20 So it's not to say that -- it's probably  
21 an indication that the DOE study probably has a  
22 little more credibility associated with it because it  
23 was done later in time. They have more engineers  
24 available experienced in these technologies that they

1 can put to bear on the study, so I tend to rely more  
2 on the DOE study than I do the MIT study for cost  
3 figures.

4 Q. If you could turn to page 19 of your  
5 testimony. Do you recall Mr. Bentine asking you  
6 about the emission reductions that an IGCC plant can  
7 achieve?

8 A. Yes.

9 Q. In your opinion can an IGCC plant achieve  
10 greater reductions in air emissions than a PC plant?

11 A. Yes, much greater, and I tried to  
12 demonstrate that in some of my exhibits, and if I  
13 could I have some charts that show that. Would it be  
14 okay if I showed the charts which are basically a  
15 blow-up of the exhibits in my text? It just allows  
16 me to point out where the differences are in the  
17 emissions.

18 MR. FISK: They're a blow-up of a couple  
19 of the exhibits in the testimony.

20 EXAMINER BOJKO: Do you have an  
21 objection?

22 MR. BENTINE: If they're exhibits that  
23 are simply blow-ups of what is in his current  
24 testimony, we crossed on that and I suppose they can

1 redirect. I wondered what those were for.

2 EXAMINER BOJKO: Might as well use them  
3 if you paid for them.

4 MR. FISK: May I approach?

5 THE WITNESS: Can you see that?

6 EXAMINER BOJKO: Yes.

7 Q. (By Mr. Fisk) Could you just describe  
8 this exhibit?

9 A. Sure. To answer the question of is this  
10 causing the minimum environmental impact and is it --

11 MR. BENTINE: I'm going to object right  
12 there. That's not the question that was asked when  
13 we started all this.

14 EXAMINER BOJKO: Could you read back the  
15 question, please?

16 THE WITNESS: The reason I --

17 EXAMINER BOJKO: Wait. Let her read the  
18 question.

19 (Question read.)

20 EXAMINER BOJKO: Can you answer that  
21 question, please?

22 THE WITNESS: Yes, it can, and I tried to  
23 demonstrate that in Exhibit 14. What I did was I  
24 took the various emissions and took the quantity of

1 emissions in tons per year of pollutants that would  
2 be emitted from the AMPS Ohio plant and compared that  
3 with the same size plant with an IGCC design and took  
4 the emission numbers that have already been permitted  
5 in Illinois for the Taylorville IGCC unit. So I used  
6 their already-permitted emission numbers and their  
7 draft permit emission numbers and just compared the  
8 two showing how much less emissions.

9 In essence the IGCC plant, if it were  
10 built to the same capacity, would only produce  
11 35 percent of the NOx emissions of the AMP-Ohio  
12 plant, it would only produce 10 percent of the  
13 emissions of SO2, it would only produce 54 percent of  
14 the particulates, it would only produce 10 percent of  
15 the mercury, and so forth.

16 So this demonstrates to me the  
17 significant reduction in emissions of all pollutants  
18 across the board if you go with an IGCC plant with  
19 the same capacity versus what AMP-Ohio is proposing,  
20 and these are tons per year. Same size plant.

21 EXAMINER BOJKO: This is the list that  
22 you have also spelled out in your testimony, too; is  
23 that correct?

24 THE WITNESS: The list?

1 EXAMINER BOJKO: Somewhere in your  
2 testimony you have written down all of the  
3 differences in emissions, the percentages.

4 THE WITNESS: Yes. Yes.

5 Q. (By Mr. Fisk) And what technology can be  
6 used to control SO2 emissions from an IGCC plant?

7 A. The Selexol technology is being used now  
8 for IGCC units.

9 Q. And what technology can be used to  
10 control NOx emissions from an IGCC plant?

11 A. SCR, selective catalytic reduction, but  
12 because it's being put on the back end just like a  
13 pulverized coal plant, and it intrinsically produces  
14 less NOx, if your starting point is much lower on the  
15 production of NOx that you make and then you add the  
16 best control technology that's available for NOx, you  
17 get much, much lower emission levels. So -- and  
18 those have been demonstrated in IGCC plants.

19 EXAMINER BOJKO: I'm sorry, didn't  
20 Mr. Bentine ask you the Taylorville plant? And I  
21 thought you said it was 630 megawatts.

22 THE WITNESS: It is, and so what I did is  
23 I scaled it up to 960, okay? That's just multiplying  
24 it by a factor to get it to the same size.

1 EXAMINER BOJKO: And I might be confused  
2 with Taylor versus Taylorville now. Is this one in  
3 operation or not in operation?

4 THE WITNESS: No; this has gotten a final  
5 permit, so these are the final permit levels --

6 EXAMINER BOJKO: This is the one that's  
7 appealed by --

8 THE WITNESS: Right.

9 EXAMINER BOJKO: It's being appealed.

10 Q. (By Mr. Fisk) And, Mr. Furman, you state  
11 in your testimony on 19 to 20 that the highest, on  
12 line 25, starting on line 25 on page 19, that the  
13 highest weight should be placed on recently proposed  
14 IGCC plants because they represent the most current  
15 view of IGCC permit levels.

16 A. Yes.

17 Q. Could you explain why those are most  
18 relevant?

19 A. Yes. The IGCC technology is evolving  
20 quite quickly and a number of new control  
21 technologies are being used, that's why in my table I  
22 tried to show the earlier technology that was used on  
23 plants that were built 10 to 15 years ago and what  
24 the emissions are on plants that are being built now.

1           So it's a rapidly improving industry that  
2 allows us to get to these much-improved levels.

3           Q.   When you referred to plants that were  
4 built 10 to 15 years ago, which plants are you  
5 referring to?

6           A.   Yes, I think in some of the -- in some of  
7 my prior testimony I was asked what about the  
8 emissions from the existing IGCC plants, and the  
9 problem with that is the existing IGCC plants have  
10 been in operation for 10 to 12 years; they were  
11 designed 15 years ago. The AMP-Ohio plant isn't  
12 going to be on line until 2012, so we're talking  
13 about a 20-year gap.

14                   It's really not fair to compare an old  
15 technology, 20 years ago, with a new technology that  
16 they're proposing to use now. A fairer comparison is  
17 new versus new, and that's why in the AMP-Ohio  
18 testimony, written testimony that's been given, they  
19 show the IGCC emission levels for plants that have  
20 been operating for over 10 years versus the new  
21 AMP-Ohio plant; I don't feel that's a fair  
22 comparison. We have to compare new to new.

23                   EXAMINER BOJKO: And when's the  
24 Taylorville supposed to be in operation?