

COMMONWEALTH OF PENNSYLVANIA  
PUBLIC UTILITY COMMISSION

ORIGINAL

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Pennsylvania Public Utility Commission, et al. :  
vs. Philadelphia Electric Company. : Docket No.  
Investigation into a requested \$660 million : R-850152  
annual rate increase. :  
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Further Hearing

Pages 664 through 911  
Hearing Room No. 1  
North Office Building  
Harrisburg, Pennsylvania  
Monday, December 16, 1985

Met, pursuant to adjournment, at 10:05 a.m.

BEFORE:

JOSEPH MATUSCHAK, Administrative Law Judge

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C O N T E N T S

|    | <u>WITNESS</u>               | <u>DIRECT</u> | <u>CROSS</u> | <u>REDIRECT</u> | <u>RECROSS</u> |
|----|------------------------------|---------------|--------------|-----------------|----------------|
| 1  |                              |               |              |                 |                |
| 2  | <u>William H. Hieronymus</u> |               |              |                 |                |
| 3  | By Mr. Calvert               | 669           |              | 772             |                |
| 4  | By Mr. Delaney               |               | 671          |                 |                |
| 5  | By Mr. Rubin                 |               | 710          |                 |                |
| 6  | By Mr. Kleppinger            |               | 720          |                 |                |
| 7  | By Mr. Widoff                |               | 732          |                 |                |
| 8  | By Mr. Ettner                |               | 748          |                 |                |
| 9  | By Ms. Ferkin                |               | 754          |                 |                |
| 10 | <u>Cary H. Rush</u>          |               |              |                 |                |
| 11 | By Mr. Calvert               | 776           |              |                 |                |
| 12 | By Ms. Smith                 |               | 780          |                 |                |
| 13 | By Mr. Delaney               |               | 781          |                 |                |
| 14 | By Mr. Rubin                 |               | 787          |                 |                |
| 15 | By Mr. Selkowitz             |               | 819          |                 |                |
| 16 | By Mr. Kleppinger            |               | 823          |                 |                |
| 17 | By Ms. Ferkin                |               | 828          |                 |                |
| 18 | <u>Lewis J. Perl</u>         |               |              |                 |                |
| 19 | By Mr. Calvert               | 831           |              |                 |                |
| 20 | By Mr. Wersan                |               | 836          |                 |                |
| 21 | By Mr. Delaney               |               | 879          |                 |                |
| 22 | By Mr. Widoff                |               | 895          |                 |                |
| 23 | <u>John H. Wile</u>          |               |              |                 |                |
| 24 | By Mr. Calvert               | 907           |              |                 |                |

E X H I B I T S

|    | <u>NUMBER</u>          | <u>FOR IDENTIFICATION</u> | <u>IN EVIDENCE</u> |
|----|------------------------|---------------------------|--------------------|
| 17 |                        |                           |                    |
| 18 | <u>PECo Statements</u> |                           |                    |
| 19 | ✓ No. 15 (Hieronymus)  | 668                       | 671                |
| 20 | ✓ No. 14 (Rush)        | 776                       | 779                |
| 21 | ✓ No. 11 (Perl)        | 831                       | 834                |
| 22 | ✓ No. 29 (Wile)        | 907                       | 909                |
| 23 |                        |                           |                    |
| 24 |                        |                           |                    |
| 25 |                        |                           |                    |

E X H I B I T S (Continued)

| 1 | 2             | 3  | 4 | 5 | 6 | 7   | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25  |
|---|---------------|--|---|---|---|-----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
|   | <u>NUMBER</u> | <u>OCA Exhibit No.</u>                               |   |   |   |     |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 24 (IR-OCA-15-8)                                     |   |   |   | 716 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 35 (IR-OCA-18-17)                                    |   |   |   | 719 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 36 (IR-OCA-9-12)                                     |   |   |   | 788 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 37 (Excerpt from decision<br>in I-80100341)          |   |   |   | 791 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 38 (IR-OCA-2-22)                                     |   |   |   | 798 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 39 (IR-OCA-5-6)                                      |   |   |   | 801 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 40 (IR-OCA-6-19)                                     |   |   |   | 809 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 41 (IR-Staff-1-7)                                    |   |   |   | 810 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 42 (IR-OCA-9-10)                                     |   |   |   | 812 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 43 (IR-OCA-15-2)                                     |   |   |   | 812 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 44 (Excerpt from I-80100341<br>testimony of L. Perl) |   |   |   | 852 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 45 (Rebuttal testimony of<br>L. Perl)                |   |   |   | 856 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 46 (IR-OCA-16-9)                                     |   |   |   | 871 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 47 (IR-OCA-16-2)                                     |   |   |   | 872 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 48 (IR-OCA-16-5)                                     |   |   |   | 874 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 49 (IR-OCA-16-1)                                     |   |   |   | 874 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | <u>Staff Exhibit No.</u>                             |   |   |   |     |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 7 (IR-Staff-LIM-07)                                  |   |   |   | 893 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | <u>UPP/UCC Exhibit No.</u>                           |   |   |   |     |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|   |               | 1  |   |   |   | --- |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 906 |
|   |               | 2  |   |   |   | --- |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 906 |

E X H I B I T S (Continued)

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NUMBER

FOR IDENTIFICATION    IN EVIDENCE

GEC Exhibit No.

3 (Excerpts from  
OCA-2-25)

766

771

PAIEUG Exhibit No.

1 (DR-Staff-LIM-10)

825

828

-0-

P R O C E E D I N G S

1  
2 ADMINISTRATIVE LAW JUDGE JOSEPH MATUSCHAK: May I have  
3 your attention, please. This is the time and place for a  
4 further hearing in the matter of the Pennsylvania Public  
5 Utility Commission versus Philadelphia Electric Company at  
6 R-850152.

7 Are the parties ready to proceed?

8 MR. CALVERT: Yes, Your Honor.

9 JUDGE MATUSCHAK: Are there any preliminary matters  
10 to come up before we proceed?

11 MS. SMITH: Yes, Your Honor, if I may. Trial Staff  
12 has been looking into the tentative dates for public input  
13 hearings. I had one response from a consumer group counsel,  
14 which recommended that the public inputs be held after  
15 January 21st and that there be two held in Philadelphia,  
16 which is the normal course.

17 After speaking with Vivian Bentzel over in the ALJ  
18 office, we have established a tentative schedule which will  
19 be submitted to the Commission, and I would like to present  
20 that to the parties at this time.

21 JUDGE MATUSCHAK: Excuse me. There was also a request  
22 from Senator Bell to have a public input hearing in Media.

23 MS. SMITH: That's correct, Your Honor. The initial  
24 one we have scheduled is for Thursday -- it will be in the  
25 afternoon -- January 23rd in Media. That will follow the two

1 days of evidentiary hearings being held in Philadelphia. The  
2 next one we have tentatively scheduled is for Monday,  
3 February 3rd in Doylestown. That is in the evening. The  
4 following one would be Tuesday, February 4th, which will be  
5 in Philadelphia, the city itself, in the afternoon and  
6 evening sessions.

7 We then have hearings February 5th to the 7th, and we  
8 can either have those follow in Philadelphia or move back  
9 to Harrisburg. That will be at the discretion of the  
10 Administrative Law Judge.

11 JUDGE MATUSCHAK: Will the parties note that and see  
12 if they have further suggestions? We would call special  
13 attention to the consumer complainants, those representing  
14 consumer complainants for any further suggestions, to get  
15 back to Ms. Smith or Vivian at the ALJ's office.

16 MS. SMITH: Again, Your Honor, these are subject to  
17 the approval of the Commission. They intend to be present  
18 for them. Thank you.

19 MR. DELANEY: Your Honor, I have another matter. The  
20 Staff today will file its reply to the company's new matter  
21 on our Motion in limine. I was going to make a suggestion  
22 that we could have some short oral argument on it later in  
23 the week, and I would certainly be glad, with your approval,  
24 to do that at the end of the week to allow the company an  
25 opportunity to review our pleading that we will file today.

1 The suggestion I have would be perhaps starting early  
2 on Thursday maybe at 9:30 for a short period.

3 JUDGE MATUSCHAK: Very well. Remind us on Wednesday.

4 Philadelphia Electric, do you have a witness?

5 MR. CALVERT: Your Honor, we are ready to proceed, if  
6 you like.

7 Your Honor, my name is Jay Calvert. I will be  
8 representing Philadelphia Electric Company and presenting its  
9 next few witnesses.

10 Your Honor, we have previously distributed to Your  
11 Honor and to all parties and to the court reporter copies  
12 of the direct testimony of William H. Hieronymus, and I would  
13 ask at this time that Your Honor have marked for identifica-  
14 tion as PECO Statement No. 15 Dr. Hieronymus' direct testimony  
15 and exhibits.

16 JUDGE MATUSCHAK: So marked.

17 (Whereupon, the documents  
18 weremarked as PECO State-  
19 ment No. 15 and Exhibits  
20 WHH-1 to WHH-29 for identi-  
21 fication.)

22 JUDGE MATUSCHAK: Dr. Hieronymus, we need to have you  
23 sworn.

24 Whereupon,

25 WILLIAM H. HIERONYMUS

having been duly sworn, testified as follows:

## DIRECT EXAMINATION

1 BY MR. CALVERT:

2 Q Would you please state your name for the record?

3 A William H. Hieronymus.

4 Q Could you give us your business position and your  
5 business address?

6 A I am a Director of the firm of Putnam, Hayes & ...  
7 Bartlett at 124 Mt. Auburn Street, Cambridge, Massachusetts.

8 Q Dr. Hieronymus, do you have before you a document  
9 of some 109 pages entitled "Direct Testimony of William H.  
10 Hieronymus," PECO Statement No. 15?

11 A Yes, I do.

12 Q Is that document your direct testimony in this  
13 proceeding?

14 A Yes, it is.

15 Q Was it prepared by you or under your direction?

16 A Yes.

17 Q Are there any corrections which you wish to make  
18 to your written testimony at this time?

19 A There is one correction to one of the exhibits  
20 which are appended to that testimony; specifically on  
21 Exhibit WHH-20. In the column headed 12/1980, there appears  
22 the number "8." That number should be "7."

23 Other than that, I have no revisions or corrections.

24 MR. DELANEY: Excuse me. Mr. Calvert, could you repeat  
25

1 that reference?

2 MR. CALVERT: It is Exhibit WHH-20. In the column  
3 entitled "12/1980," the right-hand column, the bottom part,  
4 there is the number "8." That number should be "7."

5 MR. DELANEY: Thank you.

6 BY MR. CALVERT:

7 Q. Dr. Hieronymus, if I were to ask you the questions  
8 set forth in your direct testimony, would your answers be as  
9 they appear therein subject to the correction you just made?

10 A. Yes, they would.

11 Q. Would those answers be true and correct at this  
12 time?

13 A. Yes.

14 Q. Now, as part of your direct testimony, did you  
15 submit any exhibits?

16 A. Yes.

17 Q. Are those the exhibits appended to your testimony  
18 as WHH-1 to WWH-29 inclusive?

19 A. That's correct; yes.

20 Q. Were those exhibits prepared by you or under your  
21 direction?

22 A. Yes.

23 MR. CALVERT: Your Honor, I move that the direct  
24 testimony of Dr. Hieronymus as corrected be admitted as part  
25 of the record of this proceeding and identified as PECo

1 Statement No. 15 and that the exhibits be admitted as part  
2 of the record and identified as Exhibits WHH-1 through WHH-29  
3 subject to any timely motion to strike.

4 JUDGE MATUSCHAK: Under those conditions, the motion  
5 is granted.

6 (Whereupon, the document marked  
7 as PECO Statment No. 15 and  
8 Exhibits Nos. WHH-1 to WHH-29  
9 were received in evidence.)

10 MR. CALVERT: Dr. Hieronymus is available for cross-  
11 examination.

12 CROSS-EXAMINATION

13 BY MR. DELANEY:

14 Q Good morning, Dr. Hieronymus. My name is Dan  
15 Delaney. I represent the Trial Staff in this matter. I have  
16 some questions on your direct testimony.

17 Looking through your testimony, Dr. Hieronymus, would  
18 it be correct that the materials that you have quoted in  
19 single-spaced blocks -- and I note that those materials are  
20 on pages 16, 19, 30, 31 and 54 -- are other sources that you have  
21 relied on and that the balance of your testimony reflects  
22 your own opinions?

23 Do you understand the question?

24 A Yes, and that is correct.

25 MR. CALVERT: Mr. Delaney, may I just point out for  
accuracy of the record that I believe the quote on page 16

1 actually begins on page 15.

2 MR. DELANEY: Very well.

3 BY MR. DELANEY:

4 Q Dr. Hieronymus, as I understand the initial por-  
5 tion of your testimony, it addresses the standards that you  
6 believe are appropriate in resolving the rate base treatment  
7 of Limerick 1.

8 Now, is it correct that you are offering this testimony  
9 as a utility economist?

10 A Yes.

11 Q Are you currently a member of the American Economic  
12 Association?

13 A I frankly don't know. It depends on whether I  
14 paid my dues recently. I have been a member.

15 Q You mean financial dues, I assume?

16 A Yes.

17 Q So you don't know the answer to the question?

18 A No, I don't. I have been a member in the past.  
19 I do not know whether I am currently.

20 Q Dr. Hieronymus, would you agree that utility  
21 regulation involves both economic and legal considerations?

22 A Yes.

23 Q In your own experience, have you ever acted as  
24 a regulator either acting as a presiding officer at an  
25 administrative proceeding dealing with utility regulation

1 or as a sitting public utility commission?

2 A. No.

3 Q. At the time that this testimony was prepared, had  
4 you researched the Pennsylvania precedence on the prudence  
5 of utility management actions, excess generating capacity  
6 adjustments or used and useful utility plant?

7 A. I can't say that I necessarily have read all of  
8 them. I certainly have read several.

9 Q. I have some here. Maybe you can indicate to me  
10 which of these you are familiar with.

11 Concerning the Philadelphia Electric Company, are you  
12 familiar with the Commission's order at R.I.D 438, which  
13 was entered on February 5th, 1979 concerning the prudency  
14 of the construction of the Salem Unit I and the Commonwealth  
15 Court's subsequent review of that order?

16 A. I have read it at one time, yes.

17 Q. What about the Commission's order at R.I.D. 865  
18 making an excess capacity adjustment in one of the utility's  
19 rate cases on an order entered May 9, 1980 and the Common-  
20 wealth Court's subsequent affirmance of that adjustment?

21 A. Yes.

22 Q. You are familiar with that and you have read it?

23 A. Yes.

24 Q. Have you read Administrative Law Judge Klovekorn's  
25 recommended decision in the first Limerick investigation at

1 I-8100341 and the Commission's opinion on that recommended  
2 decision of August 27, 1982?

3 A. Yes.

4 Q. Have you read the Supreme Court's affirmance of  
5 that order, the Pennsylvania Supreme Court's affirmance?

6 A. I believe so, yes.

7 Q. Are you familiar with Administrative Law Judge  
8 Turner's recommended decision in the Limerick 2 investiga-  
9 tion at I-840381 and the Commission's order of December 5th,  
10 1985 resolving that investigation?

11 A. Yes.

12 Q. Have you read Administrative Law Judge Kashi's  
13 recommended decision concerning the company's Electric Cost  
14 Rate No. 8 and the Commission order on that subject of  
15 October 30, 1985?

16 A. No.

17 Q. In the matters of the general precedent in  
18 Pennsylvania, have you read Judge Matuschak's decision in  
19 the CAPCO construction schedule investigation, an order  
20 issued on October 15, 1982 at I-79070315 and I-79070317?  
21 Are you familiar with those orders?

22 A. I believe so, yes.

23 Q. Are you familiar with the Commission's order  
24 removing TMI Units 1 and 2 from the rate bases of Met-Ed  
25 and Penelec and the opinions and orders of the Commonwealth

1 Court and the Pennsylvania Supreme Court affirming those  
2 orders?

3 A. I would have to say no. I read them several  
4 years ago, but not recently enough that I recall any of the  
5 contents at all.

6 Q. Have you read this Commission's order on the  
7 Beaver Valley 1 investigation at I-79070314?

8 A. I don't recall that one.

9 Q. Have you read this Commission's recent PP&L  
10 decisions making excess capacity adjustments for that  
11 utility?

12 A. In the Susquehanna 1 and 2 cases?

13 Q. Yes.

14 A. Yes.

15 Q. In view of your last answers, you have read some  
16 of these but not all of the ones I have listed. That would  
17 be correct, wouldn't it?

18 A. Yes.

19 Q. As a general matter, Dr. Hieronymus, would you  
20 agree that the effective regulations places responsibilities  
21 on both the regulator and the regulated?

22 A. Yes.

23 Q. What would you see as the responsibilities of  
24 the regulator?

25 A. Of the regulator?

1 Q Yes.

2 A Could I have a clarification, Mr. Delaney? Are  
3 you asking that as a positive question or a normative one?

4 Q Perhaps you could answer it as briefly as you  
5 could. What I am interested in in terms of the analysis  
6 that you presented: what kind of responsibilities does  
7 an equitable system of regulation place on a regulator?

8 A Well, I think I discuss that implicitly at least  
9 in my testimony with respect to the issues relevant to my  
10 testimony. Of course, there are many other responsibilities  
11 of the regulator.

12 It has a responsibility to the utility and its  
13 investors in my opinion to assure it a reasonable opportunity  
14 to earn a market-required rate of return, and it has a  
15 responsibility to the ratepayers which are within its  
16 jurisdiction to assure itself that the utility is providing  
17 adequate service to the customers and is providing that  
18 service at the least reasonably achievable cost.

19 Q The same question I would ask you to answer in  
20 terms of what the regulated industries or in this case  
21 utilities responsibilities would be under an effective  
22 system of regulation.

23 A Well, it has the collateral responsibility to the  
24 second of those I discussed with respect to the regulator,  
25 namely to provide adequate service and to do so at the least

reasonably achievable cost.

1 It also has responsibilities to its investors to  
2 assure that it prudently takes reasonable actions to assure  
3 that they will earn the market-required rate of return that  
4 I spoke of with respect to the first of the Commission's  
5 responsibilities.

6 So the sets of responsibilities, though they are  
7 owed to different parties, are really quite similar.

8 Now, within that context, of course, there is a  
9 difference in roles in the way in which those responsibili-  
10 ties are exercised. But from a goal standpoint, I think  
11 they are really quite similar.

12 Q In view of your last answer, would you agree  
13 that utilities in making decisions should evaluate the  
14 impacts and the consequences of those decisions not only  
15 on its shareholders but also on its ratepayers?

16 A As a general matter, yes.

17 Q Let me direct your attention to page 8 of your  
18 testimony, Dr. Hieronymus.

19 JUDGE MATUSCHAK: What page?

20 MR. DELANEY: Page 8, Your Honor.

21 BY MR. DELANEY:

22 Q On that page, you conclude that the prudent  
23 investment standard is the sole standard which should be  
24 used in determining the regulatory treatment of Limerick 1.  
25

1 A. I think you have somewhat misstated what I say.  
2 I say it is the primary or even sole standard.

3 What I meant to say there is that it is certainly  
4 the primary standard, and in circumstances where other  
5 standards would grievously conflict with it, I would agree  
6 with your characterization that it should be the sole  
7 standard.

8 Q. Would it be correct to say that in your opinion,  
9 as long as the initial decision to construct Unit 1 was  
10 reasonable, the Commission should not consider any other  
11 result or consequence of the unit's completion or placing  
12 it in the company's rate base?

13 A. No, I don't believe that is my testimony.

14 Q. So it is your position then that not only should  
15 the prudence of the initial decision be examined, but also  
16 the subsequent consequences that result from that?

17 A. No. That isn't what I meant. As again I believe  
18 I have stated in my testimony, the fact that an initial  
19 decision was prudent does not mean it was necessarily prudent  
20 thereafter to go forth and complete the plan. So I think  
21 the Commission could and should inquire as to whether  
22 subsequent decisions to continue construction of the plant  
23 were also prudent.

24 The other matter which may or may not be responsive  
25 to your question, depending on specifically what you mean by

1 placing it in rate base, is that the Commission may choose  
2 to inquire into the optimal timing of the revenue require-  
3 ments associated with that plan; for example, through a  
4 phase-in plan, which is a matter which has nothing to do  
5 with prudence providing, of course, that that phase-in plan  
6 assures that the investor is eventually made whole with  
7 respect to his investment.

8 Q. That would be evaluating the consequences of the  
9 rate impact of putting this plant into rate base, the last  
10 thing that you just addressed?

11 A. Evaluating may be too strong of a term, but  
12 certainly inquiring into, yes.

13 Q. And what you've just responded indicates that a prudence  
14 inquiry could encompass both things, the initial decision  
15 to construct and then the subsequent consequences of that  
16 action at a later point, such as the rate consequences of  
17 putting the plant in rate base?

18 A. No, I don't think so. The latter I raised not  
19 as a prudence issue but as a ratemaking issue. I don't  
20 think it has anything to do with the other. If I gave you  
21 that impression, I'm sorry; I misspoke.

22 Q. Didn't you just respond that that was an issue  
23 that should be evaluated?

24 A. The Commission may want to evaluate it. It would  
25 be within my view certainly something that would be

1 appropriate for the Commission to consider, but not in the  
2 context of prudence. It is an unrelated matter.

3 Q Concerning excess capacity adjustments,  
4 Dr. Hieronymus, would you agree that the generating capacity  
5 of a proposed generating station is at least initially a  
6 matter of judgment for the utility constructing it? Would  
7 it be true that they initially decide what the size of the  
8 plant is that they are going to construct?

9 A You mean that they choose what size of plant  
10 they will construct?

11 Q They determine the size initially; is that  
12 correct?

13 A As I understand your question, if you mean, do  
14 they choose to build a thousand megawatt unit or a 500  
15 megawatt unit, for example, the answer is yes.

16 Q That is correct. That was my question.

17 Would you agree further that the larger the proposed  
18 unit in terms of generating capacity, the greater risk the  
19 utility assumes that the plant may not all be needed at the  
20 time it is completed?

21 A I think your question gets at the heart of an  
22 issue which is very much part of my testimony; so that I  
23 think the answer is probably no. It hinges very much, of  
24 course, on what it means for the plant to be needed.

25 Now, if I can answer a slightly different question --

1 Q Your answer to my initial question was no?

2 A Yes; that is correct.

3 Q Well, would you agree that if a utility, for  
4 whatever reason, makes a decision at the beginning of  
5 constructing a plant that the plant is going to be a certain  
6 size and it chooses in that context to believe favorable  
7 predictions of load forecasts, you do not agree with the  
8 idea that the larger the plant it chooses to construct, the  
9 more reliance it has on these favorable assumptions which  
10 may or may not be true, and therefore the greater risk it  
11 assumes that these forecasts are correct? That's what I'm  
12 going at here.

13 The larger the plant, the greater the risk that the  
14 more reliance and therefore the more risk it has to have on  
15 the load forecast. Do you agree that your statement was  
16 that that is not true?

17 A I frankly don't see what it has to do with the  
18 size of the plant. Certainly it's true that if a utility  
19 commits to build a thousand megawatts seven years hence and  
20 it relies on a load forecast in making that decision, then  
21 it is implicitly relying on the notion that the load will  
22 be higher than it would have if it decided to build 500  
23 megawatts.

24 What I don't see is what the connection is to the  
25 size of the unit.

1 Q Okay. Would you agree that the design of the unit  
2 in terms of generating capacity would have some correspondence  
3 to what it anticipates is its requirements at the time the  
4 plant is completed?

5 A I think in general, yes. Typically, although  
6 there are exceptions -- even some fairly important excep-  
7 tions -- utilities who anticipate relatively small increments  
8 of load growth -- smaller utilities in general -- tend to  
9 build smaller plants than big utilities who expect large  
10 increments of load growth and in general large sizes of  
11 load; so yes, there is that correspondence.

12 Q Let me direct your attention to page 12 of your  
13 testimony, Dr. Hieronymus. On that page, you describe the  
14 response of utility management to regulatory incentives as  
15 an economic issue. That is in the middle of the first  
16 paragraph.

17 Do you see that?

18 A Yes, I do.

19 Q Would you agree that it is possible for utility  
20 management to misread or misinterpret regulatory incentives?

21 A I suppose it is formally possible, but I think  
22 the more likely event is that it is to misread what a regu-  
23 lation is going to do rather than to misread the incentive  
24 content of known regulation.

25 Q Let me give you an example of what I'm talking

1 about here. Suppose in the utility plant they are reviewing  
2 all of the orders issued on a certain issue by the regulatory  
3 authority that they are regulated by, and in terms of making  
4 their planning considerations they are interpreting these  
5 orders in a certain fashion, interpreting the language  
6 in the orders, trends in the regulation by the authority.

7 My question is: is it not possible in making those  
8 kinds of analyses and interpreting the words in the orders  
9 that it is possible for them to perhaps read something into  
10 the orders that is not there or to misinterpret them in  
11 some sense? Would you agree that that is possible?

12 A. Well, certainly it is the case that utilities  
13 have misjudged what regulators ultimately do and it is  
14 certainly possible that they did so on the basis of mis-  
15 reading orders that had occurred previously.

16 I think in all candor at least as likely a set  
17 of circumstances is that the Commission has simply changed  
18 its view of a regulation and hence that the earlier orders  
19 that the utility was interpreting are no longer controlling.

20 Q. So as I understand your response then, the answer  
21 is yes, it is possible?

22 A. It is possible.

23 Q. Would such misinterpretation or misunderstanding  
24 be an issue of management prudence or of management  
25 competency?

1 A. I suppose whether it was elevated to the issue  
2 of being imprudent would be a question of whether it was  
3 reasonable for them to interpret the orders in the way that  
4 it did. So there is a fact question that is not present in  
5 your hypothetical.

6 If the alternative to prudence that you've given me  
7 is competence, if that is the meaning of what you mean by  
8 competence, then if it were not imprudent -- well, whether  
9 it was prudent or not, I suppose it would be an issue of  
10 competence. But that is a fairly strong emotive term. I'm  
11 not sure I'd have used it.

12 Q. In the analysis that you present in your  
13 testimony, do you draw any distinction between competence  
14 and prudence, or do you see them as distinct terms or the  
15 same term?

16 A. I don't use the word "competent." Had I used  
17 it, I think I would distinguish the two, but that is a  
18 matter of my own personal semantics.

19 Q. I would be interested to hear how you would  
20 distinguish the two.

21 A. Well, prudence is a term that I have discussed  
22 at some length in terms of what I believe the appropriate  
23 standards are for judging prudence in my testimony.

24 Competence is a term which I guess is more diffuse.  
25 One might make the argument, although I wouldn't, that the

1 entire nuclear industry has exhibited a competence problem,  
2 including its regulators, the utilities, the constructors  
3 and so forth, in the sense that the plants have turned out  
4 to cost a great deal more than they thought they would.

5 I would distinguish that from the issue of whether  
6 a particular utility relying upon the same beliefs, the  
7 same technical judgments as its brethren were imprudent.

8 Q. Imprudent or incompetent?

9 A. By hypothesis, if everyone was incompetent, then  
10 the utility in question was incompetent.

11 Q. In your opinion, who should be responsible for  
12 the imprudent actions of utility management, the shareholders  
13 or the ratepayers?

14 A. The shareholders.

15 Q. Let me ask you the same question using the  
16 term "competence." Who would be responsible for incompetent  
17 actions of utility management, the shareholders or ratepayers?

18 A. Unfortunately, that's where we get to the  
19 emotional content of the term "competence" which I tried  
20 to resist earlier.

21 To the extent we are talking about less than  
22 optimal decision-making and that's all we mean by incompetent,  
23 then it would be the ratepayers. And that for purposes of  
24 my prior answers is really all that I meant.

25 Q. From your last response then, I would take it :

1 that your position is not that utility investors should be  
2 immune from the shortcomings of the utility management?

3 A. No, of course not.

4 Q. Let me direct your attention to page 14 of your  
5 testimony, Dr. Hieronymus. On that page, you describe the  
6 capital attraction function of regulation. I believe it's  
7 that page -- actually, it's page 13. I'm sorry.

8 A. Yes, I found it.

9 Q. Would you agree that the traditional rate of  
10 return regulation only provides the utility an opportunity  
11 to earn a specified rate of return?

12 A. Yes.

13 Q. Would you also agree a utility may fail to  
14 achieve its authorized rate of return because of forces  
15 not directly related to regulation such as substantial  
16 below-the-line expenses or poor management?

17 A. Among other reasons, yes.

18 Q. In the circumstances I defined in the last  
19 question, who should be responsible for the utility's  
20 failure to achieve its specified rate of return?

21 A. Could you --

22 Q. Do you want me to repeat the question?

23 A. No. I understand the question, but I need a  
24 definition of what you mean specifically by "substantial  
25 below-the-line expenses."

1 Q. Unexpected expenses the utility failed to budget  
2 for or anticipate.

3 A. With respect to what -- I believe you gave me  
4 two parts. One was incompetence and the other was  
5 substantial below-the-line expenses. And I think my  
6 answer --

7 Q. The way I phrased it was "poor management."

8 A. Poor management. Very well.

9 I don't think I can give you a general answer. What  
10 it is that a utility is permitted to budget for is a function  
11 of the regulatory rules of this jurisdiction. So that, for  
12 example, we went through a lengthy period not only in this  
13 state but elsewhere where utilities failed to earn their  
14 allowed rates of return for reasons which were unrelated to  
15 the competence of the utility management, which were  
16 unrelated to its perspicacity in budgeting. They simply  
17 were not allowed to budget for the inflation in fuel cost,  
18 interest expense and so forth which, in fact, took place.

19 So I wouldn't infer automatically or even generally  
20 that the failure to earn the allowed rate of return was a  
21 function of either the lack of perspicacity of management  
22 or its competence.

23 Q. My initial question, Doctor, went to matters  
24 apart from regulation. I gave those only as two.

25 A. I'm afraid I'll have to ask you to restate your

question.

1  
2 Q Let me repeat the question. I asked you if you  
3 agreed whether it's true that a utility may fail to achieve  
4 its authorized rate of return because of forces apart from  
5 regulation. The examples that I gave were unanticipated  
6 expenses or poor management.

7 Now, I think your prior response went to -- you were  
8 talking about regulatory forces that have had that effect  
9 on a utility.

10 A I think the answer is -- and I believe I answered  
11 that question -- I think the answer was yes.

12 Q Then I asked you who did you feel would be  
13 responsible for the utility's failure to earn an authorized  
14 rate of return in those circumstances.

15 A I am back in the same conundrum I was. In a  
16 very abstract sence, I would say the shareholders. That's  
17 the way the rules work and that's the way everybody under-  
18 stands the rules work.

19 My problem in divorcing all of this from regulation  
20 is that the ability to earn one's allowed rate of return  
21 given the variability in, for example, the availability  
22 of plants, given the unpredictability of, for example,  
23 storms is very much a function of regulation.

24 I don't think those are reasonably in all cases  
25 foreseeable events. So the mere fact that they were not

1 forecasted and that under the existing rules they are not  
2 allowed to be recovered may be a fact. That may also mean  
3 that the rules ought to be changed.

4 Q And your prior response really went to unusual  
5 expenses for the utility between rate cases and its  
6 inability to cover them retroactively like storm damages?

7 A That's correct.

8 Q Could I direct your attention to page 15 of  
9 your testimony, Dr. Hieronymous. On that page in the middle  
10 there, you state that the "Ratepayers, not the shareholders,  
11 are the primary beneficiaries of particularly fortunate utility  
12 investments, and, collaterally, also must pay the cost of  
13 service connected with prudent investments which turn out  
14 to be nonoptimal."

15 Do you see that reference?

16 A Yes, I do.

17 Q Is it your position, Dr. Hieronymous, that it  
18 is inappropriate for risk to be shared between shareholders  
19 and ratepayers?

20 A Not under all circumstances, no. I think what  
21 I am attempting to do here is to make a descriptive statement  
22 of what the American system of rate regulation is.

23 Now, I think I say elsewhere in my testimony that  
24 one can conceive of any other number of forms of regulation,  
25 some of which might well be even superior to the existing

1 form of regulation, some of which might well involve risk  
2 sharing between utilities and the ratepayers.

3 Q So your response is that sometimes it is  
4 appropriate that risk be shared between shareholders and  
5 ratepayers?

6 A I think what I'm saying is -- and again, I  
7 testified about this at length -- that under circumstances  
8 where such risk sharing is foreknown and is fairly  
9 implemented, it may very well be appropriate, yes.

10 Q So then it's not your testimony that utility  
11 management shareholders never have any responsibility for  
12 investments that are non-optimal?

13 A I think the sense of my prior answer was that it  
14 could be that way. There may even be places in the United  
15 States currently where it is that way, but that in my  
16 opinion that is not the general standard of American public  
17 utility regulation and that if one were to in a particular  
18 location implement such a scheme of regulation, that there  
19 are sets of circumstances under which that would be  
20 appropriate and sets of circumstances under which it would  
21 not.

22 Q I note on pages 15 and 16 of your testimony,  
23 Dr. Hieronymous, you quote a newspaper article by Alfred E.  
24 Kahn.

25 Would you agree that Mr. Kahn is an expert on

1 regulation and regulated industries?

2 A. Generally, yes.

3 Q. Would you agree that Mr. Kahn has also written  
4 that to the extent feasible, industry should be regulated in  
5 such a way to produce the results that would be produced by  
6 competition?

7 A. Yes. I understand that to be his general  
8 position.

9 Q. Would you also agree that in a competitive market,  
10 shareholders and management directly bear the risks of their  
11 decisions such as producing items of production that are  
12 not purchased and then having adverse economic impacts on  
13 earnings; that it's a direct consequence of -- the... market  
14 can produce direct consequences of imprudent actions that  
15 they may take at one time or another?

16 A. That is one side of the coin, yes. Of course,  
17 the other is that in a competitive market, the shareholders,  
18 should they make inordinately happy investments, are  
19 entitled and will earn substantially in excess of the  
20 ordinary market-required return on capital. I think as  
21 the quotation from Dr. Kahn that I have in my testimony  
22 makes clear, it is both his opinion and mine that to apply  
23 a market paradigm only under circumstances where the invest-  
24 ment turns out to be less than fully fortuitous but for the  
25 ratepayers to take all of the extra profits from highly

1 fortunate investments is quite wrong.

2 So I don't think there is anything inconsistent  
3 certainly with my reliance on Dr. Kahn for the purposes that  
4 I am using him and his more general position about competi-  
5 tion. At least he obviously doesn't think there is that  
6 inconsistency.

7 Q. Let me direct your attention to page 17 of your  
8 testimony, Doctor. There you begin a series -- you describe  
9 conditions that should be met in departures from the prudent  
10 investment standard, and you, through the next page or so,  
11 identify each one.

12 Do you see where I am reading?

13 A. Yes.

14 Q. Your first condition concerns the giving of due  
15 notice. Would you agree that a utility could be given such  
16 notice by a widely publicized event such as the -- I'm sorry;  
17 the investors could be given notice by a widely publicized  
18 event such as the problems utilities are facing with the  
19 construction and operation of nuclear power plants? Do you  
20 think they can get some information that way of perhaps  
21 problems with investments in utilities that are constructing  
22 such plants?

23 A. If your question is, can you learn from what is  
24 happening to your neighbors, the answer is yes; but I'm  
25 not certain what bearing that has on the part of my testimony

1 that you pointed me at which has to do with systems of  
2 regulation.

3 Q I am talking about identifying possible problems.  
4 I think that you agreed that widely publicized events that  
5 highlight those problems could give notice to investors,  
6 perhaps even utility management.

7 A But notice of what? Notice that those problems  
8 may exist; yes.

9 Q The second condition that you speak of is  
10 uniformity. Would you agree that in deciding individual  
11 cases that regulatory authorities should look to the facts  
12 in the individual cases in making decisions?

13 A Yes.

14 Q Is it not true that financial risks often vary  
15 considerably from utility to utility?

16 A Somewhat.

17 Q And that those varying risks should be recognized  
18 by the regulatory authority in making decisions or should  
19 at least enter into its decision-making process?

20 A I'm not inclined to disagree with that statement,  
21 but frankly I can't bring to mind any particular way in which  
22 those should be taken into account.

23 Q Well, my question is: should not a regulatory  
24 authority take all of the individual considerations present  
25 in the case presented to it for a decision and that each case

1 itself may present unique facts and all of those should be  
2 recognized in making its decision?

3 A. I can't very well disagree with that. Yes, that  
4 is a true statement. What I don't understand is what this  
5 has to do with difference in financial risk among utilities.  
6 Obviously, that is an issue, for example, in rate of return.  
7 It is not evident to me what it has to do with any of  
8 the topics that my testimony covers.

9 Q. In setting rate of return --

10 A. Yes, I have no objection to that.

11 Q. -- you would agree in those circumstances that  
12 really all of the utility's financial considerations should  
13 be evaluated?

14 A. Yes.

15 Q. And those considerations may be different from  
16 utility to utility?

17 A. That is correct.

18 Q. On pages 20 and 21 of your testimony, Dr.  
19 Hieronymus, you are there describing the prudent investment  
20 test. As an example of that test, you describe Jim Fixx  
21 and the consequences of jogging.

22 Now, in that example, would you agree that this  
23 example raises questions not about the prudence of jogging  
24 but about the prudence of jogging with a heart condition?

25 A. I'm not certain whether it does or doesn't. In

1 fact, I was unaware that Jim Fixx was supposed to have had  
2 a heart condition.

3 Q. I think that you responded in some of the prior  
4 questions I asked you about prudence would encompass not  
5 only an initial decision but changing the condition that  
6 conditions were subsequently not what they were at the time  
7 the first decision was made.

8 A. Yes.

9 Q. As I understand the example that you have in your  
10 testimony, would it be your position that his decision  
11 initially to engage in that kind of exercise was, as far as  
12 you know, prudent at the time it was made?

13 A. Yes.

14 Q. Now, his subsequent death while jogging, would  
15 that be -- I'm trying to categorize that event. Could you  
16 say that his result of dying that way was that he was prudent  
17 but unlucky or prudent but foolish or prudent but incompetent  
18 or initially prudent but then with changing circumstances  
19 imprudent when he jogged that day?

20 A. The presumption that I have here was that there  
21 was no -- that he had no knowledge and no basis for  
22 knowledge that he had a heart condition, and therefore he  
23 was unlucky or perhaps, if you like, minorly incompetent.

24 Q. Would prudent but unlucky characterize --

25 A. No. It was indeed my point that this precisely

1 was not -- the fact that he died does not demonstrate that  
2 it was imprudent. My presumption in the analogy was that  
3 there was nothing that he knew which meant that it was  
4 imprudent for him to be jogging.

5 Q And the other side of that is that if he had  
6 knowledge that he had a heart condition, then it may well  
7 have been imprudent for him to have exercised?

8 A It may well.

9 Q On pages 24 and 26 of your testimony, you  
10 describe standards for evaluating utility decision-making.

11 Would you agree that it is the responsibility of the  
12 regulator to monitor the decision-making of a utility  
13 management when those decisions have the potential for large  
14 impacts in terms of rates and service on the ratepayers?

15 A In general, yes.

16 Q Let me direct your attention to pages 28 and 29  
17 of your testimony. You there discuss excess capacity adjust-  
18 ments and the used and useful test for utility assets.

19 To your knowledge, Dr. Hieronymus, do the Pennsylvania  
20 cases concerning excess capacity adjustments use a used and  
21 useful analysis?

22 A That is the general regulatory principle under  
23 which they are made, yes.

24 Q So your answer is yes.

25 Now, let me direct your attention to page 36 of your

1 testimony. On that page, you discuss utilities playing  
2 chicken with regulators in terms of the scheduling and  
3 construction of new generating facilities. That is in the  
4 middle of the last paragraph on that page.

5 A. Yes, I see it.

6 Q. Would you agree that prudence also requires  
7 management to recognize events that are reasonably fore-  
8 seeable such as regulators not awarding exactly the rate  
9 that may be proposed in a rate case or that customers could  
10 restrict energy usage if the cost rises above a certain  
11 level? Would you agree that a prudent decision would  
12 involve an evaluation of those kinds of foreseeable results  
13 or consequences?

14 A. With respect to the second of your two examples,  
15 the answer is certainly yes, you would like to understand  
16 what the level of demand is going to be, whatever the  
17 causes of that including the cost of power.

18 I have a bit of a difficulty with the first of those  
19 because it seems to be implicit in your question, if I know  
20 I'm going to get hammered, to take it to the extreme, that  
21 I have some degree of freedom about what it is I am going  
22 to do such that I am responsible for the consequences of  
23 my actions even though they result from an unfair form of  
24 regulation.

25 It seems to me you have there -- indeed that's the

1 topic of this section -- you there put the utility into an  
2 impossible circumstance where they are damned if they do and  
3 they are damned if they don't.

4 Q Dr. Hieronymus, I think you responded to my  
5 question, which was -- let's see if I correctly state it --  
6 that prudence does encompass an awareness of foreseeable  
7 events in the future and that those kinds of prudent decisions  
8 would involve a recognition and evaluation of those kinds  
9 of things.

10 A That is true. I was trying, however, to distin-  
11 guish somewhat regulatory events from other events. I think  
12 they are of a different character.

13 Q Let me direct your attention to page 57 of your  
14 testimony, Dr. Hieronymus. Beginning at the bottom of that  
15 page and going to page 63, I believe, you describe the  
16 results of an analysis you performed concerning the  
17 construction schedule of Limerick I relative to other  
18 plants.

19 Do you see the section of your testimony I am  
20 referring to?

21 A Yes, I do.

22 Q Is one of the purposes of this section of your  
23 testimony to respond to prior Commission conclusions  
24 concerning the company's prudence in delaying Limerick  
25 construction in 1976 and 1978?

1 A. Yes. I think it goes to the consequences of those  
2 decisions.

3 Q Let me direct your attention to page 59 of your  
4 testimony. Now, as I understand it, you indicate there that  
5 you used a regression analysis to develop predictions in  
6 plant schedules based on plant characteristics. Is that  
7 correct?

8 A. That is correct.

9 Q On page 61 of your testimony, you indicate that  
10 you used a technique call step-wise regression to pick plant  
11 characteristics for which the relationship with schedule  
12 was statisically meaningful.

13 Do you see the reference on that page?

14 A. Yes.

15 Q Did you use a step-up or a step-down technique?

16 A. It was -- I'm trying to remember the technical  
17 term. It was forward-addition. Backward reduction I believe  
18 is the term, which means that you select incrementally those  
19 variables which add the most explanatory power to the  
20 equation beginning with the one that has the most.

21 The program, as I recall, does have the potential  
22 to drop a variable which subsequently becomes insignificant.  
23 To the best of my recollection, that did not occur.

24 Q Would it be your testimony that the technique  
25 you just described in reviewing the variables would be a

1 flawless technique to remove bias in selecting predictive  
2 characteristics?

3 A. Would be a flawless; is that the word?

4 Q. Yes.

5 A. Well, nothing about regression is flawless.

6 Q. What would you see as the possible flaws in it?

7 A. The principle flaw I see in it is that it is  
8 mindless. That is the flip side of being unbiased. Bias  
9 in the perjorative sense, as well as simple selection, in  
10 the nonperjorative sense, implies prior assumptions, prior  
11 notions about what matters and what doesn't and what the  
12 nature of the relationships are.

13 If you let the computer, which is very stupid, do  
14 the selection for you, it may select some things that, at  
15 least in my opinion, may not make any sense. I state that  
16 as a general matter.

17 That's the principle thing that comes to mind. There  
18 are some very arcane, technical things, too.

19 Q. So as I understand your response then, it is  
20 necessary using one of these techniques to use common sense  
21 in evaluating the results?

22 A. I think it's in general desirable. The problem  
23 is that as soon as I say I'm using my common sense, my  
24 common sense may be someone else's notion that I'm biased,  
25 which is precisely why I used this technique.

1 Q I understand your prior response was that the  
2 results that are produced by the kind of analysis you define  
3 should themselves be evaluated for reasonableness.

4 A Yes, I think so; although, for the purposes that  
5 I've done this analysis here, I don't think it is terribly  
6 important.

7 If I can, I'll explain the distinction. If I'm going  
8 to use an equation to predict something, if I'm using  
9 statistics in a forecasting sense, then I think it's very  
10 important that the relationships in the equation be sensible  
11 and accord with one's belief about reasonable relationships.

12 If what I'm doing is an exercise in descriptive  
13 statistics, which is what this is--I'm not trying to predict  
14 anything in the literal sense; I'm simply trying to describe  
15 differences in the schedule of plants as they vary with  
16 characteristics--then I think it's a good deal less important.

17 Q As I understand your testimony, your Exhibit WHH-3  
18 indicates the result of your analysis; is that correct?  
19 Maybe you can turn to that.

20 (Witness complying.)

21 A That is one of two analyses, yes. There is also  
22 one under WHH-5.

23 Q Now, as I understand this schedule on WHH-3, for  
24 the first line it has the label AEISUTIL. Would it be true  
25 in interpreting the data on that line that the positive value

1 for coefficient indicates that if the architectural engineer  
2 is the utility in that circumstance, that it took longer to  
3 construct the plant?

4 A. Yes.

5 Q. On the next line for the variable that is labelled  
6 MIDATL, again the positive coefficient value there in the  
7 second column indicates if the unit is in New York, Pennsyl-  
8 vania, New Jersey or Maryland, then it took longer to  
9 construct. Would that be correct?

10 A. Yes.

11 Q. On the next one, the line labelled CTOWER, in  
12 that circumstance, the negative value in the coefficient  
13 column, which is a negative .8394, indicates that if the  
14 plant has a cooling tower, then it was constructed more  
15 quickly?

16 A. Other things being equal, yes.

17 Q. In your sample that you used to make this  
18 analysis, did any of the plants have multiple cooling towers  
19 per unit?

20 A. I don't know.

21 Q. Were TMI-1 or 2 in your sample?

22 A. Probably not. Almost certainly not.

23 Q. On the next entry below the CTOWER, the variable  
24 labelled WTHRDPR, again the negative coefficient value in  
25 the second column would indicate that the higher the mean

1 days of annual precipitation at the construction site, the  
2 faster the plant was constructed?

3 A. Yes, and I think I identified that in the text  
4 of my testimony as a result which is surprising. I think it  
5 is spurious, to be candid.

6 Q. You have a similar schedule, you indicated, WHH-5,  
7 again organized the same way. Could you turn to that?

8 A. Yes.

9 Q. Going down that column in the schedule, for the  
10 variable listed and identified as FIRST1, the negative  
11 coefficient value indicates that if the unit is the first  
12 of a multiple site, I suppose, then the first unit is  
13 constructed faster?

14 A. Than a stand-alone unit.

15 Q. Going down to the one that you have labelled  
16 WTHRSNOW, the negative coefficient value in the second column  
17 would indicate that the higher the mean annual snowfall in  
18 inches at the site, the faster the plant is constructed?

19 A. That is correct. It is another result which I  
20 think is spurious, to be candid, and if I can indicate why.  
21 I believe that the reason is that this whole second analysis  
22 is somewhat infected by the inclusion of Diablo Canyon in  
23 the sample, which, of course, was a station which took a very  
24 long time to construct.

25 Q. Diablo Canyon is in California?

1 A That's correct.

2 Q Do you have any idea what the mean annual snowfall  
3 in inches was at the site?

4 A I would assume it is at or very near zero since  
5 it's a coastal site.

6 Q Let me direct your attention to pages 64 to 68 of  
7 your testimony.

8 I think again here you describe the effects of the  
9 1974, 1976 and 1978 construction delays on the Limerick  
10 construction schedule on these pages of your testimony; is  
11 that correct?

12 A Well, I think describe is an overly ambitious  
13 description of what this testimony covers. I think it brings  
14 forth certain factual matters which may be pertinent to an  
15 evaluation of what those effects are.

16 Q Would you agree that one of the purposes of this  
17 section of your testimony is to respond to previous  
18 Commission conclusions concerning the prudence of the  
19 company's 1976 and 1978 construction delays?

20 A Not to the prudence itself, no; to the consequences  
21 of those delays.

22 Q Will you agree that in making a decision to suspend  
23 construction of a generating facility, a utility should at  
24 least consider the interests of both its shareholders and  
25 its ratepayers?

1 A. A decision to suspend; is that the question?

2 Q. Right. It should consider both the interests of  
3 its ratepayers and its shareholders.

4 A. Under the circumstances where it has any real  
5 degrees of freedom, yes. I think there are circumstances  
6 which have occurred where there were no degrees of freedom.  
7 The only consideration was: do I have any options?

8 Q. And your prior answer was that where those  
9 options existed, that those considerations of both share-  
10 holders and ratepayers should be examined?

11 A. Yes.

12 Q. On these pages, is it your testimony that if the  
13 constructions of the Limerick unit had not been delayed in  
14 '74, '76 or '78, that it would not have been completed any  
15 faster than it was?

16 A. I think that's an overly aggressive interpretation  
17 of what I'm saying here. What I'm saying here is that there  
18 appears to be substantial evidence that for whatever reason --  
19 and I don't pretend to speak to the detail of the reasons,  
20 as I allude to on page 65 beginning on line 17 -- but for  
21 whatever reason, it appears that Limerick was able to make  
22 up in the latter years of its construction, through a far  
23 better adherence to its announced schedule than other plants  
24 in the country, the slippage which occurred in the 1974  
25 through 1978 period.

1 Now, having observed that, there is a weak inference  
2 that had Limerick not slipped its schedule when it did, and  
3 if one assumes the Limerick management was of average  
4 competence and that the general circumstances surrounding  
5 how long it took to build the plant were average, that  
6 something happened as a result of those slippages which  
7 allowed it to adhere to its schedule better to such a degree  
8 that the schedule took no longer than the typical plant.

9 So there is that inference that, yes, it would have  
10 taken about as long as it did had they not had the delays  
11 that it took in '74 through '78. But I don't want to over-  
12 sell that. It is simply an inference from the data. I think  
13 one would need to look in more detail to determine whether  
14 that was so.

15 Q In your last response, you used the phrase "no  
16 longer than the typical plant." So it's not your testimony  
17 that there was no delay in construction -- let me restate  
18 that. It's not your testimony that if the construction had  
19 not been delayed in '74, '76 or '78, it would not have been  
20 completed any faster? You're not saying that the delays in  
21 those periods had no effect on the completion date of the  
22 unit, but you're making a general comparison to all units  
23 in your sample?

24 A The answer to your question is generally, yes;  
25 but I think you took the answer to the wrong place from the

1 standpoint of this part of my analysis as opposed to the  
2 part we were discussing a few minutes ago.

3 Here what I was saying is that PECO is essentially  
4 unique or very nearly unique in its ability to control  
5 scheduling in the latter part of the construction of the  
6 plant.

7 I have a strong suspicion that that was in a large  
8 part because of things which occurred due to the earlier  
9 delays. For example, they did not take themselves as close  
10 to the line financially as some other utilities did. So  
11 you didn't have financially induced delays later on to the  
12 extent that other utilities did.

13 Q. Dr. Hieronymus, as I understand your testimony  
14 though, the consequence is that on an average basis compared  
15 to the plants in your sample, their completion period was  
16 average?

17 A. That is correct.

18 Q. That is the conclusion that you reach in your  
19 testimony?

20 A. In an earlier section of my testimony. This  
21 section of my testimony tries to begin to understand the  
22 reasons why that occurred in spite of the delays which  
23 occurred in '74, '76 and '78.

24 Q. I think you've answered my question, Doctor.  
25 Excuse me for a second.

1 MR. DELANEY: Your Honor, this is all the questions  
2 that I have for this witness at this time. However, I would  
3 note, based on some of Dr. Hieronymus' responses, I would  
4 like to move to strike portions of his testimony dealing  
5 with the effects of the '76 and '78 construction delays.

6 I think in his response to some of my questions, he  
7 indicated the purpose of this testimony concerned the prior  
8 findings of imprudence in the Commission order, and my  
9 motion in limine raises the reasons why we think you should  
10 not receive evidence on this issue.

11 So at this point, to be consistent, I would move to  
12 strike those portions of his direct testimony that address  
13 those issues.

14 JUDGE MATUSCHAK: We will defer until we hear you  
15 on the motion.

16 MR. DELANEY: For the record, I would indicate --

17 JUDGE MATUSCHAK: Will you indicate at this time  
18 with some particularity which portions you want to strike?

19 MR. DELANEY: Yes, Your Honor. The portion of the  
20 testimony addressing the Limerick schedule relative to  
21 comparable plants, which is pages 57 to 63; the schedules  
22 WHH-3 I believe through 10. I have to note that some of  
23 these pages have charts which I don't think have exhibit  
24 numbers written on them. Also pages 64 to 67 of the  
25 testimony where Dr. Hieronymus discusses the schedule effects

1 of the '74, '76 and '78 delays in commercial operation and  
2 Exhibits WHH-8, 9 and 10.

3 I believe that one of the purposes of this testimony  
4 is to relitigate the Commission's prior -- offer evidence  
5 on a previously litigated conclusion by the Commission  
6 concerning the prudence of the company's actions in at  
7 least '76 and '78. That is the basis of my motion.

8 JUDGE MATUSCHAK: Very well. We will defer ruling  
9 until we rule on your motion in limine.

10 MR. DELANEY: Very well. I have no further questions.  
11 Thank you, Dr. Hieronymus.

12 JUDGE MATUSCHAK: Consumer Advocate?

13 MR. RUBIN: Yes, Your Honor. May we take a short  
14 break?

15 JUDGE MATUSCHAK: Yes. Let's take a ten-minute  
16 recess.

17 MR. RUBIN: Thank you, Your Honor.

18 (Recess.)  
19  
20  
21  
22  
23  
24  
25

1 JUDGE MATUSCHAK: When you are ready.

2 MR. RUBIN: Thank you, Your Honor.

3 CROSS-EXAMINATION

4 BY MR. RUBIN:

5 Q Good morning, Dr. Hieronymus. My name is Scott  
6 Rubin. I am with the Consumer Advocate's office.

7 First, could you tell us if this is the first time  
8 you have testified before this Commission on what you term  
9 on page 3 of your testimony -- and I'll quote -- to be "the  
10 standards which are appropriate for consideration by the  
11 rate base treatment" of a new generating station?

12 A To the best of my recollection, yes, although there  
13 may have been some content on that subject in my testimony  
14 in the Susquehanna 1 proceeding.

15 Q In fact, Dr. Hieronymus, in that Susquehanna 1  
16 case, which I believe you submitted rebuttal testimony on  
17 in 1983, do you believe that you did testify on the proper  
18 standard to be applied to the review of whether capacity  
19 additions should be included in rate base?

20 A I have no such recollection.

21 Excuse me. By "capacity additions" do you mean simply  
22 new capacity?

23 Q Yes.

24 A That's not what I took the thrust of your question  
25 to be.

1 Q Does that change your answer then?

2 A Yes, it does. I think the answer to your question  
3 is yes, although frankly I don't recall the specifics of  
4 it.

5 Q Dr. Hieronymus, am I correct that your testimony  
6 in that case was in rebuttal to an Office of Consumer  
7 Advocate excess capacity adjustment?

8 A It was in response to a rate based exclusion -- I'm  
9 trying to recall. My best recollection -- and I may be  
10 confusing this with another proceeding -- was that the  
11 testimony to which I was responding was suggesting that  
12 the plant should be excluded on the basis it was not  
13 economic, and that that was called an excess capacity adjust-  
14 ment, but I may be incorrect about that.

15 Q Dr. Hieronymus, am I correct that in its Order  
16 in that case the Commission ordered an excess capacity  
17 adjustment based on its application of the used and use-  
18 ful standard?

19 A Yes.

20 Q Dr. Hieronymus, would you turn to page 50 of  
21 your testimony?

22 A I have it.

23 Q I'm looking at roughly lines 4 through 11. Now,  
24 you state here that, to your knowledge, no Commission has  
25 ever used a life cycle net benefit standard in analyzing

1 whether a generating station should be included in rate  
2 base; is that an accurate summary of what you state here?

3 A As of the time that I wrote this. I should amend  
4 it to say that, although I haven't read the opinion, that  
5 I understand that one of the many grounds upon which Wolf  
6 Creek was substantially excluded from rate base included  
7 such a test.

8 Q Dr. Hieronymus, are you familiar with any of  
9 the additional details of the Kansas Corporation Commis-  
10 sion's decisions on the Wolf Creek plant?

11 A I have only read press accounts of it. I should  
12 point out that decision had not been issued as of the  
13 time this testimony was filed.

14 Q Dr. Hieronymus, in preparing your testimony in  
15 this proceeding, I believe you state that the company at  
16 your direction did perform a life cycle analysis of the  
17 net costs and benefits of including Limerick 1 in rate  
18 base; is that correct?

19 A Yes.

20 Q And you described that analysis on page 56 of  
21 your testimony, I believe?

22 A Yes.

23 Q First, is it correct that in performing that  
24 analysis you compared the costs and benefits of not having  
25 Limerick 1 in service to the costs and benefits of including

1 in rates Limerick 1 and 50 percent of the Limerick common  
2 facilities; is that correct?

3 A Yes.

4 Q And, Dr. Hieronymus, can you explain for us why  
5 you feel that this comparison should include just 50 per-  
6 cent of the Limerick common facilities?

7 A My understanding of the company's more general  
8 intent is that they will complete Limerick Unit No. 2, and  
9 that, as a consequence, some of the value of that common  
10 is in some sense ascribable to the output of that unit.  
11 This of course is a separate matter from whether it is  
12 being used or necessary to Unit No. 1, but it seems to me  
13 that for purposes of this analysis to ascribe to the first  
14 unit all of the common, given that that common would also  
15 serve as Unit 2, would probably not be proper.

16 Q Dr. Hieronymus, is it your understanding that  
17 the company has included 100 percent of the Limerick common  
18 facilities in its claim in this case?

19 A That is my understanding, yes.

20 I should point out that my analysis is not on all  
21 points reflective of the company's filing as a ratemaking  
22 matter in this case. For example, my analysis does not  
23 include the phase-in. For this analysis I treated the  
24 plant as coming fully into rate base on the 1st of January,  
25 1986. So that the analysis does not, for example, take

1 into account the fact that the company has chosen to offer  
2 up the time value of the deferred recovery on the second  
3 and third increments of the plant. So that there is no  
4 total correspondence between my analysis on this and other  
5 points in the company's filing for ratemaking purposes.

6 Q Dr. Hieronymus, would I be correct that if we  
7 were to include the additional 50 percent of common facili-  
8 ties in your analysis that the carrying charges on the  
9 investment at Limerick 1 in the first year -- that is in  
10 1986 -- would increase by roughly \$152.47 million, and that  
11 would take it from a little over \$747 million to nearly  
12 \$900 million?

13 A If you will give me a moment?

14 Q Certainly.

15 A (witness perusing documents.)

16 Could you read me back the numbers please?

17 Q Yes. I believe I asked if the additional 50 per-  
18 cent of common, if that were included in your analysis the  
19 revenue requirement associated with that in the first year  
20 would be \$152.47 million?

21 A Yes, that is correct.

22 Q And if we add that to the \$747.27 million, as  
23 the first year revenue requirement which you show with 50  
24 percent of common, we would get a total revenue requirement  
25 of just under \$900 million?

1 A A total revenue requirement associated with the  
2 capital, yes.

3 Q And, Dr. Hieronymus, would there also be compar-  
4 able though lesser increases in each succeeding year of  
5 your analysis if we included all of the common facilities?

6 A Yes.

7 Q And in total if we were to take a net present  
8 value of the benefits and costs of Limerick 1, which you  
9 state on page 56 of your testimony to be between \$2 billion  
10 and \$2.8 billion, would you agree that this amount would  
11 decrease by roughly \$1 billion if you had used the company's  
12 proposed ratemaking treatment for the second half of the  
13 common facilities?

14 A I haven't computed that number, Mr. Rubin. It  
15 would be in that general magnitude.

16 Q With respect to the remaining benefits of Limerick  
17 1, which you develop in your analysis, am I correct that  
18 you used the company's -- I believe you term them their  
19 "standard corporate assumptions"?

20 A Yes.

21 Q And am I correct that among those assumption is  
22 that the capacity factor for Limerick 1 and all the other  
23 nuclear plants on PJM will average 65 percent?

24 A Yes.

25 Q And you also assumed that there would be zero

1 percent real escalation in nuclear operating and maintenance  
2 expenses after 1990?

3 A Yes.

4 MR. RUBIN: Your Honor, I would like to have marked  
5 for identification as OCA Exhibit 34 the company's response  
6 to OCA Interrogatory Set 15, number 8.

7 JUDGE MATUSCHAK: So marked.

8 (Whereupon, the document was  
9 marked as OCA Exhibit No. 34  
for identification.)

10 MR. RUBIN: Thank you, Your Honor.

11 BY MR. RUBIN:

12 Q Dr. Heironymus, are you familiar with the informa-  
13 tion which is shown in OCA Exhibit 34?

14 A Generally, yes.

15 Q And am I correct that the escalation rates in  
16 coal and oil prices which are shown on this exhibit were  
17 assumed by you as part of your net present value analysis  
18 for Limerick?

19 A Yes.

20 Q Are these assumptions the same as those you used  
21 in your analysis in the Limerick 2 investigation?

22 A They are very slightly different, but not  
23 importantly so.

24 Q Do you recall which, if any, of these corporate  
25 assumptions -- and here I am referring to the nuclear O&M

1 escalation and the fossil fuel escalation and the capacity  
2 factor -- were found to be reasonable by Administrative Law  
3 Judge Turner in that case?

4 A I don't know -- let me try to recall. The O&M  
5 escalation rate -- I hesitate to characterize the Judge's  
6 decision; I've only an impressionistic memory of it. My  
7 general recollection is that she disagreed with the company  
8 about the full cessation of O&M escalation after 1990. She  
9 concluded that the coal price -- or the fuels price esca-  
10 lations would be lower than the company's estimate. I don't  
11 recall the particular ones you asked me about.

12 Q The capacity factor for the nuclear plant.

13 A I believe she concluded that Mr. Komanoff's 60  
14 percent estimate was more correct. Obviously her decision  
15 says what it says; I don't recall in detail.

16 Q Dr. Hieronymus, I am showing you a copy of what  
17 has been marked in this proceeding as OCA Exhibit Number 14,  
18 and it's the company's original response to OCA Interrogatory  
19 Set 1, Number 11. Is it your understanding that the fossil  
20 fuel prices which are shown on the first page of the attach-  
21 ment, which were developed by the company during the ..  
22 second quarter of 1985, were used in your estimate of the  
23 fuel savings from Limerick, which were incorporated in your  
24 analysis?

25 A I believe that is correct, yes.

1 Q And you also included in your analysis a capacity  
2 charge which is avoided by having Limerick in operation; is  
3 that correct?

4 A Yes.

5 Q And such a charge would be paid to PJM as a  
6 capacity deficiency payment; is that right?

7 A Yes.

8 Q And that capacity charge analysis includes the  
9 assumption that PJM would charge \$56.68 per kilowatt per  
10 year for each kw that PECO falls short of its capacity  
11 obligation in the 1985-86 planning period; is that correct?

12 A I don't recall the specific number, but it's about  
13 that number, yes.

14 Q It may help you recall. Do you have with you a  
15 copy of what was provided by the company in response to OCA  
16 Interrogatory Set 2, Number 25?

17 A Yes, I do.

18 Q And if you look in there in what is labeled Attach-  
19 ment 2-25b, Item No. 9 --

20 A (Witness perusing document.)

21 The 1984-1985 figure was \$52.93 and so forth?

22 Q Yes. Tell us what you used for 1985-86.

23 A \$56.58.

24 Q Dr. Hieronymus, do you know what PJM will actually  
25 charge for each kw of capacity deficiency during the 1985-86

1 period?

2 A No, I don't.

3 I note here that it is -- on the face of the document  
4 it says it is \$155 per megawatt-day for the '85-86 period.

5 MR. RUBIN: Your Honor, I would like to have marked  
6 for identification as OCA Exhibit 35 the company's response  
7 to OCA Interrogatory Set 18, Number 17.

8 JUDGE MATUSCHAK: Motion granted.

9 (Whereupon, the document was  
10 marked as OCA Exhibit No. 35  
for identification.)

11 MR. RUBIN: Thank you, Your Honor.

12 BY MR. RUBIN:

13 Q Dr. Hieronymus, OCA Exhibit 35 was provided to us  
14 by the company. I believe it says the witness is Mr. Carroll.  
15 Have you ever seen this information before?

16 A I don't believe, so, no.

17 Q Would you agree with me that this shows that for  
18 the 1985-86 period the PJM capacity deficiency charge will  
19 be \$52.93?

20 A It appears that for some reason for the first time  
21 since 1974 it did not increase. I don't know whether that  
22 is because they haven't filed it yet or what, but on the face  
23 of it that's what it shows, yes.

24 Q Dr. Hieronymus, does your analysis of capacity  
25 deficiency payments which PECO would incur in the absence of

1 Limerick assume that the company would still require all of  
2 the peaking capacity which it currently plans to retire even  
3 if Limerick 1 were not in service?

4 A Yes.

5 Q And did your capacity deficiency analysis also  
6 assume the retirement of Delaware Units 7 and 8 in 1988?

7 A Yes.

8 Q Thank you, Dr. Hieronymus.

9 MR. RUBIN: Thank you, Your Honor. That concludes  
10 our examination of this witness.

11 At this time, Your Honor, I would like to move into  
12 evidence OCA Exhibits Nos. 34 and 35.

13 JUDGE MATUSCHAK: Any objection?

14 MR. CALVERT: No, Your Honor.

15 JUDGE MATUSCHAK: OCA Exhibits 34 and 35 are admitted  
16 into evidence.

17 (Whereupon, the documents  
18 marked as OCA Exhibits Nos.  
19 34 and 35 were received in  
20 evidence.)

21 MR. RUBIN: Thank you, Your Honor.

22 JUDGE MATUSCHAK: Who wants to proceed next?

23 MR. KLEPPINGER: I can proceed, Your Honor.

24 CROSS-EXAMINATION

25 BY MR. KLEPPINGER:

Q Good morning, Dr. Hieronymus.

1 A Good morning, Mr. Kleppinger.

2 Q You mentioned earlier today, I believe, that you  
3 have approached your testimony in this proceeding from  
4 the perspective of a utility economist; is that correct?

5 A Yes.

6 Q Does that perspective differ from the perspective  
7 of a public utility commission?

8 A Yes, I suspect it does. Utility commissioners  
9 are for the most part lawyers and are bound by a set of  
10 legal principles, statutes and so forth. Those are con-  
11 siderations that are not necessarily considerations of  
12 mine.

13 Q Would you also agree that your perspective as  
14 a utility economist would differ from the perspective of  
15 Philadelphia Electric Company ratepayers who are examining  
16 this case?

17 A That is perfectly conceivable. I mean I can't  
18 speak for the perspective of ratepayers. They are what  
19 they are.

20 Q Assuming that the perspectives that are taken  
21 by the commission and the ratepayers in this case differ  
22 from that of a utility economist, would it follow then that  
23 the standards that are appropriate to apply to the rate  
24 base treatment of Limerick 1 would also be different from  
25 those different perspectives?

1 A I can't speak for any perspective other than my  
2 own and that which I can base on my own background and exper-  
3 tise. I can conceive that for example a commission may  
4 be precluded by law from doing things which I would feel  
5 were proper as an economist; so, yes, I can conceive of  
6 that.

7 Q You make a distinction in your testimony at page  
8 9 between the minimum reserve for reliability purposes and  
9 a maximum reserve for ratemaking purposes; is that correct?

10 A Yes, it is.

11 Q You will agree with me, will you not, that the  
12 difference between those two in terms of megawatts of  
13 capacity carries a cost?

14 A Yes.

15 Q And ultimately the ratepayers bear that cost;  
16 isn't that true?

17 A I think that's very much at issue here, but as  
18 a general matter, yes.

19 Q If past history repeats itself at least rate-  
20 payers will ultimately bear that cost?

21 A I'm not certain if that is a true statement. It  
22 may well be. It certainly is the case in some jurisdictions,  
23 at least in my opinion, that ratepayers have been shielded  
24 from the difference between the minimum --shielded in part  
25 from the difference between the minimum reliability required

1 on a test year basis and what I would regard as an appro-  
2 priate maximum for ratemaking purposes. By definition,  
3 whatever the utilities were allowed for ratemaking purposes  
4 they were allowed, and hence ratepayers are paying for it.

5 Q And from your perspective now as a utility  
6 economist, I take it it is your belief that ratepayers  
7 should bear that cost?

8 A Yes.

9 Q If circumstances change such that the ratepayers,  
10 and even a regulatory body, indicate that they don't want  
11 to absorb that cost anymore, and in replace of not absorbing  
12 that cost they are also willing to say: I don't even care  
13 about the reliability question anymore; I don't need that  
14 maximum reserve reliability because I can't afford it and  
15 I'm willing to take the minimum reliability, under those  
16 circumstances, from the perspective of a utility economist,  
17 should the ratepayers continue to pay all of those costs?

18 A Let me take that in two parts, if I may. If it  
19 is the decision of the Commission, for presumably good  
20 reasons -- I take that as part of the hypothetical -- that  
21 the utility's requirement to serve to historic reliability  
22 levels is now lifted, and the Commission indicates that  
23 it is not interested in maintaining levels of reserve  
24 consistent with that reliability, then I think it is the  
25 duty of the utility to henceforth modify its behavior

1 accordingly, and to build to a lower level of reliability.  
2 So that if, indeed, to take a hypothetical, the minimum  
3 required for instantaneous reliability purposes is 25 per-  
4 cent and the implied maximum, as I discuss it in my testi-  
5 mony, is 35 percent, and the Commission says "henceforth,  
6 we want you to plan for a maximum of 25 percent even though  
7 that means a minimum of 15 percent," then that's what the  
8 utility should do.

9 Now, as a matter of ratemaking policy, it seems to  
10 me that it would be inequitable for the Commission to  
11 suddenly and in effect after the fact impose such a change  
12 in the requirements on the utility.

13 So I think the answer to your question is yes, that  
14 would be perfectly fine provided that due notice were given.

15 Q Is it your understanding that this Commission  
16 has indicated that it requires a 35 percent reserve margin?

17 A No, it is my understanding that this Commission  
18 -- or perhaps the statutes in Pennsylvania -- require that  
19 the utility meet a obligation to serve, and the level of  
20 service that has historically implied, the level of  
21 reliability, has been very high. There is, to the best  
22 of my knowledge, no general Commission policy with respect  
23 to what the implied level of reserves are, nor should there  
24 be.

25 Q Do you recall what the position of the Commission

1 Trial staff was regarding system reliability and the percent  
2 reserve margin which should be planned for in the Limerick  
3 investigation?

4 A My memory, which again may be treacherous, was  
5 that it was 23 to 25 percent, but I don't recall for certain.

6 Q I would accept that, subject to check. I think  
7 that is correct, Doctor.

8 You refer in your testimony to this concept of  
9 implicit social contract, if you will, and you indicate  
10 that that is at least relied upon by utility investors;  
11 is that true?

12 A Yes.

13 Q Who are the other parties to that contract?

14 A I would say at a minimum the Commission, the  
15 Legislature, the utility management and employees, and the  
16 ratepayers.

17 Q If the ratepayer is a party to that contract,  
18 when does the utility or the Commission receive the input  
19 of the ratepayer into the terms and conditions of that  
20 contract?

21 A I would say on an ongoing basis through representa-  
22 tion of ratepayers in proceedings, through public input  
23 sessions, through reading the newspaper, through talking  
24 to their neighbors.

25 Q Does that type of ratepayer input establish

1 what the terms and conditions of that contract are, or are the  
2 terms and conditions defined more so by the utility and  
3 the regulatory bodies?

4 A I think from the standpoint of setting the rules  
5 which make that contract operational, the parties are  
6 principally the regulating utility, its regulators and  
7 perhaps the statutory bodies and the courts.

8 Q You make an analogy at page 20 of your testimony  
9 comparing ratepayers to Lucy in the Charlie Brown series  
10 and say that ratepayers and regulators must convince  
11 investors that the football will not be snatched away at  
12 the last minute despite their promises to play fair. What  
13 I'm interested in, without prolonging this, is where you  
14 perceive ratemakers have made a promise, as you have used  
15 the term on line 14 at page 20?

16 A I think it is not ratepayers, at least as  
17 individuals, who have made promises. Really what I mean  
18 to say here is the recipient of the actions of the  
19 utilities, and really as moderated by the regulators.  
20 I think the key party here is the regulators. So that on  
21 reflection, if I were to amend that sentence, I would say  
22 "regulators and representatives of ratepayers," rather than  
23 ratepayers as unique parties. I think that was responsive.

24 Q In order to obtain regulatory approval of the  
25 implicit contract that you have referenced in your testimony,

1 am I correct that you and Philadelphia Electric Company  
2 have had to make various assumptions in order to justify,  
3 if you will, the prudence and the economics of Limerick  
4 Unit 1?

5 A I'm sorry; you'll have to restate that. I lost  
6 the sense of the question.

7 Q Maybe I should take it a step at a time. The  
8 contract that you are referring to, I take it is one in  
9 which the utility assumes that if it engages in prudent  
10 construction practices and prudently incurs expenses and  
11 builds a unit to meet the load of its customers, that the  
12 regulatory commission in return for that will grant them  
13 ratemaking treatment?

14 A That's one element of the contract, yes.

15 Q Now, if those are the terms and conditions in  
16 very rough terms of that contract, then you and the utility  
17 -- you as a representative of the utility -- must justify  
18 your end of the bargain, and to do that you have had to  
19 make several assumptions, have you not, as to how well Unit  
20 1 will operate, what the fuel prices of alternative sources  
21 of supply will be, and various other assumptions that you  
22 go into, the life cycle analyses and all the other analyses  
23 that have been performed by you and other witnesses in this  
24 case; is that true?

25 A No. I submit that the life cycle analysis that

1 I have presented is not part of Philadelphia Electric's  
2 showing on prudence, nor in my opinion should it be.

3 Q But that evidence as it is presented in this case  
4 is designed, is it not, to justify the economics on a cost/  
5 benefit analysis basis of Limerick 1 and assist in just  
6 applying your end of the implicit contract; the utility's  
7 end of the implicit contract?

8 A I will accept the first part of your question  
9 as being true. Whether or not some other party will view  
10 that as assisting in a prudence decision, I cannot say.  
11 From my own perspective, it is and ought to be irrelevant  
12 to the question of prudence, and I have so stated.

13 Q You indicated to Mr. Delaney that you had  
14 reviewed several public utility commission decisions regard-  
15 ing the inclusion of large base load units in the rate base  
16 of other utilities in Pennsylvania; do you recall that testi-  
17 mony?

18 A Yes.

19 Q During your review of those decisions, did you  
20 get the impression that the Commission looked beyond  
21 prudence, itself, and did at least examine the cost/  
22 benefit analyses of large base load units like Susquehanna  
23 1 and 2?

24 A I'm not sure what the value of my interpretation  
25 of those decisions is.

1 Q I value your opinion, Dr. Hieronymus.

2 A Fine; then I'll give it. My recollection -- and  
3 it may be more from the Administrative Law Judge's discussions  
4 than the Commission opinions -- was that in the two Susque-  
5 hanna proceedings that evidence was proffered, it was  
6 admitted, and in both cases found to be ultimately not  
7 relevant to the issue of the rate base treatment of the  
8 plant.

9 Q By the ALJ, are you saying?

10 A Well, and the Commission did not resuscitate  
11 the analysis, so I think probably by the Commission.

12 Q Your review of those decisions I would like to  
13 take in the context of your testimony at page 29, where  
14 you distinguish an excess capacity test from a more  
15 general used and useful test.

16 A Yes.

17 Q This paragraph on page 29 at lines 1 through 14,  
18 is this attempting to describe your perception of this  
19 Commission's behavior on the Susquehanna 2 units?

20 A Not all of that paragraph. I think that the  
21 lines 4 through 9 in general describe Commission practice  
22 which is consistent with the behavior of this Commission  
23 in some of its prior cases.

24 Q So you focus on lines 4 through 8 then, and what  
25 you are suggesting to us is that the Commission does look

1 at excess capacity in order to make adjustments for rate  
2 base inclusion?

3 A Yes.

4 Q Would you turn for the moment to your Exhibit  
5 WHH-2? I would just like to get a little more clear  
6 understanding of this exhibit. The column which is labeled  
7 "+ one percent load growth," does that indicate to us what  
8 the megawatts of capacity would be needed on the PECO system  
9 in order to meet its peak and have a 25 percent reserve?

10 A Yes.

11 Q So that, for example, in the year ten where it  
12 lists 8,236 megawatts, that is the amount of capacity which  
13 you would suggest PECO have in place in order to meet a  
14 load during that year, a peak load of approximately 6,588  
15 megawatts; is that correct?

16 A Well, let me amend my previous response. This  
17 is a hypothetical.

18 Q I understand that.

19 A It is not necessarily PECO.

20 Q All right, I stand corrected.

21 A But if the question is: if one had a -- I'd have  
22 to compute the number because it's not apparent on the  
23 face of it -- but to go back to Exhibit WHH-1, where by  
24 year 10 load has grown at a 2 percent load growth to  
25 5,975, then you would see how the reserve margin is

1 calculated.

2 Now, to get the one that you are talking about here,  
3 I have to take the first year load and grow it by 3 percent  
4 rather than 2 percent.

5 Q Well, isn't it more simple, Dr. Hieronymus, to  
6 just take the 8,236 megawatts and just divide it into 1.25?

7 A That certainly -- presuming I did the calculations  
8 correct, yes, that's correct.

9 Q And that produces a peak load in that year of  
10 6,588.8; is that correct?

11 A Yes.

12 Q Now at that peak load level in that given year  
13 you also indicate that the planned capacity was 7,700  
14 megawatts; is that correct?

15 A Yes.

16 Q Could you compute what the reserve margin would  
17 be just on the planned capacity and the peak load of  
18 6,588.8 for me please?

19 A 16.86 percent.

20 Q And that assumed, did it not, that the peak load  
21 growth in this hypothetical would be 1 percent in excess  
22 of what the forecast told it would be?

23 A That is correct.

24 Q Thank you, Dr. Hieronymus.

25 MR. KLEPPINGER: I have no further questions, Your

1 Honor.

2 JUDGE MATUSCHAK: Mr. Widoff?

3 CROSS-EXAMINATION

4 BY MR. WIDOFF:

5 Q Dr. Hieronymus, my name is Mark Widoff. I  
6 represent the Utility Users Committee and the University  
7 of Pennsylvania in this proceeding.

8 MR. CALVERT: Mr. Widoff, I would ask you to keep  
9 your voice up please. It is a little hard to hear this  
10 far away.

11 MR. WIDOFF: I know the problem.

12 BY MR. WIDOFF:

13 Q Doctor, would it be correct to state that as  
14 the developments with regard to energy costs, demand, and  
15 a full range of other factors which I think you deal with  
16 in your testimony, during the 1970s and '80s, that as these  
17 factors came to the attention of various utilities around  
18 the country that some of them made the determination to  
19 scale back their capacity additions either by cancellation,  
20 suspension or other decisions that they felt would be  
21 in the best interests of their shareholders and their rate-  
22 payers?

23 A Yes, that is correct. That, indeed, was almost  
24 ubiquitous, and includes Philadelphia Electric Company  
25 among others.

1 Q With regard to those companies that made a deter-  
2 mination to cancel large units, some of which may have  
3 already been in progress to one extent or another, have  
4 you made any determination either formally or informally  
5 whether those decisions were prudent or imprudent?

6 A I don't think one could make a blanket determina-  
7 tion, but as a general matter, informally, they were prudent.

8 Q Have you ever testified in a proceeding where  
9 such a determination had been made by a utility company  
10 and the issue before the commission was the proper rate  
11 treatment of the sunk costs?

12 A I have not testified in a proceeding in which  
13 that was a predominant issue. I don't know whether it was  
14 an issue in any of the cases in which I've testified. But  
15 frequently a decision is made, and then it is brought up  
16 again in future proceedings. It wouldn't surprise me if  
17 it had been an issue in one of those, but, to the best of  
18 my recollection, none of those proceedings considered  
19 importantly the issue of the treatment of cancelled plant  
20 as a real live ratemaking matter.

21 Q Do you recall any of them that treated them  
22 unimportantly?

23 A No, I don't know. I was simply suggesting that  
24 might have been the case and I was unaware of it.

25 Q If Philadelphia Electric had determined during

1 the period 1985 through 1980, 1981 and '82 to have scaled  
2 back on its Limerick plans, let's say by cancelling one  
3 or both of the units, do you have any opinion as to whether  
4 that decision would have been prudent or imprudent?

5 A I have an opinion based on the matters that I've  
6 reviewed in this proceeding and in the 1980 show cause  
7 proceeding and the Limerick 2 proceeding, that cancella-  
8 tion of either unit in that time period would not have  
9 been prudent.

10 Q So that there was something different about the  
11 circumstances that Philadelphia Electric faced as opposed  
12 to other utilities that we referred to earlier who made  
13 determinations to cancel units that were already proposed?

14 A Yes.

15 Q Could you indicate for us what circumstances, in  
16 your view, were different?

17 A I think there are several. In general, the plants  
18 what were cancelled were cancelled either because they were  
19 unfinanceable or clearly not needed; that's true of both  
20 nuclear plants and coal plants. Predominantly they were  
21 cancelled because they weren't needed, just as Philadelphia  
22 Electric cancelled at least two nuclear facilities that  
23 were on its drawing boards, and I think on one of them at  
24 least they spent some money.

25 A second distinguishing characteristic of Philadelphia

1 Electric relative to not necessarily the other utilities,  
2 but with respect to the other utilities' cancelled plants  
3 was that the energy savings -- that is fuel savings value  
4 in the PJM region is principally against gas, whereas in  
5 -- I'm sorry; against oil -- whereas many of the cancelled  
6 units could only be justified based on the fuel savings  
7 relative to coal.

8 So I think those are the three characteristics,  
9 financial capacity, need and the economic value of the fuel  
10 savings.

11 The fourth one, which is I would assume self-evident,  
12 is how far along the plant is.

13 Q My next question goes back to a series of questions  
14 that Staff asked you. I noticed in your listings of the  
15 various determinations you did not include a determination  
16 or judgment by the utility company as to the trends in  
17 regulations, as to the likelihood of regulatory treatment.  
18 Is that a factor, in your view, that a prudent utility  
19 company should or should not have considered during that  
20 period of time?

21 A I don't know. I think as a general matter  
22 certainly in the early part of the period, and perhaps  
23 throughout the period that I was analyzing, there was little  
24 if any evidence that there were going to be major departures  
25 from historic regulation with respect to new plant in service;

1 so it is not clear to me that there was anything to look  
2 at.

3 Now, carried beyond that, let's assume for the moment  
4 that there was something to look at. I haven't really,  
5 frankly, thought through whether a fair system of regulation  
6 is one in which a utility should be required to guess how  
7 the regulators are going to change the rules on them.

8 Having said that, you know, it is pretty clear by  
9 now that in at least some jurisdictions that has happened,  
10 and utilities have had to respond to that fact.

11 So that looking at it from the standpoint of private  
12 enterprise companies, we are looking at putting billions  
13 of dollars of their investors' money at stake. I think  
14 that looking at that has become something that, as corporate  
15 entities, they have had to look at.

16 I'm not certain that as a legal matter looking at  
17 prudence that is something that they ought to have to look  
18 at.

19 Q With regard to your analysis of various expecta-  
20 tions of the various parties in the questions that were  
21 directed to you a few minutes ago by Mr. Kleppinger, is  
22 it of any relevance in a consideration of what is fair --  
23 and I read your testimony basically, a large part of it,  
24 to be directed to the Commission in consideration of what  
25 is fair to everyone concerned -- is it relevant that the

1 circumstances that a commission might face in a particular  
2 proceeding are so extreme as to be beyond the contemplation  
3 of the various parties -- in other words, is it relevant  
4 that the circumstances may be unprecedented; does that have  
5 any relevance at all in terms of how the various parties  
6 must react in dealing with that unprecedented situation?

7 A I think it is fair to say that no bargain, even  
8 a literal contract, is enforceable under any and all circum-  
9 stances, and I think that one of the things which has  
10 developed has been that as the capital cost of plant has  
11 gotten to be so high the regulatory system is struggling  
12 with how to deal with the rate impacts then under conven-  
13 tional regulatory precedence, and the ways that those are  
14 being dealt with are changing. And, indeed, I take that  
15 as the spirit behind the company's phase-in proposal.

16 Yes, I think those are inevitably matters that in  
17 this proceeding and in other like proceedings are going  
18 to be taken up.

19 Q I take it also that throughout the entire process  
20 of planning, reviewing and re-examining decisions of this  
21 magnitude that there is a large element of judgment that  
22 has to be exercised by an individual responsible for these  
23 decisions; is that correct?

24 A You are referring specifically to what kinds of  
25 decisions, if I may ask?

1 Q The kinds of decisions that you refer to in your  
2 testimony with regard to the regulatory review of all of  
3 the various factors that may be relevant to a determination  
4 of whether the original plan should be adhered to, whether  
5 there should be modifications or changes and so forth?

6 A The answer to your question is yes, I would  
7 suggest that my analysis would seem to indicate that the  
8 outcome of those decisions is relatively robust with respect  
9 to those judgments. I mean we are not talking here about  
10 a very narrow close call through that period. But as a  
11 general matter, yes, there was a great deal of judgment  
12 required.

13 Q And I take it that it is simply your position  
14 that those individuals who were warning the utility industry  
15 that their numbers were significantly off -- and I am talking  
16 about the period of '76, '77, '78, '79, '80 -- that those  
17 individuals were not, to use your phrase, in the mainstream  
18 of economic thought and, therefore, it was entirely appro-  
19 priate to disregard those warnings?

20 A The first comment I would make about those  
21 individuals is that they were exceedingly few in number.  
22 The debate at that time tended more to have to do with goals  
23 than means, and the most serious opposition to construction  
24 plans of the utilities during the middle '70s, the middle  
25 to late '70s, was for the most part not on economic grounds,

1 but on grounds of different visions of our society -- small  
2 is beautiful -- the notion that the institutional role of  
3 the state and the utility should be different than it had  
4 been historically, that they should be aggressive, active  
5 promoters and sponsors of customer sited meter conservation  
6 programs and perhaps even legally required conservation,  
7 that certain of the utility resources were not environ-  
8 mentally benign or were unsafe; but there was very little  
9 of the content of even the non-mainstream activity which  
10 suggested that the kinds of plants that the utilities wanted  
11 to build were uneconomic within the context of the understood  
12 historic use of utilities.

13 There was some, but not very much.

14 Q There were some. And could you just identify  
15 for the record those that you would include in that small  
16 group?

17 A It depends on the time period we are talking about.  
18 There was some early work by Chip Buck of the Harvard  
19 Business School, and by one of the environmental groups --  
20 I can't recall which one or who the individual was -- which  
21 suggested that nuclear power was not the great bargain that  
22 people thought it was. Buck's work, some work by Bill  
23 Mooz in 1977 and 1978 -- that's M-o-o-z -- pointed up  
24 historic rates of increase in the costs of nuclear plants,  
25 but neither or those individuals sponsored the notion that

1 you can draw future inferences from that. It was kind of:  
2 you ought to be aware that this is happening, that kind  
3 of studies.

4 Charles Komanoff did a study back in the mid-'70s  
5 -- mid to late '70s; I don't recall the date -- on utility  
6 capacity factors, again summarizing history really more  
7 than making predictions.

8 So within the literature that was talking about the  
9 future correctly, I can't think of anything. That's not  
10 to say there wasn't any. There's just none that I recollect  
11 which said: you guys are completely off base about the way  
12 the future is going to be.

13 There was some evidence that said: the economics  
14 of these things are not historically improving in the way  
15 that you seem to think they are going to. I think that's  
16 the characterization of at least my understanding of the  
17 beyond-mainstream literature of the day.

18 Q And you would characterize that as non-mainstream  
19 and, therefore, with specific regard to your testimony  
20 where you refer to mainstream and consideration of main-  
21 stream opinions during that time, these individuals you  
22 have referred to would be considered non-mainstream; is  
23 that correct?

24 A I wouldn't have excluded what they were saying  
25 on that basis. No, it was not my intent to say -- to make

1 a judgment as to whose opinion which was publicly known  
2 mattered and whose didn't. I did exclude, as a practical  
3 matter, things which were not published which came up only  
4 in the context of proceedings, because to try to be  
5 exhaustive about that I felt would be impossible.

6 Those people were excluded because they weren't  
7 making forecasts. I'm putting together here forecasts and  
8 the numbers that went with those forecasts.

9 Bill Mooz was saying: hey, guys, in the past the  
10 cost of power plants has been going up. He specifically  
11 said: you cannot interpret that to mean that they are going  
12 to continue to go up at that rate in the future, and he  
13 made no forecasts, for example of what plants were going  
14 to cost in the future.

15 So I think it is an incorrect interpretation of what  
16 I'm doing to say that I made a judgment as to who was in  
17 and who was out. The key characteristic is: did you give  
18 me a forecast number I can work with or not?

19 Q As a matter of fact, do you know whether Phila-  
20 delphia Electric Company gave any consideration to those  
21 articles and those studies; did you ask that question?

22 A Not that I recall, no. I don't recall having  
23 asked it. I don't know the answer.

24 Q When you referred to environmental groups, there  
25 was work in the, as I recall, '76, '77, '78 era by Amory

1 Lovins; was that perhaps the one you were referring to?

2 A No, the gentleman to whom I was referring was  
3 Vince Taylor. Amory Lovins' work was in the class of things  
4 I was talking about earlier, explaining why in his view  
5 our whole theory of how we create and distribute energy  
6 services is wrong.

7 Q He did some mathematical calculations which tended  
8 to indicate that there was a gross miscalculation in terms  
9 of the overall cost not only of nuclear construction, but  
10 of nuclear power in general as compared to the alternatives.  
11 Do you recall reviewing any of those calculations or projec-  
12 tions that he did?

13 A The only one of those of his that I'm generally  
14 familiar with is his energy security piece, which I believe  
15 was later. I'm not specifically aware of what you are talk-  
16 ing about.

17 Q On page 36 of your testimony, specifically lines  
18 15 to 19, you indicate that several utilities have made  
19 it clear that they will not build new capacity without  
20 absolute and prior assurance that prudent expenditures  
21 will be fully recovered. Would you be able to identify  
22 for us which utilities you have in mind there?

23 A I could only do so if I went back and researched  
24 it a bit. There have been a number of announcements in the  
25 trade press by the management so stating, or even in a

1 couple of cases that I know of of the Board of Directors  
2 voting and so directing management. One that comes  
3 immediately to mind is Public Service of Indiana, another  
4 is Consumers Power, and both of them for obvious reasons.

5 I'm aware generally from my discussions with a  
6 number of utilities that that is their position, but I would  
7 have to go back and re-research the trade press to recall  
8 some more specific examples.

9 MR. WIDOFF: Your Honor, I would like to make that  
10 an on the record data request, that the witness provide  
11 us with those utilities that he had in mind and the source  
12 of his information.

13 MR. CALVERT: Your Honor, we are happy to accept  
14 that data request. If I understand the procedure, it will  
15 actually be done in writing so that we have the specific  
16 request. And I would also suggest that this line of ques-  
17 tioning and even this data request is really more appro-  
18 priate for interrogatories, and I'm surprised we haven't  
19 been asked that question before if that was of interest  
20 to the parties.

21 JUDGE MATUSCHAK: We will direct the company to  
22 provide that information.

23 And, Mr. Widoff, would you provide it in writing  
24 so we can get a look at exactly what is expected?

25 MR. WIDOFF: Yes. Thank you, Your Honor.

1 BY MR. WIDOFF:

2 Q On page 80 of your testimony, Dr. Hieronymus,  
3 at the top of the page you indicate that it might have been  
4 appropriate to compare Limerick to non-base load sources  
5 of power which would meet reliability needs; however,  
6 PECO's already substantial amount of peaking capacity makes  
7 it apparent that all new capacity systems at least through  
8 the middle 1980s should be based on capacity.

9 Would you describe for us what you consider to be  
10 the important characteristics of base load capacity as  
11 you are referring to it here?

12 A Principally that it is a low variable cost source  
13 of energy. I think that's the key characteristic. I guess  
14 I would have to amend that to exclude run of river hydro  
15 which is a base load type resource because it has that  
16 characteristic, but it has the further characteristic that  
17 it may be available only in relatively small amounts of  
18 the year in some areas. But in general the key character-  
19 istic is low variable cost.

20 Q So would it be fair to say then that when you  
21 referred to base load plants you were talking about plants  
22 that are justified because of the long hours of use because  
23 of the fact that you just referred to?

24 A Yes.

25 Q And, therefore, the combination of the long hours

1 of use and the energy savings justify the higher capacity  
2 cost; is that correct?

3 A Yes.

4 Q And is it also correct that Limerick is justified  
5 by the Philadelphia Electric Company in this case for  
6 precisely that reason?

7 A I'm not sure that's at any rate a complete  
8 characterization of Philadelphia Electric Company's  
9 justification for Limerick. They say, among other things,  
10 that Limerick is needed to meet capacity requirements. But  
11 certainly Philadelphia Electric Company in explaining why  
12 it chose to build Limerick indicated its reasons for  
13 believing that it needed base load at that period of time.  
14 So in that sense the answer is yes.

15 Q Just a couple more questions. With regard to  
16 the exercise of judgment, it is correct, is it not, that  
17 in the Limerick 1 proceeding you were a witness?

18 A In the Limerick 1 proceedings?

19 Q Yes.

20 MR. CALVERT: Are you referring to the first investi-  
21 gation that looked into the questions of Limerick 1 and 2  
22 and their completion?

23 MR. WIDOFF: The investigation into -- you are  
24 correct; the first investigation into the Limerick construc-  
25 tion project.

1 THE WITNESS: I-80341100 or something like that; yes,  
2 I was a witness.

3 BY MR. WIDOFF:

4 Q And the principal purpose of your testimony in  
5 that case was -- and I'm not trying to use this in a  
6 motive sense, but to criticize Dr. Rosen in his analysis  
7 of the construction, likely construction costs of the  
8 Limerick project; is that correct?

9 A Taking your caveat on the motive aspect of that,  
10 yes, that is correct.

11 MR. WIDOFF: No further questions.

12 JUDGE MATUSCHAK: Is this an appropriate time to  
13 take a recess for lunch?

14 MR. CALVERT: Your Honor, if I might just comment,  
15 we have today three additional witnesses, and we have four  
16 witnesses tomorrow and a pretty hefty schedule the rest  
17 of the week. We have a very packed schedule. I just  
18 wanted to bring that to the Court's attention and let  
19 counsel know that we are going to have to move these wit-  
20 nesses along perhaps a little faster than we have with Dr.  
21 Hieronymus if we are going to come close to meeting that  
22 schedule.

23 JUDGE MATUSCHAK: Do you want to start earlier?  
24 How much time do you want for lunch?

25 MR. CALVERT: I am just making the comment that we

1 have a lot of people.

2 JUDGE MATUSCHAK: Let's come back at 1:30.

3 (Witness temporarily excused.)

4 (Whereupon, at 12:32 p.m. the hearing was adjourned  
5 to be reconvened at 1:30 p.m. this same day.)  
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AFTERNOON SESSION

(1:33 p.m.)

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2  
3 JUDGE MATUSCHAK: Ms. Ferkin, are you ready to pro-  
4 ceed?

5 MS. FERKIN: I believe Mr. Ettner is going to pro-  
6 ceed first.

7 JUDGE MATUSCHAK: All right. General Services  
8 Administration.

9 Whereupon,

10 WILLIAM H. HIERONYMUS

11 having previously been duly sworn, testified further as  
12 follows:

13 CROSS-EXAMINATION

14 BY MR. ETTNER:

15 Q Good afternoon, Dr. Hieronymus. I'm Mike  
16 Ettner, representing GSA.

17 A Good afternoon, sir.

18 Q Let me first direct your attention to page 11 of  
19 your pre-filed testimony. As I understand it, it is at  
20 that point in your testimony where you are stating why you  
21 support the use of a prudent investment test rather than  
22 some of the other alternatives that are possible and that  
23 are used by some commissions.

24 I would like to direct your attention to line 17 on  
25 that page -- actually, a little bit further along, line 19.

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You make the statement that "alternative standards for determining whether investments undertaken on behalf of ratepayers should be allowed in rates are pernicious in their economic effects."

Focusing on your use of the word "pernicious," what did you mean when you chose that word?

A. Well, simply that they create incentives for the utility to do other things than seek to minimize the cost of reliable service.

Q Would you accept as a definition of the word "pernicious" the words "harmful, ruinous or destructive"?

A. Yes.

Q Is it your view then, Dr. Hieronymus, that this Commission would be acting perniciously if it were to employ something other than the prudence standard that you advocate?

A I think there are two things that I would like to say in response to that. First is, of the definition you gave me, I would use "harmful" rather than "ruinous" unless the Commission were to do something which were indeed very drastic.

Second, that I think I make provision later in my testimony for the concept that one can apply an excess capacity standard in a way which is not inconsistent with a prudence standard, and to that extent it would seem to

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me that that type of standard would also be permissible within the context of this sentence.

Q But for those commissions around the country which use a used and useful standard, for example, rather than a prudence standard, would you also tag them with the term "pernicious"?

A I think what I meant to say in my last response was it depends on how that standard is applied, and that there are ways in which that standard can be applied which are not inconsistent with a prudence standard.

Q Could you tell me how you could apply the used and useful standard, for example, in such a way that it would not be deemed pernicious in your view?

A Sure. I discuss that, in fact, at length, and the principal criteria that I talk about are, first, that the reserve margin used for the purpose of computing whether the capacity is used or useful, as the term is normally applied, must be reasonable in the sense that it is cognizant of the real world requirements of the utility; and second, to the extent that an investment was prudent and based on a prudent load forecast and nevertheless results in capacity which the Commission deems to be excess, it seems to me that an excess capacity test is best applied as a test of whether current ratepayers, as opposed to later ratepayers, should bear the cost of that capacity.

j4

1 So that when an excess capacity adjustment is applied to a  
2 prudent investment, I believe that the issue really is only  
3 when revenue requirements necessary to recover the invest-  
4 ment in the plant occur as opposed to whether they should  
5 occur.

6 Q Let me next direct your attention to page 13 of  
7 your testimony. It is at that point in your testimony  
8 where you mention or you identify two goals of the regula-  
9 tory process. First you mention the need to assure that  
10 the needs of the utility's customers are met as the first  
11 goal of the regulatory process; is that correct?

12 A Yes.

13 Q Secondly, a little bit further down on that page  
14 you identify as the second goal of the regulatory process  
15 the assurance that rates are fair and equitable to rate-  
16 payers; is that correct?

17 A Yes.

18 Q Keeping in mind your discussion of the prudence  
19 standard, is it fair to say that the prudence standard  
20 applies better to the first goal you discuss there rather  
21 than to the second goal?

22 A No. I think it is fully consistent with both  
23 goals. Fair and equitable does not mean necessarily cheap.  
24 It means fair and equitable.

25 Q Would it be possible, Dr. Hieronymus, for a

1 utility to make a prudent investment decision which would  
2 turn out to be not fair and equitable to ratepayers?

3 A. Within the context of a regulatory system in  
4 which ratepayers are permitted to keep the benefits of  
5 prudent decisions which result in substantial savings to  
6 ratepayers, I would say no.

7 Q. Next, Dr. Hieronymus, let me direct your atten-  
8 tion to page 21 of your testimony. Beginning at line 17  
9 you state as follows: "The fact that technology choices  
10 turn out to be other than least cost or capacity turns out  
11 to be excess on a reliability basis is not evidence of  
12 imprudence."

13 Did I read that correctly?

14 A. Yes, you do.

15 Q. I wanted to ask you if you could provide us with  
16 a few examples, a few factual scenarios or factual circum-  
17 stances, where you would find imprudence?

18 A. Without restricting myself to matters of my own  
19 technical competence, or with that restriction?

20 Q. Preferably, with respect to the issue of excess  
21 capacity, and the construction of nuclear power plants in  
22 particular.

23 A. Well, with respect to excess capacity, I think  
24 a circumstance where it would arise because of imprudence  
25 would be one in which the utility decided to build the

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1 plant and proceeded to construct the plant based on load  
2 forecasts which were not reasonable given what was known or  
3 knowable at the time, and where had they made load fore-  
4 casts which were reasonable given what was known and know-  
5 able, they would not have built that plant.

6 Q Based upon your experience and your reading,  
7 can you cite us to any specific case, real-life case,  
8 where in your judgment, based on your definition of the  
9 prudent investment test, that you feel that indeed this  
10 particular utility's decision was imprudent?

11 A On that basis, no, I can't. I also might add,  
12 I can't -- I'm not aware of a case where anyone has made  
13 that determination, where a commission has made that  
14 determination.

15 Q Dr. Hieronymus, if less costly alternatives are  
16 known to the utility yet are not utilized, would that be  
17 considered imprudent in your mind?

18 A I don't think I can make that as a blanket  
19 statement because there are dimensions of quality which are  
20 not subsumed, I think, by the question as you stated it.

21 I think that the utility does have an obligation to  
22 meet load in a way which it at the least achievable cost,  
23 and to the extent that they ignore that responsibility or  
24 they flaunt that responsibility, I think in general, yes,  
25 that would be a matter of imprudence.

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1 Q Also, Dr. Hieronymus, if in fact excess capacity  
2 will exist, and that fact is known to the utility, yet  
3 that fact is not considered in the decision to go ahead  
4 with a project, would you consider that act to be an im-  
5 prudent decision?

6 A Not necessarily, no. There were a number of  
7 plants which were undertaken in the first instance and  
8 subsequently continued which were justified based on cri-  
9 teria other than simply the need to meet peak load; speci-  
10 fically, fuel savings and fuel diversification, to name  
11 two.

12 That was particularly true back in the 1970s when  
13 as a matter of public policy and, in the minds of many,  
14 economic necessity, shifting away from gas and oil as gen-  
15 eration fuels were requisites of the generation planning  
16 process.

17 MR. ETTNER: Thank you, Dr. Hieronymus.

18 That's all the questions I have, Your Honor.

19 JUDGE MATUSCHAK: Ms. Ferkin.

20 CROSS-EXAMINATION

21 BY MS. FERKIN:

22 Q Good afternoon, Dr. Hieronymus.

23 A Good afternoon, Ms. Ferkin.

24 Q Dr. Hieronymus, I have some questions about the  
25 life cycle analysis that you performed in this proceeding.

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1            Could you make available for your reference the  
2 interrogatory response to OCA-2-25?

3            A. I have it in front of me.

4            Q. Thank you. Now, as I understand it, you re-  
5 sponded to Mr. Rubin earlier today that the life cycle  
6 analysis was prepared under your direction?

7            A. Generally, yes.

8            Q. In fact, that is in your testimony as well.

9            A. Yes.

10           Q. When was that analysis prepared?

11           A. I don't recall precisely. Some time this  
12 summer.

13           Q. July, August?

14           A. I don't know. I would suspect July or August,  
15 yes.

16           Q. Did the company perform the runs, or did Putnam,  
17 Hayes & Bartlett perform the runs?

18           A. They were performed by the company.

19           Q. Did you review the runs?

20           A. Yes.

21           Q. Do you recall when you first reviewed them?

22           A. Not specifically. I would suspect late-July,  
23 but I could be off on that.

24           Q. To the best of your knowledge, do you think the  
25 company performed the runs before June 1?

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A. I don't know, but would doubt it.

Q. Dr. Hieronymus, it is in your testimony that the life cycle analysis utilizes PECO's standard corporate assumptions; is that correct?

A. Yes.

Q. And you said in your testimony that you reviewed those assumptions and you found them to be reasonable; is that correct?

A. Yes. I should point out that I had reviewed those assumptions extensively in the context of the Limerick 2 show cause investigation, and in the period prior to the preparation of my testimony in this proceeding I was concerned principally with assumptions which were different because it was a different unit, or which had changed because of the passage of time.

Many of these assumptions are the same as they were in that proceeding, and I haven't reviewed them as a consequence since about a year ago.

Q. Now, maybe we can make this quick, Dr. Hieronymus. You mentioned that many of the assumptions are the same as were utilized in the Limerick 2 investigation, but that some of them are different.

A. Yes.

Q. Are you able to identify for me which assumptions used in this life cycle analysis are different?

j10 1           A. I'm not certain I can be exhaustive. I'll tell  
2 you the ones that come to mind. There was a slightly  
3 different fuel cost set of assumptions.

4           There was a different decommissioning cost. There  
5 were a number of assumptions which changed because we're  
6 talking about Limerick 1 versus Limerick 2; obviously, the  
7 cost of the plant; when it comes on line; it's O&M expense,  
8 because it is the first rather than the second unit.

9           Those are the ones that come to mind.

10          Q. Dr. Hieronymus, could you turn for a moment to  
11 item 5 in the response to 2-25 in the attachment?

12          A. Yes, I have it.

13          Q. Is it correct that -- on the first page, the  
14 target capitalization ratios --

15          A. Yes.

16          Q. -- that those were the ones used in the Limerick  
17 2 investigation?

18          A. They are certainly very close, because I remem-  
19 ber the net cost of capital there was 9.64 and this is 9.7,  
20 so that would seem to imply that there was a very minor  
21 difference between the two.

22          Q. Just on that last point, can you turn to page 2  
23 of item 5?

24          A. Yes.

25          Q. Looking down at the very bottom of the page, --

1 A. Yes.

2 Q. -- you will see a note that says, in part,  
3 "Cap ratios in columns 3 and 4 are from Exhibits WFT-5 and  
4 TPH-3.5 in Limerick 2 investigation."

5 A. Yes.

6 Q. Does that mean that the capitalization ratios  
7 shown both on page 2 of item 5 and on page 1 are the same  
8 ratios that were utilized in the Limerick 2 investigation?

9 A. (No response.)

10 Q. In other words, you had just responded to me  
11 that you thought --

12 A. That would seem to be the case; yes.

13 Q. They seem to be the same; okay.

14 And on that same item, Dr. Hieronymus, page 2 of  
15 item 5, columns 1 and 2, with respect to the interest rate  
16 on debt and preferred and the return rate on common, am I  
17 correct that that was also data used in the Limerick 2  
18 investigation?

19 A. I believe that's correct.

20 Q. Let me just ask a general question before I go  
21 on, Dr. Hieronymus. Am I correct that the data that you  
22 have said that you utilized in this analysis that is the  
23 same as the Limerick 2 investigation is data that reflects  
24 PECO's standard corporate assumptions?

25 A. Yes.

jl2

1 Q And to the extent you made changes in that data,  
2 that was to reflect updated PECO standard corporate  
3 assumptions?

4 A That is correct; yes. The only thing which  
5 were done for this proceeding at my behest was to look  
6 further at the issue of off-system capacity and at the  
7 issue of PJM capital charges.

8 I should note further that with respect to at least  
9 one of the assumptions which changed, specifically, the  
10 fuel cost, we did at the time independently take a look at  
11 that assumption, again, to see whether we thought it was  
12 reasonable and compared it to other contemporaneous  
13 forecasts.

14 Q Let me just focus on that point for just a  
15 second. You say "we looked at fuel costs at the time."  
16 Are we talking about discussions between you and the com-  
17 pany as to what assumption should be utilized in your life  
18 cycle analysis?

19 A Last summer, as this analysis was being pre-  
20 pared, it became clear that PECO had, in very minor ways,  
21 changed its view of fuel costs since they were put together  
22 for the Limerick 2 proceeding. So at that time we at PHB  
23 took a look at resources which are available to us in  
24 terms of fuel forecast assumptions and, if you like, con-  
25 tributed to the process of the company making its revisions

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1 to its fuel price forecast and judged that the ones which  
2 the company's fuel forecasting people felt were reasonable,  
3 were indeed reasonable.

4 Q Let me ask you a question about item 6 in the  
5 attachment to 2-25. That is just the one-page summary of  
6 the aspects of computing the book cost basis for Limerick  
7 1 at 50 percent of common.

8 A Yes.

9 Q The figures reflected there, the inputs to that  
10 calculation, were those provided to you by the company?

11 A Yes, they were.

12 Q Are they the same inputs used in the Limerick 2  
13 investigation?

14 A No, they would not be, because the completion  
15 date of Limerick 1 is different.

16 Q Who at the company, if you recall, provided you  
17 with the data shown on item 6, the input data?

18 A These came from Mr. Hill's department. I don't  
19 know who originally provided them within the company, but  
20 Mr. Hill was the point of contact on these matters.

21 Q Again, this data was provided to you prior to  
22 the preparation of your analysis, which would be not before  
23 June 1, but some time after; is that fair to say?

24 A Yes.

25 Q Would you take a look also in the attachment to

j14

1 2-25, could you take a look at item 7?

2 A. I have it.

3 Q. That is the computation of carrying charges for  
4 Limerick 1 plus 50 percent of common without post-commercial  
5 cap additions; is that correct? Item 7.

6 A. Yes.

7 Q. There is a year-by-year computation there;  
8 correct?

9 A. That's correct.

10 Q. Again, was the input data for this run provided  
11 to you by the company?

12 A. Well, the run was provided to me by the company.

13 Q. Prior to the time the run was done, did you re-  
14 view the assumptions used to perform the run with the  
15 company?

16 A. Only in a general sort of way. I had no reason  
17 to dispute, for example, what they thought the capital for  
18 book depreciation or the AFUDC amount was. I didn't really  
19 inquire into whether those were correct; I presume they are.

20 Q. Again, to the best of your knowledge, this run  
21 was performed some time after June 1?

22 A. Yes.

23 Q. I have I guess a similar question with respect  
24 to item 8 in the attachment to OCA 2-25. That would be  
25 the carrying charges for post-commercial capital additions

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1 to Limerick 1; is that correct?

2 A. That is correct.

3 Q. Again, did you review the assumptions that went  
4 into this run prior to the company performing it?

5 A. The only assumption which is unique to this  
6 run is the amount of the capital addition. The answer to  
7 your question is yes, this is an assumption which is con-  
8 sistent with the Limerick 2 proceeding.

9 Q. With respect to that last question,  
10 Dr. Hieronymus, you mentioned that the amount of the capi-  
11 tal addition is consistent with the Limerick 2 proceeding.

12 A. Yes.

13 Q. Do you recall who in the company developed that  
14 assumption? Would that be Mr. Kemper, Mr. Carroll?

15 A. I believe Mr. Carroll, but I'm not frankly  
16 certain.

17 Q. Can you take a look at subpart (c) of the answer  
18 to 2-25?

19 A. Can you give me some guess as to how far back it  
20 is? I don't have --

21 Q. Let's go back to the cover page to the response  
22 to 2-25.

23 A. Yes.

24 Q. We're not in the attachment at this point.  
25 Could you turn to page 3? Again, of the cover

j16

1 sheets to 2-25.

2 A. Yes.

3 Q. Do you see under subpart (c) a list of AFUDC  
4 rates?

5 A. Yes.

6 Q. Were those provided by the company?

7 A. Yes, they were.

8 Q. Do you know when they were provided by the  
9 company?

10 A. Well, they would have been provided to me at  
11 the same time that the analysis itself was provided to me.

12 Q. So you did not review those rates with the com-  
13 pany prior to the performance of the analysis?

14 A. That's correct.

15 Q. Do you know off the top of your head whether  
16 those rates are consistent or inconsistent with rates used  
17 in the Limerick 2 investigation?

18 A. They should be closely consistent. I don't know  
19 whether they are exact.

20 Q. I have the same question, Dr. Hieronymus, on  
21 that same page with respect to the inflation rates.

22 A. I believe those are consistent with the Limerick  
23 2 investigation. Again, I am trusting my memory that the  
24 long-term inflation rate was 6 percent. The specific  
25 timing for '87 and '86 I don't recall.

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Q Now, if you could turn back to the front page of the answer to OCA-2-25.

A Yes.

Q Let's look at item (c)(2) which is the assumption for yearly load growth, peak demand and annual energy growth for PECO and other utilities that are parts of PJM.

A Yes.

Q Again, was that assumption provided by the company?

A Yes.

Q Do you know whether it is consistent or inconsistent with what was provided or used in Limerick 2?

A To the best of my knowledge, it is fully consistent.

Q And you reviewed it after these runs were performed; is that correct?

A I merely verified that yes, it was the company's load growth forecast and that they hadn't changed the PJM forecast.

Q Changed from --

A I reviewed it in that sense.

Q So you reviewed that it had not changed from what was used in Limerick 2?

A That's my recollection.

Q Also, item 7 under subsection (c), now you state

1 that the fuel cost assumptions were different; is that  
2 correct?

3 A. Yes.

4 Q. And the PJM energy charges were different than  
5 what was utilized for Limerick 2; is that correct?

6 A. The capacity charges for one of the base case  
7 runs, the one that assumed that capacity charge schedules  
8 were not changed from historic practice, I think is the  
9 same as Limerick 2.

10 The fuel cost trajectories are slightly different.

11 Q. Were the fuel cost trajectories that were pro-  
12 vided to you provided by Mr. Carroll?

13 A. As I say, everything was provided to me either  
14 by Mr. Hill and his people or by Mr. Rush and his people  
15 for the production cost model calculations. Those were my  
16 two points of contact within the company.

17 Q. Just to sum up this whole line; it is fair to  
18 say that your review of the assumptions, the standard  
19 corporate assumptions used in the life cycle analysis came  
20 after the analysis was performed?

21 A. That is certainly generally true, and I can't  
22 think of any exceptions to it, other than the fuel cost.

23 Q. And you reviewed those assumptions to see  
24 whether they were different from Limerick 2; is that  
25 correct?

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A. "Reviewed" is frankly --

Q You checked.

A. I checked, is a better word.

MS. FERKIN: For the record, Your Honor, I would like to have marked as an exhibit, based on this cross-examination, excerpts from the OCA interrotatory response we have just been discussing, and I would like that marked as GEC Exhibit 3.

JUDGE MATUSCHAK: So marked.

(Whereupon, the document was marked as GEC Exhibit No. 3 for identification.)

MS. FERKIN: I have no further cross-examination on it, but I do want the exhibit marked.

MR. CALVERT: Your Honor, of course, we have no objection to it being marked, but at the time that counsel will be moving it into the record, I think I would make an objection on the basis that it is only part of a fairly extensive answer, and that for complete and fair rendering of the exhibit, that the whole thing ought to go in.

MS. FERKIN: I am more than happy to provide the entire answer, but for purposes of economy and the questions that I posed to Dr. Hieronymus, I believe -- and counsel can review this -- that what I have provided amply deals with the cross-examination of Dr. Hieronymus.

I would be more than happy to provide the entire

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1 response at a later time and make that the exhibit, if  
2 counsel would --

3 MR. CALVERT: That's fine.

4 MS. FERKIN: But for economy purposes, I think we  
5 can deal with just the excerpts.

6 BY MS. FERKIN:

7 Q. Dr. Hieronymus, I just have a few other ques-  
8 tions for you.

9 Page 15 of your testimony, you state there that  
10 the American system of public utility regulation is a  
11 cost-based regulatory system, pass-through of operating  
12 costs plus a return of and on prudent investments.

13 A. That's correct.

14 Q. A corollary to this, you state further, is that  
15 public utility regulation does not seek to mirror a com-  
16 petitive market; is that correct?

17 A. Yes.

18 Q. Is it fair to say that the following phenomena  
19 have been occurring in the electric utility market? I am  
20 going to give you some examples.

21 In general, have we seen customers of investor-  
22 owned electric utilities begin to cogenerate and supply  
23 their own electrical needs?

24 A. Well, "begin" is not quite the right term.

25 Q. I can rephrase.

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1           A. Let me explain why it isn't the right term.  
2           Actually, the proportion of energy which is cogenerated to-  
3           day is less than it was 30-35 years ago, so that if you  
4           were to say there has been a resurgence in self-generation  
5           or cogeneration, the answer to that is yes.

6           Q. That answers my question. Thank you.

7           Do we also see in some utility service territories  
8           investor-owned utilities vying with publicly-owned electric  
9           cooperatives or municipally-owned electrical systems for  
10          customers? As a general proposition, do we see that in  
11          America today?

12          A. I think we have seen that to some extent  
13          throughout. I'm not sure that it is any more common today  
14          than it has been in the past.

15          Q. But nevertheless, it does occur in some areas?

16          A. Oh, yes.

17          Q. And in some areas do we see electrical utilities  
18          competing with alternate fuels?

19          A. Certainly.

20          Q. With respect to Philadelphia Electric in partic-  
21          ular, was there a controversy in recent years regarding  
22          the Lukens Steel facility in Coatesville and its desire to  
23          leave the PECO system?

24          A. There was a case in which they sought permission  
25          to do that, yes.

j22

1 Q Isn't it correct that -- again, with respect to  
2 PECO -- the Borough of Lansdale recently left the PECO  
3 service territory, is no longer a customer of PECO?

4 A That one I will have to take your word for. I  
5 was not aware of that.

6 Q Will you accept it subject to check?

7 A Sure.

8 Q Then as a general matter, isn't it fair to say  
9 that electrical utilities have to deal with attracting and  
10 keeping their customers much as many competitive indus-  
11 tries have to deal with?

12 A It is certainly true that electric utilities  
13 face competition, and it wasn't the thrust of what I was  
14 trying to say here that they didn't.

15 The thrust of what I was trying to say here is that  
16 the pricing and output decisions, which are the economists'  
17 key decisions that a firm gets to make in the competitive  
18 marketplace, are not decisions which Commissions try to  
19 make on those same bases; that, for example, if you have an  
20 old and depreciated facility, the cost which ratepayers  
21 pay for that power has no correspondence whatsoever to the  
22 cost of power from new facilities or the market price of  
23 power; it is a book calculation.

24 Similarly, the cost of power from a new facility  
25 may well be above what that power would cost considered by

1       itself in a competitive marketplace. There are regulatory  
2       conventions about timing and about the way in which costs  
3       are calculated which do not attempt -- specifically are not  
4       interested in pricing that power at a competitive rate.

5             Q. Let me ask you this: let's say we have an in-  
6       dustry, a paper manufacturer; he supplies a customer.  
7       Let's say that customer decides to go elsewhere. Is that  
8       customer bound to the manufacturer to make up to him, to  
9       make up to the manufacturer the lost earnings?

10            A. Not unless he has a long-term take or pay con-  
11       tract; no. Under that same logic, that he lacks that con-  
12       tract, on the other hand, then the supplier is not required  
13       to serve him and can charge whatever prices the market  
14       bears.

15            MS. FERKIN: I have no further questions.

16            I would like to move into evidence GEC Exhibit 3.

17            MR. CALVERT: I would only suggest that since you're  
18       going to put in the whole exhibit, why don't you wait until  
19       whatever day you have the whole thing and then you can  
20       move it in at that time, I would think, because you don't  
21       have an exhibit now to actually give the court reporter.

22            MS. FERKIN: Can we go off the record for a moment?

23            JUDGE MATUSCHAK: Yes.

24            (Discussion off the record.)

25            JUDGE MATUSCHAK: Back on the record.

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1 We will admit the exhibit in evidence on the con-  
2 dition that you provide the whole part of that discussion.

3 MS. FERKIN: That's fair, Your Honor; thank you.

4 (Whereupon, the document marked as  
5 GEC Exhibit No. 3 was received in  
6 evidence.)

7 JUDGE MATUSCHAK: Any further examination of this  
8 witness?

9 (No response.)

10 JUDGE MATUSCHAK: Doctor, you will concede that the  
11 ratepayer has no input to any investment decisions of  
12 utility management?

13 THE WITNESS: The ratepayer himself does not, Your  
14 Honor; that's correct. The Commission, of course, does.

15 JUDGE MATUSCHAK: If in fact management decisions  
16 were prudent when made, but because of events that have  
17 come to pass they proved to be either unwise or non-  
18 optional, as you refer to it, are you suggesting that in  
19 such instance the ratepayer should provide assurance to the  
20 investor against such risk?

21 THE WITNESS: In effect, that's precisely what I'm  
22 suggesting, Your Honor; that under a cost-plus system of  
23 regulation the company is charged with doing the best it  
24 can to meet its requirement to serve at least cost, and as  
25 long as it attempts to do that prudently, the system does  
not make provision for the extra return that would be

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1 required to allow the market to insure the investor against  
2 the risk of loss.

3 JUDGE MATUSCHAK: In your reading of cases, both  
4 regulatory commission cases and the decision of the courts,  
5 have you not observed a thread of thought that there should  
6 be some balance made between the interest of the investor  
7 and the interest of the consumer?

8 THE WITNESS: There are such cases, principally in  
9 the context of the treatment of abandoned plant; there is  
10 a great deal of discussion of that issue in that context.

11 There is only one case that I am specifically aware  
12 of that deals with that in the context of completed plant,  
13 and that is the Kansas Wolf Creek case that I referred to  
14 earlier.

15 JUDGE MATUSCHAK: And doesn't it come down to the  
16 point that what should be considered -- you referred to it  
17 in your statement -- what should be considered is what is  
18 fair under the circumstances?

19 THE WITNESS: Yes.

20 JUDGE MATUSCHAK: That's all I have. Any redirect?

21 MR. CALVERT: Yes, Your Honor; just a very brief  
22 amount.

23 REDIRECT EXAMINATION

24 BY MR. CALVERT:

25 Q. Dr. Hieronymus, you will recall when Mr. Rubin

1 was cross-examining you he was talking about your life  
2 cycle analysis, and you will recall that he specifically  
3 directed your attention to the economic effects of placing  
4 100 percent of common in the rate base presently.

5 A. Yes.

6 Q. Would net benefits result from placing 100 per-  
7 cent of common in rate base now as opposed to when Limerick  
8 Unit No. 2 goes into rate base?

9 MR. RUBIN: I object, Your Honor. I don't believe  
10 that that was any part of Dr. Hieronymous' analysis; it  
11 wasn't the reason he gave under cross-examination for only  
12 looking at 50 percent of common. In the extensive work  
13 papers he has provided to us there is no calculation of  
14 that nature whatsoever. I don't see a basis for the  
15 question.

16 MR. CALVERT: Your Honor, I think that, to the con-  
17 trary, this is a line of questioning that Mr. Rubin opened  
18 up. He said: what is the effect of putting 100 percent of  
19 common in presently, when Dr. Hieronymus' analysis had only  
20 put 50 percent.

21 JUDGE MATUSCHAK: Would you restate your question?

22 MR. CALVERT: Sure. My question was: would net  
23 benefits result from placing 100 percent of common in rate  
24 base now, presently, as opposed to when Limerick Unit No. 2  
25 goes into rate base?



1 MR. CALVERT: Your Honor, I have no problem with  
2 that, and we have a procedure established. I would only  
3 point out at this point that much of Ms. Ferkin's cross-  
4 examination was truly of a data request nature, and it  
5 took something on the order of an hour, and we are going  
6 to be awfully tight on these witnesses.

7 I would only urge counsel that if they need to make  
8 data requests or if they want to discuss things with us  
9 informally about the numbers, please do it instead of  
10 taking up our time at the hearing so we can get through  
11 these witnesses.

12 Your Honor, our next witness is Mr. Rush.

13 MR. DELANEY: Your Honor, while Mr. Rush is approach-  
14 ing the stand, I have Staff's reply to the company's new  
15 matter on the motion in limine that I will distribute.

16 JUDGE MATUSCHAK: Very well.

17 Whereupon,

18 CARY H. RUSH

19 having been duly sworn, testified as follows:

20 MR. CALVERT: Your Honor, copies of Mr. Rush's  
21 direct testimony have previously been distributed to Your  
22 Honor, the court reporter and all parties, and we would ask  
23 at this time that it be marked for identification as PECO  
24 Statement No. 14.

25 JUDGE MATUSCHAK: Very well.

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(Whereupon, the document was marked as PECO Statement No. 14 for identification.)

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Would you please state your name for the record?

A. Cary H. Rush.

Q. Could you give us your business position and your business address, please?

A. Chief Engineer, Research and Planning Division, Philadelphia Electric Company, 2301 Market Street, Philadelphia.

Q. Mr. Rush, do you have before you a document of some 26 pages entitled "Direct Testimony of Cary H. Rush," "PECO Statement No. 14"?

A. Yes.

Q. Is this document your direct testimony in this proceeding?

A. Yes, it is.

Q. Was it prepared by you or under your direction?

A. Yes, it was.

Q. Are there any corrections you wish to make to your written testimony at this time?

A. We have an errata sheet. I can read through these, or would it be more efficient to hand it out?

1 MR. CALVERT: Your Honor, we have passed out an  
2 errata sheet so people can more easily follow. What I  
3 would propose to do is to have Mr. Rush simply make any  
4 corrections or changes either on the errata sheet or other  
5 than those covered by the errata sheet. I believe Your  
6 Honor has a copy up there too, and counsel have a copy.

7 BY MR. CALVERT:

8 Q Mr. Rush, why don't you make any changes, either  
9 on the errata sheet and/or in your testimony that are not  
10 covered on the errata sheet?

11 A One change, the entry on page 11 should read  
12 "change 6145 to 6139;" that is the next-to-the-last entry  
13 on the first page.

14 JUDGE MATUSCHAK: 6149?

15 THE WITNESS: 6139; 6139 is the correct number.

16 Preceding that, on page 11, the statement is, "data  
17 available as of mid-September." That should now read, "as  
18 of mid-December." That is an update of the number that is  
19 on page 11.

20 The only other change, page 19 of the testimony,  
21 the next-to-the-last line presently reads: "In late 1988,  
22 the 35 year old Delaware 7 and 8 steam station" units will  
23 be retired. That should read, "In late 1990" now. That is  
24 consistent with the change.

25 JUDGE MATUSCHAK: Should be what?

1 THE WITNESS: Should be "1990."

2 MR. RUBIN: Excuse me; on what page?

3 THE WITNESS: Page 19, at the bottom.

4 MR. CALVERT: Line 48.

5 THE WITNESS: And then the corresponding change on  
6 page 20, line 2, "anticipated system reserve will be 26  
7 percent in 1990."

8 Those are the only changes.

9 BY MR. CALVERT:

10 Q That is in addition to the changes on the  
11 errata sheet that you passed out?

12 A. That's right.

13 Q If I were to ask you the questions set forth in  
14 your direct testimony, would your answers be as they appear  
15 therein, subject to the corrections you have listed, and  
16 would those answers be true and correct at this time?

17 A. Yes, they would.

18 Q As part of your direct testimony did you submit  
19 exhibits?

20 A. Yes.

21 Q Are those exhibits Schedule 1 through Schedule 9,  
22 inclusive, and Revised Schedule 7?

23 A. Right; yes, they are.

24 Q And Revised Schedule 7 is attached to your  
25 errata sheet?

1 A. To the errata sheet.

2 Q Were those exhibits prepared by you or under  
3 your direction?

4 A. Yes, they were.

5 MR. CALVERT: Your Honor, at this time I move that  
6 the direct testimony of Mr. Rush, as corrected, be admitted  
7 as part of the record of this proceeding and be identified  
8 as PECO Statement No. 14, and that the exhibits be ad-  
9 mitted as part of the record and identified as Exhibits,  
10 Schedules 1 through 6, Schedule 7 Revised, and Schedules 8  
11 and 9, subject to any timely motions to strike.

12 JUDGE MATUSCHAK: Under those conditions the motion  
13 is granted.

14 (Whereupon, the document marked as  
15 PECO Statement No. 14 with attached  
16 Schedules 1 through 6, Schedule 7  
17 Revised, and Schedules 8 and 9,  
18 were received in evidence.)

19 MR. CALVERT: Mr. Rush is available for cross-  
20 examination.

21 JUDGE MATUSCHAK: Staff.

22 MS. SMITH: Your Honor, Staff would like to split  
23 its cross-examination between Mr. Delaney and myself be-  
24 cause I had directed some questions last week to  
25 Mr. Wright, those questions were deferred to Mr. Rush,  
concerning the Limerick-Whitpain line.

I just have a few questions on that issue, and then

j33

1 Mr. Delaney will proceed.

2 JUDGE MATUSCHAK: Very well.

3 CROSS-EXAMINATION

4 BY MS. SMITH:

5 Q Good afternoon, Mr. Rush.

6 A Good afternoon.

7 Q Are you familiar with the Limerick-Whitpain 500  
8 kv line claimed in plant held for future use in this pro-  
9 ceeding?

10 A This would be the proposed Limerick-Whitpain  
11 line?

12 Q I'm sorry?

13 A The proposed Limerick-Whitpain line.

14 JUDGE MATUSCHAK: I would ask that counsel and the  
15 witness keep their voices up, please.

16 BY MS. SMITH:

17 Q That's correct; that's a proposed line.

18 A Yes.

19 Q Has the company done any work -- let me ask you  
20 this: will the proposed line parallel an existing 500 kv  
21 line between Limerick and Whitpain which is part of a  
22 longer 500 kv line between Peach Bottom and Whitpain?

23 A That's correct.

24 Q Has the company done any of the work necessary  
25 to the filing of a siting application for this line as yet?



1 describe the derivation of the company's peak load  
2 forecast.

3 A. That's correct.

4 Q. As I understand your testimony, you first de-  
5 rive the base load forecast using an historic average of  
6 April and October monthly outputs for the previous 16  
7 years.

8 A. That's correct.

9 JUDGE MATUSCHAK: Mr. Delaney, would you mind  
10 sitting at the other side of the table? I am getting feed-  
11 back from the back and I'm missing all of this.

12 MR. DELANEY: Certainly, Judge.

13 BY MR. DELANEY:

14 Q. I think you just indicated that you first de-  
15 rive a base load forecast using an historic average of  
16 April and October monthly outputs for the previous 16  
17 years; is that correct?

18 A. That is one of the two parts of the calculation,  
19 yes.

20 Q. Then the second part is you compute a weather-  
21 sensitive demand, which you define as the difference be-  
22 tween regression demand and base demand?

23 A. That's correct.

24 Q. As I understand it, the weather-sensitive demand  
25 is derived from a ratio which correlates estimated connected

j36

1 air-conditioning load for the previous 16 years to the  
2 coincident weather-sensitive demand in those years modified  
3 to reflect expected future conditions?

4 A. That's correct.

5 Q. As I understand it, you indicate on page 8, I  
6 believe, that the ratio used in the present case is the  
7 1984 figure of 0.478; is that correct?

8 A. That's correct. That's with the air-conditioning  
9 multiplier.

10 Q. As I understand it, this ratio is intended to  
11 measure the use of existing air-conditioning load after  
12 weather normalization?

13 A. That's correct.

14 Q. Would it be true that if there is a change in  
15 the expected air-conditioning load, this would affect the  
16 derived weather sensitive demand?

17 A. That would certainly change it, yes.

18 Q. Would you agree that there are factors besides  
19 weather conditions which would affect air-conditioning use?  
20 And what I'm thinking about are economic factors.

21 A. That's true. That's really -- the intent of the  
22 factor is to incorporate, really, the usage and the temper-  
23 ature correction of the entire piece of load.

24 Q. Would you accept that a ratepayer's economic  
25 condition and the price of electricity would affect his use

j37

1 of air-conditioning?

2 A. I would accept that, yes.

3 Q. So you would agree that there is a certain  
4 amount of price elasticity with respect to air-conditioning  
5 use?

6 A. Yes.

7 Q. Would you agree that if the company receives  
8 the entire amount of the rate increase requested in the  
9 present case, that this may affect the ratepayers' air-  
10 conditioning usage because of the higher rates?

11 A. I can't really make that -- I think you're into  
12 an area that is not really my area of expertise.

13 Q. But you previously agreed that there is some  
14 price elasticity to customer use of air-conditioning?

15 A. That would be a judgment of mine, yes.

16 Q. And it may be possible that increased cost of  
17 electricity may affect the customer usage of air-  
18 conditioning?

19 A. That's possible.

20 Q. In this case you just indicated that you used  
21 the 1984 multiplier of .478. Was this figure taken from the  
22 company's May 1984 forecast?

23 A. It was taken from the forecast. I believe it was  
24 derived in the fall of '84.

25 Q. Can you explain how this figure was calculated

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at that time?

A. The basic calculation was done by taking the connected air-conditioning load and the component of load in that region and simply getting a ratio.

Q. Was there any averaging involved of prior periods in reaching that figure?

A. Not in this one. This was the 1984 value only.

Q. On page 8 you have discussed and I think you have agreed that the company uses a regression analysis to develop historic base demand and weather sensitive load; and you discuss that on page 8 of your testimony; is that correct?

A. That's correct.

Q. And you have a sample calculation on page 3-18, following Exhibit I in the back of your testimony. Will you turn to that page, please, 3-18?

A. (Witness complying.)

Q. Now, the fifth line from the bottom you have an equation that says: base demand and weather sensitive demand equals regression demand, and you have a number of figures under that line.

Do you see where I'm reading from?

A. Right.

Q. Is it correct that the company is claiming a regression demand of 5,923 megawatts, and that calculation

1 is indicated on that line; isn't that true?

2 A. This is the calculation for 1985; yes.

3 Q. On the next line, under where we have just re-  
4 viewed the calculation, the standard demand factor on the  
5 next line represents the running average of the ratios of  
6 actual maximum demand for the past 16 years to the average  
7 demand for the same years; is that correct?

8 A. That's correct.

9 Q. And that figure on the line above the last line  
10 on the page is 1.036; is that correct?

11 A. That's correct.

12 Q. So if I understand your testimony, you developed  
13 your 1985 peak load forecast by multiplying the regression  
14 demand by the standard demand factor, which equals approxi-  
15 mately 6,140 megawatts; is that correct?

16 A. That's correct.

17 Q. Is it correct that the calculation described in  
18 your testimony and demonstrated on this page 3-18 is the  
19 same methodology presented by the company in the Limerick  
20 2 investigation at I-840381?

21 A. It's the identical methodology, yes.

22 Q. And the factor used there is the same, 1.036?

23 A. That's correct.

24 MR. DELANEY: I have no further questions for this  
25 witness, Your Honor.

1 JUDGE MATUSCHAK: Consumer Advocate.

2 MR. RUBIN: Thank you, Your Honor.

3 CROSS-EXAMINATION

4 BY MR. RUBIN:

5 Q. Good afternoon, Mr. Rush.

6 A. Good afternoon.

7 Q. First, could you turn to page 11 of your  
8 testimony? I think perhaps another correction should have  
9 been made which wasn't.

10 I am looking at line 13, and the words "slightly  
11 less;" should that not read "slightly more"?

12 A. You're correct; that should be "slightly more."  
13 One megawatt more; yes.

14 JUDGE MATUSCHAK: More?

15 THE WITNESS: More.

16 BY MR. RUBIN:

17 Q. Mr. Rush, am I correct that you are the successor  
18 to Mr. Clouse as the chief planning engineer for PECO?

19 A. In part, that's true. We did a bit of reorgani-  
20 zation and we now have combined System Planning and  
21 Research, so it is Research and Planning. Yes, I have  
22 taken over his responsibility.

23 Q. So those responsibilities which Mr. Clouse would  
24 have had, you now have, plus you have additional responsi-  
25 bilities?

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1 A. That's correct.

2 MR. RUBIN: Your Honor, I would like to have marked  
3 for identification as OCA Exhibit 36 the company's response  
4 to OCA Interrogatory Set 9, No. 12.

5 JUDGE MATUSCHAK: So marked.

6 MR. RUBIN: Thank you, Your Honor.

7 (Whereupon, the document was marked  
8 as OCA Exhibit No. 36 for  
9 identification.)

10 BY MR. RUBIN:

11 Q Mr. Rush, are you familiar with what has just  
12 been marked as OCA Exhibit 36?

13 A. Generally familiar, yes.

14 Q Am I correct that this states that at the  
15 present time PJM's capacity deficiency charge is \$52.93  
16 per kilowatt per year?

17 A. That's correct.

18 Q And this rate would be in effect for the 1985-86  
19 planning period; is that correct?

20 A. That's right.

21 Q And this is the same rate that was charged  
22 during the 1984-1985 planning period; is that correct?

23 A. That's my understanding. There has been no  
24 change.

25 Q Mr. Rush, do I understand this interrogatory  
answer to mean that PJM bases this charge on the average

1 carrying cost of a new 50 megawatt combustion turbine?

2 A. The charges are meant to generally reflect  
3 carrying charges on the combustion turbine; that's correct.

4 Q. Now, Mr. Rush, in your testimony you attempt to  
5 show that all of PECO's capacity is needed, including all  
6 of Limerick 1; is that an accurate summary?

7 A. That's a reasonable summary; yes.

8 Q. And you show on your Schedule 7, which has now  
9 been revised, that in 1986, under the company's current  
10 plan, the company expects to have a peak load of 6,160  
11 megawatts; is that correct?

12 A. That's correct.

13 Q. And the company plans to have capacity of 7,858  
14 megawatts; is that also right?

15 A. That's right.

16 Q. And this creates then a 28 percent reserve  
17 margin?

18 A. Based on those two figures; yes.

19 Q. And that is roughly 158 megawatts over the  
20 company's 25 percent planning reserve margin?

21 A. That's correct.

22 Q. Now, first, Mr. Rush, as I believe you indicate  
23 on page 15 of your testimony, is it correct that the com-  
24 pany's actual contract obligation to PJM is for a reserve  
25 requirement in 1986 of 22.5 percent?

j43

1 A. That's correct for our contract number, yes.

2 Q. And if we use this 22.5 percent figure as your  
3 PJM obligation for 1986, this would mean that you would  
4 have capacity in excess of that obligation of 312 mega-  
5 watts; is that correct?

6 A. That's comparing the PJM contract number versus  
7 the reserve planning goal of 25 percent. If you take the  
8 contract number versus the planning objective, which are  
9 two, in my mind, somewhat distinct things, yes, you are  
10 correct.

11 Q. Is it also correct that the company recently  
12 moved up the retirement dates of its oil plants at Richmond  
13 9, which is 166 megawatts, and its Southwark 1 and 2, which  
14 total between them 338 megawatts?

15 A. I'm not sure. You will have to define "recently"  
16 for me, I'm afraid.

17 Q. First, Mr. Rush, on Schedule 7, am I correct  
18 that it shows a retirement date for Richmond 9 of May 1985?

19 A. That's correct.

20 Q. And for Southwark 1 and 2 of December 1985?

21 A. That's correct; yes.

22 MR. RUBIN: Your Honor, I would like to have marked  
23 as OCA Exhibit 37 a document which is an excerpt from the  
24 initial decision of Administrative Law Judge Klovekorn in  
25 the first Limerick investigation docketed at I-80100341,

1 and specifically this is a copy of Table II from Judge  
2 Klovekorn's initial decision.

3 JUDGE MATUSCHAK: Very well.

4 MR. RUBIN: Thank you, Your Honor.

5 (Whereupon, the document was marked  
6 as OCA Exhibit No. 37 for  
7 identification.)

8 BY MR. RUBIN:

9 Q. Mr. Rush, if you look at the last page of what  
10 has just been marked as OCA Exhibit 37, would you agree  
11 with me that it shows the retirements of Southwark 1 and 2  
12 and of Richmond 9 as being planned by PECO to take place  
13 in 1988?

14 MR. CALVERT: Your Honor, at this time I will ob-  
15 ject to this line of questioning. The Commission has al-  
16 ready ruled, I believe it was on October 8 of this year,  
17 on the petitions of the Philadelphia Electric Company to  
18 retire Southwark 1 and 2 and Richmond 9.

19 I think what counsel is getting into now appears to  
20 be a rehashing of that decision, which I think is improper  
21 under the circumstance of the fact that the Commission has  
22 already ruled on it.

23 That would be the basis of my objection.

24 MR. RUBIN: Your Honor, we are not challenging the  
25 company's decision to --

JUDGE MATUSCHAK: The objection is overruled.

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MR. RUBIN: Thank you, Your Honor.

BY MR. RUBIN:

Q Mr. Rush, I'm not sure you answered my question. Am I correct that this shows that as of March of 1982, the company had been planning to retire these oil units in 1988 and not in 1985 as they are presently planning?

A. That's correct.

Q Mr. Rush, in looking at the last page from OCA Exhibit 37, am I also correct that, again, at this time back in 1982, the company was projecting a 1986 peak load of 6,400 megawatts?

A. That's correct.

Q And the company was projecting growth in its peak of approximately 100 megawatts per year?

A. Yes.

Q And your current forecast, as shown on your Schedule 7, shows a peak of 6,160 megawatts in 1986, with annual growth of only about 20 megawatts per year through the year 1991; is that right?

A. That's right.

Q Mr. Rush, if today the company were still following its earlier retirement plans for Southwark 1 and 2 and Richmond 9, am I correct that your total capacity in 1986 would be, under that scenario, 8,362 megawatts?

A. That sounds approximately correct; yes.

1 Q Would you accept that subject to check?

2 A Yes.

3 Q And this would give you a capacity in excess of  
4 your 22.5 percent PJM obligation of 816 megawatts; would  
5 you accept that also?

6 A Yes.

7 Q In addition, on Schedule 7 you show a retirement  
8 in April 1986 of 458 megawatts of miscellaneous combustion  
9 turbines; is that correct?

10 A That's right.

11 Q Am I correct that this represents 16 combustion  
12 turbines at the Richmond station, with a combined capacity  
13 of 400 megawatts, and two CTs at Plymouth Meeting with a  
14 combined capacity of 58 megawatts?

15 A That's correct.

16 Q Are these combustion turbines currently included  
17 in the company's capacity for purposes of calculating  
18 whether the company's PJM capacity obligation is being met?

19 A "Currently;" by "currently" you mean today?

20 Q Yes.

21 A Yes.

22 Q Am I correct that when these combustion turbines  
23 were initially procured by the company, that was under a  
24 lease which lasts until October of 1996?

25 A Is that a question?

1 Q Yes.

2 A If that's a question, the answer is yes.

3 Q So if the company decided not to prematurely re-  
4 tire those units, and also did not prematurely retire  
5 Southwark and Richmond, you would have total capacity in  
6 1986 of 8,820 megawatts; would you accept that?

7 A I could partially accept that. If I look back  
8 in this old OCA exhibit you have just given me, the com-  
9 bustion turbines at that time were scheduled to be retired  
10 in 1985.

11 Q Yes. But I'm saying, if you kept the combustion  
12 turbines in service until the expiration of the lease in  
13 1996, and if you hadn't changed the retirement date for  
14 Southwark 1 and 2 and Richmond 9, then under that scenario  
15 you would have 8,820 megawatts of capacity in 1986.

16 A Under that scenario, I would say yes.

17 Q And if, under that scenario, the company had  
18 8,820 megawatts in 1986, that would give it capacity in  
19 excess of its PJM obligation of 1,274 megawatts; is that  
20 correct?

21 A I'll accept your numbers, yes; all peaking  
22 capacity.

23 Q And this would represent capacity of 2,160 mega-  
24 watts in excess of your predicted peak load of 6,160 mega-  
25 watts in 1986; would you accept that number also?

1 A. Yes.

2 Q So getting back to Schedule 7 where you show  
3 158 megawatts of capacity over your required reserve in  
4 1986, if the company were not prematurely retiring certain  
5 units, you would actually have 1,274 megawatts of capacity  
6 in excess of your PJM reserve; is that what we have just  
7 established?

8 MR. CALVERT: I object to the question --

9 THE WITNESS: I don't think so.

10 MR. CALVERT: I object to the question on the basis  
11 of the use of the word "prematurely retiring." Some of  
12 them have already been approved by the Commission, so I  
13 don't think "premature" is a fair characterization.

14 JUDGE MATUSCHAK: Do you want to rephrase your  
15 question?

16 MR. RUBIN: Fine; thank you.

17 BY MR. RUBIN:

18 Q Mr. Rush, if the company were not retiring cer-  
19 tain units in late-1985, and 1986, am I correct that you  
20 would actually have 1,274 megawatts of capacity in excess  
21 of your PJM reserve requirement, as opposed to the numbers  
22 which you show on your Schedule 7?

23 A If that number includes Richmond 9, I couldn't  
24 accept that number.

25 Q Why is that?

1 A. Richmond 9 is retired.

2 Q. I am asking you if the company --

3 A. I'm having a problem with the "ifs" on things  
4 that are already an accomplished fact. The retirements of  
5 Southwark and Richmond have been approved.

6 You are now asking me to speculate on a "what if."  
7 That is behind us, and that's what I'm having a problem on,  
8 "premature" and the "what ifs."

9 I'm not sure what kind of an answer I can give you  
10 under that scenario. I could fall back and look at units  
11 five years ago, too.

12 Q. I'm trying to get some numbers before us. I  
13 understand you don't agree with the assumptions that I am  
14 making, but I am asking you to accept those assumptions for  
15 purposes of our discussion here today.

16 If we were to accept the assumption that the company  
17 had not recently retired Richmond 9 and Southwark 1 and 2,  
18 and that the company was not presently planning to retire  
19 458 megawatts of combustion turbines in April of 1986,  
20 would you agree with me that you would have capacity of  
21 1,274 megawatts in excess of your PJM reserve obligation?

22 A. That I will accept, yes.

23 Q. Mr. Rush, are Southwark 1 and 2 still in service  
24 today?

25 A. They are still available for service today, I

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1 believe; yes.

2 Q Mr. Rush, getting back to the 458 megawatts of  
3 combustion turbines for a minute, am I correct that those  
4 turbines were installed by PECO during 1970 and '71?

5 A About the 1970-'71 time frame, that is essen-  
6 tially correct, in response to a PUC order at that time.

7 Q So these turbines then are only about 15 years  
8 old; is that right?

9 A That's right.

10 Q And I believe we established before that the  
11 company's lease for those turbines doesn't expire until  
12 October of 1996; is that correct?

13 A That sounds about right.

14 Q Am I correct that in order for the company to  
15 terminate that lease at this time, the company has to pay  
16 a termination penalty of approximately \$40 million to the  
17 lessor? Is that correct?

18 A That number sounds approximately correct; yes.

19 Q And that payment is just so that the company can  
20 have the privilege of eliminating this 458 megawatts of 15  
21 year old capacity; is that right?

22 A And the O&M associated with them.

23 Q Since May of 1982, in the Commission's order at  
24 R-811626, is it your understanding that the company has  
25 been collecting money from ratepayers in anticipation of

1 the early retirement of these units at a rate of roughly  
2 \$10 million a year?

3 A. Yes.

4 Q. Would that mean that the company has therefore  
5 already collected just about the entire \$40 million from  
6 ratepayers?

7 A. That's my understanding.

8 MR. RUBIN: Your Honor, I would like to have marked  
9 for identification as OCA Exhibit 38 a portion of the com-  
10 pany's response to OCA Interrogatory Set 2, No. 22, and  
11 specifically the portion is the first two pages of that  
12 response and Attachment (f) to that response.

13 JUDGE MATUSCHAK: So marked.

14 MR. RUBIN: Thank you, Your Honor.

15 (Whereupon, the document was marked  
16 as OCA Exhibit No. 38 for  
17 identification.)

18 BY MR. RUBIN:

19 Q. Mr. Rush, are you familiar with what has just  
20 been marked as OCA Exhibit 38?

21 A. I am familiar with most of it; yes.

22 Q. Are you familiar with the information, or  
23 generally familiar with the information as contained in  
24 what was Attachment (f) to the original interrogatory?

25 A. Generally familiar, yes.

Q. Mr. Rush, if we look at what is marked in

j52

1 handwriting as page 6 of that original Attachment (f),  
2 would you agree with me that if the company applied the  
3 \$40 million that we just discussed that the company has  
4 been collecting from ratepayers -- if it applied that  
5 \$40 million to future lease payments instead of to the pre-  
6 mature termination of the lease, is it correct that it  
7 would only cost an additional \$1 million to \$2 million per  
8 year to pay the lease payment on those combustion turbines  
9 through 1996?

10 A. Based on what I am seeing here, yes.

11 Q. If we look at what is marked in handwriting as  
12 page 5, the page right before that, am I correct that this  
13 shows that the total operating and maintenance costs on  
14 these units totals between \$2 million and \$5 million a year  
15 through 1995?

16 A. That's correct.

17 Q. Mr. Rush, looking back at Schedule 7 in your  
18 testimony, you characterize the retirement of these com-  
19 bustion turbines as being what you call here "economic  
20 retirement;" is that correct?

21 A. That's correct.

22 Q. Does this mean that the units are being retired  
23 for economic reasons and not because they can no longer  
24 physically be operated?

25 A. That's correct.

1 Q Mr. Rush, if you will permit me to briefly  
2 summarize another aspect of your testimony, is it correct  
3 that your position is that the company needs more base load  
4 capacity than it presently has without Limerick 1?

5 A That's correct.

6 Q On page 21 of your testimony you state that even  
7 with the full 1,055 megawatts of Limerick 1, the company  
8 has less than the optimal level of base load capacity; is  
9 that your understanding?

10 A Based on an approximate 60 percent mix, yes.

11 Q Mr. Rush, if that is true, can you tell me why  
12 in 1984 the company attempted to sell its 471 megawatt  
13 share of Salem Unit 2 through May of 1996?

14 A I was not part of those negotiations, but I  
15 would assume they were financially related, if you will.  
16 I suspect in that case probably Mr. Paquette is the better  
17 one to answer that question.

18 Q Are you stating that you are not aware of why  
19 the company was willing to sell 471 megawatts of base load  
20 capacity a year before -- well, roughly a year ago, a year-  
21 and-a-half ago?

22 A My judgment, my understanding is that it was a  
23 decision based on financial needs, which I would still un-  
24 couple from the system needs, which is where I try and  
25 focus: do we need more base load capacity? It does not

j54

1 particularly change my position, no.

2 MR. RUBIN: Your Honor, I would like to have marked  
3 for identification as OCA Exhibit 39 two documents, both  
4 of which were exhibits during this Commission's Limerick 2  
5 investigation at I-840381, specifically, they were OCA  
6 Exhibits 6 and 7 in that proceeding.

7 JUDGE MATUSCHAK: So marked.

8 MR. RUBIN: Thank you, Your Honor.

9 (Whereupon, the document was marked  
10 as OCA Exhibit No. 39 for  
11 identification.)

12 BY MR. RUBIN:

13 Q Mr. Rush, if you could look at the first docu-  
14 ment which is part of OCA Exhibit 37, -- and it is labeled  
15 here IR-OCA-5-6 --

16 MR. CALVERT: Mr. Rubin, I think you mean Exhibit  
17 39; not 37.

18 MR. RUBIN: I'm sorry. Thank you, Mr. Calvert.

19 BY MR. RUBIN:

20 Q Exhibit 39, the first document, which is labeled  
21 IR-OCA-5-6; do you see that, Mr. Rush?

22 A Yes, I do.

23 Q Am I correct that this states that the company  
24 was willing, in the spring of 1984, to lease its share of  
25 Salem 2 through May 31 of 1996?

A That's right.

1 Q Again, these are the negotiations we were just  
2 speaking about, and you said you were not a party to those;  
3 is that right?

4 A I was not personally involved in those, no.

5 Q If we look at the second document which is part  
6 of OCA Exhibit 39 that is labeled IR-OCA-1-49, again, am I  
7 correct that this shows that in the spring of 1984 the  
8 company had tried to negotiate a long-term lease of Salem  
9 2, but was not successful in those efforts; is that  
10 correct?

11 A That's the thrust of this; yes.

12 Q Mr. Rush, would I be correct that the cost of  
13 Salem 2 and half of the Salem common facilities is roughly  
14 \$1,000 per kilowatt?

15 A That sounds essentially correct, yes.

16 Q And the cost of Limerick 1 and half of its  
17 common facilities is approximately \$3,000 per kilowatt; is  
18 that about right?

19 A It sounds about right.

20 MR. RUBIN: Your Honor, I now have some questions  
21 for Mr. Rush which deal with some documents which the OCA  
22 was provided under a protective agreement with the company.

23 I can refer to those documents on cross-examination  
24 in such a way as to not violate that agreement.

25 We are presently negotiating with the company on

j56

1       how to make these documents part of the public record, and  
2       we hope to have that concluded by the end of this week.

3               For now, I think I will just have to proceed by  
4       only showing the document to Mr. Rush and to the company's  
5       attorney.

6               JUDGE MATUSCHAK: Very well.

7               Off the record.

8               (Discussion off the record.)

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JUDGE MATUSCHAK: You may proceed.

MR. RUBIN: Thank you, Your Honor.

BY MR. RUBIN:

Q Mr. Rush, do you have before you a document which is a letter dated October 25, 1978?

A Yes, I do.

Q Would you agree with me that this letter shows that in 1978 the company expected Salem Unit 2 to be in operation in 1979 and Limerick Unit 1 to be in operation in 1983?

A Yes.

Q At that time, back in 1978, the company attempted to sell not only all of its share of the projected output from Salem 2 for a period of up to ten years, but also to sell 50 percent of the projected output from Limerick 1 for some unspecified period of time?

A That's correct.

Q At the time of this letter, back in 1978, would you agree that the company's projected peak load for 1986 was much higher than it is today?

A I would accept that, yes.

Q Mr. Rush, you now have in front of you a document which is dated May 17, 1979?

A Yes.

Q Would you agree that this document shows that in

1 1979 the company actually had a tentative agreement to  
2 sell 10 percent of Limerick Units 1 and 2 to another util-  
3 ity for the life of those units?

4 A. Just in reading this, I don't know whether I  
5 characterize it as a tentative agreement. This particular  
6 one says "First Draft". I don't know if that was a draft  
7 for discussion or a tentative agreement or whatever.

8 Q. So if on the next page there is a document  
9 which says at the top "PE Draft of 2/23/79, Facilities  
10 Agreement," et cetera, you don't know what stage of the  
11 negotiations that was prepared for?

12 A. Absolutely no way of knowing.

13 Q. Would you know if this agreement was ever final-  
14 ized?

15 A. I would assume it wasn't.

16 (Document handed to witness.)

17 Q. Mr. Rush, do you now have in front of you a  
18 copy of a letter dated July 9, 1982?

19 A. Yes, I do.

20 Q. Am I correct that this letter shows that in  
21 July of 1982 the company informed another utility that it  
22 would be willing to sell for a ten-year period 250 mega-  
23 watts of Limerick 1 and 250 megawatts of Limerick 2?

24 A. Yes.

25 Q. Mr. Rush, back in 1982 on the letter we were

1 just discussing, do you know what the projected in-service  
2 date was for Limerick Unit 1 at that time?

3 A. 1982, I believe it was the summer of '85.

4 Q. Mr. Rush, do you now have before you a document  
5 which is dated July 7, 1982?

6 A. Yes, I do.

7 Q. Would you agree that according to this document  
8 in 1982 the company believed that it could have made the  
9 sales of 250 megawatts on each of Limerick 1 and 2 to  
10 another utility and still have been able to meet its 25  
11 percent reserve margin through the year 2000?

12 A. With some changes apparently, just looking at  
13 the attachment.

14 Q. This reserve margin could have been met if the  
15 retirement of certain units were delayed, is that right?

16 A. That's correct.

17 Q. And the combustion turbines, according to this  
18 document, could have been mothballed and then reactivated  
19 at a later time, is that correct?

20 A. That was something that we were conceptually  
21 looking at, wondering if we could do it.

22 Q. And these are the same combustion turbines which  
23 the company is now attempting to retire after only a 15-  
24 year life, is that correct?

25 A. With one exception; there is 458 megawatts now.

1 Q. And there was 473 megawatts back then?

2 A. That's correct. One was sold.

3 Q. Mr. Rush, at page 16 of your testimony you in-

4 dicate that a reserve margin greater than 25 percent may

5 be useful in serving customer load; have I summarized that

6 correctly?

7 A. That's a reasonable summation; yes.

8 Q. As support for this position you indicate that

9 in 1984 PJM had a reserve margin of 35 percent over the

10 actual 1984 peak and that during that period in 1984 this

11 reserve was fully utilized, is that right?

12 A. That's correct.

13 Q. Am I correct that one reason that PJM reserve

14 was fully utilized at the time of the 1984 peak is that

15 most of PJM's nuclear units were shut down at the time of

16 the peak?

17 A. The reserve was fully utilized because we were

18 capable of doing summer maintenance. There were nuclear

19 units involved in that summer maintenance and there were

20 other types of units involved as well.

21 Q. Mr. Rush, am I correct that PECO and PJM exper-

22 ienced their 1984 peak on about June 13, 1984?

23 A. That sounds correct, yes.

24 Q. Am I also correct that at the time of that peak

25 all three of PECO's nuclear units were out of service?

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A. That's correct.

Q. And we are speaking here of Peach Bottom Units 2 and 3 and Salem Unit 1, is that correct?

A. That's right.

Q. Am I also correct that Salem Unit 2, whose output PECO was then selling, was also out of service at the time of the 1984 peak?

A. That's right.

Q. And, in addition, the Oyster Creek Nuclear Unit was out of service at that time, would you accept that?

A. I accept that.

Q. And also Calvert Cliffs Unit 2, and, of course, Three Mile Island Units 1 and 2 were all out of service at the time of the 1984 peak, would you accept that.

A. That's correct.

Q. So at the time of the PJM system peak in 1984 the only PJM nuclear units which were available to help meet that peak load were Calvert Cliffs 1 and Susquehanna Unit 1, is that right?

A. That's right.

MR. RUBIN: Your Honor, I would like to have marked for identification as OCA Exhibit No. 40 the company's response to OCA Interrogatory Set 6, No. 19.

JUDGE MATUSCHAK: So marked.

MR. RUBIN: Thank you, Your Honor.

1 (Whereupon, the document was marked  
2 as OCA Exhibit No. 40 for  
3 identification.)

4 BY MR. RUBIN:

5 Q Mr. Rush, I realize that what has just been  
6 marked as OCA Exhibit No. 40 is an interrogatory answer  
7 for which you are not the sponsoring witness, but could you  
8 look at the last page of this exhibit, which shows the out-  
9 put from the company's nuclear units for each month for  
10 each year from 1982 to the present? Are you generally  
11 familiar with the information shown on this page?

12 A I would say generally, yes.

13 Q If we look at the peak month of June 1984,  
14 which we were just discussing, would you accept subject to  
15 check that the total net generation from the company's  
16 three nuclear plants during that peak month was 88,187  
17 megawatt-hours?

18 A I will accept that subject to check, yes.

19 Q And the total capacity of those three units is  
20 1,343 megawatts; is that right?

21 A That sounds approximately correct; yes.

22 Q Would you also accept subject to check that the  
23 combined capacity factor for the company's three nuclear  
24 plants during the peak month of June 1984 was roughly 9.12  
25 percent?

A Yes.

j58

1 MR. RUBIN: Your Honor, I would like to have marked  
2 as OCA Exhibit 41 a document which was an exhibit in this  
3 Commission's Limerick 2 investigation at I-840381, speci-  
4 fically, it was OCA Exhibit No. 8 in that proceeding.

5 JUDGE MATUSCHAK: So marked.

6 MR. RUBIN: Thank you, Your Honor.

7 (Whereupon, the document was marked  
8 as OCA Exhibit No. 41 for  
9 identification.)

10 BY MR. RUBIN:

11 Q Mr. Rush, could you turn to the last page of  
12 what has just been marked as OCA Exhibit 41?

13 Again, are you generally familiar with the informa-  
14 tion that is shown on this page?

15 A Generally familiar, yes.

16 Q Would I be correct that this shows that during  
17 this same month of June 1984, when the company's nuclear  
18 units had a capacity factor of just over 9 percent, the  
19 combustion turbines at the Richmond Unit, some of which  
20 the company is now planning to retire, had a combined  
21 capacity factor of 10.4 percent?

22 A That's correct.

23 Q Mr. Rush, just so we're clear on that, am I  
24 correct that there are 19 combustion turbines at the  
25 Richmond station?

A I could check. That sounds like a good number.

j59

1 Q Would you accept that, and would you also  
2 accept that you are planning to retire 16 of those 19 units?

3 A That's correct. There are three GE units that  
4 are not going to be retired.

5 Q Mr. Rush, can you tell us what fuel is burned  
6 by the combustion turbines which the company is seeking to  
7 retire in 1986?

8 A No. 2 Oil.

9 Q Do you know if these CTs are able to burn  
10 natural gas?

11 A I believe they are.

12 Q Mr. Rush, the company currently has some gas  
13 turbines, is that right, natural gas?

14 A I'm not aware that we have any.

15 Q Do you know if the company purchases natural gas  
16 for any purpose?

17 A Yes. We have a gas system. We purchase it for  
18 internal use, for heating. I think there may be some  
19 supplementary boiler firing.

20 We at one time -- I'm not sure what period of time  
21 you're talking about, but we did have natural gas capability  
22 in our Barbados gas turbines. Those units have since been  
23 retired.

24 MR. RUBIN: Your Honor, I would like to have marked  
25 as OCA Exhibit 42 the company's response to OCA

j60

1 Interrogatory Set 9, No. 10.

2 JUDGE MATUSCHAK: Very well.

3 MR. RUBIN: Thank you, Your Honor.

4 (Whereupon, the document was marked  
5 as OCA Exhibit No. 42 for  
6 identification.)

7 BY MR. RUBIN:

8 Q Mr. Rush, are you familiar with the information  
9 which appears in what has just been marked as OCA Exhibit  
10 42?

11 A Generally, yes.

12 Q Am I correct that this exhibit shows the PECO  
13 and PJM reserve obligations from 1970 until 1985?

14 A That's correct.

15 MR. RUBIN: Your Honor, I would like to have marked  
16 as OCA Exhibit 43 the company's response to OCA Interroga-  
17 tory Set 15, No. 2.

18 JUDGE MATUSCHAK: So marked.

19 MR. RUBIN: Thank you, Your Honor.

20 (Whereupon, the document was marked  
21 as OCA Exhibit No. 43 for  
22 identification.)

23 BY MR. RUBIN:

24 Q Mr. Rush, are you also familiar with the infor-  
25 mation contained in OCA Exhibit 43?

A Yes.

Q Am I correct that this shows the company's

j61

1 actual capacity in place in each year from 1979 until 1984?

2 A. That's correct; yes.

3 Q. Mr. Rush, if we could look -- I would like to  
4 run through some numbers, and it is probably easier if you  
5 could accept them subject to check.

6 If we look at OCA Exhibits 42 and 43, and also at  
7 your Schedule 3, page 2 -- first, am I correct that OCA  
8 Exhibit 43, those years which have an asterisk next to the  
9 capacity, includes the capacity of Salem 2 even though  
10 that unit was being sold?

11 A. That's right.

12 Q. If we look at 1982, am I correct that the com-  
13 pany's peak in that year was 5,610 megawatts?

14 A. Could you read that number back to me again,  
15 please?

16 Q. Yes. I'm looking at your Schedule 3; it is  
17 marked 3-2 on the bottom.

18 A. Right.

19 Q. And in 1982, 5,610.

20 A. Right; correct.

21 Q. Is that your weather-corrected peak?

22 A. That is the standard demand, not the actual  
23 peak; that's right. That is weather-corrected, weather-  
24 normalized, if you will.

25 Q. So that is not the output of the PECO system on

1 the peak day in that year; it is what the output would have  
2 been after adjusting for weather?

3 A. For weather; that's right.

4 Q. Am I correct that your reserve requirement in  
5 1982 was 22.7 percent?

6 A. That was our contract reserve; yes.

7 Q. So if we take your peak and increase it by the  
8 reserve requirement, the what I will call the capacity  
9 which you needed in 1982 was 6,883 megawatts; will you  
10 accept that?

11 A. I will accept that.

12 Q. And am I correct that if we include Salem 2, in  
13 1982 your actual capacity was 8,006 megawatts?

14 A. That's correct.

15 Q. And there is a difference between what you had  
16 including Salem 2 minus what I termed your needed capacity  
17 of 1,123 megawatts in that year; would you accept that?

18 A. Yes.

19 Q. And if we perform similar calculations for 1983,  
20 would you agree that your weather-corrected peak in 1983  
21 was 6,030 megawatts?

22 A. That's correct.

23 Q. And your contract reserve requirement with PJM  
24 was 22.5 percent?

25 A. That's correct.

1 Q So that if we increase your weather-corrected  
2 peak by the reserve requirement, we have 7,387 megawatts;  
3 is that right?

4 A That's right.

5 Q And your installed capacity in 1983, including  
6 Salem 2, was 7,974 megawatts?

7 A That's correct.

8 Q And the difference there is 587 megawatts;  
9 would you accept that?

10 A Yes.

11 Q Mr. Rush, going back to page 16 of your testi-  
12 mony, and I am looking here at roughly lines 35 through 37.  
13 Am I correct that you state here that generating units must  
14 be built in discrete sizes?

15 A Yes.

16 Q And you state that this may help to explain why  
17 the reserve margins sometimes may be above a company's  
18 planning objective; is that right?

19 A That's correct.

20 Q Mr. Rush, would you agree that prior to  
21 Limerick 1, all of the company's nuclear capacity has been  
22 shared among a number of utilities?

23 A That's correct.

24 Q Again, just so we're clear, we are referring  
25 here to Peach Bottom Units 2 and 3 and Salem Units 1 and 2;

j64

1 is that right?

2 A. That's right.

3 Q. And PECO's share of these units ranges from  
4 439 megawatts at Peach Bottom 3 to 471 megawatts at Salem  
5 2; is that right?

6 A. That's right.

7 Q. If we look at your Schedule 2, page 3 -- I be-  
8 lieve it is marked 2-3 in the upper right.

9 A. Right.

10 Q. Do you have that?

11 A. Yes, I do.

12 Q. Am I also correct that the company shares its  
13 ownership of base load coal plants at Keystone and  
14 Conemaugh?

15 A. That's correct.

16 Q. So the company owns just 357 megawatts spread  
17 over Keystone 1 and 2, and 352 megawatts divided between  
18 Conemaugh 1 and 2; is that right?

19 A. That's correct.

20 Q. Am I also correct that the company owns all of  
21 the Cromby and Eddystone plants?

22 A. That's correct.

23 Q. Am I correct that Eddystone 1 and 2 are base  
24 load plants?

25 A. Yes.

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1 Q And Eddystone 1 is 311 megawatts, and Eddystone  
2 is just 324 megawatts; is that right?

3 A That's correct.

4 Q And Cromby 1 is only 144 megawatts?

5 A That's correct.

6 Q So the company has never before -- and that is  
7 before Limerick 1 -- had more than 471 megawatts of base  
8 load capacity in any one unit; is that correct?

9 A As a share; that's correct, yes.

10 MR. RUBIN: Thank you, Mr. Rush.

11 Your Honor, at this time I would like to move into  
12 evidence OCA Exhibits Nos. 36 through 43.

13 MR. CALVERT: Your Honor, my only comment is that  
14 Exhibit 38 is similar to the GEC exhibit, it is part of an  
15 answer to an interrogatory; and if counsel would be willing  
16 to submit at an appropriate time the entire answer, then I  
17 would have no objection.

18 MR. RUBIN: Your Honor, I would not. It is routine  
19 practice, as I understand it, to move into evidence just  
20 the portion -- or at least the relevant portion of inter-  
21 rogatory answers. What I have provided is the entire  
22 Attachment (f) to that interrogatory answer. The question  
23 consisted of a number of subparts. I don't believe the  
24 other subparts have anything to do with the issues we have  
25 been raising with Mr. Rush.

j66

1 I would suggest that it would not be appropriate to  
2 require us to reproduce the entire attachment to that  
3 interrogatory.

4 JUDGE MATUSCHAK: Does the company wish to revise  
5 its comments?

6 MR. CALVERT: Your Honor, I will accept that with  
7 respect to this specific exhibit.

8 JUDGE MATUSCHAK: Very well. Exhibits -- what were  
9 those numbers again?

10 MR. RUBIN: Nos. 36 through 43, Your Honor.

11 JUDGE MATUSCHAK: OCA Exhibits 36 through 43 are  
12 admitted into evidence.

13 (Whereupon, the documents marked as  
14 OCA Exhibits Nos. 36 through 43  
were received in evidence.)

15 MR. RUBIN: Thank you, Your Honor.

16 JUDGE MATUSCHAK: Does that conclude your cross-  
17 examination?

18 MR. RUBIN: Yes, it does.

19 JUDGE MATUSCHAK: We'll take a ten-minute recess.

20 (Recess.)  
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JUDGE MATUSCHAK: Is there further cross-examination of this witness?

MR. SELKOWITZ: Yes, Your Honor.

JUDGE MATUSCHAK: Very well.

CROSS-EXAMINATION

BY MR. SELKOWITZ:

Q Mr. Rush, good afternoon, My name is Larry Selkowitz, and I represent the University of Pennsylvania and the Utility Users Group. I have just a few questions. Excuse me, I am losing my voice. In reference to the testimony --

A Excuse me, I am having trouble hearing you.  
(Pause.)

Q How is this?

A Better, thank you.

Q Specifically your Schedules 4, 5 and 6, starting with 4, it is my understanding that that really graphed what happened on June 13, 1984, the peak day, is that correct?

A You are referring now to Schedule 4?

Q Schedule 4, yes.

A Yes. Schedule 4 is really attempting to portray a period in excess of one year, not just one day.

Q Is this done on a normalized weather basis, or does this reflect the actual occurrences in 1983-84?

1 A. This particular schedule is based on actuals.

2 Q. Is such a schedule done or can it be done  
3 based on normalized weather conditions?

4 A. It would be very difficult to do it on  
5 weather-normalized conditions, for this reason. Weather  
6 normalizing requires that you go back and get the tempera-  
7 ture data for that particular hour, and then back correct  
8 to standard conditions, if you will, that hour.

9 To do that for 8,760 hours in a year would be really  
10 burdensome.

11 Q. The company has not done that?

12 A. This is really all of PJM. This would have to be  
13 extended to all members of PJM, so it could be done, but  
14 realistically I don't think we would gain too much out of it.

15 Q. Now, Schedule 5, could you tell me what numbers  
16 these are based on? Are these actual dates? Is this an  
17 average of something, or what does this depict?

18 A. This one as I recall is based on an average for  
19 the year.

20 Q. Do you know what year?

21 A. No, but I could certainly find that out for you.

22 Q. Could you let us know what year that is, please,  
23 and the same question for Schedule 6: what specifically  
24 does this represent?

25 A. My recollection is, this is based on a full year

1 of 1984 data, but let me check on that and we'll get that  
2 back to you.

3 Q. Thank you.

4 Turning to some of the questions that were asked  
5 earlier regarding the retiring of some of these units, if  
6 we assumed for example that you had Limerick but you didn't  
7 retire the combustion turbines or the Southwark plants and  
8 so on, would it be correct that your system would be some-  
9 what more reliable?

10 A. Well, there is really two parts to the answer.  
11 Certainly if we retained all of the capacity that we are  
12 planning to retire, and the units that we have indeed  
13 retired, we would have reserves in excess of our objective.  
14 Therefore, theoretically we would be more reliable.

15 Q. You have -- go ahead.

16 A. The second part, if I could finish off the  
17 answer, the Southwark units as well as the Richmond 9 unit  
18 were not in very good condition.

19 Their reliability really was in question, and that  
20 is to be expected, because when a unit is going to retire  
21 the next year, you don't put a lot of money in maintenance.

22 My judgment would be that we might have some  
23 difficulties if we depended on those units to operate on the  
24 day of the peak, for example, and schedule an outage on a  
25 more reliable unit.

1           So theoretically, yes, the increased reserve might  
2 push the reliability up, but relying on old units is  
3 fraught with troubles, too.

4           Q    You don't have that reservation with the  
5 combustion turbines, however, do you?

6           A    We assume on PJM that 50 percent of the  
7 combustion turbines will start when called upon.

8           Q    I presume that because you are retiring them, you  
9 have decided that this additional reliability or extra  
10 reliability is not necessary, is that correct?

11          A    That's essentially correct.

12          Q    Now, regarding your description of the mix of  
13 generating facilities, of the types of facilities where you  
14 talked about base load, intermediate, peakers and so on, is  
15 it correct, by your definition of base load, a facility is  
16 generally one that is used to serve the continuous loads of  
17 the company?

18          A    It is one from a planning standpoint that we  
19 would certainly expect to operate whenever available. So,  
20 from that standpoint, yes, You put    in service to supply  
21 at least the minimum load. This is a unit you want to run  
22 around the clock.

23          Q    Indeed, isn't that really part of the definition  
24 of a base load plant, that is, it has long hours of use in  
25 order to take advantage of that kind of production?

1 A. Right.

2 Q. And similarly, the reason which you can justify  
3 higher capacity costs for such plants is because you are  
4 going to have long hours of use over which you will recover  
5 the higher capacity costs through a lot greater output of  
6 energy?

7 A. That's correct.

8 Q. Am I also correct that that is a justification  
9 for Limerick's additional capacity costs, Limerick 1?

10 A. Yes, Limerick is a base load unit.

11 Q. It's a base load unit as you and I have been  
12 discussing it in terms of long hours of use, recovering  
13 your capacity costs?

14 A. That's correct.

15 MR. SELKOWITZ: That's all the questions that I have,  
16 thank you.

17 JUDGE MATUSCHAK: Any further cross-examination of  
18 this witness?

19 MR. KLEPPINGER: Yes, Your Honor.

20 CROSS-EXAMINATION

21 BY MR. KLEPPINGER:

22 Q. Good afternoon, Mr. Rush. My name is David  
23 Kleppinger. I represent the Philadelphia Area Industrial  
24 Energy Users Group.

25 Mr. Rush, Schedule 7 to your testimony provides us

1 with a load forecast for the years 1984 through 1994. Am I  
2 correct that this forecast was prepared by PECO sometime  
3 during the year 1984?

4 A. That is correct. It was finalized I believe  
5 near the end of 1984, probably about the fall of 1984.

6 Q. And these loads represent weather-corrected  
7 loads and loads which have been adjusted for the standard  
8 demand factor, do they not?

9 A. The forecast loads are loads that are now  
10 standard demands in our terms, or planning loads based on  
11 standardized weather, yes.

12 Q. As a member of PJM, does PECO also have to submit  
13 load forecasts to the Federal Energy Regulatory Commission?

14 A. We do that not -- our long-range forecasts are  
15 not submitted as part of PJM, but rather as our Mid-Atlantic  
16 Area Reliability Council.

17 The loads are the same. The members are the same,  
18 but we have a different hat that we wear for reliability  
19 purposes.

20 MR. KLEPPINGER: Your Honor, I would like to have  
21 marked for identification at this time PAIEUG Exhibit No. 1  
22 which is a response to a data request from the Staff  
23 labeled LIM-10.

24 JUDGE MATUSCHAK: Very well.  
25

(Whereupon, the document was marked PAIEUG Exhibit No. 1 for identification.)

BY MR. KLEPPINGER:

Q. You are listed as one of the responsible witnesses on this document?

A. Yes, sir.

Q. Now, if you turn to the first page of this exhibit, item number 2 indicates that Statements 1-A and 2-A show the summer and winter load capacity forecasts for PJM and its member systems, is that correct?

A. Yes.

Q. This letter is dated August 23, 1984?

A. That's correct.

Q. If you could turn to the second to the last page of this exhibit, Table 1-A, the load and capacity forecast for the summer, is that correct?

A. That's correct.

Q. The designation applicable to Philadelphia Electric is PE, is that true?

A. That is correct.

Q. Now, on this exhibit, am I correct that the summer peak load forecast is listed as 5,960?

A. For the year 1986.

Q. And is it true under this forecast at least that your forecasted peak from Schedule 7 of 6,160 megawatts for

1 1986 is not reached until sometime in 1993?

2 A. 1992, 1993.

3 Q. Next, I would like you to turn back what is  
4 designated at the bottom of this exhibit as Enclosure 1,  
5 page 3. Do you have that, Mr. Rush?

6 A. Yes, I do.

7 Q. On the bottom half of this page, there is a  
8 separate chart, and at line 3 it has a designation, PJM  
9 reserve margin.

10 Am I correct that the number for PE there is 22  
11 percent?

12 A. That is correct.

13 Q. And from your earlier testimony, I believe you  
14 are forecasting for PE in 1986 a reserve margin of 22.5  
15 percent?

16 A. That is correct.

17 Q. And I take it that from this exhibit, the  
18 planning period for the PJM reserve margin of 22 percent is  
19 1986 to 1987?

20 A. What you are looking at here, let me say, this  
21 is the 1986-87 planning period from January to May. What is  
22 in my testimony is the summer planning period. I think what  
23 you have here and what you are referring to is the spring  
24 data. The summer peak data is given on the preceding page.

25 Q. That lists a designation for PE of 22 percent also,

1 is that correct?

2 A. That is correct.

3 Q. Were the summer peak load forecasts included in  
4 PAIEUG Exhibit No. 1, Table 1-A taken from the same forecast  
5 that you used to produce Schedule 7 in your testimony?

6 A. I'm sorry, you lost me on that one. Which  
7 exhibit are you talking about now?

8 Q. The exhibit that I distributed just this  
9 afternoon, the load and capacity forecast for the summer,  
10 Table 1-A, which we have previously referred to, are those  
11 load projections taken from the same forecast which produced  
12 the load forecasts in Schedule 7 in your testimony?

13 A. No.

14 Q. What are the differences between those forecasts?

15 A. Well, the difference between those two forecasts,  
16 the information we're referring to here is a compilation  
17 that was done by PJM in the spring of 1984 to develop the  
18 contract numbers for the summer, and the two summers after  
19 that.

20 As such, this is load data that was supplied by the  
21 member companies prior to June of 1984. The load forecast  
22 that is in Schedule 7 of my testimony and that was also used  
23 in the Limerick 2 show cause hearings was data developed  
24 after the summer of 1984, somewhere in the fall of 1984  
25 when we had the summer experience behind us.

1 Your exhibit here does not include the 1984 actual  
2 experience. Based on that experience, both our sales and  
3 peak load forecasts were increased.

4 Q For the exhibit that I have distributed, doesn't  
5 PE provide the input data to the PJM in order to create the  
6 PJM forecast?

7 A That's correct. And as I said, it was provided  
8 prior to the summer peak of 1984.

9 Q And due to the experience of the summer of 1984,  
10 you are telling us that the peak load forecast for PE at  
11 least in 1986 has gone from 5960 megawatts to 6160 megawatts?

12 A That is correct.

13 MR. KLEPPINGER: Thank you, Mr. Rush. I have no  
14 further questions. I would like to move for admission, Your  
15 Honor, of PAIEUG Exhibit No. 1.

16 MR. CALVERT: No problems, Your Honor.

17 JUDGE MATUSCHAK: The exhibit is admitted into  
18 evidence.

19 (Whereupon, the document marked  
20 PAIEUG Exhibit No. 1 was  
received in evidence.)

21 MS. FERKIN: Your Honor?

22 JUDGE MATUSCHAK: Yes.

23 CROSS-EXAMINATION

24 BY MS. FERKIN:

25 Q Mr. Rush, good afternoon. I will speak very

1 loudly. On page 11 of your testimony, you indicate that  
2 no formal capacity credit is given for cogeneration energy  
3 sold to PECO, is that correct?

4 A. That is correct.

5 Q. And on page 12, you list several reasons for  
6 that position, is that correct?

7 A. That is correct.

8 Q. Do you recall, Mr. Rush, whether that position  
9 outlined on pages 11 and 12 is the same position that the  
10 company took in the Limerick 2 investigation with respect  
11 to cogeneration?

12 A. I would expect philosophically it is the same.  
13 There may be some minor differences, but in general I would  
14 say the philosophy is the same, yes.

15 Q. In the Limerick 2 investigation, the company also  
16 took the position that it would not given formal capacity  
17 credit to cogeneration energy as a general matter?

18 A. As a general matter, until we saw a need for the  
19 capacity or had some warm feeling for the reliability of  
20 some of these cogenerators, no, we would not.

21 Q. Do you know, Mr. Rush, whether ALJ Turner in her  
22 recommended decision agreed with PECO's position with respect  
23 to capacity that would be afforded by cogeneration facilities?

24 A. I don't recall the specifics, no.

25 Q. Would you accept subject to check that Judge

1 Turner did not agree with PECO's position?

2 A. I'll accept that.

3 MS. FERKIN: Thank you. I have no further questions.

4 JUDGE MATUSCHAK: General Services?

5 MR. ETTNER: No questions.

6 JUDGE MATUSCHAK: Any other cross-examination of  
7 this witness?

8 (No response.)

9 JUDGE MATUSCHAK: Any redirect?

10 MR. CALVERT: No redirect, Your Honor.

11 JUDGE MATUSCHAK: Very well, the witness is excused.

12 (Witness excused.)

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MR. CALVERT: Your Honor, we have previously distributed copies of the direct testimony of Lewis J. Perl to all parties, Your Honor, and the court reporter. I would ask at this time that that testimony be marked for identification as PECO Statement No. 11.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document was marked PECO Statement No. 11 for identification.)

MR. CALVERT: Dr. Perl, you need to be sworn.

Whereupon,

LEWIS J. PERL

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q Would you please state your name, for the record?

A My name is Lewis J. Perl, P-E-R-L.

Q And could we have your position and your business address, please?

A Yes, I am senior vice-president with National Economic Research Associates. We are located at 123 Main Street, White Plains, New York.

Q Do you have before you a document of some 49 pages entitled, "Direct Testimony of Dr. Lewis J. Perl, PECO Statement No. 11"?

A Yes, I do.

1 Q Do you also have before you an addendum to the  
2 testimony of Lewis J. Perl?

3 A Yes.

4 Q Now, are these documents your direct testimony  
5 in this proceeding?

6 A Yes, sir, they are.

7 Q Were they prepared by you or under your direction?

8 A They were prepared by me or under my direction,  
9 yes.

10 Q And do you have any corrections which you wish to  
11 make to your testimony at this time?

12 A Yes, I have one additional minor correction.  
13 On Schedule 9, page 3 of that schedule, in the lower half of  
14 the schedule, under the column headed "Adjustment Factor,"  
15 Column 4, the fourth entry down, next to "Rock Foundation"  
16 indicator should not be .219 but zero.

17 Under Column 2 of the same table in the same row,  
18 that is "Average Annual Characteristic," the entry should be  
19 1 rather than zero.

20 JUDGE MATUSCHAK: Would you mind repeating those  
21 corrections?

22 THE WITNESS: Yes. In Column 4 --

23 JUDGE MATUSCHAK: On what page?

24 THE WITNESS: This is page 3 of 9 from Schedule 9.  
25 It's the lower half of the schedule. And under the fourth

1 column, which is labeled "Adjustment Factor," the fourth  
2 entry down is now .219 and that should be changed to zero.

3 And under Column 2, the fourth entry down is zero,  
4 and should be changed to 1.

5 BY MR. CALVERT:

6 Q Dr. Perl, we have earlier passed out to all  
7 parties an errata sheet, and you had indicated the change  
8 you wanted to make which you just made on the record, which  
9 was an addition to that errata sheet, if I understood you  
10 correctly?

11 A Yes, Mr. Calvert.

12 Q If I were to ask you the questions set forth in  
13 your direct testimony, would your answers be as they appear  
14 therein, subject to the corrections you have listed, and  
15 would those answers be true and correct at this time?

16 A Yes, sir.

17 Q As part of your direct testimony, did you submit  
18 exhibits?

19 A Yes, I did.

20 Q Are these identified in your testimony as  
21 Schedules 1 through 20 plus your vita?

22 A Yes.

23 Q And were these exhibits prepared by you or under  
24 your direction?

25 A They were.

1 MR. CALVERT: Your Honor, at this time, I would move  
2 that the direct testimony of Dr. Perl as corrected be  
3 admitted as part of the record in this proceeding and  
4 identified as PECO Statement No. 11, and that the exhibits  
5 be admitted as part of the record and identified as  
6 Exhibits Schedules 1 through 20, and vita, subject to any  
7 timely motions to strike.

8 JUDGE MATUSCHAK: Under those conditions, the  
9 motion is granted.

10 (Whereupon, the document marked  
11 PECO Statement No. 11 was  
12 received in evidence.)

13 (Whereupon, the documents were  
14 marked Exhibits Schedules 1  
15 through 20 for identification  
16 and received in evidence.)

17 MR. CALVERT: Dr. Perl is available for cross-  
18 examination.

19 JUDGE MATUSCHAK: Staff?

20 MR. DELANEY: Your Honor, the Staff will initially  
21 defer to the Office of Consumer Advocate to cross-examine  
22 first.

23 JUDGE MATUSCHAK: Very well.

24 MR. WERSAN: Your Honor, before I start crossing  
25 Dr. Perl, I would like to note that the addendum to his  
testimony, which includes Schedule 20, was received by the  
OCA just Saturday, two days ago.

I don't know when other parties received them. I think

1 some parties received it this morning.

2 Because we got it on Saturday, I was able to write  
3 up some interrogatories, which I have served on the  
4 company this morning and which I have available to other  
5 parties here today.

6 However, I believe that the information provided in  
7 the addendum and in Schedule 20 deserves review of more  
8 than just a cursory nature in order for me to cross-examine  
9 Dr. Perl on this specific piece.

10 I have discussed it with Mr. Calvert, and would like,  
11 assuming a prompt response on the interrogatories, to defer  
12 cross of Dr. Perl on just the addendum to either the 30th  
13 and 31st or the week we are in Philadelphia doing rate  
14 structure cross.

15 And if my cross turns out to be very short, we can  
16 do it by telephone, if that's okay by Your Honor.

17 MR. CALVERT: Your Honor, just to respond for a  
18 moment, I have no problem with that rendition of our  
19 understanding.

20 I think there is one other further point, which is  
21 depending on the answers to interrogatories, that perhaps  
22 whatever information they need, we may be able to do infor-  
23 mally so we can perhaps avoid the entire process, if  
24 possible, again depending on the answers.

25 JUDGE MATUSCHAK: Do we agree that any responses to

1 interrogatories will be accepted as part of Dr. Perl's  
2 testimony without calling him back?

3 MR. WERSAN: Your Honor, I would rather review the  
4 interrogatories before I want them in the record. I would  
5 only ask to cross Dr. Perl --

6 JUDGE MATUSCHAK: Let's leave it this way. If you  
7 should not want him back, will we agree that that will be  
8 accepted as part of his testimony?

9 MR. WERSAN: We can put them in through testimony if  
10 the interrogatories we believe should be in the record. We  
11 can put them into our testimony as exhibits. That's not a  
12 problem.

13 I would only call him back if I believed there were  
14 things that need to be on the record through his cross.

15 JUDGE MATUSCHAK: What I meant was, we won't have to  
16 call him back to authenticate the responses.

17 MR. WERSAN: Right, that's fine. I wouldn't do that.

18 CROSS-EXAMINATION

19 BY MR. WERSAN:

20 Q. Good afternoon, Dr. Perl. My name is David  
21 Wersan. I am with the Office of Consumer Advocate.

22 A. Good afternoon, Mr. Wersan.

23 Q. I would like to start off by referring you to  
24 page 5 of your testimony, specifically line 23. Am I correct  
25 that starting at line 23 you state one of the conclusions of

1 your testimony in this case, and that conclusion is that  
2 given the information available in 1976 and in 1978, there  
3 did not appear to be any losses to consumers from a one to  
4 two year delay in scheduled completion in 1976 and 1978.

5 A. Yes.

6 Q. If you could refer to page 23, approximately  
7 actually 23 to 27 of your testimony, do these pages provide  
8 your discussion of the analysis you did to support the  
9 conclusion on page 5?

10 A. Yes.

11 Q. If you could look specifically at page 24, around  
12 line 9, you state, "I have examined the anticipated effect  
13 on system revenue requirements of a one year delay of  
14 Limerick's on-line date, and the results are summarized on  
15 Schedule 7, is that correct?"

16 A. Yes.

17 Q. Would I be correct, then, Dr. Perl, that when on  
18 page 23 at line 43 you state that, "My analysis suggests  
19 that it was clearly economic to delay the project because  
20 it would result in lower cost to consumers," that you were  
21 indicating that if you had done such an analysis in 1976 or  
22 1978, that would have been your result?

23 A. That is correct.

24 Q. And in pages 23 to 27, you do not present any  
25 analysis of whether or not delay actually had a cost impact

1 on Limerick Unit 1?

2 A. Yes. As to the prudence of those decisions, I  
3 don't think that would be relevant, so I didn't do that.

4 Q. And your analysis or what we have just discussed  
5 would also be true if we refer to page 24, line 3, where  
6 you state, "The delay had no significant impact on  
7 consumer costs."

8 You are still referring to, if you had done the  
9 analysis in 1976 and 1978, you would have reached that  
10 conclusion?

11 A. That's correct.

12 Q. Now, I would like to discuss the specific  
13 elements of your delay analysis. You state on page 26,  
14 line 27, that your results are very specific to the actual  
15 facts in 1976 and 1978, is that correct?

16 A. Yes.

17 Q. And am I correct that you attempted in your  
18 testimony to recreate what would have been the input to such  
19 an analysis if you had done one in 1976 or 1978?

20 A. That's correct.

21 Q. And these inputs include operating and maintenance  
22 costs and escalation factors, capital addition costs, et  
23 cetera?

24 A. That somebody reasonably would have anticipated  
25 or could have ascertained in those years, yes.

1 Q. And in discussing your conclusion or in  
2 discussing your results from the analysis, you state on  
3 page 26 three specific circumstances which result in the  
4 gains from delay that your analysis would have shown in  
5 those years, is that correct?

6 A. Yes.

7 Q. The first one you cite is that the prevailing  
8 cost of money was low by today's standards.

9 A. That's correct.

10 Q. And because of that, you wound up using a low  
11 discount rate by today's standards?

12 A. Yes.

13 Q. And this means that savings or benefits  
14 expected from later in the life of Limerick, when discounted  
15 back to 1976 or 1978, had greater value than if you were to  
16 use a higher discount rate such as you might use today?

17 A. That is correct.

18 Q. Could you state what the discount rate was that  
19 you used in your analysis in those years?

20 A. If you wait just a second, I can.

21 (Witness perusing documents.)

22 I'm sorry, it will take me a second to find it.

23 (Pause.)

24 For 1976, the expected discount rate was 7.65  
25 percent. For 1978, it was 8.37 percent.

1 JUDGE MATUSCHAK: What was the last one?

2 THE WITNESS: 8.37.1. By comparison today, it would  
3 be perhaps 10 percent.

4 BY MR. WERSAN:

5 Q So, if you were doing an economic analysis of the  
6 costs and benefits of a plant in 1985, you would use about  
7 a 10 percent discount rate?

8 A Well, I would have at the beginning of this year.  
9 As you probably are aware, interest rates have been falling  
10 rapidly, and I suspect if we did it now, we would be moving  
11 down below the 10 percent again.

12 But let's say at the time I did the testimony, the  
13 1984 number would have been 10 percent.

14 Q Now, the second point you state on page 26 at  
15 around line 41 was that viewed from the perspective of 1976  
16 or 1978, Limerick was not actually needed to meet load for  
17 the 1983 to 1984 time frame, is that correct?

18 A Yes.

19 Q How are you defining "needed to meet load"?

20 A It is my understanding from the company that in  
21 that time frame, the unit -- the company could have  
22 maintained a reasonable reserve margin without the Limerick  
23 plant.

24 Q And so therefore, in your analysis, you did not  
25 need to include any PJM capacity deficiency payments in the

1 year 1983 because they wouldn't have been incurred?

2 A. That's right.

3 Q. And so, in effect, in 1976 or 1978 as you are  
4 recreating that period, Limerick had no capacity value on an  
5 economic basis?

6 A. That's correct. I think that's something of an  
7 overstatement. I mean, obviously, by bringing it on line,  
8 even if you are already at your reserve margin, you would  
9 improve the reliability of the system, and that would have  
10 value.

11 But it wouldn't have had the kind of value that  
12 normally would be implicit in charging capacity costs.

13 Q. I take it when you were thinking about whether  
14 Limerick had any capacity value or not, you didn't consider  
15 whether or not, by bringing on Limerick, the company would  
16 be able to reduce other system costs by retiring plant?

17 A. When Limerick comes on, we took account of the  
18 benefits from fuel savings, and conceivably some of the  
19 units that are being displaced by Limerick or effectively  
20 displaced could literally be shut down, but we don't take  
21 any economic consequences of that.

22 Q. So, in your analysis, there was no cost or  
23 benefit from that specific factor we just discussed?

24 A. That's correct.

25 Q. And so in effect, in the analysis as you would

1 have recreated it, the principal benefit to be measured from  
2 Limerick 1 coming on line in 1983 or 1984 would have been a  
3 reduction in energy costs?

4 A. Exactly.

5 Q. And the third circumstance you state starting on  
6 the bottom of page 26 was that based on your perspective  
7 from 1976 or 1978, oil prices were still by today's  
8 standards relatively low, is that correct?

9 A. Yes.

10 Q. However, you do note on the top of page 27 that  
11 these prices were expected to rise markedly over time, is  
12 that correct?

13 A. Yes.

14 Q. What escalation rates did you use in your  
15 analysis for oil prices in recreating 1976 and 1978?

16 A. I don't think that becomes an issue, because we  
17 replace Limerick at the end of its life with a coal-fired  
18 alternative, so that in the early years, when -- in the  
19 on-time case, Limerick displaces oil-fired energy on the  
20 system. But at the end of its life, when it has to be  
21 retired, it is replaced by a coal-fired alternative.

22 So, in order to do the calculation, we don't have to  
23 know what the oil escalation rate was, as long as it is  
24 great enough that it is more economic to replace Limerick  
25 at the end of its life with a coal plant than it is to

1 replace it with existing oil on the system.

2 Q That means you have to have some escalation rate  
3 for coal prices, isn't that correct?

4 A Yes.

5 Q What escalation rate were you using for coal?

6 A I will have to check that, too. I think it's  
7 1 percent real, but let me check.

8 (Witness perusing documents.)

9 I am sorry, I am just not finding the number  
10 quickly. We'll have a break at some point, I'm sure, and I  
11 will provide it to you.

12 Q With the explanation you just gave me, I am a  
13 little confused, because you cite oil prices being low by  
14 today's standards on 26. Then you state, the prices were  
15 expected to rise markedly over time.

16 And you conclude that paragraph by saying, "Hence,  
17 the fuel savings from bringing Limerick on line in those  
18 years are low relative to those anticipated later in the  
19 life of the unit."

20 Q Yes, but the basic point is that really two  
21 things are going on. One, and the principal one, because  
22 oil prices are rising, it makes economic sense that the  
23 alternative to Limerick would not be oil. Even if you had  
24 existing spare oil capacity around, you would displace that  
25 with new coal-fired alternatives, or at least you would have

1 in the 1976 perspective, by the end of the life of the  
2 project. So, at the end of the period, the only role of the  
3 fossil fuel prices is making it economic to displace  
4 Limerick at that point with the capital plus operating  
5 cost of a coal-fired unit. Am I being clear?

6 Q So, the only purpose of this conclusion here  
7 was to state that based upon that, you desired to use a  
8 coal plant in the last year?

9 A Yes. Again, let's suppose that oil prices were  
10 high in 1981, and you expected them to fall over the  
11 succeeding period of time. Then the appropriate replacement  
12 option for Limerick at the end of its life might well be oil.

13 So, it is relevant insofar as it determines what you  
14 replace it with.

15 Q Okay, that's fine, I understand.

16 Now, am I correct that as a result of having a low,  
17 low by today's standards, discount rate, that the fuel  
18 savings that you project for the last year of Limerick's  
19 life in your delay analysis are given a greater weight than  
20 if you were to do it with your current discount rate?

21 A That's correct.

22 Q Do you have available what the Limerick fuel  
23 savings you projected for its last year were?

24 A I think so, yes.

25 (Witness perusing document.)

1 In Schedule 7, we indicate that the --

2 Q Do you have a page?

3 A I'm sorry, page 1. This is done at the  
4 expected cost of money, or if you like without the premium  
5 in the cost of money.

6 The present value of the fuel savings in later years  
7 is \$191 million.

8 Q What would that be in actual dollars in the year  
9 that the savings were to have occurred?

10 A I don't know. I don't know what the actual  
11 number was.

12 Q Do you have a ballpark figure, \$100 million,  
13 \$1 billion?

14 A Do you want it in inflated or real dollars?  
15 How about in today's dollars, and that will be easier, if  
16 it's all right with you. It's easier for me.

17 Q If it's easier, do it that way.

18 (Witness operating electronic calculator.)

19 A About two and a half times that, so about  
20 \$463 million.

21 Q Excuse me, I'm sorry, I missed your last answer.

22 A \$463 million.

23 Q Now, is the present value number you give us  
24 on Schedule 7 nominal or real --

25 A I'm sorry, I made a mistake. Just one second, I

1 just realized something.

2 (Witness operating electronic calculator.)

3 I'm sorry, that number is too high. I'm sorry, it's  
4 \$240 million. I used the wrong real discount rate.

5 Q Are the figures on page 7 for the fuel real or  
6 nominal?

7 A Everything there has been present-valued to 1984,  
8 so when you say are they real dollars, they include no  
9 inflation after 1984. They are also adjusted for the cost  
10 of money effects after 1984. Is that helpful or not helpful?

11 (No response.)

12 I think the best way to think about it, they are  
13 real 1984 dollars. There's no inflation.

14 Q When you did your initial analysis of the fuel  
15 savings from Limerick, were your fuel savings in the last  
16 year in real or nominal dollars?

17 A The program does it in nominal dollars.

18 Q And then you present-value that nominal dollar  
19 figure back to give us what was on Schedule 7?

20 A Right.

21 Q So, in order to understand what the present  
22 value figure on Schedule 7 is relating to, we actually want  
23 to know what that nominal dollar figure was from last year?

24 A Well, I don't think so, because what I did for  
25 you just now was to move them -- the discount rate can be

1 thought of as having two components, a real discount rate and  
2 an inflation rate. So, when I told you before that the  
3 discount rate for 1976 was 7.65 percent, almost 6.8 per-  
4 centage points of that are inflation.

5 So you're talking about around 1 percentage point is  
6 real. So, it's easy to compute from this what the price  
7 had to be 30 years from now in today's dollars in order to  
8 get this result.

9 If you want, we can also compute the price in  
10 inflated dollars. It just seems to me that to add inflation  
11 in and then take it out is a kind of wasteful process. When  
12 you add 6 percent per year compounded for 30 years, you  
13 start to produce numbers that have no meaning to anybody  
14 anyhow.

15 It's like the number when they tell you that it's  
16 going to cost \$200,000 to send your children to school ten  
17 years from now. So many other conditions are different that  
18 the number ceases to have any real meaning.

19 MR. WERSAN: Can I have one second, Your Honor?

20 (Pause.)

21 BY MR. WERSAN:

22 Q I understand your explanation, but I need to get  
23 clear one thing. Using your 1976 discount rate of 7.65  
24 percent and assuming a 40 year life for Limerick --

25 A Thirty year life. You want to assume 40? I'm

1       sorry, I didn't. I just want to make sure that --

2           Q    You used 30 and 35?

3           A    Yes.

4           Q    We'll redo it at 30, just so we get the number  
5       clear in the record.

6           A    If the number you are searching for is in  
7       nominal dollars, I get \$1.766 billion 30 years from now. If  
8       that's the kind of number you're talking about, that's  
9       correct.

10          Q    That's fine, Dr. Perl. I guess I am used to see-  
11       ing these numbers in that fashion from all the presentations  
12       made by --

13          A    The thing I want to make very clear here is that  
14       that number depends upon some assumption about the inflation  
15       rate, in this case 6.88 percent per year.

16                Nothing in the calculation really depends upon that  
17       inflation rate. It only depends upon real values being true.

18                So, inflation is a kind of veil here that we ought to  
19       try to pierce. To say that 30 years from now, one year of  
20       fuel replacement for Limerick will be \$1.8 billion is an  
21       interesting number--I'm not trying to dismiss it--but it's  
22       not very relevant to the rest of the calculation.

23          Q    On page 27, you state that you developed an  
24       estimate for the direct capital cost of Limerick in 1976 and  
25       1978, given the then-expected schedule for the project, is

1 that correct?

2 A. Yes.

3 Q. Now, from that sentence, I get the impression  
4 that you tie the direct capital cost estimate to the  
5 expected schedule for the project. Is that a fair  
6 assumption?

7 A. Yes, that is the expected -- in the absence of  
8 delay, yes.

9 Q. And how is the capital cost estimate related to  
10 the expected schedule of the project?

11 A. I guess if the company had told me in 1976 that  
12 they thought it was going to take 13 years to finish the  
13 project, I would have a different estimate of how much it  
14 would cost.

15 Q. Then how come, when you wanted to slip it one  
16 year, you didn't develop a new cost estimate for the plant?

17 A. Because I don't have any firm basis for knowing  
18 what the effect of a year or two years or three years of  
19 delay would be.

20 I think if somebody gave me a gross estimate and it  
21 was twice what other nuclear plants have taken to complete,  
22 I would say, well, if it's going to take that long, it isn't  
23 going to cost the earlier number.

24 But my basis for estimating the expected cost of a  
25 nuclear plant is to compare it with other plants that have

1 been completed, other plants then under construction. I do  
2 that exclusively in a statistical manner. I don't have any  
3 direct knowledge of how construction processes work. I am  
4 not an engineer and so on.

5 Statistically, it's really impossible to determine  
6 the relationship between the time you decide a unit will  
7 take and its cost, because when you observe the historical  
8 data, you observe how much plants have cost and how long  
9 they have taken.

10 But unfortunately, causality as between those two  
11 variables flows in two directions. Plants which cost a lot  
12 take a long time, and plants which take a long time cost a  
13 lot. And you can't distinguish which way causality is  
14 going from the empirical data.

15 One of the classic econometric no-no's is to relate  
16 causally two variables which are mutually causative. You  
17 will always get biased estimates of effects of those  
18 variables. You will be in effect double-counting the  
19 consequences.

20 So, from a statistical point of view, even though we  
21 know for example that plants that took longer cost more, we  
22 can't ascertain, if a company says "I think I am going to  
23 delay my project intentionally by a year," we can't figure  
24 out what those consequences are going to be.

25 Q Based upon your model?

1  
2 A. Based upon my model or any statistics that  
3 either I or anybody else has, not to over-dramatize the  
4 point.

5 Q. And am I correct that in conducting your delay  
6 analysis, you assumed in both cases that Limerick 1 would  
7 be put into Philadelphia Electric's rate base at 100 percent  
8 of its cost?

9 A. Implicitly what I am assuming is that the unit  
10 will be put into the rate base in the same fashion,  
11 regardless of whether it's delayed or not. I am not really  
12 making any explicit assumption about how it is treated, as  
13 long as it is treated symmetrically. The results will be  
14 the same for any symmetric treatment.

15 Q. Now, Dr. Perl, you are presenting this testimony  
16 or opinion of what you would have concluded if PECO asked  
17 you to do a delay analysis in 1976 or 1978. I presume that  
18 PECO did not in fact ask you to do such an analysis in  
19 those years?

20 A. No, they did not. Our relationship begins about  
21 1980.

22 Q. And this testimony you are presenting today is  
23 the first time that you have presented testimony to the  
24 Pennsylvania Public Utility Commission on the reasonableness  
25 or the cost effect of the 1976 and 1978 delays?

A. Yes, sir, that's true.

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Q. However, you were in the first Limerick investigation docketed at I-80100341, is that correct?

A. I don't know the number, but I was in a previous docket in the 1981 time frame.

Q. Actually, to make it easy, you were in both Limerick investigations, is that correct?

A. Yes.

Q. And in that case, which did review the reasonableness of the 1976 and 1978 delays, you did not present a cost analysis such as you have done in this case, is that correct?

A. Yes. In that case, I was hired solely to look at the economics of the unit on a prospective basis, and not asked to look at prudence of past decisions.

Q. Dr. Perl, have you ever presented testimony to the Pennsylvania Public Utility Commission on the cost of delaying Limerick 1?

A. No, not to the Pennsylvania PUC.

MR. WERSAN: Your Honor, at this time I would like to mark for identification OCA Exhibit No. 44. This is an excerpt from Dr. Perl's testimony in the first Limerick investigation, dated March 5, 1985. His testimony is dated March 5, 1981.

JUDGE MATUSCHAK: Very well.

(Whereupon, the document was marked OCA Exhibit No. 44 for identification.)

1 MR. WERSAN: And I would note that this testimony was  
2 revised by Dr. Perl on April 9, 1981.

3 BY MR. WERSAN:

4 Q Do you remember this testimony, Dr. Perl?

5 A I haven't had a chance to read what you have  
6 given me, but I remember delivering testimony in this  
7 time frame.

8 Do you wish me to read it over and tell you if I --

9 Q Well, I'd like you to familiarize yourself with  
10 it. I don't want to ask you out of the blue what's in it.

11 (Witness perusing document.)

12 A Yes. I am now familiar with it.

13 Q And if I could refer you to the bottom of the  
14 first page, 12, at line 24. Am I correct that you stated  
15 in that testimony, "The savings from constructing Limerick  
16 are also sensitive to the construction schedule for these  
17 facilities"?

18 A Yes.

19 Q "The savings from Limerick will decrease  
20 significantly the completion of this facility's further  
21 delay. This delay will increase the cost of Limerick and  
22 decrease the savings and economy interchange cost that occurs  
23 if the facility is completed in time."

24 A Yes.

25 Q And then starting at line 6 on page 13, you state,

1 "The present value of the savings from constructing Limerick  
2 is \$4.1 billion if the schedule is delayed to 1987 versus  
3 \$5.2 billion if it is completed on time."

4 Am I correct about that?

5 A. Yes, you are.

6 Q. You go on to say that even with the delay, there  
7 are still significant savings from completing the Limerick  
8 facility; however, they are "reduced substantially," and  
9 I'm quoting "reduced substantially" from line 11.

10 A. Yes. Again, as I indicated to you before, as  
11 discount rates changed and as oil prices changed, the  
12 economics of delay changed as well. In '76 and '78, it  
13 appeared to be of limited consequence, and in '81 it appeared  
14 to be of great consequence.

15 Q. I understand, Dr. Perl, that circumstances  
16 changed. Just so it's clear, in your revision to this  
17 testimony, which was filed on April 9, as I understand it,  
18 the revision basically was on page 13 in the excerpt I've  
19 given you, and on lines 7 and 8 you changed the cost of  
20 delay slightly -- let me change that -- you changed both  
21 dollar figures, and then the present dollar of the savings  
22 from constructing Limerick is \$4.4 billion with a schedule  
23 of delay until 1987 versus \$5.7 billion if completed on time  
24 for a difference of \$1.3 billion in the present value  
25 analysis?

1 A. Yes.

2 Q. Staying with that, if you could look at page 13  
3 of either one of those documents, I guess. You state, "This  
4 delay will increase the cost of Limerick." I'm looking at  
5 the top line.

6 What cost of Limerick were you referring to from  
7 the delay?

8 A. The cost increase or the cost to which the  
9 increase is applied or both? The reason I'm hesitating  
10 is I'm presuming that we're talking here about the book  
11 cost of the project, and obviously any delay will increase  
12 the book cost of the project as a consequence of additional  
13 accumulations of AFDC, et cetera.

14 Q. You stated, "This delay will increase the cost  
15 of Limerick," and you compared it to a decrease in the  
16 savings in economy interchange.

17 A. Yes.

18 Q. I wanted to know how you were using the term, if  
19 you could remember.

20 A. Well, I don't remember clearly, but it seems  
21 to me, from a revenue requirement point of view, the relevant  
22 number would be the book cost of the project, and it would  
23 certainly go up as you accumulated additional AFDC. It  
24 would not necessarily go up in a present value sense as a  
25 result of that.

1 Q Am I also correct that you presented testimony  
2 for Philadelphia Electric Company in its base rate case at  
3 Docket 811626?

4 A I don't remember it by docket. Do you mean  
5 the construction work in progress testimony?

6 Q Yes. You presented testimony on whether or not  
7 the Public Utility Commission should allow CWIP in rate base?

8 A Yes.

9 MR. WERSAN: Your Honor, I would like to mark an  
10 excerpt from that testimony as revised on December 22, 1981  
11 labelled "Rebuttal Testimony of Dr. Lewis J. Perl," mark it  
12 as OCA Exhibit 45, please.

13 JUDGE MATUSCHAK: Very well.

14 (Whereupon, the document was  
15 marked as OCA Exhibit No. 45  
16 for identification.)

17 BY MR. WERSAN:

18 Q Am I correct that in developing your analysis  
19 of whether or not the Public Utility Commission should allow  
20 CWIP in rate base, you discussed the effect of a slippage  
21 in the construction schedule of Limerick?

22 A Correct.

23 Q Am I correct that at line 17, you state -- excuse  
24 me. Am I correct that the slippage you are analyzing here  
25 is a 6-month slippage?

A Yes.

1 Q And you state starting at line 17, "Given the  
2 amount already invested in the project and the current stage  
3 of construction, such slippage would be very expensive to  
4 consumers."

5 A Yes.

6 Q And then you state 6-month comparison, and then  
7 at line 21 at the end you start saying, "The estimated  
8 effect on revenue requirements, which takes account of both  
9 higher completion costs and increased energy costs during  
10 the period of delay, has a present value of \$274 million  
11 (at a discount rate of 13.7 percent).

12 I would note the 274 can be found on the errata  
13 sheet dated December 29, 1981 which I have attached to  
14 this exhibit.

15 Was that your testimony in that case?

16 A Yes, sir.

17 Q Dr. Perl, you testify again in this case that  
18 if you had done an economic analysis in 1976 and again in  
19 1978 that you would have found no significant impact on  
20 consumer costs from the delay in Limerick construction.

21 A Yes, sir.

22 Q You testified in the first Limerick investigation  
23 as of early 1981 that a delay in completion would reduce  
24 substantially the present value savings from completion  
25 of the plant?

1 A. Yes.

2 Q. At what point between 1978 and early 1981 did  
3 the delay of Limerick begin to affect the present value  
4 benefit to ratepayers of completion of the project?

5 A. Well, I think we've got two phenomena that changed  
6 during this period. Oil prices started to change fairly  
7 markedly after the Irani-Iraqi War in late 1978. I think  
8 those changes in oil prices began to become apparent by  
9 '79 or '80. I think the effect on discount rates probably  
10 is a late '80 or early '81 phenomenon.

11 So that dating it precisely I think depends upon  
12 knowing what the sum of those two effects were, but let's  
13 say sometime between 1979 -- early 1979 with the Irani-  
14 Iraqi War and the end of 1980, the conditions which make  
15 delay going from being trivial to being very important are  
16 in place.

17 Q. Are you familiar with the delay announcement of  
18 Philadelphia Electric with respect to the Limerick project?

19 A. I don't know what you mean by "familiar".

20 Q. You're right. That's a bad question.

21 Are you aware or have you reviewed other company  
22 testimony in this case which states that even though there  
23 were public announcements of a slip in the completion date  
24 of Limerick, the actual construction schedule was not  
25 slipped as much simultaneously with those public announcements

1 A. I guess I'm not. It actually had always been my  
2 impression that the two-year slippage that occurred in each  
3 of these periods was partially attributable to financial  
4 constraints and partially attributable to the fact that  
5 with regulatory change, the schedule was becoming longer  
6 in any case.

7 Q. So you're not familiar with when the company  
8 actually slipped its construction schedule, only when it  
9 announced the slippage?

10 A. That's correct.

11 Q. I'd like to now turn to your discussion of the  
12 nuclear plant cost comparison. I guess I should preface  
13 this by saying I'm going to confine my cross-examination  
14 to what you filed with your original testimony and post-  
15 pone any discussion of your addendum or Schedule 20.

16 A. I will try not to be similarly constrained.

17 Q. You will try not to be?

18 A. Yes.

19 Q. I will try to keep my questions so that you don't  
20 wander too far.

21 Now, if you could refer to Schedule 1, page 2 of  
22 your testimony.

23 A. Yes.

24 Q. You there list the plants that you reviewed in  
25 developing the cost comparison; is that correct?

1 A Yes.

2 Q Am I correct that these plants include both  
3 BWRs and PWRs?

4 A They do. Insofar as I can obtain data on them,  
5 they contain the costs of all units receiving construction  
6 permits in 1972 or later, the exceptions being plants that  
7 got cancelled before they were ever under way or plants  
8 that for other reasons there is no estimate for.

9 Q Except for the fact that you have a variable  
10 in your regression that deals with single-unit BWRs, I take  
11 it that you believe you can compare two-unit BWRs to single-  
12 unit PWRs or double-unit PWRs?

13 A Well, in fact, the statistical analysis indicates  
14 that all BWRs in this data base are more expensive than  
15 PWRs; but only for single-unit BWRs is the difference  
16 statistically significant at a sufficient order of magnitude  
17 that I included it in the regression. But in fact, all  
18 BWRs appear to be somewhat more expensive even in two-unit  
19 configurations.

20 Q That really wasn't my question. My question is:  
21 do you still think that you can compare the costs, because  
22 you include both PWRs and BWRs?

23 A If you're asking me whether I believe that they  
24 are comparable, the answer is no. That is, I believe that  
25 it is unfair to compare multi-unit BWRs and multi-unit PWRs

1 as if they were the same thing.

2 If you're asking me, can I verify that with a  
3 sufficient degree of statistical certainty to include it  
4 in the regression, I can't.

5 I think you are hitting upon what is a very important  
6 limitation of these kinds of analyses. I'm including  
7 variables that have occurred to me or have occurred to  
8 others and which we can show to be reasonably statistically  
9 significant. There are other variables that influence cost  
10 which are excluded from the analysis. And to the extent  
11 that some of Limerick's characteristics work adversely  
12 against it and are outside the control of the utility, by  
13 rights they should be here as well, but they are not.

14 Q I take it that within the ambit of what you do,  
15 which is these statistical analyses as presented in this  
16 case, you did not find that the difference between two-unit  
17 BWRs and PWRs was statistically significant enough for you  
18 to make that distinction in your cost comparison?

19 A That is correct.

20 Q And just so I understand this table, first you  
21 take Actual Direct Costs for these plants expressed in 1984  
22 dollars per kW, and then you adjusted these costs to what  
23 you term Standardized Direct Costs in 1984 dollars per kW;  
24 is that correct?

25 A Yes..

1 Q And then in your discussion and in your analysis,  
2 you are comparing the direct costs of Limerick 1 against the  
3 other plants in your group and the average of the plants in  
4 the group?

5 A Standardized to Limerick, yes.

6 Q And I would note that Limerick 1's actual direct  
7 costs and its standardized direct costs are the same?

8 A By definition.

9 Q I take it by standardizing the direct costs, you  
10 believe that you can now make some comparison between the  
11 cost for different units and some kind of judgment about  
12 where a plant fits into that range of costs?

13 A I think by this technique you can eliminate  
14 obvious incomparabilities across units. So if I can just  
15 take a simple example: if the wages of labor at the Limerick  
16 site are \$20 an hour and you compare it with a plant that  
17 was otherwise similar but the wages were \$15 an hour,  
18 obviously that comparison is unfair. If Limerick had been  
19 built at \$15 an hour, it too would have been cheaper.

20 That's all this amounts to. It is attempting to take  
21 a number of factors that are clearly systematically related  
22 to cost and, in making comparisons between Limerick and other  
23 units, adjust for those known differences.

24 I don't by any means suggest that this is a sort of  
25 perfect ordering of units in which everything that differs

1 among the units by any stretch of the imagination has been  
2 controlled for.

3 Q But you think once you have standardized cost,  
4 it is at least more fair to make a cost comparison?

5 A Yes.

6 Q And the variables we are talking about you show  
7 on page 3 of your schedule, and in effect you have found that  
8 these are statistically significant in your regression and  
9 apply them to each unit in your data base to standardize  
10 it to the cost of Limerick?

11 A Yes.

12 Q Now, you have listed on the left-hand column of  
13 page 3 what those variables are; wages, subsequent unit  
14 indicator, single-unit BWR, whether or not it is on a rock  
15 foundation, cooling tower, utility is constructor, and whether  
16 it is built in the northeast.

17 A Yes.

18 Q Now, I assume that apart from the information  
19 you have presented in your Schedule 20, that when you did  
20 this analysis, those were the statistically significant  
21 variables that you developed or detected?

22 A Yes.

23 Q And because they are not listed there, I assume  
24 you did not find other statistically significant variables?  
25

1           A. Right. Amongst the ones that I looked at at  
2 the time, I didn't find others that were statistically  
3 significant.

4           Q. Does that mean then if we look back on page 2  
5 that we could compare the standardized direct cost of  
6 Limerick 1 to the standardized direct cost of -- oh, it  
7 doesn't really matter -- Fermi 2, and you feel that you  
8 have now accounted for the statistically significant  
9 differences in cost between those two plants?

10          A. I think I have accounted for a number of obvious  
11 differences between those plants. The distinction I think  
12 is well to keep in mind is there obviously could be other  
13 differences that really are statistically significant that  
14 haven't occurred to me that are worth controlling for.

15          Q. How long have you been doing these analyses  
16 of nuclear plant costs, Dr. Perl?

17          A. Four or five years.

18          Q. I assume you've looked at a lot of variables?

19          A. Yes. But again, just given my own experience  
20 in this, the variables that we are looking at and finding  
21 to be significant today and the variables that we looked  
22 at and found to be significant four years ago are not the  
23 same.

24                 I think we all have a lot to learn about what  
25 influences nuclear cost.

1 Q Now, Dr. Perl, I notice on page 2 that for Shoreham  
2 which is two below Limerick 1, you have an actual direct  
3 cost of \$4,102 per kW in 1984 dollars, and after you  
4 standardized it, the plant only cost \$2,863 in standardized  
5 direct costs based upon Schedule 1 excluding Schedule 20?

6 A All that says is if Shoreham were built with  
7 Limerick's characteristics, then it would cost about \$1,000  
8 a kilowatt less or \$1,200 a kilowatt less than it actually  
9 did.

10 Shoreham was built at the wages that were about the  
11 highest in the country. It is a single-unit boiling water  
12 reactor. Those two factors alone probably account for  
13 35 percent difference between its cost and Limerick's cost.

14 Q Again, as I understand it, once you've adjusted  
15 Shoreham to a standardized direct cost, you believe there  
16 is a comparability that you can discuss between Limerick  
17 and Shoreham?

18 A I will retreat to your previous explanation. I  
19 feel that they are more comparable this way than if we  
20 didn't make any adjustments at all.

21 Q To your knowledge, Dr. Perl, has the New York  
22 Public Service Commission conducted an investigation into  
23 the prudence of the construction cost of Shoreham?

24 A Yes, they have.

25 Q Didn't you testify in that proceeding?

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A. Yes, I did.

Q. Am I correct that the New York Public Service Commission has indicated that as much as \$1.3 billion of the cost of Shoreham was imprudently incurred?

A. They have indicated that. In my opinion, having been a witness in the proceeding --

Q. Dr. Perl, I'm not asking you your opinion about what they said. I'm asking you if they made that announcement

A. You know and I know what is in the press. So we can both comment on stories that are in the press.

Q. Let me ask you this: do you agree with me that in the press, it sounds like they have discussed the \$1.3 billion --

A. Excuse me. Either you want me to comment on that as an expert or you want me to comment on it as a lay observer.

If you want me to comment on it as a lay observer, then you know and I know what is in the press.

If you want me to comment on that number and thereby give it any credence, you're going to have to hear what I think is wrong with it. So you can pick.

Q. Well, I'm sure you know what I'll pick. So let me keep going.

I take it your calculation of plant cost does not adjust for costs which were imprudently incurred by the

1 utility building the project?

2 A. Well, I think if you look at this analysis, you  
3 can -- I mean, my judgment about this data and prudence is  
4 that before you would even start to infer that a unit was  
5 imprudent based upon this kind of information, you would  
6 have to feel that there was a statistically significant  
7 difference between its cost and the average cost for the  
8 sample.

9 I think that you could on that basis eliminate the  
10 top four or five units from the sample. If you did that,  
11 you would also I think have to eliminate the bottom four  
12 or five units from the sample as being extraordinarily  
13 good performances outside the bounds of what you would  
14 normally expect.

15 If you did throw out the top five and throw out the  
16 bottom five, the results, of course, in terms of whether  
17 Limerick lies within the range of the sample would be  
18 unchanged.

19 Q. Let me understand that further. You are saying  
20 before you discuss imprudence, you first have to standardize  
21 the costs so that you can rank someone?

22 A. Yes.

23 Q. But that doesn't mean that once you have  
24 standardized the cost of Shoreham, for example, and the  
25 Commission there were to go in and investigate and found out

1 that something was sized improperly and had to be rebuilt,  
2 et cetera, if they found actual construction imprudence, your  
3 figures here don't in any way calculate for that.

4 A If a commission had found what I would interpret  
5 as reasonable evidence of imprudence, then I would feel that  
6 we ought to make adjustments for that in other ways; I mean,  
7 remove it from the data base or put in that kind of a fact.

8 I don't think there have been any such determinations  
9 in the Shoreham case. But I would point out also that  
10 you can't apply that kind of adjustment process to this  
11 data base unless you are going to do it symmetrically.  
12 That is, if there is in this data base unusually expensive  
13 plants -- and that is the only sort of way in which this  
14 is related to imprudence -- there must be unusually cheap  
15 plants as well. And it doesn't make any sense to start  
16 throwing out high cost plants and then leave in low cost  
17 plants. That would be an inherently unfair kind of  
18 comparison.

19 It would be as if you were trying to say, "Well,  
20 how well did people run a race around a track," and say,  
21 "Well, in making that comparison, I want to take out the  
22 worst seven runners around the track and I'm going to judge  
23 your performance by whether you came out last after I  
24 removed the last seven, but I'm not going to do anything  
25 to remove the guys at the front of the race."

1 This kind of statistical test is really not a test  
2 for prudence. It's a test for: are units in the popula-  
3 tion or not in the population? Are they drawn from the same  
4 data base? And it seems to me it is an inherently symmetric  
5 draw.

6 Q Let me ask you this: to your knowledge, apart  
7 from Shoreham, have any other of the plants in your Schedule  
8 1, page 2, have any of them been found to include costs  
9 which were imprudently incurred?

10 A Yes. I think there are a number of plants in  
11 which Commissions have drawn the judgment that the costs  
12 were imprudent.

13 Q What plants were those?

14 A I think that's true for Wolf Creek. I think it's  
15 true for Calloway, but I'm not positive about Calloway.

16 Q And you would agree that also currently there  
17 are investigations by the respective Commissions into  
18 Nine Mile Point 2 and San Onofre 2 and 3?

19 A Yes; and I'm sure, by the way, with the exception  
20 of units like Hatch and Arkansas Nuclear One and St. Lucie,  
21 all of which are at the bottom of the pile, virtually every  
22 plant in this data base is going to be subject to some such  
23 investigation.

24 I think it's interesting to note that both Calloway  
25 and Wolf Creek, which have been subject to imprudence

1 disallowances are in the lower half of the data base, which  
2 suggests one of the problems of trying to rely upon what some  
3 commission thought about whether a plant was expensive or  
4 too expensive or not.

5 I think by and large those kinds of determinations  
6 have been made with the scanty and most limited possible  
7 data bases, and in general they're not worth anything.

8 Q. In this analysis, you have adjusted actual direct  
9 costs to what you call standardized direct costs. Am I  
10 correct that in the past, you've also used a plant cost  
11 comparison where you used predicted cost for plants?

12 A. Yes, I have in some cases.

13 Q. And what does such a plant comparison entail?

14 A. Instead of adjusting each of the other units in  
15 the data base or each of the other plants in this case in  
16 the data base for the characteristics of the plant we're  
17 comparing it with, one can simply take the regression  
18 equation, enter into it the characteristics of the plant  
19 in question and see what the equation would predict for  
20 that particular project.

21 Q. Am I correct that in the testimony submitted in  
22 Shoreham, you used a predicted cost approach?

23 A. I did.

24 MR. WERSAN: Your Honor, at this time I would like  
25

1 to mark for identification OCA Exhibit No. 46, which is a  
2 company response to IR-OCA-16-9.

3 JUDGE MATUSCHAK: Very well.

4 (Whereupon, the document was  
5 marked as OCA Exhibit No. 46  
6 for identification.)

7 BY MR. WERSAN:

8 Q Dr. Perl, am I correct that IR-OCA-16-9 indicates  
9 that if you had used the predicted cost approach, you would  
10 have come up with a predicted cost for Limerick 1 of  
11 \$2,717 per kW?

12 A Yes. That's \$40 lower than the average of the  
13 standardized values.

14 Q As compared to what you have for its actual  
15 of \$2,868 per kW?

16 A Yes. I think I would point out that whether the  
17 reference point is \$2,757 a kilowatt or \$2,717 a kilowatt,  
18 my conclusions would remain exactly the same that Limerick  
19 is so close --

20 Q That's okay. I'm sure they would, Dr. Perl.

21 A -- so close to the average of the sample that  
22 it seems likely that the management was prudent.

23 Q I would also like to note on page 3 of Schedule 1,  
24 you included a cooling tower indicator with a "t" statistic  
25 of 1.027.

A Yes.

1 Q And you note on page 4, Note 4, that a "t"  
2 statistic of 2.01 indicates that the coefficient is  
3 significantly different from zero at the 5 percent level  
4 and a "t" statistic of 1.68 or higher indicates significance  
at the 10 percent level.

5 So I would be correct -- let me put it this way:  
6 what significance level does a "t" statistic of 1.027  
7 indicate?

8 A Probably a significance level of about 30 percent.  
9 That is, there is a 30 percent probability that the actual  
10 coefficient is not different from zero and a 70 percent  
11 probability that it is different from zero.

12 MR. WERSAN: Your Honor, at this time I would like  
13 to mark for identification OCA Exhibit 47, which is the  
14 company's response to IR-OCA-16-2.

15 JUDGE MATUSCHAK: Very well.

16 (Whereupon, the document was  
17 marked as OCA Exhibit No. 47  
18 for identification.)

19 BY MR. WERSAN:

20 Q Am I correct, Dr. Perl, that this exhibit  
21 contains your regression analysis without the cooling  
tower indicator?

22 A It is not my regression analysis anymore. It is  
23 one you asked us to do for you.

24 Q I'm sorry. Let me restate it. Am I correct that  
25

1 this shows the result if the regression you show on  
2 Schedule 1 was rerun without the cooling tower indicator?

3 A. Yes, that is correct.

4 Q. And the ratio of the average cost of Limerick  
5 without the cooling tower to the average cost with the  
6 cooling tower -- I'm sorry. Let me rephrase that.

7 The ratio of the cost of Limerick 1 without the  
8 cooling tower to the regression without the cooling tower  
9 is 1.065; is that correct?

10 A. Yes, it is.

11 Q. Am I correct that in developing your regression  
12 analysis in Schedule 1, you included Limerick in the data  
13 base?

14 A. I did.

15 Q. Am I also correct that you indicated in an  
16 interrogatory answer that normally you prefer to exclude  
17 the unit which is the subject of the cost comparison from  
18 the data base?

19 A. That is correct.

20 MR. WERSAN: Your Honor, I would like to mark for  
21 identification OCA Exhibit 48, which is simply the results  
22 of the regression shown on Schedule 1 excluding Limerick  
23 from the data base and then excluding Limerick from the data  
24 base and excluding the cooling tower variable.

25

JUDGE MATUSCHAK: So marked.

(Whereupon, the document was marked as OCA Exhibit No. 48 for identification.)

BY MR. WERSAN:

Q. And am I correct, Dr. Perl, that your response to this interrogatory indicates that with those two changes the ratio of actual cost to the average of standardized cost for Limerick will be 1.075?

A. Yes, that is correct.

Q. And finally on this line, am I correct that you used a 6 percent escalation rate for 1985 and 1986 in developing your cost data?

A. Yes.

MR. WERSAN: Your Honor, I would like to mark for identification OCA Exhibit 49, which is the company's response to IR-OCA-16-1 in which Dr. Perl recalculated the cost per kilowatt of Limerick 1 after adjusting for the actual value of escalation in 1985 and using a 4.5 inflation rate for 1986.

JUDGE MATUSCHAK: It will be so marked.

(Whereupon, the document was marked as OCA Exhibit No. 49 for identification.)

BY MR. WERSAN:

Q. Is this your response, Dr. Perl?

A. Yes, it is.

1 Q Now, if I could refer you to Schedule 2 of your  
2 testimony, page 2.

3 A Yes.

4 Q Here you show a comparison of the time for  
5 completion of construction for your sample group; is that  
6 correct?

7 A Yes.

8 Q Again, you standardize the construction time  
9 to Limerick 1?

10 A Yes.

11 Q I note that all of the construction times change  
12 from actual to standardized except for Susquehanna 1,  
13 Seabrook 1, of course Limerick 1, Hope Creek, Nine Mile  
14 Point 2, and Shoreham; is that correct?

15 A I guess I don't understand the question. They  
16 all change.

17 Q Except the ones I've just listed?

18 A Let's just go through them so I can check them  
19 off.

20 Q Sure. Susquehanna 1?

21 A Yes.

22 Q 9.58, 9.58.

23 A Right.

24 Q Seabrook 1?

25 A Yes.

Q. Limerick 1, of course?

A. Yes.

Q. Hope Creek?

A. You skipped Millstone. Did you do that intentionally?

Q. I'm sorry. Did I miss Millstone? Oh, you're right. I should have included that.

A. Yes.

Q. Millstone, Hope Creek, Nine Mile Point 2 --

A. Right.

Q. -- and Shoreham?

A. Wait I just want to make sure.

MR. CALVERT: Beaver Valley. Did you get that?

THE WITNESS: Yes. I think you skipped Beaver Valley as well.

BY MR. WERSAN:

Q. Beaver Valley, yes.

A. Of course, since the only thing we're standardizing for is whether you're located in the northeast, what you've discovered here is that plants that are in the northeast don't change. That was what I said in the testimony. Since we found a systematically higher cost for the northeast, it seems to me reasonable in evaluating Limerick to compare it essentially with other plants in the northeast or at least to adjust other plants for what their costs would

have been had they been built in the northeast.

1 We find that on that basis, there is no difference  
2 between Limerick and other units.

3 Q So, in effect, you only found two significant  
4 variables in making this time comparison, and that's whether  
5 it's the first or second unit on the site or a subsequent  
6 unit on the site or whether it is built in the northeast?

7 A Yes.

8 Q And therefore, in making the comparison, there  
9 were no other significant differences that you felt you  
10 should adjust for?

11 A There weren't any that I found. I note with  
12 great interest that Mr. Hieronymus found others, and I  
13 suspect that simply suggests that he is a faster or more  
14 careful looker than I am.

15 MR. WERSAN: Thank you, Dr. Perl. That's all the  
16 cross-examination I have for you. I do look forward to  
17 the answers to the interrogatories as soon as possible on  
18 Schedule 20.

19 Your Honor, at this time I would like to move into  
20 the evidence OCA Exhibits Nos. 44 through 49.

21 MR. CALVERT: Your Honor, I have no objection other  
22 than with respect to Exhibit, I think it is, 45. I point  
23 out that there is some underlining and so on that hasn't  
24 been identified by anybody and kind of suspect that it is  
25

1 not the witness'. I would object to any markings on the  
2 exhibit which purports to be somebody else's testimony.

3 The errata I don't mind, because I think the errata  
4 just sets forth --

5 MR. WERSAN: Your Honor, I would indicate for the  
6 record that this is, of course, the testimony that the  
7 OCA had in its file. I'm sure the underlinings were by  
8 OCA attorneys, but I didn't refer in my cross of Dr. Perl  
9 to any of the sections that were underlined. If you would  
10 like, you can, in fact, cut off that top paragraph and it  
11 wouldn't change the gist of the cross.

12 MR. CALVERT: I'm not objecting saying it should be  
13 excluded. I'm just making the point that you shouldn't  
14 mark on exhibits and you should really white them out  
15 before you put it in if you aren't going to --

16 JUDGE MATUSCHAK: With that understanding, the  
17 exhibits are admitted into evidence.

18 (Whereupon, the documents  
19 marked as OCA Exhibits Nos.  
20 44 through 49 were received  
21 in evidence.)

22 MR. WERSAN: Thank you, Your Honor.

23 JUDGE MATUSCHAK: Let's take a five-minute  
24 recess.

25 (Recess.)

JUDGE MATUSCHAK: You may proceed.

CROSS-EXAMINATION

BY MR. DELANEY:

Q Mr. Perl, my name is Dan Delaney, and I represent the Trial Staff. I have some questions on your previously filed direct testimony.

Initially I would like to direct your attention to page 3 of your testimony.

A Yes.

Q Do you have it?

A Yes, I do.

Q And on that page you discuss the purposes of your testimony. Now, you indicated initially that one purpose of your testimony is to evaluate the reasonableness of Limerick's construction costs and schedule by comparison with other units.

This morning Dr. Hieronymus testified on page 58 of his statement, which was PECO Statement 15, that such comparisons to him are of questionable relevance in establishing whether a specific utility's plant construction actions in the past were prudent. Would you agree with that observation?

A I think that as a demonstration that a unit was either prudent or imprudent, I don't think that they can be used for that purpose, as a sort of preliminary screening

1 device. I think that they are useful. Again, it wasn't  
2 clear to me from reading Dr. Hieronymus' testimony when  
3 he spoke about comparisons whether he was speaking about  
4 comparisons controlling for other characteristics or not  
5 controlling for it. I guess I sort of see it as a hier-  
6 archy. I think simple comparisons with no controls are  
7 pretty much worthless. On the other hand, if you can  
8 control for a significant number of factors which, them-  
9 selves, are outside the utility's control the comparisons  
10 may have some probative value in giving you a sense of  
11 whether this unit is an outlier. I think if a unit lies  
12 within the range of other nuclear units that it seems to  
13 me unlikely that there is much of a prudency problem  
14 because either management was prudent or any poor decisions  
15 they made didn't have any effect on the costs.

16 I think if you find that the unit is on the fringe,  
17 it is more expensive than the others, then I think a more  
18 detailed review of the specific decisions that either led  
19 or didn't lead to that excess cost are appropriate.

20 Q Would it be true then, if I correctly understand  
21 your last response, that these kinds of comparisons would  
22 only be a rough indicator of whether there might be a  
23 prudency problems?

24 A I think I'd take it one step further than a rough  
25 indicator. I think that the test of prudence, as I take

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it, is: did the utility make reasonable decisions during this time frame. And it seems to me to show that construction management was imprudent you would have to show both that the company made decisions which, given information available at the time, were inappropriate, and, secondly, that those specific decisions led to excessive costs.

It seems to me obviously in that context the finding that the unit is more expensive than others is at most the first part of an inquiry in which you would then have to find out: was that extra expense attributable to specific decisions; and if it was attributable to specific decisions, were they unreasonable decisions?

Q And so your testimony is not that one of these comparisons would completely answer the question of utility prudence of construction?

A Right.

Q I note also on page 3 you indicate that one of the other purposes of your testimony is to examine the economic soundness of scheduling delays in 1976 and 1978. Would it be true that one of the purposes of this testimony is to respond to prior criticisms in this Commission's Orders concerning the '76 and '78 Limerick construction delays?

A I don't know what the company's objectives were in asking me to evaluate this. I can only tell you that

1 my objectives were to determine retrospectively in '76 and  
2 '78 were these prudent decisions?

3 Q Let me direct your attention to page 9 of your  
4 testimony. On page 9 you have a conclusion that concerns  
5 the 1976 and '78 construction delays, that since Limerick's  
6 construction time was about average it does not appear  
7 that these decisions delayed its completion by comparison  
8 to the other units in your sample.

9 A Yes.

10 Q As I understand this testimony, it is not your  
11 testimony that the decisions on the delays did not delay  
12 Limerick's completion, but that with these delays Limerick's  
13 construction times were still average with those of the  
14 other plants in your sample?

15 A Well, given the fact that they were average, one  
16 might infer -- at least it is certainly a possible inference  
17 -- that the decision to constrain the expenditures didn't  
18 in fact have the effect of delaying the unit; but it would  
19 have been completed in the same time frame even if they  
20 hadn't constrained it.

21 Q But your statement, as I understand it, in your  
22 testimony uses the comparison of the other plants in your  
23 sample, and you take the judgment -- you reach the conclusion  
24 based on your comparison?

25 A As I said, there are several possible explanations

in the testimony.

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Q But the statement that you made in response to my prior question was one conclusion that you reached from that examination in your testimony?

A One possibility.

Q One possibility.

A One possibility is that it just didn't have any effect.

Q But, again, your testimony is couched in terms of averages of samples that you have examined --

A Yes.

Q -- in construction time?

A Yes.

Q Dr. Perl, as a general matter, would you agree that utilities have responsibilities to both its ratepayers and shareholders in making decisions that would have large impacts on rates and service?

A I would like to answer that question if I can in two parts. If regulatory treatment conforms to what I interpret as the regulatory bargain; that is you will give reasonable returns to all prudently incurred investments, then there is no distinction between what is in the interests of the stockholders and what's in the interests of the ratepayers, and there's no need for the utility to balance those interests. Its sole goal under those

1 circumstances is to minimize the cost of electricity to  
2 its consumers.

3           The only time at which the interests of the share-  
4 holders get a separate weight in the process is when the  
5 Commission behaves in a way that is not consistent with  
6 that regulatory bargain; that is the Commission says, for  
7 example: we are not going to give a return on cancelled  
8 plant regardless of whether prudently incurred or not; or  
9 we are going to disallow expense of plants even when those  
10 are incurred -- then, of course, a utility has to look out  
11 for the stockholder's interests separate from the interests  
12 of the consumers.

13           Q Let's see if I understand your response. Suppose  
14 a utility has to make a decision, and in evaluating the  
15 decision it can identify possible negative impacts in terms  
16 of rates or service to its customers, but at the same time  
17 in evaluating the consequences of the decision they can  
18 realize or recognize the potential benefit to its sharehold-  
19 ers; assuming that. Would you agree that the utility would  
20 have the responsibility to balance in that circumstance  
21 the interests of its ratepayers with those of its share-  
22 holders?

23           A Is regulatory treatment as I described it; that  
24 is, giving returns to all prudently incurred investments?

25           Q Assuming lawful regulatory treatment.

1 A "Lawful" has all kinds of meanings. As I'm defin-  
2 ing it, if that's what the Commission is doing -- it's  
3 going to give you a return on all prudent investments --  
4 then there is no separate interest that you have to protect  
5 on the part of the shareholders; and if you did try to pursue  
6 the interests of the shareholders at the expense of the  
7 consumers, it would be perfectly justifiable for the Commis-  
8 sion to deem that to be imprudent behavior.

9 Q My prior question which you asked me to qualify  
10 again: I'd like you to assume that it would be fair regula-  
11 tion again. I am hoping that fair regulation is consistent  
12 with the quantification or qualification that you just added  
13 a moment ago; would you accept that?

14 A Yes. What I described I think of as fair regula-  
15 tion, so yes.

16 Q So making that assumption then, would you agree  
17 that in making these kinds of decisions on potential  
18 impacts that they should balance the interests of their  
19 shareholders and their ratepayers before concluding to  
20 pursue a certain course of action?

21 A No, I don't. I think they should puruse -- if  
22 it is fair, they should pursue the interests of the consumers,  
23 and by doing that the interests of their stockholders will  
24 take care of themselves.

25 Q And you are responding in that way because you

1 believe in a fair regulatory system that the interests of  
2 consumers and ratepayers are identical?

3 A Yes, basically.

4 Q You continue on page 9 with your discussion of  
5 the '76 and '78 delays, and you state there that there  
6 were two additional reasons why these delays did not affect  
7 Limerick's average performance in construction time and  
8 cost. The first of those you indicate to be that the  
9 delay allowed the engineering to keep pace with the design.

10 A With the construction.

11 Q With the construction; right. Would you agree  
12 that it is a prudent practice to have significant amounts  
13 of engineering completed prior to the initiation of con-  
14 struction?

15 A Yes, I would; but I also would point out that  
16 with nuclear plants because regulation perpetually changed  
17 the design problems people who thought they had a prudent  
18 amount of engineering done when construction started found  
19 that the percentage that they thought was done was not.

20 I think that's not imprudent. There was no way to  
21 control that. Nobody anticipated that the design was going  
22 to change as dramatically as it did, but it did.

23 Q So as I understand your response, you are  
24 indicating to me that under those circumstances it was not  
25 uncommon for the engineering and the construction to be

1 on parallel tracks during the --

2 A I would say it was very common.

3 Q Very common.

4 All right, the second reason you indicate on page  
5 9 is that financial constraints were endemic to the industry  
6 at this time and affected construction schedules for all  
7 plants. I'm wondering, Dr. Perl, have you made any financial  
8 comparisons of the economic conditions of the utilities  
9 in your sample with PECO during these construction periods;  
10 did you examine achieved rates of return, interest coverages,  
11 percentage of AFUDC as earnings? Did you make that kind  
12 of analysis for all the utilities and plants that you  
13 examined in your sample and compare them with PECO?

14 A Well, certainly I didn't make such an examination  
15 on a systematic basis. I have worked on a number of nuclear  
16 construction projects and have some familiarity with other  
17 circumstances besides PECO's. But I don't have any sys-  
18 tematic approach.

19 Q So your answer is no then?

20 A Yes.

21 Q Could we turn to page 3 of your Schedule 1?

22 A Yes.

23 Q In your response to questions Mr. Wersan asked  
24 you I think you indicated that these were the variables  
25 identified in the lefthand column there that you found to

1 be statistically significant in your study.

2 A Yes.

3 Q Would it be possible that other variables exist  
4 that you did not identify and that could be included on  
5 this list?

6 A Oh, sure.

7 Q I note that you have as the third entry in the  
8 variable column "Log of Wage Index."

9 A Yes.

10 Q Would you agree that wages are generally con-  
11 sidered to be one of the components that make up construc-  
12 tion costs?

13 A Yes.

14 Q Did you run a correlation table of the independent  
15 variables used in the regression equation on Schedule 1,  
16 page 3 before you used those variables in the regression  
17 equation?

18 A Correlations amongst themselves?

19 Q Yes.

20 A No.

21 Q I note that on Schedule 1, page 3, you note that  
22 your regression contains 59 observations, but on page 2  
23 you list only 37 units.

24 A 37 plants.

25 Q 37 plants. Could you explain why you did not

1 list all 59?

2 A I did list all 59. There are 59 units which are  
3 contained in 37 plants. And when we do the standardization  
4 units of the same plant are grouped together before we make  
5 the comparison. This, by the way, is one of the reasons  
6 why I regard the standardized average cost as a perhaps  
7 more valid way to compare plants than the predicted cost that  
8 was discussed by the OCA. When we look at the 59 units,  
9 one of the problems you get into is that you have multiple  
10 units at the same site getting -- if there are three units  
11 at a site, it gets three times as much weight as if there  
12 are two. If there are two it gets twice as much weight  
13 as if there is one.

14 And while you can argue that that's the way you want  
15 to do it, you can also I think argue convincingly that two  
16 units at the same site being built in the same time frame  
17 ought to really be treated as one observation. When we  
18 make the comparison in Schedule 1 that's exactly what we  
19 do. We treat the multiple units at the same site as if  
20 they were a single observation.

21 Q So as I understand your response then, the  
22 difference in the numbers relates to multiple units at the  
23 same site in your treatment of those?

24 A For example, the South Texas project listed third  
25 from the bottom has two units in it. On Schedule 1, page

1 2 it has only one, but it counts in the regression as two.

2 Q Is it possible that one or more variables could  
3 be added to your regression equation on Schedule 1, page  
4 3, that could improve the model and have a significant "t"  
5 statistic; do you think that would be possible?

6 A Sure.

7 Q Next we will go to Schedule 2, page 3 of your  
8 testimony. Let me ask you a similar question to one I  
9 asked before. I believe the answer would be the same, but  
10 you can indicate that.

11 On that schedule you used 57 observations in your  
12 regression equation, but there are only 35 first or single  
13 units. In examining only first and single units, wouldn't  
14 it be better just to use those as our data base for first  
15 or single units rather than the 57?

16 A It might be desirable to run the regression just  
17 for the first and single units, but the order of this pro-  
18 cess is so we ran the regression first with all the  
19 same variables that were in the cost equation. It turned  
20 out that only these two were statistically significant.  
21 And since one of the two variables was the subsequent unit  
22 indicator it seemed to me that it was easier to just throw  
23 the units out of the data base for comparison purposes than  
24 to put them in and standardize them. I did that, but you  
25 could do it either way, I guess.

1           And since what the data indicates is that on average  
2           the subsequent units are 1.7 years longer in their construc-  
3           tion length, I think it's fairly clear that if we put that  
4           in but adjust for it we are going to eliminate its effect.

5           So I think whether you put it in the regression and  
6           then compare Limerick 1 with all 57 units, adjusting for  
7           it, or you throw the subsequent units out, you are going  
8           to get the same result.

9           Q    Could you turn to page 10 of your testimony?

10          A    Yes.

11          Q    On page 10, line 6 you make the observation that  
12          construction times are longer in the Northeast, and this  
13          may be the effect of weather conditions or more restrictive  
14          work rules?

15          A    Yes.

16          Q    Would you agree that it might be possible that  
17          the systematic longer construction times in this area could  
18          be due to other factors than weather or restrictive work  
19          rules?

20          A    Such as?

21          Q    Such as the standard of management of these  
22          construction units?

23          A    I think that's an implausible interpretation,  
24          given the range of different managements that are involved  
25          in the Northeast. It seems to me it would be very unlikely

1 given the differences in the management styles and the  
2 nature of the management of the projects in the Northeast  
3 that you would get that kind of result.

4 If I could just give on example, numerous of the  
5 plants in the Northeast are essentially managed by Bechtel,  
6 and yet if you look at Bechtel units built around the  
7 country they are more expensive -- their plants built in  
8 the Northeast are more expensive than their plants built  
9 elsewhere. It seems to me if the difference were attribut-  
10 able to the quality of management at the very least you  
11 would expect to see the differential be smaller where you  
12 were dealing with a common AE operating in different  
13 regions, and it is not any smaller. So it seems to me that  
14 that is not a good hypothesis.

15 Q Is it your testimony then that these observed  
16 longer construction time in the Northeast is solely due  
17 to weather and restrictive work rules?

18 A No, I mean I think there are many hypotheses.  
19 I guess I just intended to indicate that I rejected yours.

20 Q Could you turn to page 2, Schedule 2?

21 A I have it.

22 JUDGE MATUSCHAK: What page is that?

23 MR. DELANEY: Page 2, Schedule 2.

24 BY MR. DELANEY:

25 Q Do you have the interrogatories that you answered

1 in this proceeding in front of you?

2 A Yes, I do. If you could refer them to me?

3 Q Yes, Staff Interrogatory Limerick No. 1, IR-  
4 Staff-LIM-07.

5 MR. DELANEY: Your Honor, I would ask that there  
6 be marked for identification at this time as Staff Exhibit  
7 the company's response to IR-Staff Limerick No. 7.

8 JUDGE MATUSCHAK: So marked.

9 (Whereupon, the document was  
10 marked as Trial Staff Exhibit  
11 No. 7 for identification.)

12 BY MR. DELANEY:

13 Q You are indicated as the responsible witness on  
14 that interrogatory response?

15 A Yes.

16 Q Do you recall responding to that request?

17 A Yes, I do.

18 Q Was that response prepared under your direction  
19 or control or by yourself?

20 A Just one second please.

21 (Witness perusing document.)

22 Yes.

23 JUDGE MATUSCHAK: Do you have copies for the  
24 reporter?

25 MR. DELANEY: Yes.

Excuse me for a second, Dr. Perl.

1 (Pause.)

2 MR. DELANEY: I'm sorry, Your Honor.

3 BY MR. DELANEY:

4 Q: Dr. Perl, is the information contained in that  
5 interrogatory response true and correct to the best of your  
6 knowledge, information and belief?

7 A: Yes.

8 MR. DELANEY: I have no further questions of the  
9 witness at this time, Your Honor.

10 I would note that I would move to strike portions  
11 of Dr. Perl's testimony again in reliance on the motion  
12 in limine because I believe he has indicated some testimony  
13 goes to the prudence of the '76 and '78 construction delay  
14 decisions.

15 JUDGE MATUSCHAK: We will defer ruling on that  
16 until we dispose of your motion.

17 MR. DELANEY: Very well.

18 Would you like me to list the pages subject to the  
19 motion? Would you like me to list the portions of Dr.  
20 Perl's testimony that I am referring to?

21 JUDGE MATUSCHAK: Can you particularize the portions?

22 MR. DELANEY: Your Honor, my motion would be to  
23 pages 9, 23, 24, 25, 26, 27, 28 and one-half of 29, and  
24 Schedule 7. At the time that we argue the motion I will  
25 try and summarize all these sections for you.

1 JUDGE MATUSCHAK: All right.

2 MR. DELANEY: Thank you, Dr. Perl.

3 THE WITNESS: Excuse me, Your Honor. Counsel  
4 indicated to me that my answer before about the 1 percent  
5 increase in coal prices wouldn't be in the record because  
6 we did it when the stenographer was out of the room.

7 JUDGE MATUSCHAK: We will note it for the record.

8 Is there further cross-examination of this witness?  
9 Mr. Widoff?

10 CROSS-EXAMINATION

11 BY MR. WIDOFF:

12 Q Mr. Perl, my name is Mark Widoff, and I represent  
13 the University of Pennsylvania and the Utility Users Group.

14 I would like to refer you to the bottom of page 28  
15 of your testimony.

16 There is a reference in that question to your analy-  
17 sis being different than that done by the company. What  
18 analysis by the company were you referring to in that  
19 question?

20 A It is my understanding that in the time frame  
21 of 1976 through '78 the company did its own analyses of  
22 the consequences of delay, and it is those analyses that  
23 I'm referring to. I believe Mr. Paquette refers to those  
24 analyses in his testimony.

25 Q Were those analyses done in a form that you could

1 actually examine; that is, were they done in writing?

2 A Yes, I believe so. Yes, I believe I've seen  
3 memos at some time or other describing the company's  
4 analyses of the consequences of delay.

5 Q And they were referred to in Mr. Paquette's  
6 testimony?

7 A I'm saying that from memory. I think so.

8 Q You said that your analysis differs from that  
9 done by the company in two respects. First, the company's  
10 analysis gives special weight to on --

11 A In the errata sheet we corrected the "on." Just  
12 strike that now.

13 Q To the effects of delay on the system costs  
14 over the first ten years after Limerick came on line.  
15 Delay clearly reduces costs in this time frame; what do  
16 you mean by that, that delay clearly reduces costs in this  
17 time frame?

18 A Because of the time pattern of costs for a nuclear  
19 plant, or any capital intensive plant, tends to be very  
20 high in the early years and very low later on, by delaying  
21 the project, if you focus only on the first ten years of  
22 the project's life you are likely to get observed benefits  
23 that are not true over the full life of the unit. That's  
24 not to say that analyzing things in a ten-year time frame  
25 is necessarily incorrect; it depends on what your objectives

1 are, but in part when you look at anything other than the  
2 full life of the unit your result is being driven by the  
3 accounting conventions of the jurisdiction in question as  
4 much as it is by the true economics of the project.

5 Is that a clear answer?

6 Q Well, not entirely. In your answer you referred  
7 to the project's cost. In your testimony you referred to  
8 system costs.

9 A Yes.

10 Q What exactly are we talking about then?

11 A I think we are talking about system costs.

12 Q What do you mean by "system costs"?

13 A The total revenue requirements of the system;  
14 that is the fuel plus capital plus operating costs of all  
15 the units on the system. And again I just want to make  
16 it clear here; because a large portion of the total cost  
17 of a project like Limerick is concentrated in the first  
18 ten years of the project, if you do your analysis of "is  
19 it going to be beneficial for consumers for me to delay  
20 this project by one year" and you only consider those first  
21 ten years and not the eleventh through the 30th years,  
22 it's more likely that you are going to get benefits than  
23 if you look at the full 30-year period, because you are  
24 taking the high cost part of the plant and deferring it  
25 out to another period.

1 Q So this aspect of the difference has actually  
2 resulted in an increase; is that what you are saying, an  
3 increase in the company's analysis as compared to yours?

4 A When you say an increase, one of the reasons the  
5 company concluded that delay was in the interests of  
6 consumers was they observed that system revenue require-  
7 ments over the first ten years of the project's life would  
8 be lower with the delay.

9 I don't think that that is an uninteresting conclu-  
10 sion; I think it is a very interesting conclusion. The  
11 only point I meant to make here was that in part that is  
12 driven by accounting conventions and you are bound to get  
13 a different result if you look at the project over its full  
14 life.

15 Q I see what you are saying. What you are saying  
16 is that the company felt that the benefits to the customer  
17 in the first ten years were significant and, therefore,  
18 that was a plus factor?

19 A Yes.

20 Q And you are saying that that's not necessarily  
21 a proper way to look at the pros and cons of the delayed  
22 decision because after the first ten years the benefits  
23 to the customers are significantly greater?

24 A I don't know whether it is proper or improper.  
25 There are obviously objectives to which that is an

1 interesting -- questions to which that is an interesting  
2 answer. I didn't do it that way, and I was simply trying  
3 to explain here why I got a different -- part of the  
4 difference in my result was attributable to that.

5 Q All right; the second item, as I understand it,  
6 relates to this question of -- it goes back to the earlier  
7 part of your testimony on pages 26 and 27. As I understand  
8 it, it is the same as your third point on the bottom of  
9 page 26; is that correct?

10 A I'm sure I wasn't repetitious, but --

11 Q No, you weren't being repetitious; you just  
12 indicated what the differences were, and I'm asking you  
13 whether the point that you made at the bottom of page 28  
14 is in effect you are referring back to the point that you  
15 make at the bottom of page 26?

16 A They are related points, but they are different  
17 in one respect. Even the longer term analysis that the  
18 company performed compares the present value of revenue  
19 requirements over the originally intended life of the  
20 project, and stops at that point and looks at those two  
21 sets of revenue requirements. That ignores -- by the nature  
22 of the calculation, irrespective of the magnitude of the  
23 numbers, but by the nature of the calculation, it ignores  
24 certain of the benefits from delay which result from --  
25 because delay defers the point at which you have to build

1 a replacement unit.

2 So in the answer to 26 I indicated that one of the  
3 factors that made the delay beneficial was the fact that  
4 we projected high oil price increases over the life of the  
5 unit, and there is that factual connection, and if it  
6 weren't for that the benefits from the delay at the end  
7 of the life of the project would be small; and, therefore,  
8 whether you included them or you excluded them it would  
9 make less difference.

10 Here I am making the point that in the company's  
11 analysis they didn't take them into account at all in their  
12 initial delay analysis.

13 Q If I understand you correctly, you are saying that  
14 the company did take them into account in the sense that  
15 they considered the adverse effect of delay and system fuel  
16 costs during the delay period. By "delay period," what  
17 do we mean by delay period?

18 A The two years that the unit would not be on line  
19 in the early part of the observation, so they did take  
20 account of the costs of the delay during that period, but  
21 they neglected to take account of benefits of delay 30  
22 years later.

23 In saying that, I want to point out that even my  
24 own sterling early analysis in 1981 did the same thing.  
25 The general tendency here was to say: well, how much

1 difference can it make what's going to happen 30 years  
2 later; and the answer unfortunately is: well, quite a bit.  
3 It may make a difference.

4 Q It is quite significant in your analysis?

5 A Yes. When I say it is quite significant, I think  
6 if we hadn't taken into account that thing happening at  
7 the end of 30 years there would have been small, but never-  
8 theless significant, disbenefits to delaying the units.  
9 Whether they would have been large enough to change the  
10 company's decision in light of its perceived financial  
11 constraints, I don't know.

12 Q The company didn't make this analysis at all,  
13 so that much is clear; correct?

14 A The company did two analyses in 1976 and 1978,  
15 both of which I think cast a great deal of light on this  
16 decision. They looked at what the effect on revenue  
17 requirements would be in the first ten years, and they looked  
18 at what the effect on revenue requirements would be over  
19 30 years. The only thing they didn't do was look at them  
20 over 32 years.

21 I'm pointing out here that 32 years will give you  
22 a different answer than 30 years. In order to come to  
23 the conclusion that the company did, that it was not going  
24 to have a significant effect and therefore that given the  
25 financial constraints that they should defer, I don't think

1 you have to look at 32 years.

2 I think they would have been reinforced in their  
3 original conclusion, that is that they should defer the  
4 unit, had they looked at it over 32 years.

5 Q Would you agree with me though that there is  
6 a question of the comparability of the data in this sense,  
7 that when the company was looking at the difference in fuel  
8 costs for the first two years, and as you are looking at  
9 them now, you are dealing with known numbers, are you not?

10 A No, I don't believe so. I believe we are dealing  
11 with -- as this calculation is done, everything is a  
12 projection. The benefits of the delay in the early period  
13 are projections; the costs of delay are projections and  
14 the benefits of the delay are projections.

15 Q They are projections, but in the first calculat-  
16 tion you are projecting what years?

17 A You are projecting something that is five years  
18 or six years in the future.

19 Q I don't understand why we have to go five or six  
20 years into the future; could you explain that?

21 A Well, we are looking at 1976 at the benefits from  
22 Limerick in 1981 or '82, and then we are looking in 1978  
23 at its benefits in 1983 or '84.

24 Q Okay, and in order to do your 32-year analysis  
25 how far are you projecting into the future?

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A 37 years.

Q Isn't there a fundamental problem --

A I think that's right --

Q -- when we are talking about rates for rate-payers today?

A I think you are absolutely right that it is easier to know what is going to happen in the short run than it is to know what is going to happen in the long run. It seems to me that that would be just as good a -- if you believe that, and I gather that you do, then you should be very happy with the company's analysis that says: well, over the first ten years there will be obvious benefits to the consumer from this deferral. And I think that's a fair way to reason and many people reason that way. All we care about is what is going to happen in my lifetime or the Commission's lifetime, not the lifetime of my children.

Q Mr. Perl, I find your arguments on behalf of the company very persuasive. However, that wasn't the question I asked you.

I simply asked you a very, very simple question --

A Maybe I didn't understand it.

Q -- and I understand that you agreed with me, and that is that there is a significant difference in projecting the costs five years into the future as opposed to 37

1 years into the future -- and I take it you agree with me  
2 on that. And isn't this one explanation for the fact that  
3 the company did not consider doing this in 1976, nor did  
4 you consider doing it in 1981?

5 A I think that -- I can't interpret why the company  
6 did what they did. I know I did it in 1981 because it  
7 didn't occur to me that the 32-year analysis would come  
8 out any different than the 30-year analysis.

9 Having done it, it is clear that it does make a  
10 difference.

11 MR. WIDOFF: I have no further questions.

12 MR. ETTNER: I have no questions.

13 JUDGE MATUSCHAK: Is there any further cross-  
14 examination for this witness?

15 (No response.)

16 JUDGE MATUSCHAK: Is there any redirect?

17 MR. CALVERT: May I have a minute or two with the  
18 witness, Your Honor?

19 JUDGE MATUSCHAK: All right.

20 (Pause.)

21 MR. CALVERT: Your Honor, we have no redirect.

22 JUDGE MATUSCHAK: Thank you.

23 (Witness excused.)

24 JUDGE MATUSCHAK: What is the concensus of counsel  
25 as to proceeding any further this evening?

1 MR. WERSAN: I have no cross for Dr. Wile. I don't  
2 know about the other parties. He's the last witness for  
3 today.

4 MR. CALVERT: Your Honor, I suspect Dr. Wile may  
5 be a very brief witness, and if we could sort of canvass  
6 the group we might be able to do him very quickly.

7 JUDGE MATUSCHAK: Let's try it.

8 MR. CALVERT: Could we go off the record for just  
9 a moment, Your Honor?

10 JUDGE MATUSCHAK: Yes.

11 (Discussion off the record.)

12 MR. WIDOFF: Your Honor, before we adjourn if we  
13 are still on the record for just a moment, I would like  
14 at this time to again move in UP/UCC Exhibits 1 and 2.  
15 If you will recall, on Friday I moved those exhibits into  
16 evidence and the company indicated they wanted the weekend  
17 to determine whether they wanted to make an objection or  
18 not. At this time I would like to renew my motion.

19 MR. CALVERT: Your Honor, I'm afraid that I'm at  
20 something of a disadvantage because I wasn't here on Friday  
21 and I don't recall the exhibits. I would be happy to  
22 determine this evening what the response is and let you  
23 know the first thing tomorrow morning, if that would be  
24 all right.

25 JUDGE MATUSCHAK: Do you have any objection?

1 MR. WIDOFF: The problem is that I don't know what  
2 parts of the days I'm going to be here the rest of this  
3 week.

4 JUDGE MATUSCHAK: We feel that they should be  
5 admitted. We will take those exhibits into the record.

6 MR. CALVERT: Your Honor, if I could just add: it  
7 seems to me that there's probably no procedural reason  
8 why they have to be admitted immediately. It can be any  
9 time before the record closes, so there's no hurry on it.  
10 I think we could get the answer, and whenever Mr. Widoff  
11 happens to appear next week he could present them.

12 JUDGE MATUSCHAK: Our disposition was to admit them  
13 into evidence the other day. We did give the company a  
14 chance to review them, and we still feel as we did  
15 originally when they were offered. They are admitted in  
16 evidence.

17 (Whereupon, the documents  
18 marked as UP/UCC Exhibits  
19 Nos. 1 and 2 were received  
in evidence.)

20 MR. WIDOFF: Thank you, Your Honor.

21 MR. DELANEY: Your Honor, I would move into evidence  
22 Staff Exhibit 7 which I just used with Dr. Perl in his  
23 cross-examination.

24 JUDGE MATUSCHAK: Is there any objection?

25 MR. CALVERT: No objection, Your Honor.

JUDGE MATUSCHAK: Staff Exhibit 7 is admitted into

1 evidence.

2 (Whereupon, the document marked  
3 as Trial Staff Exhibit No. 7  
4 was received in evidence.)

5 MR. CALVERT: Mr. Wile.

6 Whereupon,

7 JOHN H. WILE

8 having been duly sworn, testified as follows:

9 MR. CALVERT: Your Honor, we have previously  
10 distributed copies of Dr. Wile's testimony to all parties,  
11 Your Honor and the court reporter, and we would ask at  
12 this time that it be marked for identification as PECO  
13 Statement Number 29.

14 JUDGE MATUSCHAK: It will be so marked.

15 (Whereupon, the document was  
16 marked as PECO Statement No. 29  
17 for identification.)

18 DIRECT EXAMINATION

19 BY MR. CALVERT:

20 Q Please state your name for the record.

21 A My name is John H. Wile, W-i-l-e.

22 Q Could you give us your business position and your  
23 business address please?

24 A I'm a Vice-President at the National Economic  
25 Research Associates at 123 Main Street, White Plains, New  
26 York.

27 Q Dr. Wile, do you have before you a document of

1 some eleven pages entitled "Direct Testimony of Dr. John  
2 H. Wile," which has been marked as PECO Statement Number  
3 29?

4 A Mine is marked 13. That's just my copy.

5 Q It is 29.

6 A Yes, I do.

7 Q Thank you.

8 Is this document your direct testimony in this  
9 proceeding?

10 A Yes, it is.

11 Q Was this prepared by you or under your direction?

12 A Yes, it was.

13 Q Are there any corrections which you wish to make  
14 to your testimony at this time?

15 A No, there aren't other than those that we filed  
16 with you earlier.

17 Q And you are referring to the errata sheet that  
18 has been passed out to His Honor and all parties?

19 A Yes, I am.

20 Q Dr. Wile, if I were to ask you the questions  
21 set forth in your direct testimony, would your answers be  
22 as they appear therein subject to the corrections which  
23 you have listed, and would those answers be true and  
24 correct at this time?

25 A Yes, they would.

1 Q As part of your testimony, did you prepare some  
2 exhibits?

3 A Yes, I did.

4 Q And have those been marked as Schedules 1 through  
5 11, plus your vitae?

6 A Yes.

7 Q Were these exhibits prepared by you or under your  
8 direction?

9 A Yes, they were.

10 MR. CALVERT: Your Honor, at this time I would move  
11 that the direct testimony of Dr. Wile, as corrected, be  
12 admitted as part of the record of this proceeding, and  
13 identified as PECO Statement Number 29, and that the exhibits  
14 be admitted as part of the record in this proceeding and  
15 identified as Schedules 1 through 10 and Dr. Wile's vitae,  
16 subject to any timely motions to strike.

17 JUDGE MATUSCHAK: Under those conditions the motion  
18 is granted.

19 (Whereupon, the document marked  
20 as PECO Statement No. 29 was  
21 received in evidence.)

22 MR. CALVERT: Your Honor, I understand there is  
23 no cross-examination, although Dr. Wile is here and prepared  
24 for cross-examination.

25 JUDGE MATUSCHAK: Staff?

MR. DELANEY: Staff has no cross, Your Honor.

1 MR. WERSAN: OCA has no cross-examination, Your  
2 Honor.

3 MR. ETTNER: GSA has no cross-examination.

4 MR. WIDOFF: No cross-examination.

5 JUDGE MATUSCHAK: Does anyone have any cross-  
6 examination of this witness?

7 MS. FERKIN: GEC has none.

8 JUDGE MATUSCHAK: Dr. Wile, we are going to be very  
9 easy on you today. Thank you.

10 (Witness excused.)

11 JUDGE MATUSCHAK: Does the company have anything  
12 further?

13 MR. CALVERT: Nothing further, Your Honor. I would  
14 just ask if we are going to start at 10:00 tomorrow  
15 morning.

16 MR. WERSAN: Do you have a witness order?

17 MR. CALVERT: The witness order, as I understand  
18 it, will be Mr. Hoch, Mr. Guth, Dr. Mattson and Vincent  
19 Boyer, in that order.

20 JUDGE MATUSCHAK: Very well. We will adjourn and  
21 reconvene at 10:00 tomorrow morning.

22 (Whereupon, at 5:54 p.m. the hearing was adjourned,  
23 to be reconvened at 10:00 a.m. on Tuesday, December 17,  
24 1985 in Harrisburg, Pennsylvania.)  
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I hereby certify, as the stenographic reporter,  
that the foregoing proceedings were taken stenographically  
by me, and thereafter reduced to typewriting by me or  
under my direction; and that this transcript is a true  
and accurate record to the best of my ability.

COMMONWEALTH REPORTING COMPANY, INC.

By: John A. Kelly  
John A. Kelly

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