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COMMONWEALTH OF PENNSYLVANIA

PUBLIC UTILITY COMMISSION

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

Further Hearing

Pages 4367 through 4690

Hearing Room No. 1
North Office Building
Harrisburg, Pennsylvania

Wednesday, March 12, 1986

Met, pursuant to adjournment, at 9:30 a.m.

BEFORE:

JOSEPH MATUSCHAK, Administrative Law Judge

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E X H I B I T S

NUMBER	FOR IDENTIFICATION	IN EVIDENCE
PECo Statements		
No. 15A (Hieronymus)	4371	4371
No. 15B (Hieronymus)	4371	4371
No. 37 (Hogan)	4386	4386
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No. 38 (Schink)	4609	4609
No. 38A (Schink)	4609	4609

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PECo Exhibits		
Nos. WHH-30 through 56 (Hieronymus)	4371	4371
Nos. WWH-1 through 7 (Hogan)	4386	4386
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No. FC-1 (Clemente)	4405	4405
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No. 88 (IR-OCA-29-1)	4511	4536
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P R O C E E D I N G S

ADMINISTRATIVE LAW JUDGE JOSEPH MATUSCHAK: You may proceed.

MR. CALVERT: Your Honor, our first witness is Dr. Hieronymus. He has been previously sworn and has been cross-examined on his direct testimony.

Whereupon,

WILLIAM H. HIERONYMUS

having previously been duly sworn, testified further as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Hieronymus, would you please state your full name for the record?

A. William H. Hieronymus.

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

A. I am a Director of the firm of Putnam, Hayes and Bartlett at 124 Mount Auburn Street, Cambridge, Massachusetts.

Q. Dr. Hieronymus, do you have before you a document of some 52 pages entitled "Rebuttal Testimony of Dr. William H. Hieronymus," PECo Statement No. 15A?

A. Yes. It is 56 pages, actually.

Q. Fifty-six pages; okay. Thank you.

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Do you also have in front of you a document of some 26 pages entitled "Sur-surrebuttal Testimony of Dr. William H. Hieronymus," PECo Statement No. 15B?

A. Yes, I do.

Q. Are these documents your rebuttal and sur-surrebuttal testimony in this case?

A. Yes, they are.

Q. Were they prepared by you or under your direction?

A. Yes.

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

A. Yes; there are some essentially typographical corrections.

Q. Were these the ones that were contained in the errata sheet sent out by Mr. Zeiter to Secretary Rich by letter dated March 10, 1986?

A. Yes.

Q. If I were to ask you the questions set forth in your rebuttal and sur-surrebuttal testimonies, would your answers be as they appear therein, subject to the corrections you just referenced, and would those answers be true and correct at this time?

A. Yes, they would.

Q. As part of your rebuttal and sur-surrebuttal

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testimony, did you submit any exhibits?

A. Yes, I did.

Q. At the back of your rebuttal testimony, there are exhibits entitled WHH-30 through WHH-52; are those the exhibits you are referring to for the rebuttal testimony?

A. Yes.

Q. And on the sur-surrebuttal testimony, there are exhibits labeled Exhibit WHH-53 through WHH-56; are those your sur-surrebuttal testimony exhibits?

A. Yes, they are.

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

A. Yes.

MR. CALVERT: Your Honor, at this time I would move that the rebuttal and sur-surrebuttal testimonies of Dr. Hieronymus as corrected be admitted as part of the record of this proceeding and identified as PECo Statement Nos. 15A and 15B, respectively, and that the exhibits be admitted as part of the record and identified as Exhibits WHH-30 through WHH-56, respectively.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the documents were marked as PECo Statements Nos. 15A and 15B and Exhibit Nos. WHH-30 through WHH-56 for identification, and were received in evidence.)

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

JUDGE MATUSCHAK: Staff.

CROSS-EXAMINATION

BY MR. DELANEY:

Q. Good morning, Dr. Hieronymus.

A. Good morning.

Q. I am Dan Delaney. I have a couple of questions for you.

On your rebuttal testimony, is it mis-labeled on the top?

A. Yes, it is.

Q. It is labeled 15B. It is actually 15A?

MR. CALVERT: It is 15A for the rebuttal; that's correct.

BY MR. DELANEY:

Q. Dr. Hieronymus, on pages 9 to 12 of your rebuttal you discuss the Limerick construction schedule performance in comparison to the construction schedule performance of other plants.

Is it your testimony that the results of such comparisons are conclusive on the issue of the prudency of the nuclear plants' construction schedule performance?

A. No, I don't think they are conclusive. I believe I state in my testimony that they are essentially

contextual, by which I mean that they are an indication of what average schedule performance was; and it is my testimony that since we are trying to reconstruct in some somewhat different world in which acts which the Commission has found to be imprudent or decisions the Commission has found to be imprudent in some fashion had not occurred, we are trying to construct what the schedule would have been. And I think it is helpful to understand what average schedule performance for other units was.

Q. So if I understand your response then, you are indicating that that is one thing that could be examined in trying to answer that question?

A. That's correct.

Q. On page 12 of your rebuttal, Dr. Hieronymus, I note that you discuss the Staff's proposed quantification of delay costs.

When you prepared your rebuttal testimony, I assume you reviewed the direct testimony of Staff Witnesses Dougherty and Rosenthal?

A. Yes, I did.

Q. Is it your understanding of the Staff's position on this issue that the Staff believes the Limerick Unit 1 could have been in service by April of 1981?

JUDGE MATUSCHAK: Keep your voice up, Mr. Delaney.

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BY MR. DELANEY:

Q. Is it your understanding of the Staff's position on this issue that the Staff believes that Limerick Unit No. 1 could have been in service by April of '81?

A. Yes, it is. I inferred that from how the quantification was done.

Q. So the answer is "yes"?

A. Yes.

Q. Could we turn to your sur-surrebuttal testimony, page 3? Now, on the initial pages of this testimony, I understand you have been discussing Mr. Falkenberg's testimony here and proposed adjustments; is that correct?

A. Yes.

Q. On lines 20 to 33 on page 3 you discuss Mr. Falkenberg's reliance on a Northeast Utilities brief, and I think what you state there is, on line 25, that you are "somewhat bemused at the characterization of a brief in a contested proceeding as the dispassionate statement of objective expert opinion."

Now, if I understand what you are saying there, is it your opinion that statements made in court briefs filed in contested proceedings are not necessarily dispassionate statements?

A. I think the emphasis is on "expert."

Q. Expert statements.

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A. Yes.

Q. In your opinion, would it be prudent for a public utility to interpret a regulatory order on the basis of statements made in briefs filed in contested proceedings?

A. Gee, you're beginning to wander, it seems to me, into a legal interpretation in the sense that I would think the principal use of a brief would be that it might further amplify an understanding of what the Commission had in its mind if it took the same position in its decision; but it is not clear to me in what sense you can rely on a brief for any particular purpose.

Q. As I understand the statement in your sur-surrebuttal testimony, you seem to suggest that since these are contested proceedings and the statements are not dispassionate ones, that it is not reasonable to rely on them; is that a fair summation of what you are indicating there?

A. No. I think that is an overstatement. I am certainly not asserting here in particular that Northeast Utilities took any position other than what it did. I am merely objecting to the use which Mr. Falkenberg chooses to make of it as being dispositive of the issue on the basis that this is a statement, an expert statement, of what it is that the utilities generally meant when they responded to the EEI survey.

Q. Directing the discussion to regulatory orders, would you agree that the best source of interpreting a regulatory order is the text of the order itself?

MR. CALVERT: I object to the question. Again, I think that counsel is starting to ask this witness to wander into a legal interpretation area.

MR. DELANEY: My question was suggested by the doctor's prior response which talked about interpreting orders.

JUDGE MATUSCHAK: We will overrule the objection.

THE WITNESS: I'm sorry; could you restate the question?

BY MR. DELANEY:

Q. You previously remarked about interpreting orders in briefs, and I am asking you, in your opinion, would the best source of interpreting an order be the actual order itself?

A. I would think so; yes.

MR. DELANEY: That's all the questions I have for this witness, Your Honor.

JUDGE MATUSCHAK: Consumer Advocate?

MR. RUBIN: We have no questions, Your Honor.

JUDGE MATUSCHAK: Does anyone else?

MR. KLEPPINGER: Yes, Your Honor.

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CROSS-EXAMINATION

BY MR. KLEPPINGER:

Q. Good morning, Dr. Hieronymus. At page 2 of Statement 15B you make reference, at line 15, to "the expected value of a promise that the utility would be made whole for its investment in the distant future."

In your mind, who or what entity makes that promise?

A. In the context of the statement, it is the Commission.

Q. You then continue, at lines 17 through 19, and discuss risks of that promise coming to fruition, I take it, and you list fuel savings and operating costs; is that correct?

A. No. And I apologize if you have that understanding.

Q. You begin, at line 17, the sentence saying, "Such risks," and I thought you were referring back to the prior sentence. If that is not --

A. If you will give me just a moment. Let me read the whole paragraph.

(Pause.)

A. I'm ready now. I'm sorry; I need the question back.

Q. When you make the reference to the risks of future fuel savings and operating costs of a nuclear power

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plant at line 19, are you characterizing those as risks that the promise made by the Commission would not come to fruition?

A. What I am referring to here is the risk of future return in general, which may or may not have to do with the promise made by a commission at a point in time with respect to the future treatment of those risks.

Q. If we were to assume that your treatment of revenue and cost recovery for Limerick 1 is adopted by the Commission, isn't it true that the risk of the materializing of future fuel savings is borne primarily by the ratepayers?

A. Yes, it is.

Q. Would the same answer be true for the operating costs of the nuclear power plant, assuming in your mind that those operating costs were prudently incurred?

A. Yes.

Q. You have recalculated at page 4 of Statement 15B what I believe is an incremental after-tax cost of capital at line 43; is that correct?

A. Yes, it is.

Q. And your number is 9.86 percent?

A. Yes.

Q. Are you familiar with the additional sur-surrebuttal testimony of Mr. Hill at Statement 18H where

he has calculated an incremental after-tax cost of capital of 10.4 percent?

A. I am not familiar with it, no. I think I am aware of it.

MR. KLEPPINGER: Thank you, Dr. Hieronymus.

I have no further questions, Your Honor.

JUDGE MATUSCHAK: Mr. Widoff.

CROSS-EXAMINATION

BY MR. WIDOFF:

Q. Dr. Hieronymus, on page 16 of your testimony --

A. Of which testimony, sir?

Q. Your Statement No. 15B, your sur-surrebuttal, -- beginning on line 11, you discuss --

A. Excuse me; I must have the wrong page. What page?

Q. Page 16.

A. Okay.

Q. Beginning at line 11.

A. Yes.

Q. You discuss certain recent performances of nuclear power units and refer back to Mr. Chernick's analysis in terms of his projections for Limerick; is that correct?

A. Yes.

Q. Referring to your Exhibit WHH-56, you have

certain capacity factors for PWRs; is that correct?

A. Yes.

Q. You have other capacity factors for BWRs; is that correct?

A. Yes.

Q. Is it correct that Limerick is a BWR?

A. Yes.

Q. Is it also correct that nowhere in Mr. Chernick's testimony does he in any way either rely on or suggest the use of data regarding PWRs for purposes of projecting capacity factors for Limerick?

A. I'm not aware that he does; no.

Q. I refer you to page 17. In the first paragraph on page 17 you discuss the energy sales to GPU; is that correct?

A. Loosely, yes. I am speaking specifically about capacity charges.

Q. You are not suggesting, are you, in that discussion, that the large sales to GPU were not profitable to PJM, are you?

A. They were presumably at above incremental cost. Whether they were as profitable as alternatives might have been, I don't know.

Q. Isn't it also a fact that in negotiating the sale to GPU, that both parties to those negotiations, both

GPU and PJM, had to consider what other alternatives GPU might have had with regard to long-term contracts or purchase of capacity from other sources; isn't that correct?

A. I'm not specifically aware of what either party considered. That certainly would be a logical thing to consider; yes.

Q. Referring you to the bottom of page 17, there there is a discussion, I believe, Dr. Hieronymus, regarding your projections as part of your cost/benefit analysis for Limerick where you make certain assumptions regarding payment of penalty rates to PJM had Limerick not been constructed; is that correct?

A. I am discussing the fact that the capacity charge which I use in two of my cases is a penalty rate.

Q. And am I correct that you use that penalty rate for purposes of coming up with your overall view of the cost/benefit of the Limerick project?

A. For some of the cases; yes.

Q. At the bottom of the page you indicate that the penalty rates -- by the way, you do state at the top of that page, lines 1 and 2, that you do not know specifically what PJM would actually do under these circumstances; is that correct?

A. That's correct. We're talking about a hypothetical situation.

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Q. Nevertheless, for purposes of your calculation you make the assumption that PJM will act in a certain manner, namely, it will impose penalty charges; is that also correct?

A. Yes.

Q. At the bottom of page 17 you indicate that the purpose of the penalty rates is to provide an inducement to insure that each utility will build its fair share of the baseload capacity. That is at the very bottom. Is that correct?

A. That is correct.

Q. Is it not correct, therefore, that you are stating that the very purpose of these penalty rates is to avoid a situation where a utility would select, as an option for the future, the non-construction of units, as opposed to relying unduly on PJM for purchase of power?

A. Yes.

MR. WIDOFF: No further questions, Your Honor.

JUDGE MATUSCHAK: Any further cross-examination of this witness?

(No response.)

JUDGE MATUSCHAK: Any redirect?

MR. CALVERT: Your Honor, if we could have just a moment, please.

(Pause.)

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MR. CALVERT: Your Honor, I have just one brief question.

REDIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Hieronymus, when Mr. Delaney was cross-examining you he referenced pages, I believe, 9 through 11 or thereabouts, at least beginning on page 9, of your rebuttal testimony, Statement 15A, under the heading of "Limerick Construction Delay." He asked you questions about whether or not that discussion in your rebuttal testimony related to prudency issues. Do you recall that?

A. Yes.

Q. Does that discussion relate in any way to the issue of a quantification of any imprudent action ultimately found by the Commission?

A. Yes; it relates solely to that. In the question I talk about the effects of decisions, and in the answer in the first two lines I am contrasting what I believe is the macro approach to quantification that I am taking in my testimony, to the micro approach taken by other witnesses.

All I am talking about here is quantification.

MR. CALVERT: That's all I have, Your Honor.

MR. DELANEY: I have no recross, Your Honor.

JUDGE MATUSCHAK: Thank you.

(Witness excused.)

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MR. CALVERT: Your Honor, Dr. Hogan has not previously testified.

Whereupon,

WILLIAM W. HOGAN

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Hogan, will you please state your full name for the record?

A. William W. Hogan.

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

A. I am a professor at the Kennedy School of Government at Harvard University and a principal of the firm of Putnam, Hayes and Bartlett, both in Cambridge, Massachusetts.

Q. Do you have before you a document of some 28 pages entitled "Rebuttal Testimony of William W. Hogan," PECo Statement No. 37?

A. I do.

Q. Do you have before you a document of some 19 pages entitled "Sur-surrebuttal Testimony of William W. Hogan," PECo Statement No. 37A?

A. I do.

Q. Are these documents your rebuttal and sur-surrebuttal testimonies in this case?

A. Yes, they are.

Q. Were they prepared by you or under your direction?

A. Yes.

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

A. No.

Q. If I were to ask you the questions set forth in your rebuttal and sur-surrebuttal testimonies, would your answers be as they appear therein, and would those answers be true and correct at this time?

A. Yes.

Q. As part of your rebuttal and sur-surrebuttal testimonies, did you submit any exhibits and appendices?

A. Yes, I did.

Q. For your rebuttal testimony there is an Appendix 1 and Exhibits WWH-1 through WWH-4. Are those the exhibits and appendices to that testimony?

A. Yes, they are.

Q. And to your sur-surrebuttal testimony you have listed Exhibits WWH-5 through WWH-7. Are those your exhibits for that testimony?

A. Yes, they are.

Q. Were those exhibits and appendix prepared by you or under your direction?

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A. Or collected by me, yes.

MR. CALVERT: Your Honor, at this time I move that the rebuttal and sur-surrebuttal testimonies of Dr. Hogan be admitted as part of the record of this proceeding and identified as PECo Statements Nos. 37 and 37A, and that the exhibits be admitted as part of the record and identified as Exhibits WWH-1 through WWH-7, and Appendix 1.

JUDGE MATUSCHAK: The motion is granted subject to timely objections.

(Whereupon, the documents were marked as PECo Statements Nos. 37 and 37A, Exhibits Nos. WWH-1 through WWH-7 and Appendix 1 for identification, and were received in evidence.)

MR. CALVERT: Dr. Hogan is available for cross-examination.

MR. DELANEY: We have no cross for this witness, Your Honor.

JUDGE MATUSCHAK: Consumer Advocate?

MR. RUBIN: Yes. Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. RUBIN:

Q. Good morning, Dr. Hogan.

A. Good morning.

Q. My name is Scott Rubin. I am with the Consumer Advocate's Office.

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Initially, in your Statement 37A, which is your sur-surrebuttal testimony, there is just one matter I would like to clarify in your Exhibit WWH-6. And there is a page that is labeled at the top "Exhibit 3."

Do you have that?

A. Yes, I do.

Q. The bottom of the page, in my copy at least, has been cut off. I am wondering if the bottom of the page of that exhibit should be the same as what is labeled "Exhibit 6" a few pages later, so that we know what years that is referring to.

A. I believe the answer is yes. The original that I had also had the same bottom cut off, so I am only speculating by looking at the graphs. But if you look at the "most likely" in Exhibit 6 and the "history/forecast" breakpoint and the years, they coincide with those in Exhibit 3. So I believe the answer is yes.

Q. Now, turning back to your rebuttal testimony, Statement 37, could you turn to page 25 in there, please? I am looking at the paragraph that starts at, it looks like, line 21, and you refer to a recent set of runs which you performed with your model.

Could you tell us when those runs were performed?

A. I think the exact date was the 3rd of November, 1985.

Q. Would I be correct that those runs would have been conducted with actual data through the end of 1984?

A. No, that is not correct. The last year for which we have complete data for the world, which includes everything, oil consumption, GDP, prices, exchange rates and so on, is 1983. So we start in 1983 and use that to project forward.

Q. Could you tell us back in November of '85 what price you were projecting for 1986 for the refiners acquisition cost for crude oil?

A. Well, there is no single number because it depends upon the risk profile that you're looking at. The point of the paper of the fact was that there are many uncertainties which will determine that.

Q. Just to clarify it then, I would be referring to -- I believe in your paper you refer to it as your mean price in your most likely case.

A. Right; the mean price in the most likely case would be -- I don't remember the exact number, but for '86 it would be in the low 20s.

Q. Would that be in 1985 dollars?

A. 1984 dollars.

Q. 1984 dollars. And would you recall what you would have been projecting for a 1990 price, again, your mean price in your most likely case?

A. Subject to check, it was something over $30.

Q. Again, that would be in 1984 dollars?

A. That's correct.

Q. Dr. Hogan, would you be able to tell us approximately what the refiners acquisition cost is today for crude oil?

A. Literally today, or this month, I don't know, because the reporting systems don't have the data available yet. But I would guess it is in the range of the $18 to $19 a barrel range, given the mix of crudes that people take and the long-term contracts and spot purchases that they're taking, and so on, and that has been going down the last several months.

Q. Could you turn to page 26 in your rebuttal testimony? I think it is around line 43; you say that you assume that PECo's and Mr. Komanoff's forecast of residual oil prices were consistent with crude oil prices.

Can you tell us what you mean by the term "consistent" there?

A. Their forecasts were expressed in terms of residual prices, and the model we're dealing with here deals with crude oil prices; and I was assuming that the growth rates of the two would be the same. So I took the 1985 crude oil price and assumed that whatever differential there was between residual and crude oil in 1985 implicit in their

analysis would hold true in the future and that we would have the same growth rates.

Q. So you think it is a reasonable assumption that crude oil prices and residual oil prices would basically move in the same direction?

A. Over a long period of time I think that is true. I think that short-run movements, which, as you know, have been dramatically different for a year or two or more -- we've had this in the past and then there is a lot of response to that.

Q. Dr. Hogan, am I correct that your oil price model is described in a paper entitled "Oil Market Risk Analysis" which was dated December 1985?

A. That's correct.

Q. Do you have a copy of that paper with you today?

A. I do.

Q. I would like to refer you to a couple of places in there, if I could.

A. I don't have it with me at the table. Could I --

Q. Certainly.

(Pause.)

Q. In that paper, could you turn to, I believe the page is I-8?

Do you have that, sir?

A. Yes.

Q. Down at the bottom of the page, the very last paragraph on the page, I wonder if you could read that paragraph, which continues over onto the next page, could you read that into the record for us? Then I would like to ask you a question or two about it.

A. The full paragraph to the end on page I-9 is what you're referring to?

Q. Yes; please.

A. This is a paragraph which is under the heading "Near-term Consensus Suggests Forecasting Myopia," and then the paragraph begins: "There is a strong consensus that in the 'near term' the oil market will be soft. Figure 1-1 shows that as of October 1984, over two-thirds of the forecasts surveyed by the International Energy Workshop anticipated 1990 prices at or below the 1980 level. Since then most forecasts have been revised downward. Prices are not expected to rise until the 1990s.

"Forecasts corresponding to this notion have been published by the Energy Information Administration and several oil companies. In a recent issue of "The Energy Journal" four oil market analysts commented separately on the future of the world oil market. Their substantial agreement with the near-term consensus was more striking than their differences, which mostly centered around how long the soft market would last, how low prices would go

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before they begin to rise, and how much we should worry about it."

Q. Thank you, Dr. Hogan.

Do you still believe today, some three months or so after this paper was published, that this strong consensus among forecasters still exists?

A. No.

Q. Dr. Hogan, could you turn to, I believe it would be, page V-25 in this paper?

A. Yes.

Q. Again, it is the last paragraph on the page, which continues over onto page V-26. Again, could you read that paragraph into the record for us?

A. This is a paragraph which is in a section, just to set the context, "HOMS Two-product Version Most Likely Case Behavior." The paragraph begins: "While the HOMS most likely case forecast may be concrete and interesting, one should not lose sight of the overriding uncertainty. For example, OPEC is perfectly free to alter its target utilization level or, equivalently, its capacity in either direction or the price reaction function may change completely. There is always the possibility of economic recessions or oil market disruption.

"For these reasons, the HOMS most likely case results are primarily used as an exercise in understanding

the model and the oil market it is meant to characterize. In all cases, oil market models are more appropriate for thought experiments and for exploring the range of oil price uncertainty than for reliably projecting the most likely trend. Careful policy analysis requires that the model and the uncertainty about the oil market be integrated, and that is the purpose of the risk analysis in the next chapter."

Q. Dr. Hogan, do you believe that that is an accurate, I will call it, caveat on the use of the results of your and many other oil price models?

A. Yes.

Q. Dr. Hogan, a moment ago you said you believe that the consensus among oil price forecasters is different today than it was, say, three or four months ago; is that right?

A. I didn't say that. I think you asked me, did I think the same consensus held; and my answer is no.

You can check the question, but that was my recollection of the thrust of what you were asking.

Q. How do you believe that that consensus may have changed over the last three or four months?

A. Well, the consensus was that prices would be soft, meaning probably constant in real terms or declining slightly against 1985 prices that we saw, and that it would

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be into the 1990s before you would see an upturn relative to that price. The consensus has evaporated given what has happened in the last three months, and there are some people who say that the prices will go even lower than the spot prices are today and stay there for many years; there are some people who say that the sharp drop in prices is going to stimulate an even sharper rebound and the thing is going to go much higher than it was in the not very distant future. There are other people who say that it will all be over tomorrow because the Saudis will agree and they will consolidate back and we will be back to the low 20s before this year is out; and so on.

So there is no consensus as near as I can tell.

MR. RUBIN: Thank you, Dr. Hogan.

That's all we have, Your Honor. Thank you.

JUDGE MATUSCHAK: Any further cross-examination of this witness?

(No response.)

JUDGE MATUSCHAK: Any redirect?

MR. CALVERT: Your Honor, if I could have a moment, please.

(Pause.)

MR. RUBIN: Your Honor, if I may, I have one or two more questions for Dr. Hogan.

JUDGE MATUSCHAK: Very well.

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BY MR. RUBIN:

Q. Dr. Hogan, I believe you stated a few moments ago that your best estimate for the current refiners acquisition costs for crude was around $18 or $19 a barrel; is that right?

A. That's right.

Q. Does that include spot purchases as well as contract purchases?

A. It is my effort to give you my almost gut feeling as to what is happening to the mixture of everything, spot purchases, contracts, net-back arrangements, everything, and as it will be reported. We don't know in fact what those numbers are today.

We do know that the spot market has traditionally been highly volatile but thin, and so a small part of the purchases. So there is a significant lag in the costs coming through to the average and to refiners across the board.

Q. Would you know approximately what the spot price might be for crude, again, as recent as you may know it?

A. $13, $12, something like that.

Q. I believe you also indicated that your most recent forecast for a 1986 price was done back in November. Is that price reported in the "Oil Market Risk Analysis" paper you were referring to before?

A. Yes.

Q. There are a number of tables in there. I wonder if you could point me to the table which would give, again, your most likely case mean price and which would show your 1986 and 1990 projections.

A. I believe that is in Appendix 5 on page V-27.

Q. And we would be looking --

A. U.S. crude price.

Q. That is the first column on that page?

A. After the year label, yes.

Q. And that shows a 1986 price of $22.93; is that right?

A. That's right.

Q. And that is in 1984 dollars I believe you said?

A. Yes.

Q. And it shows a 1990 price of $40.29; is that true?

A. That's correct.

Q. Again, that is still in 1984 dollars per barrel; is that right?

A. That's correct.

MR. RUBIN: Thank you, Dr. Hogan.

Thank you, Mr. Calvert.

Thank you, Your Honor.

MR. CALVERT: Just a couple of questions, Your Honor,

if I might.

REDIRECT EXAMINATION

BY MR. CALVERT:

Q. Dr. Hogan, Mr. Rubin was questioning you about the consensus of forecasters, and you had indicated that the consensus in the last several months perhaps has changed or come apart somewhat.

Can you tell us what you believe will happen to the oil prices in the future?

A. My best guess, of course, is subject to the caveat of uncertainty, and there are many things that could happen. But the key is the behavior of Saudi Arabia and the other members of the producing cartel.

If I might, we actually addressed this issue in the paper, and since we extracted a couple of other parts from that document, if I could read another paragraph into the record which deals with the uncertainty and, in fact, deals with one of the criticisms of an early version of this model, and that is that OPEC might collapse and we might see prices fall dramatically.

The paragraph begins on page V-21. "It is true that the HOMS model, as it has been applied so far, assumes that OPEC maintains its cohesion. Operationally, this assumption means that the historically based OPEC price response function remains applicable for the future

determination of oil prices.

"OPEC collapse, on the other hand, is equivalent to a breaking down of the OPEC price capacity utilization relationship. In effect, an OPEC collapse would be equivalent to falling off the oil price response curve with observed prices well below what the curve would suggest for a given OPEC capacity utilization.

"Contrary to popular reports, however, recent pricing behavior" -- and this was written in the end of 1985 -- "indicates that if pricing is off the price response curve at all, it is above it rather than below it.

"As mentioned earlier in the report, OPEC has managed to keep price reductions smaller than one would expect from the historically based price response curves. Thus, while it is possible that OPEC could suddenly collapse, and it may be useful to explore alternative characterizations of future behavior, the recent press reports of OPEC's weakness appear to be much exaggerated."

Q. Can you explain what all that means?

A. No one has doubted ever that the Saudis could make the price of oil as low as they wanted to for as long as they wanted to by increasing their production. What has been amazing over the last ten years is their ability, and others, to constrain production and keep prices high. As a matter of fact, they have kept prices higher than this

model predicted for the years '84 and '85. It has been predicting lower prices consistently.

The question that no one knows the answer to at the moment is how long they will maintain their current policy of expanded production to discipline everyone else. It is costing them a great deal of money, and it is costing their allies even more.

Given the record of the past where they have been able to constrain production remarkably, far better than anyone ever predicted early on, I think that the most likely case is that they will reassert control over that market and raise prices. I don't think that they will raise them to $30 a barrel in 1986, but they could certainly go back up into the $20 range.

In any event, the lower prices are going to stimulate a response, higher demand, lower production elsewhere -- and we see it all around us -- and that creates the seeds for future increases that I think are the essence of the story in this model.

There is a great deal of uncertainty around all of that, and that is one of the things we tried to address.

Q. Is your HOMS model designed to deal with the uncertainties that you indicated are being expressed by the various forecasters?

A. Yes. That was exactly the point of it, was to

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try to, a, be careful about this slow adjustment process, that there are responses that are going to come because of the price drops we saw through the end of last year, and that those have not been seen yet, but they are going to have a big impact in the future; and, secondly, that there are many events that could occur in the economy, politically and so forth that would affect prices, and we tried to incorporate those to display the range of uncertainty in how oil prices might change over time.

Q. How would you characterize then your model's ability to make these projections in view of all of these uncertainties?

A. We have done the best job that I know how to do in trying to use the historical information to be explicit about the uncertainties and to show the danger of trying to plan against a single forecast, and most of the analysis suggests that prices could rise sooner rather than later because of the delayed effect of events that have already taken place.

Q. If you will turn to page V-27, which is the table that Mr. Rubin had you read from.

A. Yes.

Q. I believe you gave there -- I think you read the numbers for 1986, was it, and 1990?

A. That's correct.

Q. Would you read for us what the projections were for 1991, '92, '93 and '94, please?

A. Yes. The number for '91 is $38.44. For '92 it is $36.48. For '93 it is $35.91.

Do you want more?

Q. Yes; the next two.

A. For '94 it is $37.66; and '95 it is $41.30.

MR. CALVERT: Thank you.

That's all I have, Your Honor.

JUDGE MATUSCHAK: Anything further of this witness?

MR. RUBIN: Could we have just a minute, please?

(Pause.)

MR. RUBIN: We have nothing further. Thank you, Your Honor.

JUDGE MATUSCHAK: Very well.

(Witness excused.)

MR. STILMANN: Your Honor, Dr. Clemente has not been previously sworn.

Whereupon,

FRANK CLEMENTE

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. STILLMAN:

Q. Dr. Clemente, could you state your name for the record, please?

A. My name is Frank Clemente.

Q. And your business position and business address?

A. I am a Professor of Sociology and Chairman of the Department of Sociology at Pennsylvania State University. My address is 322 Arbor Way, State College, Pennsylvania, 16803.

Q. Do you have before you a document of some 11 page entitled, "Rebuttal Testimony of Frank Clemente," marked PECo Statement No. 36; a document of some 10 pages, also entitled, "Rebuttal Testimony of Frank Clemente" and marked PECo Statement No. 36A; and a document of some nine pages entitled, "Sur-surrebuttal Testimony of Frank Clemente" and marked PECo Statement No. 36B?

A. Yes, I do.

Q. Are these documents your rebuttal testimony, your further rebuttal testimony and your sur-surrebuttal testimo

in this proceeding?

A. Yes.

Q. Were these documents prepared by you or under your direction?

A. Yes.

Q. Are there any corrections that you wish to make to your written testimony?

A. There are several corrections in Statement No. 36 that I would like to make on the tables. Specifically in the Exhibit FC-1, page 2 of 16, the number of the table should be Table No. 1 rather than 3.1.

And in the first set of columns, the N should read down, 0, 3, 5, 1, 9; and the percentages should be 0.0, 33.3, 55.6, and 11.1.

On page 9 of 16 is another error in terms of numbers. In the last set of columns, the N down should read, 2, 5, 11, 6, 24. And the percentages should be 8.3, 20.8, 45.8, 25.0, and 99.9.

And on page 15 of 16, the subtitle of that table -- that's Table 14 -- should be, "Rank of Metro Areas by Rand McNally Rating of Economic Promise."

And on the final table, Table 15 of that exhibit, the last set of columns down, the readings should be 7, 3, 8, 3, 1 and 22; the percentages should be 31.8, 13.6, 36.4, 13.6, 4.5, and 99.9.

MR. SELKOWITZ: Could you please read the N number corrections, please?

THE WITNESS: 7, 3, 8, 3, 1 and 22.

I have one other correction. That is in 36B. Page 9, on line 15, the second word in should be "learned" rather than "earned."

Those are all of the corrections that I have.

BY MR. STILLMAN:

Q. Dr. Clemente, if I were to ask you the questions set forth in your direct testimony, would your answers be as they appear therein subject to the corrections you have listed, and would those answers be true and correct at this time?

A. Yes.

Q. As part of your direct testimony, did you submit any exhibits?

A. Yes, and these are attached. Yes, I did.

Q. Are they exhibits labeled FC-1, attached to PECo Statement No. 36; FC-2, attached to PECo Statement No. 36A; and FC-3, attached to PECo Statement No. 36B?

A. Yes.

Q. Were these exhibits prepared by you or under your direction?

A. Yes.

MR. STILLMAN: Your Honor, I move that the rebuttal

testimony, the further rebuttal testimony and the sur-surrebuttal testimony of Frank Clemente as corrected be admitted as part of the record of this proceeding, and identified as PECo Statements Nos. 36, 36A and 36B respectively, and that the exhibits be admitted as part of the record and identified as Exhibits FC-1, FC-2 and FC-3.

JUDGE MATUSCHAK: Subject to timely exceptions or objections, motion granted.

(Whereupon, the documents were marked PECo Statements Nos. 36, 36A and 36B and PECo Exhibits Nos. FC-1, FC-2 and FC-3 for identification and received in evidence.)

MR. STILLMAN: Your Honor, Dr. Clemente is available for cross-examination.

JUDGE MATUSCHAK: Staff?

MR. DELANEY: Your Honor, I will defer to Mr. Rainey initially.

JUDGE MATUSCHAK: Very well.

MR. RAINEY: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. RAINEY:

Q. Good morning, Mr. Clemente.

A. Good morning.

Q. My name is Charles Rainey, and I am appearing on behalf of the City of Philadelphia. Mr. Clemente, are you

an economist?

A. No.

Q. Do you have any degrees in economics?

A. No.

Q. Are you an expert in computer modeling?

A. No.

Q. Do you have you ever taught any courses in computer modeling?

A. No.

Q. Are you an expert in the area of econometrics?

A. No.

Q. Are you a statistician?

A. No.

Q. Mr. Clemente, have you recently presented testimony in the matter of New Orleans Public Service, Incorporated's request for an increase in rates at Docket No. CD-85-1?

A. Yes.

Q. When was that testimony prepared?

A. It was prepared over the last several weeks.

Q. When was the testimony presented?

A. The testimony was presented I believe February 26.

Q. Did you testify on behalf of a utility company in that case?

A. Yes.

Q. What was the subject matter of that testimony?

A. The subject matter dealt with my research on how metropolitan areas with varying electric utility rate increases have changed over time.

Q. So, the testimony in that case was essentially the same as the testimony you are presenting in this case, is that correct?

A. Similar.

Q. And isn't it also true that the study that you presented in that particular case, specifically with regard to your tables, are essentially the same as you presented in this case as well?

A. Some of the tables were the same.

Q. Particularly, your Table 2 that you presented in this particular case is the same table that you presented in those cases, is that correct?

A. Table 2, the data in FC-1, changing manufacturing?

Q. Yes, in which you presented --

A. Yes, that table is the same.

Q. It is the same, okay.

Mr. Clemente, is there presently a pending motion to strike your testimony in the New Orleans case?

A. I believe so.

Q. What is the basis of that motion to strike?

A. I haven't read it. I don't know.

MR. STILLMAN: Your Honor, I am going to object to this on the grounds of relevancy.

MR. RAINEY: Your Honor, if I might, I believe this is very relevant to the extent that Dr. Clemente has presented the same studies in the New Orleans case as well as in other cases which I am going to mention.

He has presented those studies in rebuttal to the same type of study which Dr. Schinnar has made in this particular case.

The questions do go to his qualifications to present such rebuttal testimony.

JUDGE MATUSCHAK: What does the prodeeding in that other case have to do with the proceeding here?

MR. RAINEY: The proceeding in the other case, Your Honor --

JUDGE MATUSCHAK: You have the same privilege to seek to strike his testimony here as they did there. Why don't you do it here if you want to do it, not depend on them to do it down there for you.

MR. RAINEY: Very well, Your Honor. We will do so.

BY MR. RAINEY:

Q. With respect to the New Orleans case which was discussed, what was the purpose of your testimony in that case, or what was your assignment as given to you by your client in that case?

MR. STILLMAN: Your Honor, I would object.

JUDGE MATUSCHAK: That is sustained.

MR. RAINEY: Very well.

BY MR. RAINEY:

Q. Mr. Clemente, did you testify in the recent Kansas Wolf Creek Nuclear Plant case?

MR. STILLMAN: Objection, Your Honor.

JUDGE MATUSCHAK: What is the basis of your objection?

MR. STILLMAN: Your Honor, on the grounds of relevancy as well.

JUDGE MATUSCHAK: We will overrule the objection. He hasn't asked anything yet. The objection is overruled.

MR. RAINEY: Thank you, Your Honor.

BY MR. RAINEY:

Q. The Kansas case I am referring to is at Docket No. 84-KG&E-197-R142098-U.

A. I don't remember all those numbers. The case was in 1985, and I did testify.

Q. And isn't it true that the testimony that you presented in that case was also essentially the same as you presented in this case?

A. No, the same general area of research but not necessarily the same information. I didn't present, for example, in that case anything relating to the Northeast specifically.

Q. Did you present the same Table 2 as you presented in this case in that case?

A. Basically.

Q. Basically?

A. Yes. I believe there might have been --

Q. I would like to show you a copy of your testimony in the Kansas case.

(Document handed to the witness.)

Q. Is that a true copy of your testimony as presente in the Kansas case?

A. Well, I don't know. I haven't looked at every page. I am assuming it is.

Q. Please take an opportunity and look at it and see if it is.

A. I would assume that it is.

Q. Would you assume that it is?

A. Yes.

Q. Would you look at Table 3.2 in that testimony?

A. Yes.

Q. Is that the same table as you presented in this case as Table 2?

A. Yes, basically, it is.

Q. Is it?

A. Yes, I think.

Q. Isn't it true, Mr. Clemente -- let me ask you

this: did you also testify on behalf of the utility in that case?

A. Yes.

Q. Isn't it true that your testimony was withdrawn in that case?

A. No, that is not true.

Q. Mr. Clemente, have you reviewed the order in that case?

A. No, not completely.

Q. Not completely; you have reviewed it, but not completely?

A. I have seen it.

Q. Did the Commission in that case at all reference you or your study?

A. Not to my knowledge.

Q. I would like to refer you to page 3 of your rebuttal testimony in this case. Do you have that?

A. Yes.

Q. Specifically, lines 25 throuth 29, isn't it true that there you state that the Philadelphia Electric Company asked you to examine the quality of socioeconomic materials and conclusions submitted by Dr. Schinnar?

A. That's correct.

Q. Do you believe that you performed that task in this case?

A. Yes.

Q. Would a review of residential energy consumption behavior be considered a part of a socioeconomic analysis?

A. Could be in certain circumstances, yes, it could.

Q. Would it be applicable in this case?

A. Could be, possibly, yes.

Q. Did you review residential energy consumption behavior in this case?

A. No.

Q. As a part of your review of the socioeconomic materials submitted by Dr. Schinnar, did you review his technical report?

A. I examined it, but as I stated, I am not an expert in that area.

Q. What materials did you review as a part of your -- what socioeconomic materials of Dr. Schinnar's did you review as a part of your task in this case?

A. I reviewed his direct testimony.

Q. Did you review his backup papers at all?

A. I looked at them. I did not review them from a technical viewpoint.

Q. I would like to refer your attention to his technical report, Dr. Clemente, specifically Section 5 on residential energy consumption behavior.

MR. STILLMAN: Could we just have a minute, Chuck?

MR. RAINEY: Sure.

THE WITNESS: Is this dated January of 1986 by Dr. Schinnar, et al.?

BY MR. RAINEY:

Q. No, this is PECo Exhibit No. 22.

A. Is this the same?

Q. Yes.

A. I am sorry, I forgot where you told me to look.

Q. Section 5 of that report on residential energy consumption, page 2.

A. Page 2, Section 5, all right.

Q. Do you have that?

A. Yes.

Q. Do you see the equation at 5.1?

A. I do.

Q. Have you reviewed this equation?

A. No.

Q. Have you reviewed the section on residential energy consumption behavior?

A. Not thoroughly, no.

Q. Would you take the time now to look at the equation at 5.1?

A. (Witness perusing document.)

Q. Have you had an opportunity to review it?

A. Yes.

Q. From a socioeconomic perspective, Dr. Clemente, is this a well-specified residential energy demand equation?

A. I can't say. This is not within my area of expertise.

Q. I would like to refer you to Table 5.1 at the back of Dr. Schinnar's technical report. Do you have that, Dr. Clemente?

A. Yes, I do.

Q. And that is entitled, "Demand Elasticities of Residential Ratepayers with Respect to Changes in Electric Rates," is that correct?

A. Yes.

Q. Have you reviewed this table?

A. No.

Q. Would you take an opportunity now to review this table?

A. Yes.

Q. Are the demand elasticities of residential electricity consumers shown there reasonable?

A. As I say, this is not in my area of expertise, so I can't say.

Q. Again, Dr. Clemente, referring back to Section 5 of the technical report, the same equation on page 5.1 as we spoke about earlier. This equation contains many variables, is that correct?

A. Yes, it contains a number of variables.

Q. And some of the variables are things like income by source including household earnings, public assistance and unemployment benefits, is that correct?

A. Yes, it does.

Q. And also it has variables such as age, race, gender of head of household, number of children, level of education, is that correct?

A. Yes, that is correct.

Q. Are these matters that would be considered a part of a sociological study?

A. Generally, yes.

Q. However, you do not have the expertise to review or to make a statement with respect to the completeness of the specifications which are shown in this equation, is that correct?

A. I believe I stated that the technical dimensions of the equation were not in my area of expertise.

Q. But sociology is, is that correct?

A. That is correct.

Q. And I had previously asked you whether or not the equation was well specified from a socioeconomic basis.

A. And I said that in terms of the nature of the equation, that that is not in my area of expertise.

Q. You are also saying, with respect to the

sociological variables listed there, you cannot make a comment with respect to whether or not those would be considered appropriate in view of demand elasticities for residential households in relation to electric price increases?

A. Can you read that back? I am not sure I understand it.

Q. I will restate the question.

With respect to the sociological variables that are shown here which you have agreed are there, are you able to say whether or not those variables are appropriate ones to consider in looking at the demand elasticities of residential households?

A. I would say generally they would be the appropriate variables.

Q. Dr. Clemente, what is meant by "cross-elasticities"?

A. That is not within my area of expertise.

Q. Dr. Clemente, as part of your sociological study, did you question any residentials, businesses, manufacturers or government agencies with respect to how PECo's rate increase would affect their budgets and operations?

A. No.

Q. Dr. Clemente, in your rebuttal testimony in this case and in testimony provided in other cases, isn't it true

that you state that, "Certain electric rate increases may have inhibited economic growth and even led to some loss of potential job growth"?

A. I do say that in PECo Statement No. 36, I believe.

Q. Haven't you also made that statement in the New Orleans case?

A. Yes, I did.

Q. In which cases have you documented electric rate increases inhibiting economic growth and resulting in job growth loss?

A. None.

Q. However, you make that statement. What is the reason for making that statement?

A. Generally, I felt that in order to maintain conservatism, it would be reasonable to state that in certain circumstances, rate increases may have inhibited economic growth to some extent or led to potential new job loss, and basically that was just a cautionary statement in which I wanted to couch my general findings.

Q. Since you have not observed that and you have not documented that, what is your cautionary statement couched in?

A. It is couched in the context of always remembering that we are not measuring precisely every social and economic change that may occur.

Some social and economic changes may be occurring that are not being measured. I think that is a general cautionary statement that every social scientist should keep in mind.

Q. What socioeconomic concerns have you not measured?

A. In terms of this particular statement, and this is what we are discussing, I don't have a crystal ball, and I don't know if anyone else does, to know exactly what may have happened in areas where varying levels of rate increases have occurred, either the highest levels or lowest levels.

Q. What economic conditions have you reviewed in your observations?

A. These are presented basically in my tables, and deal with such issues as manufacturing, manufacture employment, retail sales per household and some general income data.

Q. And again, what have you excluded that would cause you to make the statement previously cited?

A. There are many variables that one might include.

Q. Would you name some of those, please?

A. Well, we could include,let's say property values might be a variable one might want to examine. One might want to refine the measures of employment and look at different types of employment, if the data were available, different types of manufacturing.

Certainly, the whole process of trying to measure

social and economic change at a relatively macro level for metropolitan areas could always use additional refinement. More variables could be looked at in almost every case.

Q. So, would some of the variables that we recently talked about with respect to Dr. Schinnar's technical report such as residential energy consumption behavior which you have excluded be something that would factor in to the impact on an economy of electric rate increases?

A. Are you asking me -- maybe I can clarify this in my own mind -- are you asking me -- in his equation 5.1, for example, Dr. Schinnar discusses such variables as age, race, gender, number of children and so forth.

Are these the variables that you are suggesting?

Q. Right.

A. Yes, these too would be variables that one might want to refine the analysis to.

Q. Which you have not looked at, correct?

A. No.

Q. That's yes, that's correct?

A. No, I have not looked at these.

Q. Dr. Clemente, do you consider Dr. Lewis Perl, a Philadelphia Electric witness in this case, an expert in the area of economic forecasting?

A. I don't know enough about Dr. Perl to judge his qualifications.

Q. Are you familiar with the testimony of Dr. Lewis Perl in the Lukens Steel case before this Commission at Docket No. P-810310?

A. No.

Q. I would like to present you a copy of the testimony in this case which was provided as a data request at RCW-6-UCC/UP, 12-13-85.

(Document handed to the witness.)

MR. STILLMAN: Excuse me. Do you have an extra copy of that?

MR. RAINEY: No, I do not.

MR. STILLMAN: Could I approach the witness and review it?

MR. RAINEY: Sure.

BY MR. RAINEY:

Q. I would ask you to turn to page 19 of that document, lines 4 through 7.

A. Okay.

Q. There it states that a study done by the National Economic Research Associates, Incorporated suggests that for the manufacturing sector, each 10 percent increase in electric price is associated with a 1.4 percent decline in manufacturing output, is that correct?

A. That's what it states.

Q. Then further down at lines 10 through 11, he

states that, "This occurs because manufacturing firms try to locate in areas where electric price is lowest." Is that what he states as well?

A. Yes.

Q. Do you agree with those statements?

MR. STILLMAN: Your Honor, before the witness answers that question, I would like to note that it is a rather long paragraph and in fact begins on the preceding page, and I would like to allow the witness an opportunity to read the entire context in which those statements were made.

JUDGE MATUSCHAK: Very well.

(Witness perusing document.)

THE WITNESS: I have read it.

BY MR. RAINEY:

Q. Do you agree with those statements which I have previously cited?

A. I am not an economist, but I don't agree with the statements. From an empirical standpoint, for example, it says that, "A study done by NERA suggests that for the manufacturing sector, each 10 percent increase in electric price is associated with a 1.4 percent decline in manufacturing output."

By my understanding of that, if that were true in the real world, a place like San Diego which had an 800 percent

increase in electric rates over a 10 year period would have something like 120 or 110 percent decline in manufacturing output.

So, I don't think that meshes with what we know has happened in the real world.

Q. So, in other words, you don't agree with Dr. Perl's statement in that case?

A. No.

Q. Dr. Clemente, are you familiar with the Philadelphia Electric Company's request for an Employment and Economic Recovery Rider at PUC Docket No. R-832357?

A. No.

MR. STILLMAN: Do you have another copy of that as well?

MR. RAINEY: You will have to stand over his shoulder, again.

(Document handed to the witness.)

BY MR. RAINEY:

Q. I'd like to show you a copy of a document in that matter entitled, "Comments of the Philadelphia Electric Company Supporting the Implementation of its Proposed Employment and Economic Recovery Rider."

Are you familiar with that document?

A. No.

Q. I would specifically like to refer your attention

to the appendix of that document, page A-5. Do you have that?

A. Yes.

Q. Would you read into the record the first Q and A in the left hand column?

A. "Q: Why did PECo file an Employment and Economic Recovery Rider? A: The purpose of the rider is to encourage existing manufacturers to remain in the area and expand here, and new manufacturers to move here by reducing their electric costs, thereby increasing local employment and the economic well-being of the area."

Q. Do you believe that lower electricity costs will accomplish those things stated?

A. Well, of course, lower electricity costs is a pretty broad range. It could be a large range.

Q. Do you generally agree with the statement, the Q and the answer that you just read into the record?

A. I believe there are many other costs that make a difference in the location, on expansion decisions of manufacturers beyond electric costs.

Q. So that, you generally disagree with that answer just stated?

A. That's one of those questions that doesn't have a yes or no answer.

Q. You don't feel comfortable accepting that answer

as it is stated?

A. I think it makes certain assumptions, and the assumptions may or may not be reasonable depending upon the manufacturers that are being discussed.

Q. So, the blanket statement as made, you disagree with?

A. I'd say I would agree with the concept that certain electric costs, reduced electric costs may encourage some types of manufacturing expansion, but generally I do not know if this statement -- I do not believe this statement has empirical support in what has actually happened in the real world.

Q. Is that statement true with regard to Philadelphia metropolitan area, specifically those customers served, manufacturing customers served by Philadelphia Electric Company?

A. I don't know.

Q. Have you specifically looked at the Philadelphia metropolitan area in this case, Dr. Clemente?

A. Not specifically, but I have included it as part of the analysis of the Northeast SMSAs.

Q. But you are not prepared to say in your study of the Philadelphia metropolitan area that that statement with regard to manufacturers and a lower cost in electricity price is true?

A. Could you restate that?

Q. Yes. With respect to the statement that you recently read into the record from Q and A, are you saying that in your review in this case of the Philadelphia metropolitan area, that you are not able to say that a decrease or low electricity prices would maintain growth of manufacturers, would encourage new manufacturers to the area, would encourage expansion of manufacturers?

A. No, I am not prepared to say that.

Q. Why are you not prepared to say that, Dr. Clemente?

A. Because I think that statement would require a very significant study of locational decisions and expansion decisions of various types of businesses.

Q. A study which you have not performed in this case, is that correct?

A. As far as I know, it hasn't been done by anyone.

Q. Dr. Clemente, do you consider Dr. William Hogan, also a witness for Philadelphia Electric Company in this case, an expert in the area of economic forecasting?

A. I am not expert enough in the area of economic forecasting to judge experts, but a review of his credentials certainly would indicate that he has been a significant scholar in the field.

Q. Are you familiar with his rebuttal testimony in this case, PECo Statement No. 37?

A. Yes, I am.

Q. Do you have a copy of that with you?

A. I do.

Q. I would like to refer your attention to page 18 of his testimony.

A. Yes.

Q. I would like to specifically refer your attention to lines 31 through 43 on that page. Would you agree that there he describes the effect of the proposed rate increase of Philadelphia Electric in this case as the combination of higher production costs, reduced wages, loss of output, loss of job growth, and the blow of unemployment?

A. Are those words that you read supposed to be in --

Q. Yes, if you will look from lines 31 --

MR. STILLMAN: Your Honor, I object that it is not a direct quote from Dr. Hogan's testimony.

MR. RAINEY: Fine. We can take a direct quote from the testimony.

BY MR. RAINEY:

Q. Looking again at line 31, it there states, is it correct, that, "In the real economy, something in between no job loss and the upper limit of 2,000, 3,000 fewer new jobs created would be plausible."

It goes on to state that, "Part of the impact of higher costs in one area would be reduced wages in other

areas and part would be in lost output and job growth. The time path of rate changes would be important, as well as the dynamics of income and savings. Government transfer programs would soften the blow of unemployment," and so on.

Do you agree with those statements that Dr. Hogan has made, which were just read?

A. This is not in my area. I can't say whether this is a reasonable statement. I think that basically it is reasonable in the context that if there are losses of jobs, they would be in the general range cited by Dr. Hogan. These are projections, as I understand it.

Q. Your study that you have presented in this particular case, you have looked at unemployment, isn't that correct?

A. I looked at unemployment as a variable changing over time, that is correct.

Q. Would you agree that there would be, quote, a blow of unemployment as a result of PECo's electric price increase in this case?

MR. STILLMAN: Your Honor, I object, first, that that wasn't a quote from Dr. Hogan; and secondly, that it would be a mischaracterization of Dr. Hogan's testimony on the point that he is making.

JUDGE MATUSCHAK: I overrule the objection. This is cross-examination.

THE WITNESS: Could you state that again?

BY MR. RAINEY:

Q. Yes. Do you believe that there would be a blow of unemployment as a result of PECo's electric price increase in this case?

A. I don't know. There could be a certain amount of unemployment, but that is not within the range of my study, projecting as to what would happen.

Q. I would like to refer your attention now to your Table 2 of your sur-surrebuttal in this case.

A. Yes.

Q. Is my understanding correct that there you show changes in employment in the manufacturing sector of various metropolitan areas relative to low, mid-range and high electric rate increases?

A. That is correct.

Q. And this table was taken from a NARUC study, is that correct?

A. The data on the utilities was taken from a NARUC study, yes.

Q. You have employed 39 electric utilities, is that correct?

A. In this table, yes.

Q. And in the NARUC study, 112 electric utilities were employed, is that correct?

A. That is correct.

Q. So that, you have reduced the number of electric utilities employed in the NARUC study by about 73, is that correct?

A. In this particular table, I studied 13 utilities. Throughout all the tables, I study approximately 70 to 80 different utilities; 13 utilities in each sector, I should say, in each level of actual increase.

Q. So, in looking at 39 electric utilities out of 112, you have in fact manipulated the NARUC study, is that correct?

A. No, that is not correct. What I tried to do in this particular table, and in fact in virtually all the tables, was to focus on the general question of how areas with varying levels of rate increases have changed over time

That seems to be a reasonable question to me.

Q. But by not looking at all of the 112, and only choosing 39, you have in fact manipulated the study, isn't that correct?

A. No, I don't believe I have manipulated it. What I have done is to choose the group with the lowest rate increases, a sort of control group with middle rate increases, and compare them to a group with the largest rate increases, in other words to get a spectrum of different types of rate increases for comparative and

descriptive purposes only.

Q. But isn't it true that you could have looked at all 112 electric utilities used in the NARUC study?

A. That would have involved such heroic data collections beyond resources that are available. That would include an analysis, for example, of perhaps 350 metropolitan areas in the United States.

Q. But wouldn't that have given you a greater sampling and possibly a more statistically feasible sampling than the 39 that you have looked at in this case?

A. I don't think it would have added substantively much to what I was trying to do, which was merely describe what happened at different levels of rate increases.

That is really what I was trying to do. I am not presenting this as a causal model in any way, with independent and dependent variables. This is just sort of, essentially, a picture of what has happened, a historical kind of view of recent events.

Q. And how many metropolitan areas did you look at?

A. Overall, I think in this particular set of tables --

Q. Table 2, I am referring to.

A. In Table 2, we looked at -- I believe the N there is 43 different metropolitan areas.

Q. And was Philadelphia metropolitan area one of

those?

A. No, not in this table.

Q. Why did you not include the Philadelphia metropolitan area?

A. Because Philadelphia Electric did not fall into one of these three different categories.

Q. It did not fall into any of these categories?

A. Philadelphia Electric was not, as I remember the data, was not in the least actual increase in industrial rates, did not fall into the middle group, and did not fall into the greatest increase group.

Q. Where would it have fallen?

A. I believe it was somewhere between -- I'd have to check this -- I believe it was somewhere between the middle group and the least actual group.

Q. Was there a number of other utilities in that range as well -- I'm sorry, metropolitan areas?

A. Well, utilities is actually right. I am thinking between -- in that range, with Philadelphia Electric, there must have been about 37 or so utilities in that particular category.

Q. Could you have, in your study, included that special category in coming up with certain observations and percentages as you have done in your Table 2?

A. I could have. I could have particularly focused

on Philadelphia. I felt, in terms of the research I am doing, I am trying to get a broad perspective and not a case study kind of perspective.

Q. Looking at the far right hand column of your Table 2, and under N, the first number we see is 6. Does that represent six metropolitan areas?

A. Yes.

Q. Do you show there growth in employment despite a large rate increase?

A. Wait a minute. I'm a little confused. Which column are you looking at again?

A. I am looking at the far right hand column under--

Q. I was looking under the far left, because I thought you said six. I'm sorry.

Q. I did say six under N there.

A. The total N there is 24.

Q. The total N is 24. I am looking at the first number under N, for number of observations?

A. Yes.

Q. And what does that six represent in terms of the .01 or more? Is that a growth in employment?

A. That six represents that six of the 24 metropolitan areas had an actual increase in manufacturing as a percentage of employment over the study period.

Q. And what were the six metropolitan areas that you

show there?

A. I don't have those broken down by individual metropolitan areas.

Q. Would you agree that the metropolitan areas that you looked at or are shown represented by the number six are San Diego, California; Oxnard, California; Santa Barbara, California; El Paso, Texas; San Jose, California, and Santa Rosa, California?

A. Subject to check, yes, I would agree with that.

Q. Are the economies of these six metropolitan areas comparable to Philadelphia in terms of wages, labor costs, number of impoverished persons, taxes, price of goods and services, price of other energy sources, et cetera?

A. I haven't done any specific analysis comparing any of these metropolitan areas with Philadelphia.

Q. Are you saying as a result of your study that the Philadelphia metropolitan area will experience the same job growth in the manufacturing sector if PECo was granted its rate proposal in this case?

A. No. As I indicated several times, I am not projecting into the future. I am trying to describe events that occurred.

Q. In what you have shown, could there have been an even greater increase in job growth and manufacturing in the six metropolitan areas absent the large electric rate

increases?

A. I don't know. As I said, I haven't --

Q. Conceivably, could that --

A. Conceivably, it could work either way. There could have been a lower -- I mean, it is like asking if the cup is half empty or half full.

Q. So, conceivably, under Philadelphia Electric Company's rate proposal in this particular case, there could be loss in employment growth, is that correct, even significant loss, if it could go either way?

A. I guess I am not following you. Could you just state that a little differently, because I don't know really what you are saying.

Q. You have just stated with respect to the six metropolitan areas that you observed which showed employment growth despite large rate increases that there could have been even greater increases absent the large rate increase.

You said it could have gone either way. Specifically with respect to Philadelphia Electric Company's rate proposal in this case, would it also be true that that rate proposal would result in significant job loss in the metropolitan area

A. There I can't say, because I don't have -- I am not doing projections.

Q. But your statement with respect to the previous question that it could go either way would also apply to the

scenario which I just set up with regard to the Philadelphia metropolitan area?

A. Yes.

Q. Is it also true, then, conversely, that Philadelphia Electric Company's 28.2 percent rate increase could also stimulate growth in the Philadelphia metropolitan area?

A. I don't know that. That's not what I meant when I said it could go either way. I don't believe I have presented my data in a causal kind of way which would suggest that.

Q. When you say it could go either way, would you define what you mean?

A. Let me see if I can say what I meant. I could imagine the scenario -- if we are imagining scenarios, for example, I could imagine the scenario where an increase in employment would occur because if a particular rate increase was tied to let's say a new power plant that was built that provided more reliable electricity, I believe some industries for example might locate in the area to be assured of reliable electricity.

That is what I meant, that there is a whole range of different variables that may be operating at the same time.

Q. In other words, looking at the present case, Philadelphia Electric's 28.2 percent increase could in fact

result in job growth, you are stating?

A. No, I didn't say that. What I said was, the power plants that may be associated with rate increases actually themselves could spur -- we know that they do spur economic growth in certain ways, just to employ people.

But they also could serve as let's say magnets for different types of industries who were seeking reliable electric power. That's what I mean when it can go either way.

Q. So, it would be the electric utility, as a result of its rate increase, which might spur economic growth?

A. The power plant is what I am talking about, not the rates themselves.

Q. Limerick 1, for example, could?

A. Right. I believe there is empirical justification for that line of reasoning in the real world through studies of location decisions of manufacturing firms and other businesses. Fantus Corporation has done studies on that.

Q. In making that statement, you are including as a part of that the 28.2 percent electric rate increase, and you are saying, despite that, or even as a result of that, there could still be,as a result of Limerick 1 reliability or what have you, an increase in economic growth in the Philadelphia metropolitan area?

A. I think that what you're saying is that with the

rate increase, there could be economic growth in the Philadelphia area, and I certainly wouldn't disagree with that, although as I said I am not projecting what the future is going to be.

Q. I would like to refer your attention to your rebuttal testimony in this case at page 10.

MR. STILLMAN: Which statement is that, Mr. Rainey?

MR. RAINEY: PECo Statement No. 36.

THE WITNESS: Okay.

BY MR. RAINEY:

Q. I specifically refer your attention to lines 30 through 35. Would you read that sentence into the record, please?

A. "Point 3. As a final point, I want to stress that I am not proposing that electric rate increases lead to economic growth or present similar benefits to the community." Is that all you want me to read?

A. Yes, that's fine.

Q. Dr. Clemente, did you meet with Dr. Schinnar on February 10 through 12, 1986 or March 6, 1986 or at any time during these proceedings to discuss his model, to test the sensitivity of his model, and to review and collect computer printouts and notes of his staff?

A. No.

Q. Did you corroborate Dr. Schinnar's economic model

through your own modeling work or that of an expert in the field?

A. No.

Q. We previously established that you used in the New Orleans and Kansas case the same Table 2 that you are using in this case. Do you remember that?

A. Yes.

Q. And the Kansas case affected the Wichita, Kansas metropolitan area, is that correct?

A. Yes.

Q. And of course, the New Orleans case affected the New Orleans metropolitan area, is that correct?

A. Yes.

Q. Are the economic conditions of Kansas the same or comparable to New Orleans?

A. I haven't done studies of Kansas or Wichita or of New Orleans, so I can't say.

Q. Are the economic conditions of Wichita, Kansas or New Orleans the same or comparable to Philadelphia metropolitan area?

A. I can't say.

Q. Dr. Clemente, are you aware that there have been various changes to the boundaries of the metropolitan areas provided by the Bureau of Labor Statistics?

A. Over what period of time?

Q. Over the period of time that you show on your Table 2, 1972 through 1984.

A. Yes, there have been some changes.

Q. Does your table incorporate those changes?

A. My table basically -- the data that I present, what I have tried to do is to couch variables in terms of proportions and percentages as opposed to absolute numbers to eliminate the problem of geographical boundary changes as much as possible.

Q. And so in other words, you did not modify your table in order to reflect the changes in the boundaries of the metropolitan areas?

A. What I did was basically try to use measures which were comparable over time. I did not reconstruct every metropolitan area of the 150 over a 12-year period.

MR. RAINEY: I have no further questions, Your Honor.

JUDGE MATUSCHAK: Any further cross-examination?

CROSS-EXAMINATION

BY MR. SELKOWITZ:

Q. My name is Larry Selkowitz, and I represent the University of Pennsylvania and the Utility Users Committee in this case. As I understand what you have been telling us today, one of the things that you do for a living is, you go around the country to various public utilities or at the behest of various public utilities and you testify that at

least from what you have seen in the past, one cannot say that there is a connection between electric price increases and local economies, is that a fair statement?

A. No. It is not what I do for a living in terms of going around the country, certainly. I think I have testified in two previous cases. I have only gone to two parts of the country, in other words, plus Harrisburg.

Q. This is only the third time you have testified to this material in a rate case, is that correct?

A. That is correct.

Q. And I also take it from your answers to Mr. Rainey's cross-examination that you haven't done any predicting in your testimony, is that correct?

A. I have tried to avoid predicting in prefernce to describing phenomena, that is correct.

Q. So, would it be fair admonishment to the rest of the parties in this case that it would be improper for us to take anything out of your testimony as a prediction of what will happen in the Philadelphia service territory as a result of this rate increase?

A. It would be improper to characterize my research as predictive, yes.

Q. All you have presented is a picture of what happened in some other places in the past, is that correct?

A. "Some other places" do include Philadelphia in th

Northeast study, for example, but that is generally correct.

Q. I didn't hear, in what study?

A. The Northeast, where I studied the Northeast SMSAs, I did include Philadelphia.

Q. Did you include Philadelphia in the work papers that are attached to 36A?

A. Yes.

Q. Whereabouts in the work papers -- I found it. It's one of the middle pages. I couldn't find that before.

A. Did you find it now?

Q. Yes, I did, thank you.

A. Okay.

Q. I take it from your answers to Mr. Rainey's questions, however, you did not study the details of the Philadelphia economy for purposes of preparing your report, is that correct?

A. That is correct.

Q. You have also not presented any comparison of the details of the economy of the city of Philadelphia or the PECo service territory with that of any of the other SMSAs that are a part of your report, is that also correct? I mean, if you did not study PECo, you couldn't easily have compared it to anybody else, doesn't that follow?

A. Could you repeat that?

Q. Sure. You say you didn't study the details of the

Philadelphia area's economy. Would it also not follow, then, that you have not compared the details of the Philadelphia economy to those of the other SMSAs to which you have referred in your testimony?

A. The Philadelphia SMSA, as I said, falls into the general group that I am working with.

Q. Consistent with your former answer, because you did not study the actual details of the Philadelphia economy, you have not presented any comparison of those details to any place else?

A. Details is a broad word, and I don't know what your operational definition of it is.

Q. I am using it in the way you were using it when you answered my question, when I said to you, did you study the details of the Philadelphia area economy, and you said no to me, and you also said no to Mr. Rainey.

In that same context, did you present any comparison of those details with the economies of any of these other SMSAs?

A. I presented a comparison of data in the Northeast study, and those data are from the Philadelphia area as every other SMSA. I did not study the Philadelphia economy in detail.

Q. And you did not attempt to predict anything about the Philadelphia economy in detail also, is that correct?

A. That is correct.

Q. Would you anticipate, when you looked at price increases for electricity across the country, that the same percentage increase applied to a company with low rates would have the same impact as a company who already had high rates?

A. No. There could be differences, and that is why I have looked at percentage increase, absolute increase and actual rate in a number of different cases.

Q. Would you refer to the schedule where you do that, you compare the absolute increases as compared to the relative increases?

A. What I did in my statement No. 36 was to take basically three different ways of looking at rate increases, industrial rates, let's say, and Tables 1, 2 and 3 give those three different ways.

The first way was to look at the actual increase in percentages, and --

Q. I am not sure I am in the right place. I am in Statement No. 36, Exhibit FC-1.

A. Page 2 of 16, Table 1, okay. Those data pertain to the percentage increases in industrial rates for the three different groups, the highs, the middles and the lows.

Q. Rather than just tell me what these say, can you show me one -- this might simplify it -- where you show the

actual dollar increases to any of these companies?

A. The next table deals with the actual increase. That is Table 2. You see, the first table deals with the percentage increase. The second table are the utilities, based on the actual increase. Now, they are not the same utilities. That is I guess what your point is, and I think--

Q. No. My point is, is there anyplace in your data where we can look at the actual dollar levels in any periods of time, in real dollars rather than percentage increases?

A. That is what I am trying to say.

Q. It's a simple yes or a no. Is there a table anywhere where I see dollar signs rather than percent signs? That's all I want to know. I am not challenging you about what this says. I am just curious.

A. In terms of Table 2, that is the actual increase. That's the dollar increase, but actually it's in cents per kilowatt-hour.

Q. But I can't look at this and find out if, for example, in the metro areas with the lowest industrial rates, whether that was a 16 percent increase on $5 or a 16 percent increase on $50, right?

A. In this table, in Table 2, you can't tell whether it's any kind of percentage increase, because I am dealing with the actual increase, let's call it the absolute increase.

Q. Obviously, you and I are not understanding each other.

A. Do you understand that I looked at three different types of measures of rates?

Q. Yes, I do. What I am trying to find out is, is there any way I can look at Table 3 and figure out what somebody's bill was in dollars before and after these percent increases?

A. No.

Q. I think you have indicated, or you did indicate to Mr. Rainey that there are some factors that one can see in an economy which might impact on job growth. I just wanted to ask you a few questions about that general area.

Would you agree with me that the price that a manufacturer has to charge for his goods might have an impact on the total employment picture in that area?

A. It could, yes.

Q. Would you agree with me that the price that a commercial landlord would have to charge for office space in order to cover his overhead and earn a fair return on his investment could have an impact on the total employment to an area?

A. Yes, it could.

Q. Would you agree with me that the wages that employees demand for their services could have an impact on

total employment in an area?

A. Yes, I think it could.

Q. Would you agree with me that in all three of those decisions, the price of manufactured goods, the price a landlord has to charge for office and the wages that workers demand are all in part related to what the price for utilities is in that area?

A. I emphasize "in part," yes.

Q. When you were comparing rate data from utility to utility, did you look at a particular rate schedule in a utility to look at percent increases, or were you looking at company-wide increases?

A. I was looking at the company-wide increases as reported by NARUC.

Q. So, to the extent that individual rate classes might differ at a different company, your results are not sensitive to those differences of cost?

A. That is correct.

Q. With reference to Exhibit FC-3, page 2 of 2, Mr. Rainey asked you about Statement No. 36B. Do you have that in front of you?

A. Yes.

Q. I believe you testified that you thought the Philadelphia area might fall between the middle and the right hand groupings.

A. Are you on page 3 of 16?

Q. I am on Exhibit FC-3 to PECo Statement No. 36B.

A. I am on the wrong page. You're on Table 2?

Q. 2-A, correct.

A. Right.

Q. Page 2 of 2.

A. Yes.

Q. I believe you testified that the Philadelphia results might fall in between the middle and the right hand columns, is that correct?

A. Yes, I think -- I haven't checked it. Off the top of my head, I can't remember. I believe Philadelphia falls into that group between those two columns, that's correct.

Q. Do you have the number available for Philadelphia in terms of the increase or decline in manufacturing as a percentage of total employment that would fit into this chart if we had a fourth column?

A. No, I don't have that number. I didn't do those calculations for Philadelphia.

Q. Do you know what the answer is from other materials that you have reviewed?

A. Based upon reading Summer's work, I would hypothesize that Philadelphia would fall into the decline of negative 5.1 percent or more group.

Q. Referenced in your testimony was a Rand McNally study. I don't have a page reference, but I suspect you remember what it is.

A. Yes.

Q. Is that the study where they rank how nice it would be to live in different cities of the country?

A. That is one of the dimensions of that study, yes.

Q. They weight in there things such as crime rates, taxes, access to recreational facilities, things like that?

A. In their overall ranking of cities, I think they do rank those, yes.

Q. Would you consider that a part of academic literature, the Rand McNally reporting, as compared to let's say popular literature?

A. No. I believe that would fall in the popular literature based upon data that are available for review.

MR. SELKOWITZ: I have no other questions.

JUDGE MATUSCHAK: Any further cross-examination?

MR. DELANEY: I have some short cross, Your Honor. Good morning, Dr. Clemente. My name is Dan Delaney -

JUDGE MATUSCHAK: Maybe we'd better take a 10-minute recess.

(Recess.)

JUDGE MATUSCHAK: Mr. Delaney, do you want to proceed?

CROSS-EXAMINATION

BY MR. DELANEY:

Q Good afternoon, Mr. Clemente. My name is Dan Delaney. I represent the Trial Staff. I have some questions on your testimony.

I would note initially in all of your testimony you appear to be critical of the use of mathematical models, specifically those relied on by Dr. Schinnar and Dr. Feldman. Is it your testimony that mathematical models have no value in evaluating potential economic impacts?

A No.

Q What do you see to be the limitations of mathematical models?

A Well, I think that mathematical models, as I understand the definition of them, are essentially mathematical models of an economic theory, okay? So they are attempts to project, as I understand it, from an existing situation and current conditions into a future point.

Certainly that is a worthwhile and important goal of all of our sciences, particularly the social sciences.

I think that, as most social sciences recognize, all types of predictions and statements into the future

have to be couched in the context of an understanding of the limitations of the social sciences, the uncertainty that exists in that future, and the wide range of variables that could intervene between now and that future that is being predicted.

There is a body of literature on this in the social sciences; certainly there is in economics; and there are a number of journal articles, for example. "The New England Economic Review, I believe, had a journal article in 1983 which deals with the track record of economic modeling.

I believe that is my overal view of the use of models in the social sciences. I think from my testimony I wouldn't say that there is no value to such models in any way, but the final analysis should always be couched on the fact that these are projections into an uncertain future.

Q In this proceeding there has been a substantial amount of testimony using models. As I understand your response to my prior question, in your opinion all these models would be subject to the limitations you just defined?

A That's true.

Q Dr. Clemente, can you tell us what is the total amount of the requested increase in this case by the

Philadelphia Electric Company?

A I do not know the total amount in terms of dollars. It is 28 percent.

Q You don't know the dollar amount?

A No.

Q Do you know how the company should receive the total amount requested by the Commission intends to implement this rate increase?

A I don't understand what you just asked me. Could you state that again?

Q Do you know whether the company proposes to increase its rates, assuming the Commission approves the entire amount, by 28 percent immediately, or does it intend to stagger the increase?

A I believe there is a phase-in proposed, but I'm not sure.

Q You are not certain on that; you don't know the amount of the rate increase in dollars?

A No.

Q Could you turn to page 4 of your rebuttal testimony? There on line 21 you quote Dr. Schinnar where he indicates "we don't have a precedence for a price increase of the magnitude we are considering here." And you indicate that that is historically incorrect and, in your view, shows his somewhat constrained view of a very

complex phenomenon.

Do you see where I am referring you to?

A Yes.

Q Can you tell us what is the Pennsylvania precedence on an increase this large sought by an electric utility?

A Of the Pennsylvania ones?

Q Yes.

A I don't know if there are any in Pennsylvania.

Q You don't know, or there are none?

A I don't know.

Q Can you tell us what is the largest fixed utility increase granted by the Pennsylvania Commission in the last 20 years?

A No.

Q Turning to the SMSAs in your study, have you made any effort to correlate the ones in your study with the characteristics of the Philadelphia SMSA, say in terms of population, economic characteristics, percentage of employment to manufacturing and services, tax base, things of that nature?

A Yes, as I say, we have 150 SMSAs here and we haven't done that.

Q For the utilities in your study how many were there again?

A It varied in any given -- the number of total utilities, I believe, was somewhere between 70 and 80, but in any given table with the SMSAs studied of course I'm studying only 39.

Q Were all those utilities electric utilities?

A Yes.

Q Are any of the SMSAs in your sample served by more than one electric utility?

A Some are. There are several.

Q Several. Did any of the rate increases examined in your study involve introduction into rate base of large nuclear power base load units by the utilities?

A I can't point to any specific ones.

Q You don't know?

A No.

Q Did any of these increases that you have examined in your study involve phase-ins of the rate relief granted by whatever the regulatory authority was?

A I don't know.

Q Are the percentage rate increases examined in your study expressed in nominal or real terms?

A They are expressed in nominal terms.

Q Dr. Clemente, are you familiar with how utility rates are set in Pennsylvania?

A No, I'm not an expert on that.

Q Would you accept subject to check that the rates in Pennsylvania are set on cost of service principles?

A Subject to check.

Q Is it your testimony that rising electricity prices do not affect industrial employment in the utility's service area?

A Would you state that one more time?

A I'm asking you: is it your testimony that rising electricity prices do not affect industrial employment in the utility's service area?

A No. I believe there could be an effect.

Q How about employment generally in the service area where the rate increase takes place?

A There could be an effect.

Q Can I direct your attention to page 10 of your rebuttal testimony?

A Yes.

Q Beginning on line 30 where you begin with the number III --

MR. CALVERT: Excuse me, Mr. Delaney. There are two rebuttal testimonies.

MR. DELANEY: I'm sorry. It's Number 36.

BY MR. DELANEY:

Q Dr. Clemente, I think you indicate there that you say that the final point you want to stress is that

"I am not proposing that electric rate increases lead to economic growth or present similar benefits to the community." And you go on to say, "Certain increases may have inhibited economic growth and even led to some loss in potential new job growth."

I believe Mr. Rainey asked you a question on that. Did you indicate in your response to him that you have never seen the effect described in the last sentence there, increases inhibiting economic growth and leading to some loss in potential new job growth?

A My didn't document any because I was basically trying to describe what happened, and not describing or predicting what might have happened. That would be the distinction between those.

Q I understood your response to one of Mr. Rainey's questions to be that you had not observed this type of effect in your research?

A Based upon my research, I do not believe that one could point to significant inhibition of economic growth due to rate increases, at least rate increases there do not appear to have been associated with that inhibition. But I cannot say for certain when we are dealing with relatively gross measures, and I think that when we get to stating findings in too precise terms we are misrepresenting the social sciences and their capabilities.

Q Are you familiar, Dr. Clemente, with the company's litigation with the Lukens Steel Corporation?

A Just from what I've read relating to Dr. Perl's testimony.

Q Do you understand Luken Steel Corporation attempted to leave the Philadelphia Electric system?

A That is my understanding.

Q Do you know why they attempted to leave the Philadelphia Electric system?

A No. I hypothesize it was related to rates.

Q Are you familiar with the company's controversy with the Scott Paper Company in Philadelphia?

A No.

Q You have no knowledge of that?

A No.

Q In your research have you considered the effects of electric prices on the possibility of cogeneration in the areas you studied?

A No.

Q Are you familiar at all with the interests of large industrial companies in the Philadelphia Service area to implement cogeneration measures in response to the company's present retail rate structure?

A No.

Q Are you familiar with the aspects of the

present case concerning Philadelphia Electric' existing Tariff Supplement No. 6, which is now the subject of a proceeding at Commission Number R-850290?

A No.

Q In the rate hikes that you have examined in your testimony, rate increases by electric utilities examined in your testimony, Dr. Clemente, to your knowledge is there any one identified in your tables as equal to the magnitude sought by the Philadelphia Electric Company in the present proceeding?

A Well, in terms of percentage increases there certainly are. In terms of dollar increases, I don't know.

Q So the answer is you don't know?

A I said in terms of percentage increases, yes.

Q I'm speaking in terms of dollar increases.

A I haven't studied that, no.

Q In your Statement Number 36, which is one of your rebuttal testimonies, on Tables 13 through 15, Dr. Clemente, I note that you refer to the Rand-McNally Rating of Economic Promise

A Yes.

Q Could you indicate on what kind of data the Rating of Economic Promise is based?

A I believe that's based on projected job growth, a combination of job growth and income growth at the futur

as well as the current jobs and income opportunities.

Q If I understand some of your responses on the prior cross-examination, you, yourself, did not attempt to track future events, but characterize your testimony as looking at things that have already occurred; is that correct?

A Generally that is true, yes.

Q Could you indicate to us why you chose the Rand-McNally data source rather than use another one?

A Well, basically I used that because I felt it was a commonly recognized, or at least understood kind of ranking of economic promise for individuals. I don't think I am couching it as the guaranteed projection of what is going to occur, but just as a general commonly recognized measure of economic promise for individuals; that's really what the definition is.

Q A few pages before those pages, pages 10 through 12, they are in the same testimony, which is Statement Number 36. You are looking at -- actually it is on page 11 of Exhibit FC-1. You look at rank of metro areas by retail sales per household.

Would I be correct in assuming that in making this ranking you are presuming that increases in the electric rates are reflected in retail sales directly by merchants; do you see a correlation of that kind in gathering this

data?

A I suspect to a certain extent that is true; I don't know to what extent though.

Q Would you also agree that retail prices may be affected by competition of the merchants in the area?

A They could be.

Q So what you are responding is that you are not sure to what extent increases in electric prices could be reflected in the retail prices, and you have agreed that one of the things that might affect retail prices is competition; is that correct?

A Yes, I think that's correct.

Q In your sur-surrebuttal testimony, Dr. Clemente, on page 8, which is PECo Statement 36B, beginning in your response to the question on line 13 you cite the testimony of Dr. Anita Summers from the Limerick Unit 2 investigation.

A That's right.

Q Did you read Dr. Summers' testimony in that case?

A Yes, I did.

Q Did you read Dr Summers' cross-examination in that case in January of 1985 in Philadelphia?

A Yes, I did, some time ago.

Q Do you recall that Dr. Summers testified on

cross-examination that she had not considered rising electric prices as part of her study in predicting employment in the Philadelphia area?

A Yes, that's part of the quote, I think.

Q Do you also recollect that she testified that she refused to state a time period on the parameters of her study in terms of the length of time examined or predicted?

A I don't recall that, but I'll accept that as true.

MR. DELANEY: I have no further questions for this witness.

Thank you, Dr. Clemente.

JUDGE MATUSCHAK: Is there further cross-examination of this witness?

MR. WERSAN: Yes, Your Honor.

CROSS-EXAMINATION

BY MR. WERSAN:

Q Good afternoon, Dr. Clemente. My name is David Wersan. I'm from the Office of Consumer Advocate.

You have answered in a previous question of Mr. Delaney's that you do not know the size of the rate increase being requested by Philadelphia Electric Company in this proceeding?

A In terms of absolute dollars, no.

Q And you stated that it was your understanding that the company was asking for a 28 percent rate increase; is that correct?

A Yes.

Q Do you know whether that 28 percent is a net increase or a gross base rate increase?

A No. I think that's -- I think it's a gross increase, but I'm not sure.

Q If rather than being a gross increase of 28 percent it is a net increase, and instead the gross increase, discounting energy savings projected by the company, was on the order of 30 to 35 percent, would that in any way affect your view of the impact of the rate increase on the Philadelphia Electric economy?

A No, it wouldn't affect my findings, certainly.

Q Do you think the higher the rate increase the greater the potential for economic impact on the economy -- on the service territory of the company?

A Generally I suspect that's true,but, as I indicated, my data, the data that I dealt with in terms of percentage increases, there were a number that were major percentage increases over time.

Q I'm sorry; could you restate your answer.

A I'm saying that there are many cases of rate increases in terms of percentages far beyond 28 percent,

or 30 percent.

Q Do you know if those rate increases were on the magnitude of $700 million or $800 million?

A No.

Q Do you know how much money Philadelphia Electric collects -- or what the total revenues are that Philadelphia Electric currently collects from its ratepayers?

A No.

MR. WERSAN: That's all I have, Your Honor. Thank you.

JUDGE MATUSCHAK: Is there further cross-examination of this witness?

(No response.)

JUDGE MATUSCHAK: Dr. Clemente, what in effect you are saying is that you made a study of six metropolitan areas and you found that even if there were an increase in the electric rates the sociologic and economic situation was not affected by the rates; is that what you are saying?

THE WITNESS: What I did, Your Honor, was we looked at 180 different metropolitan areas in the whole study, and what we tried to do was look at electric rates in a number of different ways, percentage increases, absolute increases, and even actual rates. We tried to see basically what the differences in social and economic change were between metropolitan areas that had different

kinds of rate increases.

In other words, if we compare those with the highest rate increases, how do they compare then with those with the lowest and with the middle; and what we generally found was it didn't seem to be major. Based upon the data we had it didn't seem to be a major relationship.

JUDGE MATUSCHAK: The weakness of that argument is that you are assuming that the only forces at work affecting the economic status of those areas was electric rates, to the exclusion of anything else?

THE WITNESS: Your Honor, I don't think so. We are taking electric rates and basically saying: well, let's just look at electric rates and the changes and what happened, and let all other factors vary.

I do agree that there are many factors involved.

JUDGE MATUSCHAK: But you didn't consider any of the other variables, any other forces at work, in any of those metropolitan areas except the only thing you are looking at is the electric rates?

THE WITNESS: That's right.

JUDGE MATUSCHAK: So, in effect, what you are considering is that no other economic forces either did not affect or did not affect in any way the economic situation in those areas except electric rates; that was the only

force that was affecting them?

THE WITNESS: All I was saying -- I was basically saying that all other factors were free to vary and we were looking at rates, I guess in an attempt to provide some information on what had actually happened as opposed to projections and predictions of what will happen.

I think basically there seem to be two goals here. One is to understand what has happened, and the other one is to predict into the future.

I think it is a logical precursor to me to say: well, let's look at what has happened and then we can potentially predict.

JUDGE MATUSCHAK: As a hypothetical, suppose, for instance, there was a large manufacturing establishment in one of those areas, that has just come in, which was a very low user of electricity, maybe not even using any electricity except for minimal usage. That could affect the economic situation of that community and have no relationship at all to the electric rates that were increased in that area; isn't that true?

THE WITNESS: That's right.

JUDGE MATUSCHAK: While you profess to make your survey on real life situations in the various metropolitan areas, you are not considering the real life variables that would also be at play in any of those metropolitan

areas?

THE WITNESS: Not in any given case, but we are looking at -- don't forget -- 180 different metropolitan areas. I mean that's a pretty large number. There are all kinds of variables affecting each one. I think technically it is impossible to control for all information such as you are bringing up, though you are bringing up good points. But it seems to me that a logical place to start in looking at this problem is to see what has happened in areas with different rate increases. And if you look at 180 different cases --

JUDGE MATUSCHAK: The only thing that you know that happened there was the electric rates were increased; that's the only thing you know. You don't know whether there was a sudden burst of manufacturing come in which did not use electricity to any extent; you don't know what other forces may have been at work, whether there was a work force available peculiar to that district, for instance in the computer district in the Massachusetts area, for instance, or the California area where the computer industry came in. You considered nothing of that kind.

THE WITNESS: No. Those weren't entered into the analysis, no.

JUDGE MATUSCHAK: Doctor, there's evidently a

purpose to your testimony here. One of the concerns that has been expressed in this proceeding is the effect on the economic situation of service area of Philadelphia Electric Company.

THE WITNESS: Yes.

JUDGE MATUSCHAK: By your study, what light can you give us on the effect of the proposed electric rate increase in the service area of Philadelphia Electric Company?

THE WITNESS: I can't predict the Philadlephia Electric area in particular, but what I can say from my general study is --

JUDGE MATUSCHAK: What are you trying to tell us in your testimony, in your various statements; what are trying to tell us as to the effect of the increase in electric rates proposed on the economic situation in the service area of Philadelphia Electric Company?

THE WITNESS: That in the cases where we examined electric rate increases there has not seemed to be an inhibition of economic growth or economic -- or the development of economic stagnation or exceptional unemployment, or declines in manufcturing in the cases that we have studied.

JUDGE MATUSCHAK: You have found that the increase in rates by Philadelphia Electric Company will have no

economic effects on the service area of the Philadelphia Electric Company?

THE WITNESS: No, I'm not saying that. I'm saying --

JUDGE MATUSCHAK: If you are not telling us that then what is the purpose of your testimony?

THE WITNESS: I'm giving you a basis of comparison for other areas.

JUDGE MATUSCHAK: But there must be a purpose of your testimony. What is your purpose? What are you trying to tell us in this case?

THE WITNESS: I'm trying to tell you basically -- to describe what has happened in other areas that have had similar rate increases.

JUDGE MATUSCHAK: That's your study. What are you trying to tell us? Are you trying to tell us that that is the same situation that will be found in the Philadelphia Electric service area, the same as you found in these metropolitan areas that you surveyed?

THE WITNESS: I'm saying that that's likely, yes, but I can't predict for Philadelphia. I'm trying to provide a background point of information for the people who are making the decisions.

JUDGE MATUSCHAK: Are you telling us that the increase in electric rates in the Philadelphia area will

have no effect on the economic situation in the service area of Philadelphia Electric Company?

THE WITNESS: No. They could have an effect, but based upon the previous study that we have done it doesn't seem as -- we can't find major adverse economic effects in areas that have had large rate increases.

Let me make an analogy. For example, suppose the City of Philadelphia were going to buy buses and decided that they wanted to spend $15 million or $20 million on buses. It would seem reasonable to me that the city manager, if he knew that other cities in the United States had purchased buses, the same kind of buses, to try to find out how those buses had performed in the other cities; and that's basically the information --

JUDGE MATUSCHAK: In the real world the only thing you can look at in the municipalities studied, the only thing you can look at -- or should look at is electric rates and forget about everything else, and base your conclusion on the fact that because electric rates were increased in this community and there was no economic impact or no economic loss, that, therefore, electric rates must be conducive to maintaining the economic stability of that area?

THE WITNESS: No. I don't believe -- I'm not saying -- I tried to make it fairly clear, Your Honor,

that I'm not arguing that electric rates spur economic growth; that's not the purpose of my testimony.

JUDGE MATUSCHAK: Well, what is the purpose? I can't deduce what the purpose of your testimony here is. What value is your testimony if you are saying that you don't know whether it will have any effect on the economic situation, when you haven't reviewed the full impact in all the other areas that you studied? Your study is confined to the electric rates.

THE WITNESS: That's right.

JUDGE MATUSCHAK: You have concluded that that was the only force that was at work in the economic impact in those various areas.

THE WITNESS: No, I'm saying that there were many other forces at work, and they are all operating. If you take electric rates alone, they are not making a difference.

JUDGE MATUSCHAK: By the same token, it could have happened that an area that you studied could have increased tenfold for other reasons than the change in electric rates; isn't that so?

THE WITNESS: Yes.

JUDGE MATUSCHAK: Thank you.

Is there anything further?

MR. RAINEY: Yes, Your Honor. I would like at

this time to move to strike those portions of Dr. Clemente's testimony as it purports to rebut the testimony of Dr. Schinnar. As ground for the motion to strike I would state that --

MR. STILLMUN: Excuse me, Your Honor. Would it be appropriate prior to the motion to strike if the company were allowed some redirect?

JUDGE MATUSCHAK: Yes, there can be redirect.

MR. STILLMUN: If we may have a moment, Your Honor?

MR. SELKOWITZ: Your Honor, on that point I think it might assist in the redirect to hear the motion because I have a motion to make also.

JUDGE MATUSCHAK: Let's wait until we have the redirect.

We will take a short recess.

(Recess.)

JUDGE MATUSCHAK: Are you ready?

MR. STILLMUN: Yes, Your Honor.

REDIRECT EXAMINATION

BY MR. STILLMUN:

Q Dr. Clemente, we have heard questions asked of you today with respect to the purpose of your model, and you have stated that you are not -- the purpose of your testimony, and you have stated that you are not a

modeler, that your study is not meant to be predictive.

Now, your testimony was submitted to rebut the testimony of Dr. Schinnar and Dr. Feldman. Would you explain specifically what it is about their testimony that you are rebutting in this case?

MR. SELKOWITZ: I'm going to object, Your Honor. First of all, that was not within the scope of direct. Secondly, it already says what it says. It is the rebuttal, and it is not proper to have him restate what it is he is rebutting.

JUDGE MATUSCHAK: We will overrule the objection. We entered upon the subject.

THE WITNESS: Could you read back that question please?

(Whereupon, the reporter read from the record as requested.)

THE WITNESS: Both Dr. Schinnar and Dr. Feldman make a number of projections and assertions as to socio-economic effects that will occur if the rate increase occurs. What I tried to do in my analysis was to basically present descriptive information on previous events, previous electric rate increases throughout the country, to try to give a comparative point of information for the Commission in terms of evaluating the credibility of Dr. Schinnar's and Dr. Feldman's projections.

BY MR. STILLMUN:

Q Dr. Clemente, do you need to study all of the variables in the economy in order to get a perspective on the impact of electric rates?

A No, I don't believe you do. I think one should look at some of the basic variables such as manufacturing, retail sales, unemployment, variables that are very commonly accepted, and this will give one a perspective of what has happened in other areas and a perspective of whether projections that have been made are one that fit with real world experience.

JUDGE MATUSCHAK: In that connection what did you look at besides electric rates; what variables did you look at?

THE WITNESS: I looked at manufacturing, I looked at unemployment, I looked at --

JUDGE MATUSCHAK: What did you find about manufacturing in those areas?

THE WITNESS: Well, I found out that in areas where there were varying levels of electric rate increases there did not seem to be a relationship between large rate increases and declines in manufacturing, let's say. In other words, the areas which had the greatest declines in rate increases did not show declines in manufacturing; they did not show declines in manufacturing as a percentage

of employment, they did not show declines in retail sales.

JUDGE MATUSCHAK: Did you check the manufacturing entities in those areas as to whether they were energy-consuming or non-energy-consuming manufacturing entities?

THE WITNESS: No. Once again, as I said, we worked with 180 different ones. These factors -- basically I believe they are taken into account by the fact that we were working with such a large number.

Every metropolitan area is different; I will admit that. But overall, looking at a large number of data you can identify commonalities, and I think changes in manufacturing, for example, is one that is generally accepted as a driving force in the economy.

BY MR. STILLMUN:

Q Dr. Schinnar, you have heard questions asked about other variables in the economy that may or may not -- that may affect the growth of the economy or the decline of the economy. Now, how would you compare, based upon the findings of your study, electric rates with the other types of variables, be it whatever it is in the various economies?

A I have a statement in my testimony which I think gets at this matter. In 36B at page 9 my point is not that electric rate changes have no socioeconomic effects, but that in a complex economy electric rate

changes are dwarfed by far more significant variables, and, thus, have had no measurable socioeconomic effects that are relevant for policy-making purposes.

And I go on there in terms of talking about Dr. Schinnar's projections to basically suggest that policy-makers do two things; first of all look at what has happened in actual events in the real world, and (b), examine the reliability of the model upon which Dr. Schinnar bases his projections.

Q Dr. Clemente, do you need to examine all of the inner workings of a model, all of the variables that a model is taking into account, in order to sustain your conclusion about what has happened in the past?

A No. One doesn't have to be an expert on modeling to understand the efficacy of models or their relevance. There are a whole series of technical questions which need to be asked about a model, and I'm not qualified to discuss those, I don't believe.

But there are substantive questions that need to be asked that are just as important, and perhaps more important,that any social scientist or in fact any layman should answer, things such as about a model, for example: has it ever been tested? Has it ever been taken to a situation -- let's say a metropolitan area where similar electric rate increases have occurred and been tested?

I think that's an important element in evaluating the validity, the real world validity of any model.

Second, do its findings and projections meet with the experience in the real world? If one looks at other cases, other circumstances, are the projections of the model compatible with what we know has already happened?

I think those two tests are tests that one doesn't have to be an expert on modeling to project, to assess and examine.

Q Dr. Clemente, if the impact, the significant impact on the local economy that is predicted by Dr. Schinnar's model -- that is the loss of 19,000 jobs -- if impact of that magnitude occurs in local economies, in reality or in the real world, would your study have seen them?

A I believe that if impacts of the magnitude, of that large magnitude -- the trends of the data would not be the way they are.

Q Would you explain what you mean by the trends of the data would not be the way they are?

A Well, basically I think if you look at the data what you see basically is that actually the areas with the highest rate increases tend to be the ones with the greatest amount of economic growth. I'm not projecting or arguing that this rate increase is going to cause

economic growth, of course; but if there were an inhibition of the major -- of areas with the greatest rate increases, if there were inhibitions in the economic growth, then it wouldn't tend to be at that side of the table; they would tend to be more evenly distributed.

JUDGE MATUSCHAK: Why don't you take that position?

THE WITNESS: What?

JUDGE MATUSCHAK: Because the areas with the highest rate increases have the most economic growth; why don't you take that position?

THE WITNESS: No. I'm not projecting causality; I'm not projecting --

JUDGE MATUSCHAK: Your testimony is here and it infers that, doesn't it?

THE WITNESS: No, it doesn't.

JUDGE MATUSCHAK: We could have more economic growth in Philadelphia if we increased the rates.

THE WITNESS: No. No, I'm not projecting that.

JUDGE MATUSCHAK: You are not saying that?

THE WITNESS: No, not at all; not at all.

BY MR. STILLMUN:

Q What is it, Dr. Clemente, that we could infer about the metropolitan economies that have had large rate increases in the past, and why is it that they have experienced economic growth as well?

A What I'm saying is that electric rate increases may not have an adverse effect, that the impact is so small that it's not discernable in these data. And I think that's the --

JUDGE MATUSCHAK: Are you inferring that the increases in those areas where the larger electric rate increases were held, that they were greater because of the electric rate increase, or could there have been other forces at work?

THE WITNESS: There obviously were other forces at work. If there was an adverse impact due to the rates, to a certain extent, whatever the adverse impact was if there was one was obviously dwarfed by the other changes that are taking place. And that's the argument or the position that I'm taking, that there are so many variables interacting, and you have identified some of them, yourself, when you talked about a certain manufacturer may come in and certain events may occur. That is true; these vents are occurring all the time in metropolitan areas.

JUDGE MATUSCHAK: What are you telling us; what are you telling us in this proceeding as to the effect of any increase in electric rates in the Philadelphia Electric service area?

THE WITNESS: Well, what I'm saying is -- if you

will remember, the purpose of my testimony is in terms of rebuttal to Dr. Schinnar and Dr. Feldman, and I am saying basically that I believe, based upon my data, that the impacts that they project and assume and assert are larger than one would anticipate based upon my data.

JUDGE MATUSCHAK: Why didn't you go the whole way and say that there will be an increase in economic growth in the area?

THE WITNESS: No, as I say --

JUDGE MATUSCHAK: You don't go that far?

THE WITNESS: No, I don't believe that.

JUDGE MATUSCHAK: All right.

BY MR. STILLMUN:

Q Dr. Clemente, do you need to be an economist or an econometric modeler in order to reach the conclusions that you have reached?

A No, I think one can look at the basic data. Remember, these are descriptive data; it is nothing more than what has happened, just a series of facts, and I came up with those basic conclusions.

Q What is the perspective that you, as a sociologist, can bring to these data?

A Well, I think basically respecting as a sociologist, it is one of the social sciences, and -- I'll go back to say this one more time, if I haven't

said it -- maybe I haven't said it enough -- is that I am trying to provide a comparative view, a perspective that might be used to evaluate the validity of the predictions made by Dr. Schinnar and Dr. Feldman.

It seems to me one of the first steps to evaluate the predictive validity of any model is to look at what has happened in previous cases. I'm presenting my data as data, nothing more, nothing less, for review and at least some comparative understanding of not models but the real world.

Q Do you need to isolate and quantify all of the socioeconomic variables in a particular economy in order to reach the conclusion that rate increases -- your conclusion that rate increases are a relatively small factor?

A No, and I think, as has been pointed out here, one cannot isolate all those different variables. There are many different things going on in every metropolitan area across the country, but I think when one looks at 180 different metropolitan areas and the results generally hold up and there are those kinds of commonalities then one can have increased faith in the nature of the findings.

Every metropolitan area is different; there's no question about it, but they are not all isolated in their own little universe.

Q Dr. Clemente, can you explain why you chose to look at for any of the individual analyses represented in the tables of your study 39 out of the 112 utilities?

A Well, of course, the resource question was involved there, but I was trying to give a broad perspective with the broadest range possible.

I looked at on-eight of the group that had the lowest rate increases and the one-eighth of the sample that had the highest rate increases to give a comparative perspective.

Q When you say the broadest range possible, what do you mean?

A Well, the broadest range possible is obviously to look at the two extremes, and I compared them to a middle group, and I found no relationships.

Q Is this consistent with sociological research that you and others in your field employ?

A I don't think that this is any kind of deviant research in the sense that it's not unusual to do these kinds of analyses and descriptive studies.

Q You have made reference to the term "descriptive studies." Would you explain what you mean by a descriptive study and perhaps contrast that with the modeling approach that Dr. Schinnar takes?

A Well, a descriptive study is nothing more than

the name implies, an attempt to describe what is happening. The type of approach that Dr. Schinnar takes is more of a predictive study to predict what is going to happen in the future.

I think that the description is the logical -- as I said, the logical precursor to prediction, and in a rush to prediction we may not fully understand what we are predicting.

I think it is really important to look at actual events before one moves to a predictive scheme.

Q What do actual events tell you about the predictions that are being made and the model that Dr. Schinnar has put forth in this case?

A As I said, in studying actual events I find no support for Dr. Schinnar's conclusions of relatively high unemployment growth -- inhibition of employment growth.

Q In response to -- you were asked about whether your data represents the Philadelphia area. Now, did any of your data include the Philadelphia Metropolitan Area and/or the Philadelphia Electric Company?

A Yes, my Northeast study did.

Q Just for sake of clarification, which study is your Northeast study? Is that the study that is attached as Exhibit FC-2 to PECo Statement Number 36A?

A 36A; right.

Q Why is it that you performed a Northeast Metropolitan Area study?

A Well, generally I felt that certain regional effects may be occurring that weren't being picked up in my analysis, so I decided to limit the study -- to do another study actually of the Northeast Metropolitan Area, so I looked at all the metropolitan areas in just the Northeast and forgot about California, Texas and so forth. And generally I think the findings are the same in the Northeast study as they were in the national study. But I felt that it would be a reasonable idea to essentially control for region.

Q Did the metropolitan areas that you studied in the Northeast region include large Northeastern cities such as Boston and New York and --

A Yes.

Q -- and Philadelphia?

A Yes.

Q Philadelphia was included in that study?

A That's right.

Q Now, I believe in response to a question that Mr. Selkowitz had you referred -- that referred you to Table 2-A, which is page 2 of Exhibit FC-3. That's the one attached to your sur-surrebuttal testimony, PECo

Statement Number 36B.

I believe in response to Mr. Selkowitz' question you indicated that the Philadelphia Electric Company would fall between the middle column and the right-hand column.

A I don't know if I did that. If I did I was incorrect. It should be -- the other gentleman asked me a similar question. I believe Philadelphia should fall between the middle column and the left-hand column.

Q To clarify, that means that it fell between the 13 utilities that had a mid-range increase in electric rates during the period of 1972 to 1983 and the 13 utilities at the bottom; that is, that had the lowest increase in industrial rates during the period of 1982 to 1983?

A I believe that is where it would fall.

Q You were asked by Mr. Delaney, I believe, about precedents in Pennsylvania for the price increases on the magnitude that the Philadelphia Electric Company is asking for in this case, and you stated that you did not look at historical precedents particularly in Pennsylvania.

In terms of percentage increases in electric rates, what historical precedence did you look at in terms of the highest percentage electric rate increases. What are we talking about here in percentage terms?

A Well, in the SMSA study the highest group had electric rate increases I think ranging from 410 percent to 800 percent -- over 800 percent, over the study period.

Q And that was a 10-year or 11-year period from 1972 to 1983?

A Yes.

MR. STILLMUN: I think that's all the questions I have.

MR. RAINEY: If I may, Your Honor, at this time I would like to move to strike those portions of Dr. Clemente's testimony that purport to rebut the testimonies of Dr. Schinnar.

Dr. Clemente has stated that the purpose of his testimony was to examine the quality of the socioeconomic materials and conclusions of Dr. Schinnar. He has shown that he is not qualified to perform this task. It was necessary for him to evaluate the study of Dr. Schinnar, which he has stated that he does not understand since he lacks the expertise to do so.

It is not enough for him to look at the end result conclusion of Dr. Schinnar's study in order to accomplish his stated task.

Dr. Schinnar has used an econometric computer model in order to make certain projections with regard to economic growth relative to Philadelphia Electric Company's

proposed rate increase.

Dr. Clemente has admitted that he is not an economis not an expert in computer modeling, and he's not an expert in the areas of econometrics.

He has stated that he has no view with respect to the completeness, relevancy or validity of socioeconomic variables which Dr. Schinnar shows in his technical report in regard to residential energy consumption.

He has stated that he is unable to address the reasonableness of demand elasticities of residential electricity consumers shown in Dr. Schinnar's technical report. He has stated that he does not know what cross-elasticity means.

He has stated generally that the matters and equations in the technical report fall outside the area of his expertise. The technical report is the singlemost important backup document on the socioeconomic materials and conclusions submitted by Dr. Schinnar in these proceedings.

If Dr. Celemente did not have the expertise to review it, then how could he comment on it, which was a part of his stated task in this particular proceeding?

He has stated that he does not know that Dr. Schinnar discussed the socioeconomic aspects of his model on February 10th and 12th and on March 6th or at any time

during these proceedings.

He has not looked at Philadelphia specifically, as has Dr. Schinnar. He has not looked at all the socio-economic variables which play a part in the sensitivity of the economies of metropolitan areas to rate increases.

He has not looked at such things as household earnings, public assistance, employment benefits, age, race, gender, households, number of children. level of education, etcetera.

He has admitted that these are socioeconomic materials,and he should be able to address these with regard to Dr. Schinnar's testimony, but he has not.

He has used essentially the same study and testimony in this case as he has in the Kansas and the New Orleans case.

His testimony in this case is not an appropriate examination of the Philadelphia Metropolitan Area, as is Dr. Schinnar's testimony.

He has not even truly rebutted the bottom line result of Dr. Schinnar's study because he said that although there may be a decline in employment as a result of the electric rate increases, he just can't measure it.

He can't rebut Dr. Schinnar's testimony because he does not understand it. Therefore, I would submit that he's not qualified to rebut the testimony of Dr. Schinnar,

and those portions of his testimony regarding thereto should be stricken.

MR. SELKOWITZ: Your Honor, I would join in Mr. Rainey's motion. I would add to it the term "Dr. Feldman's testimony" anyplace where we heard Dr. Schinnar's name, because Dr. Feldman's rebuttal -- the rebuttal of Dr. Clemente to Dr. Feldman is mainly because Dr. Feldman has adopted and accepted Dr. Schinnar's study.

Moreover, I would move to strike pages 36, 36A and 36B in their entirety. The reason for that is they are of such little probative value when weighed against their potential confusion in this record that they must be stricken. Not only might that go to a weight of the evidence type of an argument, but I think we reach a point where the weight is so small and the potential for confusion is so large that it simply is no longer a weight question, and it becomes of no probative value whatsoever.

For many of the reasons that Mr. Rainey has stated, Dr. Clemente has provided no information whatsoever specific to the City of Philadelphia and the service territory of PECo.

He said you can't predict anything from what he said. He admits that he has only looked at electric prices while he lets everything else in all these other places vary as they would, holding nothing else constant,

which tells you absolutely nothing about the impact on electric rates.

I think to leave this amount of testimony in the record when it is of virtually no use whatsoever would be an error.

JUDGE MATUSCHAK: Do you have any response?

MR. STILLMUN: Yes, Your Honor. First of all, with respect to whether the purpose of Dr. Clemente's -- with respect to whether Dr. Clemente's testimony rebuts the conclusions or rebuts that of Dr. Schinnar and Dr. Feldman, there are two ways that you can rebut the conclusion or rebut the testimony of an econometric model or economic experts.

One way is to look at the structure of the model, that is to break it apart and say that the workings of it don't make sense, the way it was put together don't make sense, the calculations don't make sense, and that was the type of testimony that this company has presented in the testimony of Dr. Hogan and Dr. Schink.

The other way to rebut the testimony of an econometric model is to take a look at the conclusions and to say: in the real world do these conclusions really make sense?

Would the Philadelphia economy be dragged downward into a spiral if this electric rate increase went in?

Would in fact there be a loss of jobs on the magnitude of what Dr. Schinnar is proposing with his model if this electric rate increase went into effect?

And what Dr. Clemente presents is a study that says: I have looked at the real world; I've looked at what has happened in other economies.

His conclusions are that although electric rates may be a factor in the economy that affects the employment, that overall it's a very minimal factor.

If it were a factor on the order of magnitude that Dr. Schinnar is suggesting, I would see results that are fairly consistent in showing loss of employment or changes in employment in these economies that I'm looking at.

Instead what he finds are results that are not consistent or even suggest the opposite; that is that economies can grow and economies even can be vital notwithstanding the fact that they have had very substantial rate increases.

And for that reason Dr. Clemente is in fact rebutting the model of Dr. Schinnar and the testimony of Dr. Feldman and he need not be a modeler or an economist or an econometrician in order to look at that. And in fact I would suggest that the fact that he is a sociologist, one that says: what are the impacts of these in

society on the whole, gives him qualifications to look at it from this perspective, to put the electric rate increase and the employment results that Dr. Schinnar is suggesting into perspective. And that is what the purpose of his testimony is.

Now, overall then, given what Dr. Clemente is saying about the impact of electric rates, the magnitude of electric rates, his testimony goes to the weight of Dr. Schinnar's testimony and Dr. Feldman's conclusions based on Dr. Schinnar's testimony, and is probative as to the magnitude of the increase -- the magnitude of what they are proposing.

He's not suggesting that electric rates will cause the economy to grow. In fact, he stated several times that it is not a question of causality. Rather what he is trying to do is put it into perspective and say: if this was important, if this was as significant as the model that Dr. Schinnar presented suggests, then I would have seen it and it would have produced results in my analysis.

This of course is consistent with the conclusions that Dr. Hogan and Dr. Schink have come up with in the testimony that they filed wherein they state that Dr. Schinnar's model overestimates by a factor of 5 the magnitude of any rate increase that would occur here; and,

in fact, therefore I would suggest, Your Honor, that this motion to strike be denied.

JUDGE MATUSCHAK: If this were a matter before a jury, we would probably adduce to strike the testimony. However, this is opinion evidence which sometimes has weight and sometimes does not have great weight.

We think we in the first instance, and the Commission in the finality, can place the proper weight on Dr. Clemente's testimony. At this point in time we attach very little weight to his testimony.

We will adjourn now until 2:20.

(Whereupon, at 1:20 p.m. the hearing was adjourned, to be reconvened at 2:20 p.m. this same day.)

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AFTERNOON SESSION

(2:20 p.m.)

JUDGE MATUSCHAK: Is counsel ready to proceed?

MR. MacGREGOR: Yes, Your Honor.

JUDGE MATUSCHAK: When you're ready.

MR. MacGREGOR: Thank you, Your Honor.

Your Honor, as agreed by the parties yesterday, we will proceed with the conclusion of the 80 percent/20 percent ECR portion of the testimony at this time.

The company has two witnesses to present, Mr. Carroll and Mr. Hill. We will first recall Mr. Carroll to the stand. He has been previously sworn.

JUDGE MATUSCHAK: Very well.

MR. MacGREGOR: Your Honor, I have previously distributed to the parties, to the court reporter, and to Your Honor copies of three documents. The first is entitled "Additional Rebuttal Testimony of John J. Carroll, Re: Performance Standards for PECo Nuclear Units," and I would ask that it be marked for identification as PECo Statement No. 22C.

The second is entitled "Additional Rebuttal Testimony of John J. Carroll, Re: 80%/20% Energy Cost Rate," and I would ask that it be marked for identification as PECo Statement No. 22D.

The third document is entitled "Exhibit to Accompany

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Additional Rebuttal Testimony of John J. Carroll, Supporting Data for PECo's Energy Cost Projection Re: Prodcost Outputs," and I would ask that it be marked for identification as PECo Exhibit JJC-2.

JUDGE MATUSCHAK: Very well.

(Whereupon, the documents were marked as PECo Statements Nos. 22C and 22D and Exhibit No. JJC-2 for identification.)

DIRECT EXAMINATION

BY MR. MacGREGOR:

Q. Mr. Carroll, do you have before you copies of the two pieces of testimony that have been marked for identification purposes as PECo Statements Nos. 22C and 22D?

A. Yes, I do.

Q. Are these documents in fact copies of your rebuttal testimony in this proceeding?

A. Yes, they are.

Q. Were these documents prepared either by you or under your direct supervision?

A. Yes, they were.

Q. Do you have any changes, corrections or additions to make to either of those documents at this time?

A. There is only one correction, and that is in PECo Statement 22D, page 14, line 9, in reference to the

Commission order which is listed as R-850010. It was incorrectly stated. It should be M-850010.

Q. Mr. Carroll, do you also have before you a copy of the document that has been marked for identification as Exhibit JJC-2?

A. Yes, I do.

Q. Was this document prepared either by you or under your direct supervision?

A. Yes, it was.

Q. Is the information contained in that document true and correct to the best of your knowledge?

A. Yes, it is.

Q. Mr. Carroll, if you were asked the same questions contained in Statements Nos. 22C and 22D again today, would your answers be the same as those contained therein, and would they be true and correct to the best of your knowledge?

A. Yes, they would be.

MR. MacGREGOR: Your Honor, I would ask that these three documents which have been marked for identification as PECo Statements Nos. 22C and 22D and Exhibit JJC-2 be admitted as evidence in this proceeding, subject to any timely motion to strike or other objection.

JUDGE MATUSCHAK: The motion is granted.

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(Whereupon, the documents marked as PECo Statements Nos. 22C and 22D and Exhibit JJC-2 were received in evidence.)

MR. MacGREGOR: In addition, Your Honor, in accordance with the schedule that was established, I have brief oral sur-surrebuttal testimony from Mr. Carroll, which I could go ahead and do at this time, and then Mr. Carroll could stand for cross-examination.

JUDGE MATUSCHAK: Very well.

BY MR. MacGREGOR:

Q. Mr. Carroll, at pages 4 and 5 of his surrebuttal testimony, Dr. Wilson states that a utility's generation, maintenance and construction programs and other operating policies may be affected by the choice of ECR procedures.

Do you agree with this statement as it might apply to Philadelphia Electric Company?

A. No, I do not agree with that statement as it applies to Philadelphia Electric Company. Philadelphia Electric Company has always operated and maintained their units to provide the most economical power for their customers regardless of the ratemaking procedure we have used that allows the company to recover its fuel costs.

This was always true in the past even though we operated under various different fuel clauses in the past.

I have been associated with the power production department in Philadelphia Electric, the electric production department, for over 30 years at various levels of operation, including plant performance monitoring, outage scheduling and cost control, and during those 30 years the philosophy the company has consistently followed is that we will operate and maintain our units to provide the most economical power for our customers.

Q. At pages 6 and 7 of his surrebuttal testimony, Dr. Wilson states that if only planned outages for refueling and maintenance were to be accomplished, capacity factors for nuclear units in the range of 80 to 90 percent could easily be established.

Do you agree with this conclusion?

A. No. If we look at the ranges that Witness Wilson has provided, the 90 percent range would basically only provide us with 15.6 weeks of outages over a three-year period which has two refueling cycles, and to expect that we would be able to get two refueling cycles and the maintenance outages that are necessary for minimizing forced outages over three years within 15.6 weeks is -- basically, it is an unachievable target.

If we look at his 80 percent range, then that would give us double or 31.2 weeks, and that is still a very ambitious target. Neither of these values, when he talks

about the capacity factors, recognize the ramps up or the ramps down associated with any of our outages or the power reductions necessary for fuel management control.

So, therefore, I think that even obtaining an 80 percent capacity factor including all outages is unattainable, and even under that condition they are based on a zero forced outage rate, which is unrealistic not only for nuclear units but for the power industry in general.

I think the view that these values of 80 to 90 percent could easily be established by Witness Wilson shows his lack of understanding of the operating characteristics within the electric power industry.

Q. Turning for just a moment to the surrebuttal testimony of Mr. Rosenthal and Mr. Hosler, and focusing on page 12 of that testimony, they present several criticisms of your projected level of two-party purchases.

First, at lines 4 to 5, they reference a level of two-party purchases made by Philadelphia Electric Company for the year ending June 30, 1982, that level being 4,036,944 megawatt-hours.

Do you have any comments as to whether that number is useful in attempting to project future two-party purchase levels?

A. In the period ending 6/82, Philadelphia Electric was one of two PJM members that was importing a great

amount of western two-party power, ourselves and General Public Utilities. The other members of PJM at that particular time were not importing western two-party power. Therefore, Philadelphia Electric and GPU had the ability to use the entire PJM import capability to import as much western power as was economical to receive.

Since that time all members of PJM are getting a share of western two-party coal energy into PJM. As a result, the PJM has had to go into an allocation procedure to determine how much each member can receive of the import capability of PJM.

What they have done is they have developed an allocation procedure based on the member's contribution to the transmission system which is allowing the power to come in. So, therefore, PE cannot import anywhere near the level of two-party power in the present or in the future that we were able to import in the year ending 6/82 when everybody wasn't trying to use the same transmission pass to get in two-party power; so that we cannot in any way achieve a level of 4 million megawatt-hours today or in the future.

Q. Further down on that same page, Mr. Carroll, Mr. Rosenthal and Mr. Hosler refer to the fact that the Metropolitan Edison Company purchased 21 percent of its needs through two-party purchases in January 1986 at a cost of 21.8 mills per kilowatt-hour.

Do you have any comments with respect to this testimony?

A. Yes. There are two items that stand out in this; one is the 21 percent of their needs. You've got to remember that Met-Ed is one of the members of the General Public Utilities group within PJM, and the General Public Utilities Group not only gets their share of the PJM transmission, but because that group, through Penelec, has direct ties with western systems outside of PJM, they can import without using the PJM facilities; they can use their own facilities, and then how GPU allocates it within their members is up to their own group. So it is easy to see where they could pick up 21 percent of a much smaller total system output.

In the month of January, they took in approximately 180,000 megawatt-hours. Philadelphia Electric took in 188,000 megawatt-hours.

As to the 21.8 mill cost, in a Federal Energy Regulatory Commission ruling and consent decree with American Electric Power, American Electric Power had to reimburse $22 million to purchasers of electric power for a period prior to 1982 because they were selling power based on the high priced coal -- low sulfur coal from the Upper Great Lakes region.

As a result, in the month of January 1986, American

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Electric Power started to reimburse the overcharges. Philadelphia Electric in that month received a credit for $236,603. Metropolitan Edison received a credit of approximately $2 million, so that all of the energy they received from American Electric Power during the month of January was at zero cost and they still have some additional credits coming to them.

If we look at the actual cost that PE paid during the month of January without the rebate credit, we paid $28.47 per megawatt-hour for our two-party purchases. With the rebate credit it dropped down to $27.22 per megawatt-hour.

Metropolitan Edison's cost without the rebate credit was approximately $33 a megawatt-hour, and with the energy credit then it came down to 21.8. So that is not what they paid; that is what they booked for the month based on the credit they received.

Q. Finally, Mr. Carroll, at the bottom of page 12 the Staff witnesses state that you were under-informed as to the November 19 filing of AEP and APS.

Do you have any comments with respect to that conclusion?

A. Basically, to start out with, the filing on November 19 was made by AEP. APS made no filing at that particular time. It was only an AEP filing. APS made no

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filing whatsoever.

Secondly, the comment about the fact that Section 1 deals with short-term power reservations, and they thought that that was the only one I addressed.

The Section 1 short-term power, what it did was it changed the capacity charges from a fixed fee of $1.25 per kilowatt-week to the ability of AEP to charge up to $1.25 per kilowatt-week. It set no additional rate. It just said that that is the max that they could charge.

Section 2 then, their old charge was cost plus ten percent for energy. It was changed to read "up to cost plus ten percent for energy."

Section 3 then put a limit on the total cost they could charge where they said it could not be less than 110 percent of the out-of-pocket costs.

Basically, in looking at the prices that we have used, we have reduced the capacity charge and we have not really considered the fact that we would be buying from AEP during this period of time, because the only path to get AEP energy into Philadelphia Electric is through APS. APS has an additional capacity charge of $240 per megawatt-week for transmission system reservation. We then must additionally pay APS for the losses of the transmission system to get AEP power across their territory, and APS has the right to put an adder on the fuel cost.

What is happening right now at this particular time is that of the contract of APS, they are getting 100 megawatts from AEP, or have allocated 100 megawatts of the total coming to PJM to AEP. There is no capacity charge on that. Therefore, they are only charging us cost plus ten percent on the energy. They can't drop that because it can be no less than 110 percent of the out-of-pocket cost.

So Section 2 and 3 does not apply right now, and if we went to look at the entire AEP purchases, we would have to add the APS.

The purpose of that particular filing was to make AEP competitive with the rest of the western power. We feel that in our projections we have made the prices which are competitive now, and all AEP would be able to do is either match it or have to come down sufficiently below it to make up for the additional cost to supply that power through the APS system, which is a filing requirement.

MR. MacGREGOR: Thank you, Mr. Carroll.

Mr. Carroll is available for cross-examination, Your Honor.

MS. CHESTNUT: May I have just a moment, Your Honor? I would like to review Mr. Carroll's oral sur-surrebuttal.

JUDGE MATUSCHAK: Very well.

(Pause.)

CROSS-EXAMINATION

BY MS. CHESTNUT:

Q. Mr. Carroll, good afternoon.

A. Good afternoon.

Q. Mr. Carroll, do you know if the agreement between APS and PSE&G with respect to the output of its Pleasant 2 unit was in effect for the year ending June 1982?

A. I'm sorry; would you repeat -- the output of what unit with PS?

Q. Pleasant 2.

A. No, I do not.

Q. Mr. Carroll, in your PECo Statement No. 22D you discuss the unit comparisons made by Mr. Rosenthal, and you make the point that with respect to the nuclear units, Mr. Rosenthal incorrectly looked at the capacity factors for all PWRs rather than just Westinghouse; is that correct?

A. That's correct.

Q. Am I correct that the other PWRs would primarily be the Babcock and Wilcox units?

A. Babcock and Wilcox and Combustion Engineering.

Q. How many Combustion Engineering PWRs are there?

A. I'm not sure of the exact number. I think it is something like eight.

Q. How many Babcock and Wilcox PWRs are there?

A. I don't know the exact number right now. It

seems like it might be six or eight; I'm not sure of the exact number.

Q. How many Westinghouse PWRs are there?

A. I think the number is somewhere in the neighborhood of 30, but I'm not sure, again, of that exact number.

Q. Mr. Carroll, are you familiar with the major safety investigation initiated by the NRC into possible design flaws of B&W PWRs?

A. With respect to what area?

Q. Well, my understanding is that it involves several areas; generally, over instrumentation and the steam supply system.

A. With respect to GE PWRs, did you say?

Q. No; I'm sorry. With respect to B&W, Babcock and Wilcox.

A. I knew they did a general investigation as a result of the TMI incident with respect to the Babcock and Wilcox. If there are any others you are talking about, no, I am not familiar.

Q. Do you have any knowledge as to the relative capacity factors of Babcock and Wilcox units compared to Westinghouse?

A. Right now I can't remember the relationship. I have seen it recently, but I can't remember the relationship; no.

Q. Would it surprise you to know that generally the lifetime average for Babcock and Wilcox units is lower than that of Westinghouse units, without getting into specifics?

A. As I say, I don't remember. But if that is your statistic, I will accept it subject to check.

Q. That's fine, Mr. Carroll.

Now, on Schedule 3 attached to your testimony, you present the development of normalized energy costs for the three-year period.

A. Yes.

Q. Can you tell me if the two-party transactions include cogenerated power, or would all cogeneration be under the heading of steam heat and cogen?

A. The anticipated cogen in this particular production cost program is under steam heat, cogen.

Q. And I see that for the year July of '86 through June 30, '87, you anticipate 97,000 megawatt-hours for steam heat and cogeneration; is that correct?

A. That is correct.

Q. And for the next year the comparable number is 111,500 megawatt-hours?

A. Yes.

Q. And in the third year it drops down to 40,100?

A. That is correct.

Q. Can you tell us why there is such a sharp decrease?

A. Yes. It is anticipated that Schuylkill No. 3, which is the steam heat, will retire in that particular period, so, therefore, we lose the majority of the steam heat.

Q. Were your estimates of cogenerated power equal during these periods?

A. No, they were not. I don't think there was much growth on it, but they were not equal, to the best of my knowledge.

Q. On page 5 of your statement, Mr. Carroll, and that is still on 22D, do you know if Hope Creek No. 1 has yet received its operating license?

A. To the best of my knowledge the answer is no, it has not received its low power license yet.

Q. Further down on that page, Mr. Carroll, you are talking about the reduced level due to economics and transmission limitations on west to east energy.

A. Yes.

Q. Are you talking more than normal transmission limitations there, any factors other than the normal transmission limitations?

A. No. I am talking about the transmission system that is in and the loading that would be placed on that

transmission system based on the operation of the units that are operating on the PJM.

Q. There are no major scheduled outages or line problems?

A. To the best of my knowledge there is nothing that is anticipated other than normal maintenance on our transmission system.

Q. Mr. Carroll, I would like to move to your Statement No. 22C, the performance standards for PECo nuclear units.

A. Yes.

Q. When you discuss the expected operating performance of Limerick No. 1, isn't it correct that you don't mention anywhere in the statement the effect of the water availability?

A. That is correct.

Q. With respect to your nuclear scenario begun at page 3 of your testimony, Mr. Carroll, is this the prospective schedule for each of the next three years?

A. I'm sorry; with respect to -- would you repeat that, please?

Q. Sure. You have a scenario concerning outages of your nuclear units.

A. Yes.

Q. I want to know: does that represent your

prospective schedule for that period?

A. No, it does not. That is a scenario. That has nothing to do with real life.

MS. CHESTNUT: Thank you, Mr. Carroll. I have no further questions.

JUDGE MATUSCHAK: Consumer Advocate.

MR. WERSAN: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. WERSAN:

Q. Good afternoon, Mr. Carroll.

A. Good afternoon.

Q. If I could refer you to page 10 of your Statement 22D. Starting at line 15 you discuss new production cost projections for the three years ending 6/30/87 through 6/30/89; is that correct?

A. That's correct.

Q. And you state that your new projections incorporate a number of revisions. The one I am interested in for the moment is number 2 where you state, "Staff proposed oil prices, constant for the three years."

A. Yes.

Q. When you say you used Staff proposed oil prices, what is your understanding of where the Staff got the oil prices that you are referring to?

A. In discussing with the Staff how they arrived

at their oil prices and in reading the Staff's testimony, they said they were taking the July 1986 oil prices and keeping them constant.

Q. Whose July 1986 prices, Mr. Carroll?

A. The July 1986 oil prices that were used to prepare Exhibit JJC-1.

Q. Which was your original ECRF filing?

A. Which was our original supplemental filing concerning the 80/20 in this case; yes.

Q. That was made in December; is that correct?

A. That is correct.

Q. The oil prices that were in JJC-1 that were filed in December, have those oil prices been changed from the oil prices you used in your production cost analyses to develop the projected energy savings from Limerick 1 when this case was first filed in September?

A. Subject to check, the answer is no, they were not changed.

Q. Mr. Carroll, at this time I would first like to show you what has previously in this case been identified and introduced for the record as OCA Exhibit No. 15, which is a copy of Interrogatory OCA-1-11, Revised. I would ask you if you recall the information that is in this document?

(Document handed to witness.)

A. Yes, I do.

Q. Does this look like the oil and coal prices that you presented on the first page of the attachment that you presented -- let me change that -- that you used as the basis of your production cost run when this case was first filed?

A. No. I think that there has been a change in the -- if you said oil price, yes, it is the oil price. There was a change in the coal price; but it is the oil price that we used.

Q. So when the company filed this base rate case in September, you were using the oil prices shown in what has been admitted as OCA Exhibit 15; is that correct?

A. I think that is correct; yes.

Q. When you prepared and submitted the 80/20 energy cost rate forecast, you used these same oil prices; is that correct?

A. That is correct.

Q. And it is these oil prices escalated from December 1985 to July 1986 that you have used in Exhibit JJC-2, which you are proposing to use as the new forecast for the ECRF filing?

A. Well, with one exception. It is the prices which we see in here, which were de-escalated from the 1985 prices on this page, escalated from the December -- I can't say whether they were escalated or de-escalated from the

actual December prices. I don't remember what the price of oil for Philadelphia Electric actually was in December 1985. But on this particular sheet the December prices were higher than we used in this particular run. Fourth quarter -- half a percent is 27.75; we used 27.10, I think, so it is de-escalated.

MR. WERSAN: Your Honor, at this time I would like to mark for identification as OCA Exhibit No. 88 the company's answer to Interrogatory OCA Set 29, Question 1.

JUDGE MATUSCHAK: Very well.

(Whereupon, the document was marked as OCA Exhibit No. 88 for identification.)

BY MR. WERSAN:

Q. Mr. Carroll, are you familiar with the response that the company provided to this question of the Office of Consumer Advocate?

A. Yes. This response was prepared under my direction.

Q. Am I correct that what the first part of the question asked for was the oil and coal prices that you used in the production cost forecast that has been included as Exhibit JJC-2?

A. That is correct.

Q. Am I correct that for No. 6 oil--which is also called residual oil; is that correct?

A. That is the common terminology for all types of No. 6 oil; yes.

Q. For No. 6 oil at 0.5 percent sulfur content you used the price of $27.108 per barrel?

A. That is correct.

Q. For 1 percent it was $26.107 per barrel; is that correct?

A. That's correct.

Q. Finally, for No. 2 oil, $32.088 per barrel.

A. That's correct.

Q. If you could compare that to OCA Exhibit 15, the prices you originally developed for this case, you would agree with me that they are fairly comparable to what you are then projecting to be the second quarter 1986 prices?

A. Yes. That is actually how we arrived at the prices for our projection, although the Staff specifically said they used the July prices, and we went back and took the prices which we had picked as the 30th of June prices and kept them constant because the actual July prices in the JJC-1 production had picked up the quarterly inflation as of the 1st of July, which basically was a midpoint of the third quarter. So we took that quarterly inflation out; we stopped at the inflation factor which was the mid-point of the second quarter and let it run through. There is a slight difference in the cents on the back end from

what you see in your Exhibit No. 15, I think you identified it as; and that is strictly a function of the accuracy of the inflation factors.

When we receive a projection from our Fuels Department, such as shown in OCA Exhibit 15, we use those particular prices to develop inflation factors, for quarterly inflation factors, and then we take where we are in the beginning, the known value where we are starting a particular study we are doing for any purposes, and use the inflation factors to arrive at a quarterly price.

In using those inflation factors we may miss by pennies, but we are within the ballpark of all those numbers. We don't put in a value of $27. We convert that $27 to an inflation factor for where we are, and then we attempt to arrive at $27. The inflation factor as a degree of accuracy we miss slightly.

Q. In your answer to OCA-29-1, which I have marked as OCA Exhibit No. 88, you have prices for coal for Eddystone, Cromby, Keystone and Conemaugh.

Would I be correct that in the document that has previously been admitted as OCA Exhibit 15, you show coal prices, and that was generally referred to as urban coal, representing Eddystone and Cromby?

A. That is correct.

Q. Could you explain to me why the Cromby coal price

that you used and showed in Exhibit 88 is $45.90, but the Eddystone price is $50.74 a ton?

A. Yes. There is a difference in cost between the coal which is delivered to Cromby and the coal that is delivered to Eddystone. Two factors make Cromby's coal cheaper. One is Cromby is in a rail zone which is outside the City of Philadelphia, and, therefore, the rail cost to deliver coal to Cromby is cheaper than it is to deliver it to Eddystone; yet in most cases it rides right by Eddystone before it gets to Cromby, but the rate structure is such that it is cheaper to go to Cromby.

The second thing is that there is a finer restriction on the limits of the properties of coal that go to Eddystone, so traditionally Eddystone coal has been a little bit more expensive than Cromby coal because Cromby can run a broader range of properties and burn it without any problems in the boilers and everything else. So that Cromby has always been cheaper than Eddystone.

Q. Is there a reason why in OCA Exhibit 15 you didn't show Eddystone prices separate from Cromby prices?

A. Traditionally, what the Fuel Procurement Department gives us is what they consider as an average cost for coal. They are always working with the average. They base that cost on what they think is a traditional burn between Cromby and Eddystone to arrive at their average.

What we do then is we turn around and, again, use it to develop inflation factors and take the actual cost we're seeing at Cromby, the actual cost we're seeing at Eddystone, and use it with the inflation factors which are developed from their average costs.

Q. The coal prices that you show for Eddystone and Cromby in Exhibit 88, are those the coal prices that you included in your December production cost run in JJC-1?

A. I'm trying to remember when we received the reduction in coal cost, because coal, I think, was originally -- in the second quarter of '86 was $47-something a ton; it dropped down to this $45.90 a ton. Right now, I don't remember whether that one came out after we ran JJC-1 or whether it came out before we ran JJC-1.

Q. The $45.90 price for coal is shown for the second quarter of 1986 in Exhibit 15, and the costs that you have included in your answer to OCA-29-1 for Eddystone and Cromby are either at or above the $45.90 that you originally included last September with your original filing. So, --

A. As I say, I'm not sure on coal, when the coal change came out. But if we're looking at the $45.90 for the second quarter of '86 versus the $45.90 for Cromby, the Cromby cost that we see here is the average cost that we have incurred for the entire year running from July '86

through June of '87. All right?

Q. Okay.

A. So, therefore, it is not comparable to that $45.90 at all, because that is prior to the test run. All right?

Q. Okay. Now, --

A. The only thing I will say is that if your Exhibit 15 -- and I'm having problems with the timing. If that was available at the December run, if that came out prior to the December run, it is the same cost we had in the December run.

Q. What is in Exhibit 15 I cross-examined you on in early December and was the basis for your original Limerick energy savings analysis, so --

A. Then it is the same one we had in the December run; it is the same one we have in this run.

Q. You referred once or twice to getting information from your Fuel Procurement Department for use in your production cost model; is that correct?

A. That's correct.

Q. Have you asked them what you are currently paying for coal at Eddystone and Cromby? -- let me change that. Did you ask them what you were currently paying for coal when you prepared the production cost run in Exhibit JJC-2?

A. No, I did not.

Q. Do you know what the current coal price is at Eddystone and Cromby?

A. I receive, as a matter of course within the working of the department, a price change sheet every time there is a price change for use in incremental dispatching of the system and for replacement energy on PJM.

That particular information is rolled automatically into the production cost runs that we go through.

We have seen --

Q. Which production cost runs that you go through?

A. The normal production cost runs of the company.

Q. For internal use?

A. For internal use.

I am trying to visualize that particular sheet right now. We have seen, in the last two months, an increasing coal cost of maybe a cent-and-a-half a million Btus. And the next one that came out, it dropped slightly because the Btus changed slightly in the fuel. We got one recently that brought it back down I think to the period -- very close to the level we were experiencing in December, because there was a slight drop in mine prices.

So that as I visualize that particular sheet right now, we're about the same cost in coal in the middle of February that we were in December.

Q. Let's look at your oil prices that you used in JJC-2. When you originally developed the oil forecast in Exhibit 15 that you presented with this rate case, who gave you the information you used? Was that from the Fuel Procurement Department?

A. That Exhibit 15?

Q. Yes.

A. That's from the Fuel Department, Fuel Procurement.

Q. Would that be under Mr. English's responsibility?

A. Yes, it would.

Q. Do you know what Mr. English is currently paying for oil, for residual oil, for Philadelphia Electric's plants?

A. I know what he has paid as of last week. We were able to get some residual oil in the neighborhood of about $17 a barrel; yes.

Q. Did you discuss with Mr. English the oil prices that you included in your production cost run for Exhibit JJC-2?

A. No. I stated in my testimony that I had used the oil prices which the Staff had recommended; and the reason for not using the Staff calculations was I thought that the ProdCost did a better job of taking into account all of the factors associated with oil. It takes into account all of the oil which is needed for auxiliary use,

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where the Staff had taken the dollars per megawatt-hour for a month and then multiplied that by the total megawatt-hours for the year. They didn't look to see whether that was a typical oil use month or whether it had high or low auxiliary oil requirements. Then I also used it within the ProdCost so it would accurately reflect the impact on Interchange prices.

So what I did was use the oil prices which I felt were closest to what the Staff said they used, and put it in the ProdCost.

Q. So you agree that the Staff was simply using your oil prices, only was not escalating them beyond July 1986?

A. The Staff accepted our prices and did not escalate it; that's right.

Q. Are you testifying today that you believe that the Staff's oil prices in their testimony are the prices the company is going to pay in 1986?

A. No, I am not testifying to that at all.

Q. If I could refer you to your Schedule 3 of Statement 22D. Starting at page 2 of 4 you give results for each of the next three years, for the years ending 6/30/1987, et cetera, and you show on the top line of each page megawatt-hours and dollars for "Oil - PE Steam;" is that correct?

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A. That is correct.

Q. And these dollar figures that you show in the right-hand column for each year are based upon the oil prices that you included in Exhibit JJC-2; is that correct?

A. That is correct.

Q. You also show Interchange from PJM in the form of "Received PJM" and "Delivered PJM." And it is my understanding that those prices are based upon the oil prices that we have been discussing that are in OCA Exhibit 88; is that correct?

A. Those prices are impacted to some extent by the oil prices we were just -- they are not completely dependent on the oil prices. The oil prices would have some impact on those prices; yes.

Q. Would you agree with me that the way in which oil prices impact PJM transactions is in the measurement of what the split savings rate will be?

A. If oil generation is used in determining the split savings. If oil generation is not used in determining the split savings, then oil has no impact on those particular megawatt-hours.

Q. In your opinion, is oil the predominant fuel that is the basis for measuring split savings transactions on the PJM?

A. In light of the nuclear generation we have in

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both the 6/30/87 year and the 6/30/89 year, it depends on your use of the word "predominant," whether I would have to agree with that or not.

Q. You said 6/88 and 6/89?

A. 6/87 and '89.

Q. Do you think that oil might be the predominant fuel 30 percent of the time?

A. Oh, yes, I think it is the predominant fuel 30. It may be 50; it may be slightly higher than 50.

Q. I would take it that if oil prices came down, then the costs PECo incurred for purchasing PJM power would also go down by some amount?

A. Yes, and also the value PECo received for PJM delivered would also go down.

Q. Would you agree with me, however, for each of the next three years you are projecting that PECo is a net purchaser of PJM power?

A. Yes, PECo is a net purchaser of PJM power, but that does not necessarily mean we are a net purchaser of oil power, oil-priced power.

Q. The only way you know what the results would be, I take it, would be by rerunning your production cost model?

A. Yes, because most of our delivered is in the peak period of time, which almost entirely is oil; and our received is all scattered through, and there could be an

awful lot of coal in there.

Q. You have two-party transactions also on your Schedule 3, pages 2 through 4. Does oil play a role in the pricing and the cost of two-party transactions?

A. No, it does not.

Q. You don't measure whether or not you are going to take two-party transactions against the rates that you are experiencing on the PJM and PECo systems?

A. You mean in the level or in the dollars? It does not --

Q. In the dollars.

A. In the dollars it plays no part. It could play a part on whether it is economical to take a megawatt in. But if we took the megawatt in, there is no oil factor in the price we paid for that megawatt.

Q. But the dollars will change as the megawatt-hours change; would you agree with that?

A. Yes. And if the megawatt-hours change, then something else has to change to compensate for it, because they still have to meet the total system output.

Q. Once again, the only way you would really know that is if you reran your production cost model?

A. That's the only accurate way to determine the impact on such a complicated process as this; that's correct.

Q. Mr. Carroll, the results of your Exhibit JJC-2, the production cost results, the company is proposing to use them to develop what the energy cost rate factor will be under the 80/20 proposal coincident with the end of this rate case; is that correct?

A. That is correct; yes.

Q. Would you agree with me that assuming everything else is equal in terms of outage scheduling and sales, for example, if oil prices go down from $28 a barrel that you have included in your production cost run to $18 to $20 a barrel as they are today, if not lower, that energy costs would also be lower as experienced by Philadelphia Electric Company?

A. I think that is a function of how long a period we are looking at, what the oil prices are going to do based on the $20 today, where they are going to go and what they are going to ultimately do over the three-year period we are looking at.

Q. How about over the next year, first, the year going from July 1, 1986 to June 30, 1987?

A. If we do not average $27 a barrel for 0.5 percent oil in that year, then the energy prices would be lower than this projection; that is correct.

Q. To the extent that there is an 80/20 ECR mechanism in effect and you over-price oil in your

production forecast, wouldn't the over-collections that that would result in accrue to the company through the 20 percent non-reconciled portion of the ECR?

A. For that portion of the projection in actual statistics, everything else being equal, that is correct.

MR. WERSAN: Mr. MacGregor, I would like to make a transcript request of the company that it provide rerun Schedules 3 of Mr. Carroll's Statement 22D in which the oil prices that the company is currently paying are included, rather than the oil prices shown in OCA Exhibit 88.

I am requesting that -- I recognize that it might take a few days to develop that information, though I understood from Mr. Carroll that he is constantly inputting new data as it comes in -- because I believe that in order to measure what the ECRF should be at the end of this case, we need the most accurate oil prices available.

MR. MacGREGOR: I don't think that the current price we are paying is the most accurate for the next year, and I would object to providing a whole new computer run on the last day of the record hearings in this case unless we are going to come back for more cross-examination and more testimony.

There is no testimony on the record -- the OCA has not proposed any alternative oil price, and I don't see how you can come in at this point in the case and be

proposing something different as to the oil price on the last day of the hearings on this part of the case.

MR. WERSAN: Your Honor, yesterday Mr. English for the company testified that he purchased residual oil last week for $17 a barrel, and Mr. Carroll just agreed.

Mr. Hogan this morning, the other oil witness presented by the company, testified today that it was his understanding that the average price being paid for a combination of spot market and long-term contracts was $18 to $19 a barrel.

As I read your ruling on the motion, which I received on March 12, regarding the Staff 80/20 motion to strike, you stated: "As we view it, the Commission directed us to ensure that the correct ingredients were included in PECo's ECR, for without proper ingredients, the Commission's 80/20 provisions would be meaningless, could be manipulated and would fail to establish the effect intended."

I don't see how we can establish an ECR at the end of this case based upon the oil prices that Mr. Carroll has included in Exhibit JJC-2.

Certainly, to the extent the Commission is going to investigate the 80/20 in this case, it has to be able to order the company to implement an ECR based upon the Commission's view of what energy prices should be.

I don't believe that the close of the record in this

is a limiting factor on what the Commission is going to order the company to do on its ECR. Moreover, we would agree to hold the record open for receipt of that information.

MR. MacGREGOR: Hold it open for further cross-examination and further testimony then as well. The spot price we happen to be paying for oil today has virtually no relationship whatsoever to the oil price we would use in this model, which is for the next three years, or for at least the next one year that begins July 1, '86 and runs through June 30, 1987.

The cost of oil or the price of oil in that is the total inventory of Philadelphia Electric Company, of its oil inventory, not what it happens to be paying on a spot basis at a particular point in time.

To rerun the computer model at some spot price on a particular point in time which does not reflect the current inventory value of Philadelphia Electric oil, and certainly does not have any relationship to what the average inventory is going to be for the first year these rates are in effect, is burdensome, meaningless and is not timely.

MR. WERSAN: Your Honor, no company witness has testified now that they are paying $28 a barrel or expect to pay $28 a barrel in 1986 or 1987. And to base an ECR on that is just -- I find that incredible.

MR. MacGREGOR: We are not establishing the ECR today. We are establishing it for next year.

MR. WERSAN: You are establishing it starting July 1, 1986, to run for a year; and no one has said oil prices will be $28 a barrel for the rest of this year on behalf of PECo or any other party.

MR. MacGREGOR: And no one has said they will be anything different, either, certainly no witness of yours.

MR. WERSAN: Your Honor, Mr. English testified as to his view of what oil prices would be --

MR. MacGREGOR: -- today.

MR. WERSAN: -- throughout this year.

No; he said $17 a barrel yesterday, that he bought last week, and he said in the low 20s at a maximum through the rest of this year, and he projected it to be flat.

We can check the transcript, if you would like.

MR. MacGREGOR: And this goes through June 30, 1987. That is not the end of this year.

JUDGE MATUSCHAK: I think the testimony of Mr. English was, Mr. MacGregor, -- I think he thought that it would not be over $20 for the next year. I think he indicated it might be $18 or $19, but not over $20.

MR. MacGREGOR: I believe that is through 1986, Your Honor.

MR. WERSAN: I think the transcript will speak for

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itself.

MR. MacGREGOR: We have the transcript here. We can look at it.

JUDGE MATUSCHAK: Let's look at the transcript.

(Parties perusing transcript.)

JUDGE MATUSCHAK: I think on page 4358 the question was: "What is your current prediction for the price of residual oil for the rest of 1986?"

MR. MacGREGOR: That's what I said, Your Honor; 1986. The first year rates will be in effect in this proceeding runs from July 1, '86 to June 30, 1987, so Mr. English was not testifying that the oil price would be $17 for the first year rates would be in effect, which is exactly what I said.

MR. WERSAN: Your Honor, for oil prices to be $27 a barrel over the first year in Mr. Carroll's production cost model, if they are $17 a barrel for the first six months, they would have to be about $40 a barrel in the last six months to make up the average.

MR. MacGREGOR: It is the average of the inventory. Even if we start paying $17 now, that won't be the average inventory value of Philadelphia Electric Company oil for the rest of this year. We don't replace our inventory instantaneously every day.

MR. WERSAN: It is a 60-day inventory, --

MR. MacGREGOR: So there is at least a 60-day lag, if not more.

MR. WERSAN: Wait a minute, Mr. MacGregor, you're testifying now.

MR. MacGREGOR: We're still arguing about JJC-2.

MR. WERSAN: That's fine, but I don't want you testifying on how long your inventory lag is.

MR. MacGREGOR: I am arguing the motion.

JUDGE MATUSCHAK: It was further testified that for the year 1987 there would be an increase which would move it up to the 20s.

The question was: "Into the 20s, the late 20s; is that your best estimate?" And he says, "Probably."

MR. POPOWSKY: Your Honor, I believe there is a typo in the question. I asked that question. It should say: "In the 20s; in the low 20s?" I believe it says "the late 20s."

MR. MacGREGOR: I am not going to accept that correction at this point.

MR. POPOWSKY: "Late 20s?" You mean like 1920 to 1929?

MR. MacGREGOR: I don't know what the question was.

JUDGE MATUSCHAK: My recollection is that the question was "In the low 20s?"

MR. POPOWSKY: It is in the question. It is not in

the answer, in any case.

JUDGE MATUSCHAK: While you are right that it may not be fair to the consumer to use the rates that are projected, on the other hand, it may not be fair to the company to project spot rates for the next -- at least the next year.

Can we stipulate some average cost or use some other basis by which we can estimate the probable cost at least for the next year, for a one-year period?

MR. MacGREGOR: Your Honor, the problem I have is, if the OCA had wanted to propose a different oil price, there have been various testimony filing dates for 80/20 ECR testimony throughout this proceeding. If the OCA or any other party wanted to propose a different oil price, they could have.

The company proposed a price. The Staff didn't agree with it and proposed an alternative price. We accepted that price. We reran the model. We put that in our rebuttal testimony. Now, when the record is about to close on this issue, the Consumer Advocate pops up and says: Oh, no, I want to use a different price even though I didn't put any testimony in on this issue, and now I want a complete rerun of the company's computer model on the last day of the record for this part of the case. I don't think that is right.

MR. WERSAN: Your Honor, Mr. Carroll's Exhibit JJC-2 was not filed months ago, it was filed quite recently, and the interrogatory response we got from the company was received just a few days ago.

MR. MacGREGOR: We have been litigating the 80/20 since December of 1985.

MR. WERSAN: That's right. And oil prices have been falling ever since we started litigating the case, and they keep falling; and we don't think you should use a price in September 1985.

MR. MacGREGOR: You could have put some testimony in on that fact. The Staff did.

MR. WERSAN: Mr. English came in and testified as to prices for the company. That's why we cross-examined him; that's why we asked him what he is paying for oil.

MR. MacGREGOR: What he is currently paying for oil right now is not the average value that would go into a ProdCost run even if we ran it for the first year that rates were going to be in effect.

MR. WERSAN: Your Honor, I believe the company has a burden of proof to show that the elements of its rate filing are factual and reasonable. I don't think they have met their burden of proof on these $27 or $28 a barrel for oil, especially since Mr. Carroll, when I asked him if he was testifying that that is a reasonable number, as I recall,

he was not supporting Staff's number, but was using Staff's number, which, of course, was his December number.

Now, if the company has a problem with $17 a barrel that Mr. English testified to yesterday, it is possible that they could bring in Mr. English or we could discuss it with Mr. English and he could tell us what he is forecasting for the next year.

I recognize there is a dispute between the Staff and the company as to whether they should use three-year data or one-year data, but certainly the next ECR will be in effect for one year, and those rates, I think, should reflect the most recent data it can.

In Exhibit 88 Mr. Carroll indicated the time requirements for rerunning his production cost model, and he indicated from five to ten days, depending on what was requested.

I don't think that is either burdensome or untimely considering the magnitude of the dollars at stake.

MR. MacGREGOR: The record is closed on this issue today.

JUDGE MATUSCHAK: Is there some other way we can resolve this matter without going through a computer run?

MR. MacGREGOR: Could we have a five-minute break to discuss it with the Consumer Advocate, Your Honor?

JUDGE MATUSCHAK: Yes.

(Recess.)

JUDGE MATUSCHAK: When you're ready.

MR. WERSAN: Your Honor, it is my understanding that Mr. Carroll called back to Philadelphia Electric Company and spoke to someone; I presume Mr. English?

MR. MacGREGOR: That's correct.

MR. WERSAN: About a number to be used as an average price for the period July 1, 1986 to June 30, 1987.

Maybe Mr. Carroll could tell us exactly what that number was.

THE WITNESS: I asked Mr. English in his testimony of what he gave yesterday and everything else, talking about a period starting July, 1986 through June, 1987, did he feel that he could support for half a percent on a cost of about $24 a barrel, and he said he felt that based on the fact that we were -- I think his word was mushing around that price of $17 to $20 a barrel now, and the fact that it could get up to the present prices or the old prices that we knew by late 1987 or very early 1988, that that period of time, about $24 a barrel would seem like a good average price to use.

What it is going to do to average $24 a barrel, I will have to give some consideration to, but he felt that $24 would be a good number.

BY MR. CLARK:

Q. Did you propose the $24 to him?

A. I asked him if he felt that would be a reasonable number or what would he think would be a reasonable number, and he said he felt that would be a reasonable number.

JUDGE MATUSCHAK: Can we stipulate on the price of $24?

MR. WERSAN: One moment.

(Pause.)

BY MR. WERSAN:

Q. Mr. Carroll, you gave us a price for half a percent. What would be the price for one percent residual?

A. It would probably be the traditional dollar a barrel less, about $23.

MR. WERSAN: Your Honor, I can't say that the OCA agrees with Mr. English's oil price. I guess, to the extent the company would agree to provide Mr. Carroll's Schedule 3 rerun with those oil prices, we would certainly like to have them come into the record.

I am not saying that we will stipulate that that is a reasonable price, but it appears to be the best that we can get from the company as a run, unless Your Honor is willing to order them to use a different price.

MR. MacGREGOR: Your Honor, could I just make two points: first of all, that this rerun would only be for the first year, not for the three years. We are not proposing $24 a barrel for the next three years.

And secondly, I think it is important to understand

that we're dealing with a total energy cost figure here, which can vary for any number of reasons.

I mean, if we wanted to come in and present an entirely new computer run now, there might be other changes that would go in the other direction.

So, while the Consumer Advocate might not think $24 is a good price, there may be changes in sales, changes in unit output maintenance schedules and many other things that could revise this number.

I don't think we want to get back into a situation where we are rechecking and rerunning every parameter.

JUDGE MATUSCHAK: Does the company volunteer and agree that for the first year, to have this Schedule 3 rerun on the basis of $23 and $24?

MR. MacGREGOR: Yes, for the first year. We would do that, Your Honor, and supply it as soon as it is available

JUDGE MATUSCHAK: We will direct the company to do that.

MR. WERSAN: Thank you, Your Honor.

Your Honor, that's all the cross I have. I would like to move into evidence OCA Exhibit No. 88 at this time.

MR. MacGREGOR: No objection.

JUDGE MATUSCHAK: OCA Exhibit No. 88 is admitted into evidence.

(Whereupon, the document marked OCA Exhibit No. 88 was received in evidence.)

JUDGE MATUSCHAK: Any other cross-examination of this witness?

MR. CLARK: I have some cross, Your Honor.

CROSS-EXAMINATION

BY MR. CLARK:

Q. My name is Roger Clark, and I represent the Governor's Energy Council. At the beginning of your time on the stand, you addressed a couple of points in Dr. Wilson's surrebuttal testimony on the energy cost rate levels. That was GEC Statement No. 1B.

The first point that you mentioned was with respect to economic dispatch and the energy cost rate. Would you please read the section from Dr. Wilson's testimony that you are responding to? I have a question about whether or not the question was asked properly.

MR. MacGREGOR: I don't recall saying anything about economic dispatch in either my question or Mr. Carroll's answer, but go ahead.

THE WITNESS: On the bottom of page 4 it says, "What can be influenced by the choice of ECR procedures, however, is a utility's generation, maintenance and construction program and its other operating policies which determine the plant that will be available for dispatch."

And it was my thinking that the question referred to the fact that we would modify our maintenance, and other operating policies would be influenced by the choice of the ECR procedures. That's what I understood the question to be. That's what I was answering.

Q. But you agree with the sentence prior to that from Dr. Wilson's testimony that there is no reason to believe that economic dispatch will be significantly influenced by the choice of ECR procedures?

A. Yes, I agree with that.

Q. The second point in this statement that you discussed was on the bottom of page 6 and the top of page 7 where Dr. Wilson was estimating what a capacity factor might be if you were only going to take into account planned outages for refueling and scheduled maintenance.

And you challenged his estimate of 80 to 90 percent capacity factor, only if you are accounting only for planned outages, is that correct?

A. I took the word to say only planned outages for refueling and scheduled maintenance. In our thinking, there are two types of outages. There's a planned outage and there's a scheduled outage, as opposed to a forced outage.

The scheduled outage is not necessary at the same time as your planned outage, and may be of one week's duration to try and correct a problem before it creates a

forced outage. And that's what I addressed, was the planned outage, which is your refueling, 18-month cycle outage and your scheduled maintenance outages which are usually one or two weeks' duration to correct a problem before there's a forced outage, and had no other outages considered.

Q. If you were to suggest a capacity factor based only on those planned and scheduled outages, what do you feel a good nuclear generating station would be able to achieve?

A. I haven't had the opportunity to give that much thought to the question, so I would hate to have to give you a number right off the top of my head at this point in time.

Q. Mr. Carroll, on page 6 of your rebuttal testimony, Exhibit 22C, beginning about line 20 on that page, you have a sentence discussing the non-linear incremental costs of generating stations, and you say the costs increase faster as nuclear costs go down -- I'm sorry, nuclear performance goes down than they decrease as nuclear generation increases.

Do you see that point, beginning about line 20?

A. Yes.

Q. Doesn't that indicate then that the technology in a way makes -- that there is an asymmetric impact of good performance versus bad performance, due to the inherent nature of the cost of operating the facilities?

A. I don't know what you mean by, the technology makes an asymmetric --

Q. I'm sorry. The way the plants operate and the economic dispatch, a 5 percent drop in performance costs you more than a 5 percent increase?

A. Part of that is because of the fact that you are going to be using a particular type of equipment a very small amount of time.

Then what you do is, you sacricice the operating cost for a low installed capacity cost, such as putting peaking units in.

And the more you would have to use those peaking units, the faster the incremental cost would go. Also, if you put in a cycling unit as opposed to a base load which has large clearances in the turbines so that you can take the unit on and off every day, then the heat rates of those units are not as good as base load designed with very small clearances in the turbine.

The heat cycle has very few heaters in it, because the anticipated capacity factor does not justify the high capital cost.

So therefore, as you use more and more of those units in developing your output, the cost goes up faster than if you are shutting all of those units down and then backing off on base load units because you have a very high

performance factor on your nuclear units.

Now, if that's what you mean by "the technology," I think really that's good use of technology, that has created that situation, and a minimization of the overall cost of producing electric power.

MR. CLARK: Thank you.

No further questions, Your Honor.

JUDGE MATUSCHAK: Any further cross-examination?

(No response.)

JUDGE MATUSCHAK: Any redirect?

MR. MacGREGOR: I have no redirect, Your Honor.

JUDGE MATUSCHAK: Thank you.

(Witness excused.)

MR. MacGREGOR: Your Honor, we call as our final witness on the 80/20 issue Mr. Hill, who has previously been sworn.

Whereupon,

THOMAS P. HILL, JR.

having previously been duly sworn, testified further as follows:

MR. MacGREGOR: Your Honor, I have previously distributed to the parties, to the court reporter and Your Honor copies of six statements which are various rebuttal, surrebuttal and sur-surrebuttal testimonies of Mr. Hill. He will be standing for cross-examination on some of these

statements today and on others later in the week, but I thought it might be useful to simply move them into evidence at this time, subject to cross-examination either today or later in the week.

JUDGE MATUSCHAK: Very well.

MR. MacGREGOR: The first is a document entitled "Additional Rebuttal Testimony of Thomas P. Hill, Jr., Re: Phase-In, Discount Rate, Energy Savings Guarantees, Performance Standards, and Revenue Requirement Quantification for the Costs of the 1976 and 1978 Delays."

I would ask that that document be marked for identification as PECo Statement No. 18D.

The second is entitled, "Supplemental Rebuttal Testimony of Thomas P. Hill, Jr., Re: Corrections to Revenue Requirement Quantification for the Cost of the 1976 and 1978 Delays." I would ask that that be marked for identification as PECo Statement No. 18E.

The third is entitled, "Additional Rebuttal Testimony of Thomas P. Hill, Jr., Re: 80%/20% Energy Cost Rate Mechanism." I would ask that that be marked for identification as PECo Statement No. 18F.

Statement No. 18G was previously admitted into evidence last Thursday, March 6.

The next document is entitled, "Additional Sur-surrebuttal Testimony of Thomas P. Hill, Jr., Re:

Limerick Related Issues from Governor's Energy Council, Utility Users Committee, and Philadelphia Area Industrial Energy Users Group." I would ask that that be marked for identification as PECo Statement No. 18H.

The fifth document is entitled, "Additional Supplemental Direct Testimony of Thomas P. Hill, Jr., Re: Commission Tentative Amended Order at Docket C-78080459." I would ask that that be marked for identification as PECo Statement No. 18I.

I would note for the record that that statement was filed in response to requirements in a tentative amended order entered by the Commission on February 18, 1986 in the Keystone Alliance case which directed the company to file certain information concerning certain expense claims in this document for consideration by the Commission in this proceeding.

The final document is entitled, "Additional Sur-surrebuttal Testimony of Thomas P. Hill, Jr., Re: Limerick Related Issues from Trial Staff." I would ask that that be marked for identification purposes as PECo Statement No. 18J.

JUDGE MATUSCHAK: Very well.

(Whereupon, the documents were marked PECo Statements Nos. 18D, 18E, 18F, 18H, 18I and 18J for identification.)

DIRECT EXAMINATION

BY MR. MacGREGOR:

Q. Mr. Hill, do you have before you copies of the six documents that have been marked for identification as PECo Statement Nos. 18D, E, F, H, I and J?

A. Yes, I do.

Q. Were these documents prepared either by you or under your direct supervision?

A. They were.

Q. Do you have any additions, corrections or changes to make to any of those documents at this time?

A. I have one change to make to PECo Statement No. 18I, page 7, line 27. There is a transposition of numbers. It currently reads, $741,012. It should read, $714,012.

Q. Mr. Hill, if you were asked the same questions contained in these six statements again today, would your answers be the same as those contained therein, and would they be true and correct to the best of your knowledge?

A. Yes, they would.

MR. MacGREGOR: Your Honor, I would ask that the documents that have been marked for identification previously as PECo Statements Nos. 18D, E, F, H, I and J be admitted as evidence in this proceeding subject to any timely motion to strike or other objection.

JUDGE MATUSHCAK: The motion is granted.

(Whereupon, the documents marked PECo Statements Nos. 18D, 18E, 18F, 18H, 18I and 18J were received in evidence.)

MR. MacGREGOR: Your Honor, Mr. Hill is available for cross-examination on the material contained in any of these statements, with the exception of the revenue requirement quantification for the cost of the 1976 and 1978 delays.

It is my understanding that that will be taken up later this week. In addition, I would note that Mr. Hill will be here later in the week in the event that there are certain areas outside the 80/20 ECR that the parties wish to ask questions on at some other time.

MS. CHESTNUT: Your Honor, I am not prepared to cross Mr. Hill on any of the Limerick revenue requirement issues right now. My cross is limited to the 80/20 portions of his testimony.

MR. MacGREGOR: That's what I meant to say, that the Limerick revenue requirement would not be crossed today. There are items other than the 80/20 ECR that are contained in these statements that relate to some of the testimony by the Philadelphia Area Industrial Energy Users Group, for example, and some other items including the response to the Keystone Alliance order that Mr. Hill would be available to respond to today to the extent that any party is ready to proceed.

In addition, Your Honor, I have two or three brief questions in the nature of oral sur-surrebuttal for Mr. Hill on the subject of the 80/20 ECR.

BY MR. MacGREGOR:

Q. Mr. Hill, at page 2 of his surrebuttal testimony, Dr. Wilson states that there is a reduced need in his view for fuel adjustment clauses today as compared to the 1970s due to reduced volatility of fuel prices.

Do you agree with his conclusion in this regard?

A. No, I do not. I think there are several reasons why I don't agree with Dr. Wilson's conclusions, the first being, I guess the strongest support for my argument that an ECR is required is evident by the warm exchange we had here just a few moments ago concerning the volatility of oil prices.

Oil prices have in fact fallen, and there are projections for them to increase. They fell rapidly. They fell within a matter of a few months.

On that basis, I think, as an ECR operates to benefit the company in terms of recovery of costs, one of our elements of cost, the ECR also acts to protect our customers by allowing for changes in fuel prices to be reflected in that element of the cost of service.

In addition, there are still large variations in the unit prices of fuels, specifically coal, oil, nuclear. As

we begin to shift generation from one unit to another, these price variations cause swings in Philadelphia Electric's total energy bill, and again that has a major impact on the company as well as our customers.

The third element as to why we should maintain an ECR or why it is still required, the energy bill today is much greater than it was in the 1970s.

The absolute, actual dollars that Philadelphia Electric Company spends on its fuel bill and its purchases is much greater than it was in the early and mid-seventies.

And without an Energy Cost Rate or a fuel adjustment, those swings in cost would be felt by the company in terms of its earnings, and would substantially add to the company's financial risks.

The fourth reason that I believe an energy cost is required is that energy clauses or fuel adjustments are not just utilized to track changes in prices.

There are other reasons why the fuel bill or the energy bill for Philadelphia Electric varies. As I have mentioned in my testimonies, the changes in sales, weather, the performance of other units on the Pennsylvania-Jersey-Maryland interconnection as well as outside purchases all act with fuel price changes to change the total cost of energy for Philadelphia Electric Company.

I think Dr. Wilson's conclusion is incorrect, that an

energy cost rate is as mandatory today or is as required today as it was in the mid and late 1970s.

JUDGE MATUSCHAK: I think we are beyond that anyway, aren't we? The Commission determined that question. We don't have to determine that question, whether there should be an ECR or not.

The Commission had indicated that they were not in favor of abolishing the ECR. And as far as that is concerned, we think we are way beyond that.

MR. MacGREGOR: We agree with that, Your Honor. We simply wanted to respond to the testimony presented by Dr. Wilson.

BY MR. MacGREGOR:

Q. Mr. Hill, on page 11 of his surrebuttal testimony, Witness Wilson proposes adopting unit sales terminology for use in the company's energy cost rate as compared to the company's current language which uses the term firm classification.

Do you have any comment with respect to his proposed change?

A. Yes. I have read Dr. Wilson's direct testimony as well as his surrebuttal testimony, and I believe he has a fundamental misunderstanding of the operation of the company's energy cost rate.

Our energy cost rate is a jurisdictional energy cost

rate. The F factor, the cost of fuel that goes into the formula, has already been reduced to a jurisdictional basis.

Dr. Wilson seems to think we have to change the word "firm" to "unit" in our tariff when we define those sales which act as the denominator in developing the unit cost of fuel.

As I have explained in several of my surrebuttal statements, the company reduces or utilizes only jurisdictional sales to divide into jurisdictional energy cost in order to find the current cost of fuel in our energy cost rate.

The only sale that falls out of the company's jurisdiction right now is a wholesale sale that we make to Conowingo Power Company, which is a wholly owned subsidiary.

We reduce the cost of energy on an allocated basis, on a system to company allocated basis, and we likewise reduce the sales used in the denominator by removing those wholesale sales such that we have like amounts or equivalent amounts, if you will, of sales and dollars of fuel cost in the fraction that we are developing for unit cost.

I think Dr. Wilson's offered wording change from firm to unit sales is totally inappropriate.

Q. Finally, Mr. Hill, at page 7 of their surrebuttal testimony, Mr. Rosenthal and Mr. Hosler state that any interim

adjustment to the energy cost rate should apply over a subsequent 12-month period rather than over the remainder of the ECR computation year, and in support of that they cite the Commission's order in the Gas Cost Rate No. 5 investigation at Docket No. M-78050055.

Do you have any comment with respect to that comparison?

A. I believe the comparison is inappropriate. I believe my understanding of the Commission's Bureau of Audits' current thinking on the matter is that when the company makes an interim adjustment to the energy cost rate, such an interim adjustment will not be in effect for a 12-month period but rather will be in effect for the remaining months of the computation year.

The company has filed three interim adjustments to our ECR, and in each instance we have made that adjustment for the remaining months of the computation period.

I think the GCR, the gas fuel adjustment clause is in a different situation altogether. Gas has a very major portion of the sales --the gas company's gas sales are seasonal sales, particularly the house heating sector.

In those circumstances, I can agree with the Staff's position that an adjustment might be appropriate over a longer period of time, and even perhaps a 12-month period because you have this lump or this hump of sales occurring in

the winter heating season.

If I made an interim adjustment after or part-way through that heating season, I would not be passing back that benefit of over/undercollection to the proper class of customers.

That seasonality, while there is seasonality in electric sales, it is not the same or to the same degree that we see in our gas sales. So, I think it is a very unique situation.

MR. MacGREGOR: Thank you, Mr. Hill.

Your Honor, Mr. Hill is available for cross-examination.

MS. CHESTNUT: Could I have just a second, Your Honor, to review something?

JUDGE MATUSCHAK: Yes.

(Pause.)

CROSS-EXAMINATION

BY MS. CHESTNUT:

Q. Mr. Hill, are you employed by the Bureau of Audits?

A. No, I am not.

Q. Have you ever been?

A. No, I have not.

Q. You don't purport to speak for the Bureau of Audits in this proceeding, do you?

A. I don't think I have ever purported to speak for the Bureau of Audits.

Q. Isn't it correct, Mr. Hill, that the F factor is calculated on a total company basis, not a jurisdictional basis?

A. The F factor is reduced to reflect jurisdictional sales. We take the total energy cost and then we reduce the energy cost to reflect a reduction from Philadelphia Electric Company total system to a jurisdictional basis.

Q. Is that done in the calculation of the F factor or is that done as part of the reconciliation?

A. It's done as part of the reconciliation.

Q. Mr. Hill, how many times in the last six years has PECo's projected energy cost been suspended for investigation?

A. Two have been suspended, to my knowledge, ECR-8 and ECR-9.

Q. In either of those cases, were the company's projected energy costs suspended for investigation?

A. No, they were not.

Q. So, the answer is never?

A. In those two, they were not.

Q. In the last six years, has the company's projected energy cost ever been suspended for investigation?

A. Not to my knowledge.

Q. Under your ECR proposal, Mr. Hill, the 20 percent unreconcilable piece would be examined in annual filings pursuant to the ECR procedure currently in effect, isn't that correct?

A. Yes, that's my proposal.

Q. So, the company would file projected energy costs in June of 1986, 1987 and 1988, is that correct?

A. I believe 30 days prior to effectiveness, yes.

Q. And the effective date would be July 1, is that correct?

A. July 1, that's correct.

Q. The energy cost to be established at that time --

A. I would also add that I would recommend that we would be filing as we do now, a preliminary ECR-F value 60 days prior to implementation.

Q. So, the energy cost would be established at that time, and then at the end of the period, 80 percent of the experienced variation would be reconciled?

A. Yes.

Q. If the company files for a general rate increase in September of 1987, would projected energy costs be looked at in that proceeding?

A. They could be, yes.

Q. If the energy costs are to be looked at every June under your proposal, what is going to be looked at in

the general rate proceedings reference by the Commission?

A. The Commission could look at the company's data that it filed, the same data, if it was current. There might be some requirements for revision to that filed data based upon additions or retirements of production plant.

Q. There would be no need to look at it in a general rate proceeding, would there, since it would be done on an annual basis?

A. If it was the Commission's desire to conduct a more extensive review during a base rate proceeding based on the company's filed data, they could certainly do that.

Q. A general rate proceeding is a filing pursuant to Section 1308 rather than Section 1307, isn't that correct?

A. Yes.

Q. And in its ECR No. 8 order, the Commission explicitly used the term "subsequent general rate filing," isn't that correct? In fact, you mention that in your testimony?

A. Yes, I have that reference in my testimony, with the footnote.

Q. At pages 5 and 6 of your Statement 18F, you make the statement that, "An adjustment to the base cost of fuel at this late stage in the proceeding would be counterproductive," is that correct?

A. Yes, I do.

Q. You're not saying that the Staff's proposal is untimely, are you?

A. Yes, I am. I think the company has filed their recommended change in base cost, or recommended base cost for the energy cost rate factor.

I think the intervenors have filed testimony, particularly those intervenors involved in the rate structure area of the case. I think they based their case on the basis of the allocations and data utilized or calculated by the company.

And I think it is a very late date to put in a recommended revision to the base cost of fuel, not allowing the Consumer Advocate or the industrials or any other party to come in and question that revised base cost.

Q. What was the filing date for Staff's GCR testimony?

A. I don't have the date. I don't know, offhand.

Q. Would you accept, subject to check, it was February 7, Mr. Hill?

A. I will accept that, yes.

Q. Do you know what date Staff filed its testimony?

A. No, I do not.

Q. Do you have any reason to disbelieve it was late?

A. I said timely in terms of the other elements of the rate case. I didn't say they filed it late. If it sounded like that, that was not my statement. I said it was

filed late in the proceeding relative to the other elements of the case going on. The rate structure portion of the case is wrapped up. It wrapped up early this week.

And we are still talking about a revision to the base cost of fuel. I don't think that affords those parties the opportunity to discuss it.

JUDGE MATUSCHAK: I am going to ask the parties to speak louder. I am having a little difficulty.

BY MS. CHESTNUT:

Q. How long did it take the company to respond to the Commission's ECR-8 order?

A. The company filed its response to the Commission's ECR-8 order within the time frame allowed by that Commission order.

Q. How long was it?

A. All I know --

Q. Two months, wasn't it, 60 days?

A. If that was the allotment, yes. I believe we filed it a day or two earlier, the 30th of December.

Q. When do you think Staff should have filed its ECR testimony?

MR. MacGREGOR: Objection, Your Honor. Staff filed its testimony in accordance with the schedule that was established by the parties. That is not Mr. Hill's point. He has already said it was not his point.

JUDGE MATUSCHAK: What was the question?

MS. CHESTNUT: I asked Mr. Hill when we should have filed the ECR testimony so that in his opinion --

JUDGE MATUSCHAK: What?

MS. CHESTNUT: I asked Mr. Hill when he thought Staff should have filed its ECR testimony, and then I was going to ask him --

JUDGE MATUSCHAK: Well, he can't speak for Staff.

MS. CHESTNUT: Your Honor, he made the statement that it's counterproductive, that it's too late for the base cost of energy to be looked at. Just because the company filed a proposal doesn't mean it's accepted.

JUDGE MATUSCHAK: The objection is sustained. If you want to counter that statement, do it with your witness.

BY MS. CHESTNUT:

Q. At page 3 of your Statement No. 18F, you make a statement concerning the Staff there. "The Staff has recognized that the portion of energy costs subject to reconciliation is subject to modification and, therefore, on the same basis, the 20 percent element not subject to reconciliation should be subject to similar modification."

Do you see that reference?

A. Yes, I do.

Q. Could you tell us the basis for your statement there concerning the 20 percent element?

A. I think the Commission's ECR-8 order states that the company will file an energy cost projection, one, one energy cost projection, not two, not one which is a three-year normalization and one that's a one year projection.

We are required to file one energy cost projection. And therefore my statement is that if 80 percent is in fact subject to reconciliation, which Staff recognizes, then likewise the 20 percent element not subject to reconciliation should be constructed on the same basis.

Q. You're not saying, though, that it's Staff's position concerning the 20 percent element?

A. Staff has proposed that the company be allowed to modify 80 percent of its energy costs on an annual basis. That is my reading of Mr. Hosler and Mr. Rosenthal's testimony.

Q. That's not the part that I am questioning you about.

A. That is what I am responding to. That was the basis for my statement on lines 18 through 22 of page 3.

Q. The part of that sentence starting, "... therefore on the same basis," that is your opinion?

A. That is my opinion.

Q. It's not the Staff's opinion?

A. That is correct.

Q. At page 17 of your statement, you make some

pronouncements concerning, a utility's behavior and actions are prudent unless there is a showing to the contrary, is that correct?

A. Yes. I am responding to some of the statements made by Dr. Wilson.

Q. Who has the burden of proof with respect to proposed rates?

A. The company.

MS. CHESTNUT: Thank you. No further questions.

JUDGE MATUSCHAK: Consumer Advocate?

CROSS-EXAMINATION

BY MR. WERSAN:

Q. Good afternoon, Mr. Hill.

A. Good afternoon, Mr. Wersan.

Q. If I could refer you to page 3 of Statement No. 18F?

A. Yes.

Q. Starting at line 9 you state, "It is quite clear, in my opinion, from the Commission's order, that the company's estimates for fuel and interchange expenses submitted in this proceeding, will" -- and then you underline -- "upon investigation, be utilized to develop an Energy Cost Rate Factor for prospective application to customer's bills."

Is that correct?

A. Yes.

Q. I assume the "perspective" on line 13 is "prospective."

A. It should be prospective, yes.

Q. Now, you have underline "upon investigation." What sort of investigation of the company's estimates do you envision with that language?

A. I the investigation could take many forms. It could be a review by the Commission Staff, various bureaus. It could be an investigation with a hearing process much like the base rate proceedings.

Q. No, that is not my question. What will they investigate, Mr. Hill?

A. The elements in the Energy Cost Rate Factor filing.

Q. So, in your opinion, that would include the schedule of outages of the plants on the system, and could include possibly the capacity factors of those plants?

A. To the extent the investigation or the scope of the investigation develops, I don't know to what extent that would be.

I know that the company is required by Appendix B to the ECR-8 order to file certain data. What that brings in terms of further investigation and hearings, et cetera, I don't know, but review of that data, to me, would be the starting point.

Q. For the Commission, I take it, to investigate an Energy Cost Rate Factor of PECo, they'd want to look at the underlying elements, I assume for example like outage schedules, capacity factors, oil prices, coal prices, interchange purchases, two-party purchases. Do you agree with that list as at least a partial list of what the Commission might want to review?

A. That might be a list, that might not be a list. It might be too extensive. It might be not extensive enough. The energy cost rate, the one that we currently have in existence right now, I assume, it is my assumption that when the Commission makes a filing, it is reviewed for accuracy, for comparisons.

I don't know what the internal procedures are, but I am sure there is some review of that data, because we notice some suspension orders coming out that have not allowed our rates to go into effect.

I would not assume that many of the elements would have to be reviewed each and every time. If the company was required to submit certain data up front such as the outage schedule projected, its fuel cost projections, if that data is presented with the company's filing, it seems to me that there can be a qualititative or quantitative decision made as to whether that is a reasonable estimate without going through lengthy hearings and investigation on each and

every element time and time again.

Q. My question is not on whether or not there will be lengthy investigation on some of the elements that are important.

You would agree with me that in the past, when there was a 100 percent reconciled ECR, the estimates, to the extent they were incorrect, would be adjusted the following year, is that correct, the consequences of those missed estimates would be adjusted for the following year?

A. 100 percent of fuel costs were reconciled, and if there was an overcollection, the company paid interest. If there was an undercollection, the company was not allowed or is not allowed to recover interest.

Q. And you would agree with me that with the advent of the 80/20 for Philadelphia Electric, we're in a slightly different world, and the estimates the company submits as part of its energy cost rate filing become a little more important, wouldn't you agree?

A. I don't think they are any more important. I think they are as important in the 80/20 mechanism as they are in the 100/0 mechanism.

We still are seeking recovery of our energy costs.

Q. But to the extent the company now misestimates, the reconciliation will only be for 80 percent of that misestimation under the company's approach, is that correct?

A. Again, it's just as important today, with 100 percent cost recovery, to make good estimates or as best estimates as we can derive based upon the data we have before us, because if we undercollect, we have to carry that undercollection for substantial periods of time.

So, there is an incentive there to try to match dollar for dollar the revenue and expense, at least to try to come as close to or project as close as we can to what the actual situation or the real world is going to be.

Q. Now, when your filed your Statement No. 18F and your discussion of the 80/20, am I correct that much of your discussion is focused upon how the Commission should approach the filing in this case, and what should be done with your 80/20 ECR-F in this case?

A. I think that's the thrust of my direct testimony, yes.

Q. And since this is the first 80/20, wouldn't you suggest that the Commission should investigate the elements that are contained in your 80/20 filing?

A. And I think that is the purpose of investigating those elements in this proceeding.

Q. And to the extent that you agree that the Commission should investigate the elements of the 80/20, wouldn't you also agree that to the extent the Commission disagrees with one or more elements of the company's

projected Energy Cost Rate Factor, that it could and should, either through a recommended decision or a final order, order the company to alter its forecasted Energy Cost Rate Factor?

A. I think the same situation is evident today. If the Commission does find some fault or some flaw with the company's Energy Cost Rate filing, whether it be the E-factor or the F-factor, they can suspend that portion and make it subject to a special investigation.

Q. Or, through this case, they could recommend what the ECR-F level should be set at, don't you agree? Or, let me change that -- what is the energy cost that should be recovered in total.

A. I think that is one of the purposes of placing this aspect of the Energy Cost Rate filing in the company's base rate proceeding, to iron out these elements and present the company with an ECR mechanism that it can use prospectively, beginning on or after June 27.

Q. Would you therefore agree with me that the Commission is not limited in establishing the Energy Cost Rate Factor revenues in this case by what the company itself filed in support of that ECR-F?

A. I think that is somewhat obvious, since I understand the cap proposal has been stricken, which is one of the elements that we had.

Q. And to the extent that the Commission ordered the company to introduce a different element or change an element of its Energy Cost Rate projection, the company would do that in its compliance filing just as it does for all compliance filings for other Commission adjustments, is that correct?

A. If it was an item that was developed in this proceeding and incorporated, yes, properly.

Q. Now, if I could refer you to page 12 of your testimony -- I'll just be in 18F; I don't want to keep repeating it.

A. Okay.

Q. Starting at line 17, you discuss the fact that the $207 million average two year savings estimate which was filed with your initial submittal to the Commission is no longer an appropriate representation of estimated fuel savings, is that correct?

A. That is correct.

Q. What is the current estimated fuel savings from Limerick Unit 1, Mr. Hill?

A. For what period of time?

Q. For year one, and then for year two.

A. I can't answer that question, and then you have to tell me the oil prices you want to build into that estimate, because we just changed them moments ago.

Q. Let's use the oil prices you used before I requested a change.

A. I think the numbers are basically -- and I think Mr. Carroll has testified to them -- they were roughly $150 million in year one, and 200 and some million in year two. I don't remember the exact --

Q. Two hundred and what million?

A. Two hundred and some million in year two. I don't know what that number is. It's in the record someplace.

But again, that is based upon those oil prices and not the ones that we just discussed moments ago.

Q. So, I take it that when the company originally filed this rate case and through notices to its ratepayers indicated that there would be a $671 million net increase based upon fuel savings of $207 million, that that notice no longer holds today?

A. I don't think that's appropriate.

Q. You don't think the ratepayers will see a 28 percent rate increase at the end of this case if the company got all of its claims? Let me rephrase that: you do still believe ratepayers will see a 28 percent rate increase at the end of this case if the company received all of its request?

A. The company filed for a $671 million base rate increase. Based upon the base cost of fuel that the company

has utilized, and if we receive through revenues all the rate requests that we have asked for, they in fact will receive a $671 million base rate increase, or 28 percent. And that has not changed.

Q. But the concurrent energy costs that they will be billed will change, whereas when you first filed the case, you were not projected to change those, is that correct?

A. The company did not file a revision to its energy cost rate on September 27, 1985. It changed its base cost of fuel.

So, all the change is occurring in base rates, and the notice still applies.

Q. That's true, but for example, when you filed your Salem 2 case in the last base rate case, you filed both a base rate change and an energy cost rate change, and you discussed the bills with ratepayers on the basis of a net increase between both base rates and ECR, is that correct?

A. That is correct, and we did not file the Limerick rate case that we are dealing with today on the same basis.

Q. Again, with respect to your last base rate case, am I correct that the projected energy savings from Salem Unit No. 2 in the last case were guaranteed or ordered to be tied down by the Commission?

A. It was a guarantee in the last proceeding which

the company agreed to.

Q. And if I could refer you to the appendix to your Statement 18F, Schedule E-4, page 1 of 7, which is towards the rear of your entire document, is entitled, "Philadelphia Electric Company Electric Operations Energy Cost Rate Reconciliation Report Ended January, 1986, Sheet 1 of 3."

A. Yes.

MR. WERSAN: Do you have that, Your Honor?

JUDGE MATUSCHAK: What schedule is it, now?

MR. WERSAN: It's Schedule E-4, Sheet 1 of 7. It looks like 7 of 7, the way it was copied.

BY MR. WERSAN:

Q. Mr. Hill, if I could refer you to Column 12 in that schedule, the column where it says, "Total Revenue Including Salem 2 Credit" -- is that correct?

A. Yes.

Q. What does that column represent?

A. That represents the Energy Cost Rate Factor for the projected cost of fuel less the base cost of fuel, less a credit of 3.798 mills per kilowatt-hour, which represents the Salem 2 guaranteed fuel savings resulting from the prior base rate proceeding.

Q. And if you could go to column 13 and explain that column?

A. That represents the portion of total revenues included in column 12 that is the result of the application of the 3.798 Salem 2 credit less 4.5 percent for gross receipts tax.

Q. If we can turn the page to sheet 2 of 7, the Salem 2 columns continue. If you could explain column 14, please?

A. Column 14 represents the actual savings generated by the operation of Salem during the period February, 1985 through January of 1986, and column 15 represents the difference in dollars that we have guaranteed, that is the revenue that we have passed back, $97.5 million, we have generated $74.5 million of savings, and the guarantee has caused a shortfall of $22.9 or approximately $23 million, a portion of which the company has taken into income during 1985 and 1986 as a loss, because we did not meet the guaranteed savings, even though customers are receiving -- the customers receive the guarantee automatically.

The company has to recognize any loss which is occurring on our books for proper accounting purposes as that loss is incurred.

So, at the point in time we recognized the loss, we began expensing that for book purposes.

Q. Does that mean that the company's projection of

Salem 2 energy savings in the last case was too high compared to what actually occurred?

A. Two things happened. One --

Q. First, answer it yes before you explain why.

A. I don't like the term "too high."

Q. Or higher than actually occurred?

A. The company did not meet the guaranteed level of energy savings that we projected, and there are two reasons for that.

Q. Okay.

A. The first reason was that the generation was not equivalent to what we had projected, and the second was that there was a dramatic drop in the price of oil during the latter stages, which was not built into the estimate of the guarantee at the time we made it back in early 1985, late 1984, I guess.

Q. And absent the energy tie-down from Salem 2, ratepayers would have been or would now be billed, I guess, by the company for an additional $22,964,000, is that correct?

A. No. It's not correct, because the Salem guarantee is not over, and we had to create a different situation when we came out of the case, because we made a specific guarantee. That guarantee runs through March 31, 1986.

Without that guarantee, whatever the shortfall was through January 31.-- actually, it carries over into sales for the month of April -- whatever that shortfall turns out to be, that would be the amount that the customers would have paid, had there not been a guarantee.

Q. So, at least through the end of January, 1986, that amount was the $22,964,000 which ratepayers would be billed for in the coming year but for the tie-down, is that correct?

A. That's correct, that's a fair summary.

Q. If I could refer you now to page 14 of your testimony, at lines 7 through 11 you discuss why you believe there should be an ECR, and you state a number of reasons and then say, "... coupled with the high proportion of fuel costs to total operating expenses for a utility...."

Do you see that?

A. Yes, I do.

Q. What are Philadelphia Electric's total operating costs, Mr. Hill, in round numbers?

A. Total operating expenses for the future test year on an unadjusted basis, excluding depreciation and taxes, are about $1.5 billion.

Q. And the company's projected energy costs for the next year, is that in the ballpark of about $460 million?

A. That's correct, it's about that number, yes.

Q. Is that energy cost forecast lower than your energy prices have been in the last few years?

A. Yes, it is, it's lower primarily due to the impact of Limerick Unit No. 1 going into service. The expense figure that I quoted you as of June 30, 1986 does not reflect the reduction in fuel expense that would occur resulting from a year's operation of Limerick, the fuel savings.

MR. WERSAN: Thank you, Mr. Hill.

That's all I have, Your Honor.

JUDGE MATUSCHAK: Any further cross-examination of this witness?

MS. CHESTNUT: Your Honor, if I could ask a question related to Mr. Wersan's.

CROSS-EXAMINATION (Continued)

BY MS. CHESTNUT:

Q. Mr. Hill, it is correct that to get to the 671 net revenue requirement number, you built in an anticipated fuel savings from Limerick, is that correct?

A. No. We generated an estimated fuel savings for Limerick over a two year period based upon our best knowledge of fuel prices and availability of units prior to September of 1985. We made that estimate. Then what we did was, we calculated a differential in fuel and interchange expense with and without Limerick.

That result we unitized to a cents per kilowatt-hour figure, and took that cents per kilowatt-hour figure and reduced our base cost of fuel that's reflected in our tariff of rates, and coupled that with a proposed revenue increase sufficient to give us $671 million more of base revenues after reflecting that base cost reduction in the tariff pricings.

Q. So, the 671 is a net number which reflects the anticipated energy savings over a two year period of Limerick?

A. Simply, yes. Very simply put, yes.

Q. Did you do any calculation to see what the revenue requirement would have been had you not changed the base energy component?

A. Yes. I believe I have submitted that number in the statement of reasons to this case, where I indicated what the gross number was and what the net effect was after reflecting the reduction in base costs.

Q. Do you remember what it is?

A. It's 800 and some million. I don't know the number.

Q. 878, Mr. Hill?

A. It's in the record, and it's in the statement of reasons.

Q. To the extent that Limerick does not achieve

the anticipated level of energy savings, the difference in energy costs would be recovered from ratepayers, isn't that correct, via the ECR?

A. There will be a timing effect, but before I answer your question, you have to qualify, which ECR. It may or may not, under the basis of the 80/20 as Staff is proposing.

Q. Even under the 80/20, at least 80 percent of it will be recovered?

A. Yes, that is correct.

Q. The company is not revising the $207 million two-year anticipated energy savings from Limerick 1, isn't that correct?

A. No, that is not correct. The company is not revising its base cost of fuel contained or reflected in its tariff of rates on file for this proposed increase.

The energy savings resulting from Limerick change as oil prices change, as mix changes, as unit availabilities change, as two-party purchases increase or decrease, as weather changes.

Q. The $207 million is derived from the change in the base energy component, right?

A. That is correct.

Q. And you are not changing the base energy component?

A. That is correct.

MS. CHESTNUT: Thank you. I have no further questions

JUDGE MATUSCHAK: Any further cross-examination of this witness?

(No response.)

JUDGE MATUSCHAK: Any redirect?

MR. MacGREGOR: May I have one minute, Your Honor.

JUDGE MATUSCHAK: Let's take a five minute recess --

MR. MacGREGOR: Your Honor, I have no redirect.

(Witness excused.)

(Recess.)

T6

JUDGE MATUSCHAK: When you're ready.

Whereupon,

ROBERT A. ROSENTHAL
and
DENNIS P. HOSLER

having previously been duly sworn, testified further as follows:

DIRECT EXAMINATION

MS. CHESTNUT: Good morning, Mr. Hosler and Mr. Rosenthal.

MR. ROSENTHAL: Good afternoon.

MR. HOSLER: Good afternoon.

MS. CHESTNUT: Mr. Hosler, will you please state your name and business address, for the record?

MR. HOSLER: My name is Dennis P. Hosler. My business

address is Post Office Box 3265, Harrisburg, Pennsylvania, 17120.

MS. CHESTNUT: By whom are you employed and in what capacity?

MR. HOSLER: I am employed by the Pennsylvania Public Utility Commission as a Fixed Utility Financial Analyst in the Electric Division of the Bureau of Rates.

MS. CHESTNUT: Have you testified previously in this proceeding?

MR. HOSLER: I have.

MS. CHESTNUT: Did you prepare or cause to be prepared surrebuttal testimony for use in this proceeding?

MR. HOSLER: I have.

MS. CHESTNUT: Judge Matuschak, I have distributed copies of Staff Statement -- the joint surrebuttal testimony. I request that it be marked for identification as Staff Statement ECR-2.

JUDGE MATUSCHAK: Very well.

(Whereupon, the document was marked Staff Statement ECR-2 for identification.)

MS. CHESTNUT: Mr. Hosler, you have before you what has been marked for identification as Staff Statement ECR-2?

MR. HOSLER: I do.

MS. CHESTNUT: Was this document prepared by you or

under your direct supervision and control?

MR. HOSLER: Portions of the document were, yes.

MS. CHESTNUT: Would you please tell us the portions of this document for which you are responsible?

MR. MacGREGOR: I am willing to stipulate to the authenticity of the document, if you don't want to go through the questions with them both.

MS. CHESTNUT: Okay, fine. Why don't we just go to any additions or changes.

JUDGE MATUSCHAK: Do you want to make a motion to admit the document?

MS. CHESTNUT: Before I do, Your Honor, there are two changes we would like to make to this document.

Do either of you gentlemen have any additions, changes or corrections to be made to this document?

MR. ROSENTHAL: Yes.

MS. CHESTNUT: Mr. Rosenthal, why don't you tell us what they are?

MR. ROSENTHAL: We have a number of typographical changes. Page 3, lines 25 and 26, should read, "Section 1307 proceedings. The...."

JUDGE MATUSCHAK: Period?

MR. ROSENTHAL: Period after "proceedings," and then capitalized.

Page 4, line 25, the word should be "modifications."

Page 7, line 5 --

JUDGE MATUSCHAK: What was the change made?

MR. ROSENTHAL: Just an "s" added to "modification."

Page 7, line 5, the reference should be to "its ECR tariff, rather than "and."

Page 8, line 18, strike one of the s's in "proposed."

Page 9, line approximately 5 and a half, please insert the language at the end of the line, "in such case"-- a period after the word "collection," and then the language, "In such case, the F factor..." is how it will read. That is to clarify the language.

And on page 11, line 22, where you have "comparison" and "whatsoever," they need to be corrected.

I also have some additional comments regarding Mr. Hill's Statement No. 18F, his statement on page 13 which dealt with the guarantee of Limerick energy savings.

Mr. Hill I believe has misinterpreted Staff's concept for integrating the guaranteed savings into the 80/20 ECR. Staff's calculation associates the estimated dollar savings directly with the estimated production of the unit.

Departures from the expected production would be priced at the savings rate calculated on a yearly basis. Effectively, Staff's concept establishes only a benchmark minimum for Limerick production.

If dollar savings were not realized but production was,

no adjustment would be made, and 80/20 effects would occur only if Limerick production is less than actual projected, actual production is less than projected production.

While the expected savings numbers, the much-discussed $207 million, could be updated to be coincident with the fuel cost calculations, the company has chosen not to put forth new estimates, though Limerick production is higher in JJC-2 than in the original filing.

Further, while no specific benefit for extra production was proposed in Staff's discussion, if such extra production was able to lower overall costs of service, then a benefit would accrue to the company through the 80/20 calculation.

It is not a strict one-way street, as Mr. Hill has described. He also believes that our presentation is a double penalty.

I don't believe he has closely examined the ECR-F formula contained in Staff's tariff. Through the formula operation, the guarantee's effects are split in 80 percent and 20 percent pieces.

Hence, 80 percent of the guarantee is worked through as part of the 80 percent reconciled piece. The other 20 percent becomes immaterial and irrelevant to any subsequent calculations.

There is no double-counting of the penalty, only one

guarantee which is dealt with in two pieces.

MS. CHESTNUT: Does that conclude your response, Mr. Rosenthal?

MR. ROSENTHAL: Yes.

MS. CHESTNUT: Your Honor, with the changes and additions that Mr. Rosenthal and Mr. Hosler have noted, I would like to move in Staff Statement ECR-2 subject to any timely motions to strike or other objections.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document marked Staff Statement ECR-2 was received in evidence.)

MS. CHESTNUT: Mr. Rosenthal and Mr. Hosler are available for cross-examination.

JUDGE MATUSCHAK: Mr. MacGregor?

MR. MacGREGOR: Thank you, Your Honor.

CROSS-EXAMINATION

MR. MacGREGOR: Good afternoon, gentlemen.

MR. HOSLER: Good afternoon.

MR. ROSENTHAL: Good afternoon.

MR. MacGREGOR: I would first like to refer you to page 2 of your testimony. I guess I will direct this to Mr. Rosenthal. The paragraph beginning on line 12 of that page, you state that the Commission's order does not mandate the use of a three-year period to determine the projected level of energy cost, but it does require that prospective

one-year data for a three-year period be supplied by the company, is that correct?

MR. ROSENTHAL: That's what we state, yes.

MR. MacGREGOR: And then you conclude from that that clearly the Commission wished that the three-year data be considered in setting the level of projected energy cost, is that also correct?

MR. ROSENTHAL: Yes.

MR. MacGREGOR: Would you also agree with me that the Commission's order directed the company to file historic data for the preceding five years?

MR. ROSENTHAL: Yes.

MR. MacGREGOR: Would it follow, using the same logic, that therefore, clearly the Commission wished that the five-year historic data be considered in setting the level of projected energy cost?

MR. ROSENTHAL: It was to be reviewed, I believe, in light of the projections as to whether or not units were being operated in a reasonable manner, and whether the projections are also reasonable.

MR. MacGREGOR: Is the answer to my question yes?

MR. ROSENTHAL: Yes.

MR. MacGREGOR: At page 7 of the testimony, there is a discussion of interim adjustments of energy cost rate and whether those adjustments should be examined and reviewed

upon the basis of the remaining months of the 1307(e) reconciliation year or the ECR computation period, is that correct?

MR. HOSLER: That's correct.

MR. MacGREGOR: And it is the company's position that this examination should be based upon the reconciliation year which currently ends January 31, is that correct?

MR. HOSLER: I believe that is correct.

MR. MacGREGOR: And it is your position that the period should be the ECR computation period, is that correct?

MR. HOSLER: That is correct.

MR. MacGREGOR: Would you agree with me that the company's position is consistent with that advanced by Mr. Dennis P. Dougherty in his testimony in the ECR-9 investigation?

MS. CHESTNUT: Do you have a copy?

MR. HOSLER: I have not read his testimony.

(Document handed to Witnesses Rosenthal and Hosler.)

MR. MacGREGOR: I hand you a copy of his direct testimony in that proceeding, and also a portion of his cross-examination. I would refer you specifically to page 6, beginning with the question on line 23 and going on to page 7. I would ask if you would read that question and answer into the record, please.

MR. HOSLER: From Mr. Dougherty's testimony on page 6--

JUDGE MATUSCHAK: Keep your voice up. I can't hear you.

MR. HOSLER: The question reads, "You have stated that you believe primary emphasis should be placed on analysis of the F-factor activity when deciding if it is appropriate or not to adjust an ECR. For what time period should emphasis be placed on when analyzing the F-factor activity?"

Answer: "I believe primary emphasis should be placed on the remaining months of the ECR period up through January 31. While it is true the ECR will be in effect through March 31, it is the over- or undercollections experienced through January 31 that are utilized in the computation of the following year's ECR.

"The company's tariff, Mr. Hill's Schedule 2" -- in parentheses -- supports the use of January 31 periods by basing the threshold amount for an interim ECR adjustment on the 12-month period ending January 31."

MR. MacGREGOR: Mr. Hosler, would you also examine the document which I have provided which is two pages of the cross-examination of Mr. Dougherty in that case, and I would ask you to read the testimony beginning on transcript page 427, the question beginning on line 22, and carrying over to the answer on line 11 of transcript page 428.

MR. HOSLER: Question: "All right. We may come back to that a little later. For now, I'd like to again refer you

to the testimony at pages 5, lines 7 through 15. I believe that we can -- there are two periods, two annual periods which have some significance for the energy cost rate.

"One is the so-called F-factor computation year, which is from April 1 to March 31, and the other is the E-factor, which is the undercollection/overcollection reconciliation period of February 1 to January 31.

"Mr. Dougherty, which of those two periods do you believe should be used to track the ECR performance?"

Answer: I believe I indicate in my direct testimony, page 7 if I am not mistaken, that because it's the period ending January 31 and impacts the next ECR, I place primary importance on that period."

MR. MacGREGOR: Thank you, Mr. Hosler.

Finally, referring to page 11 of your statement, I believe you indicate on line 23 and in the preceding lines that the Commission's ECR-8 order orders the company to file comparable data for the operating performance of other generating stations, is that correct?

MR. ROSENTHAL: Yes, the Commission's order does request that.

MR. MacGREGOR: Does it order the company to file such data, and if so, could you provide me with a reference to the order where that requirement is set forth?

MR. ROSENTHAL: The reference is dealing with the

review on page 163 of information considered to be relevant to a determination of a proper energy cost level for PECo, which describes both the historic performance of the company's generating units, the historic performance of comparable generating units operating other utilities, projected performance of the company's generating units, prudent and practical generating unit performance improvements planned or anticipated by the company, and projected energy demand requirements of the company and the PJM interconnection.

It is this information which the Commission has requested as being relevant to the determination and part of the evaluation for a proper energy cost level for PECo.

MR. MacGREGOR: Does that paragraph direct the company to file such data, or does it rather state that the ALJ assigned to this proceeding is to give consideration to the following issues or criteria, which included the ones which you have just referenced?

MR. ROSENTHAL: Well, the following line says that PECo is directed to provide such full support for its expected energy costs in all future general rate filings.

And I would presume that that would include, in addition to this information, that which is detailed in Appendix B.

MR. MacGREGOR: Is that the basis of your conclusion

in your testimony?

MR. ROSENTHAL: Principally.

MR. MacGREGOR: Would you agree with me that Appendix B, which states, "The following information and data shall be supplied by the company for determining the projected energy costs in the company's general rate proceedings," does not reference or require the company to file data for the operation of other generating units?

MR. ROSENTHAL: If you look at item 3 of Appendix B, compare the future test year projected unit performance with the unit's actual performance for -- okay, that deals with the unit on a particular basis, I'm sorry.

It is not contained within Appendix B.

MR. MacGREGOR: Would you also agree with me that the data for comparable units has been filed in this proceeding, both by Dr. Wilson and by yourselves?

MR. ROSENTHAL: I have not fully reviewed all of the information from Dr. Wilson. I am not sure if it explored all the units of PECo's. We have provided information on the oil steam units and on the coal and nuclear units of the company.

MR. MacGREGOR: Thank you, gentlemen.

That's all I have, Your Honor.

JUDGE MATUSCHAK: OCA?

MR. WERSAN: Thank you, Your Honor.

CROSS-EXAMINATION

MR. WERSAN: I have one question, if I could refer you gentlemen to page 10 of your testimony -- I am not sure which one of you should answer the question.

Starting at line 9, you state, "The first 'E' factor should include any balance of unrealized guaranteed Salem 2 energy savings resulting from PECo's last rate case."

It's a little unclear to me how you intend that to occur, and what you are stating the company should do. Could you please explain that?

MR. HOSLER: Yes. The company has guaranteed an energy savings amount for a 14-month period, which we haven't reached the end of that period yet.

So, no effort has been made in the current ECR filing to go into effect April 1 to balance the amount of energy savings that is guaranteed and the amount that was actually received by customers.

After the 14-month period is completed, the Bureau of Audits has already initiated discussions with the company on how to properly reconcile those dollar amounts.

And at that point in time, those dollar amounts will be reconciled, what the company guaranteed and the amount received by customers.

And any difference, either under-receipt by the customers or possibly the company may have reduced rates by

more than the guaranteed amount through that credit that Mr. Hill spoke about earlier today. That balancing figure will have to be included in the E-factor to bring that out to the guaranteed savings.

We cannot do that at this point, but it should be included in the E-factor that goes in effect at the end of this rate case.

MR. WERSAN: Okay, fine. Thank you.

MR. KLEPPINGER: I have a few questions, Your Honor.

CROSS-EXAMINATION

MR. KLEPPINGER: Good afternoon, gentlemen.

I would like to focus first on page 4 of your testimony, at lines 22 through 25. You indicate there that modifications are always made to the cost allocation study to comply with Commission-ordered ratemaking adjustments and rate structure modifications.

To your knowledge, are those modifications to the cost allocation study filed as part of the compliance filing at the conclusion of a rate case?

MR. ROSENTHAL: The actual cost allocation study is not filed as part of the compliance filing. On occasion, there are some informal reviews of the information the company must prepare to calculate the HT and PD prices, as I mentioned, and to insure that they are tracking for instance the caps that have been ordered on GS classes in the past

couple of years. Documentation supporting that calculation is normally supplied.

The official compliance filing is normally only a proof of revenue, the tariff sheets and a summary, and a recalculation of the state tax adjustment surcharge.

MR. KLEPPINGER: The next point that you make begins on page 4 and carries over to page 5, where you assert that PECo has built in a $100 million base energy overcollection, and that that factor colors all the rate structure proposals.

Do you see that reference on page 5 of line 2?

MR. ROSENTHAL: Yes.

MR. KLEPPINGER: By "all the rate structure proposals," are you including the proposed distribution of this increase among customer classes as one of those rate structure proposals?

MR. ROSENTHAL: Effectively, the expression of percentage increases is what is being colored by the inclusion of the $100 million overcollection in base rates of energy costs, such that if you express a 28 percent increase, that includes a base number which colors the percentage calculations.

MR. KLEPPINGER: In other words, if the application of a percentage increase to a base number is applied such that the base number is inflated, while the percentage may remain 28 percent, the actual dollars assigned to a given

class are increasing?

MR. ROSENTHAL: They could vary, yes. It's a question of, at what point are you applying those percentages if you are applying them to current rates which already have 28 mills and change in them, or to a pro forma new base rate which would have a lesser amount when you apply your percentages.

MR. KLEPPINGER: Would this coloring of the company's rate structure proposals be eliminated if the increase were applied to base revenues excluding this fuel component about which there appears to be some discrepancy between what the Staff believes should be in base energy and what the company believes should be in base energy?

MR. ROSENTHAL: It would not affect the process in which you would go about making that allocation. It is just a question of how many dollars you would replace to the rates in order to establish your revenue requirement in the future.

MR. KLEPPINGER: If we are to take a given customer class that has a large percentage of its total base revenues composed of fuel, that class typically is the Rate HT class.

And if we compare that to other classes and apply an equal percentage increase allegedly to all classes on that basis, will not the actual dollar increases to the energy-intensive classes become lower than what they would otherwis

be under the company's proposal?

MR. ROSENTHAL: If you have a lower based fuel component than what the company has used in the development of the percentages and the application of those percentages and the ultimate rate design to apply those percentages to, then you would have a lower dollar applied to that class.

Your overall revenue requirement is going to be lower, also. These are dollars which actually would have been, through a conventional ECR, a credit.

MR. KLEPPINGER: As I understand it, the company's $671 million base rate increase, the company is attempting to achieve that increase regardless of the base fuel component, is that correct?

MR. ROSENTHAL: The level of revenues which result from $672 million in increase is what the company is attempting to achieve for base revenue requirement, versus current rates.

If we remove fuel component dollars of $100 million, then that amount versus current rates would be going down. The company's 672 number would have had an associated ECR credit to reflect that difference of actual operations versus the 20.8 mills.

It would have been also integrated with the other factors of ECR calculations.

MR. KLEPPINGER: Mr. Rosenthal, you have been involve

in the last several PECo rate cases as a rate structure and rate design witness, have you not?

MR. ROSENTHAL: Yes.

MR. KLEPPINGER: And is it your recollection and understanding that if the company had distributed this increase on an equal percentage basis to all classes excluding the fuel component, that the issue which you reference at pages 4 and 5 of your testimony of coloring the rate structure proposal would be eliminated?

MS. CHESTNUT: Your Honor, I think I am going to object to that question. Mr. Rosenthal isn't here as a rate structure expert. He simply knows the fact, which everybody admits, that the base energy component will affect the rate design.

MR. KLEPPINGER: That's precisely the point, Your Honor, and the class that is most affected by the level of that base --

JUDGE MATUSCHAK: We will overrule the objection. This is cross-examination.

MR. ROSENTHAL: Had the company adopted its prior case methods, which was to examine zero fuel revenues, apply a percentage, and then make additional modifications for cost of service, it would have not been encumbered by this proposal.

The final expression of the percentages, though, is

always based upon whatever the current rates are versus the ultimate proposed rates, and that number is always affected by changes in fuel prices.

It's a question also, to use a better example, is what is the expression of a beginning case number in terms of current rates in effect versus the end of the case number where you would have changes in both ECR and also state tax adjustment charges in the interim.

And that has always been a problem of, what was originally noticed to customers versus what is the ultimate effect on customers.

So, it's not a unique occurrence here at all.

MR. KLEPPINGER: Thank you, Mr. Rosenthal.

I have no further questions.

JUDGE MATUSCHAK: In advocating the 80/20 in the base rate energy costs, did you have as your purpose a modification of the class responsibility in the HT class? Was that your purpose?

MR. ROSENTHAL: No. In examining the 80/20 and in establishing the base fuel component, we did not attempt to examine how that affected one class versus another. Total company was the examination.

JUDGE MATUSCHAK: If you say the Commission intended the same application in base rates of the 80/20, if you pursue the position that the Commission intended the same

application of 80/20 in base rate energy costs, do you think that the Commission by the ECR-8 order intended to involve itself into rate structure aspects?

MR. ROSENTHAL: I don't believe that the Commission intended the order to have severe effects in rate structure in that area. Their examination is, where are we going to collect these dollars and what is going to be reconciled and what is the incentive out there for the company to improve its operations.

From our examination, and given all the facts as to what level of costs are going to be experienced on the part of the company, the most recent runs of Mr. Carroll and others and incorporating for instance the fuel differences which also have not been reflected yet for Salem in base rates -- they are still an ECR reflection -- getting all those pieces together, we thought was a better method or an improved method to have a good base cost of fuel going out into the future for the rates themselves, that reflects, to the best example, the actual level or expected level of fuel expenses on the part of the company.

And we believe the 16.5 mills per kilowatt-hour, which is what is expected on a normalized basis for three years, is much closer than the 20.5 which the company has proferred for the base rate portion.

JUDGE MATUSCHAK: Anything further of these

witnesses? Any further cross-examination?

(No response.)

JUDGE MATUSCHAK: Any redirect?

MS. CHESTNUT: Your Honor, could I have two minutes?

(Recess.)

JUDGE MATUSCHAK: Trial Staff?

MS. CHESTNUT: Thank you, Your Honor.

REDIRECT EXAMINATION

MS. CHESTNUT: Mr. Rosenthal, you were asked some questions by Mr. MacGregor with respect to the unit comparison data the company is required to file in Appendix C, and also you directed attention to page 163, the five items discussed on that page.

Would you please tell us what the basis of your position that the company is required to file unit data is?

MR. ROSENTHAL: Yes, in terms of the language contained on page 163, both what is referenced for the consideration of the ALJ and this proceeding, is the following issues and criteria, which are the five points listed there, which include the historical performance of comparable units operated by other utilities, as well as where PECo is further directed to support its expected energy costs with the information in Appendix B, such that for this proceeding, being the current PECo rate filing, it was the intention of the Commission to have as much information available for the ALJ to examine the operational history of PECo's units, both on historical performance, the performance compared with other companies, and the projected performance into the future, as well

as planned improvements and expected energy and demand requirements.

It was not just the Appendix B data; it was the information on 163 which the Administrative Law Judge is to have to examine in this case.

MS. CHESTNUT: Thank you, Mr. Rosenthal.

I have no further questions, Your Honor.

JUDGE MATUSCHAK: Do you have anything further?

MR. MacGREGOR: Just one question.

RECROSS-EXAMINATION

MR. MacGREGOR: Mr. Rosenthal, you would agree with me that there is data on this record as to the operation of other utilities' units, both in your testimony and, as I believe we agreed earlier, in Dr. Wilson's testimony as well?

MR. ROSENTHAL: Yes, we have supplied information of a national basis.

MR. MacGREGOR: As has Dr. Wilson?

MR. ROSENTHAL: I believe he has.

MR. MacGREGOR: Thank you.

MS. CHESTNUT: I have a further question, Your Honor.

FURTHER REDIRECT EXAMINATION

MS. CHESTNUT: Was information concerning units operated by other utilities presented by the company

in this proceeding?

MR. ROSENTHAL: Not for this purpose. I have no other knowledge.

MS. CHESTNUT: No further questions.

JUDGE MATUSCHAK: Very well. If there is nothing further the witness is excused.

(Witnesses excused.)

MR. CLARK: Your Honor, at this point I would like to complete our energy cost rate presentation by presenting these two pieces of surrebuttal testimony of GEC witness, Dr. John Wilson.

I believe the company and others have stipulated that there is no cross-examination for Dr. Wilson, and I would simply note for the record that Dr. Wilson was sworn and testified in earlier pieces of testimony in this proceeding. He was under oath, and he stipulated that this was a true and correct piece of testimony, and I would move it into evidence.

JUDGE MATUSCHAK: Do the parties stipulate to Dr. Wilson's testimony, GEC Statement Number 1?

MR. CLARK: 1D and 1E, Your Honor.

(No response.)

JUDGE MATUSCHAK: Then 1D and 1E are admitted without further authentication?

MR. MacGREGOR: Yes, Your Honor.

JUDGE MATUSCHAK: Make your motion.

MR. CLARK: Your Honor, I move at this time into evidence GEC Statement 1D and GEC Statement 1E, the surrebuttal testimony of Dr. John W. Wilson on behalf of the Governor's Energy Council.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document was marked as GEC Statements Nos. 1D and 1E for identification and were received in evidence.)

MR. CLARK: Your Honor, if I may just have another moment, I would like to raise a problem I have on part of this testimony regarding the energy cost rate. We received today Your Honor's ruling on the Staff's motion to strike regarding the 80/20 ECR. I realize, of course, that the motion and Your Honor's ruling only was insofar as several PECo witnesses, but Dr. Wilson in his testimony and surrebuttal testimony also addressed 80/20 ECR implementation.

JUDGE MATUSCHAK: Yes, and we think the motion was not made to strike that -- and this is in the same vein -- and we think that testimony is not relevant insofar as it requests us to modify the ECR. We would feel that that would come within the same category as the $35 million cap that the company proposed.

MR. CLARK: I expected Your Honor to feel that way, and that's my problem. At the time we had oral argument

on the issue of the Staff's motion Your Honor made the statement that if the parties were impacted by the ruling they would have an opportunity to present supplemental testimony.

What I am asking at this point, I believe, is simply an opportunity to review your ruling on the motion, to review our testimony, and to see how you might want to file anything supplemental. I'm not concerned about the impact or the dual nuclear performance standard plus the energy cost rate. This Commission, itself, in the Limerick 2 matter has said it is appropriate to have a nuclear performance standard for the same company that is having an 80/20 ECR.

What I am concerned about is that Dr. Wilson's testimony suggests ways to implement its nuclear performance standard as part of the 80/20 ECR, and with that struck, whether explicitly or not by the ruling, I would think we would like and would need an opportunity to suggest alternative implementation of that performance standard.

MR. MacGREGOR: I would object to that, Your Honor. As I stated earlier, this is the last day of hearings on the 80/20 ECR. If supplemental testimony is admitted, there will be supplemental cross-examination and supplemental rebuttal testimony.

JUDGE MATUSCHAK: I don't see where supplemental testimony is going to do any good. As we recall, Dr. Wilson wanted to make further modifications to the ECR in addition to the modification that was requested by PECo, to put a cap at $20 million.

If we are going to hold to any testimony relevant to a modification by us of the ECR and it is not relevant in the $35 million cap, then we have to rule that the modification suggested by Dr Wilson is likewise not relevant to this proceeding. I don't think any further testimony in that regard would do any good.

I mean Dr. Wilson made certain recommendations to modify the ECR, and we hadn't ruled before that it was not relevant, but if someone so asks we will so rule right now.

MR. CLARK: Your Honor, Dr. Wilson proposed nuclear performance standards in GEC Statement 1A. He suggested a way to implement that standard through a perfomance standard ECR modification.

JUDGE MATUSCHAK: That was no less of a modification than the company's $35 million cap.

MR. CLARK: I understand that. I understand that. What I'm say though is I don't believe Your Honor's ruling on the ECR will go to the merit of Dr. Wilson's testimony regarding nuclear performance, and my point on that is

that the Commission in the Limerick 2 investigation has required for this company a performance standard and at the same time an 80/20 ECR.

JUDGE MATUSCHAK: When we speak of Dr. Wilson's testimony with regard to modification of the ECR, if you have any suggestions of any way to further provide some incentive for the company to reduce its costs in any other manner in other phases of the case we will not rule on that, and we think if you can show us where it is relevant we will accept that.

MR. CLARK: The point of my discussion here, Your Honor, is to be given the opportunity to present for yourself and for the record how we think that could be implemented in this case.

JUDGE MATUSCHAK: I don't think we need any further testimony on it. I think you can refer to that in your brief and deal with that in connection with your brief. Cite that testimony if it relates to any other matter involved in this proceeding other than the ECR.

MR. CLARK: I don't doubt, Your Honor, the possibility of arguing this issue or presenting this in a brief; what I'm concerned about is having evidence in the record. What I am asking is an opportunity to simply review Your Honor's ruling on our testimony, and then an opportunity possibly to refile the portions of the

testimony of Dr. Wilson.

MR. MacGREGOR: I strongly object, Your Honor. Mr. Clark was on notice back since the end of January when Trial Staff filed their motion that there was a chance that this motion was going to be granted. There has been plenty of opportunity to present any proposal that Dr. Wilson wanted to present. And to extend the record, which is already extended in this proceeding, further just doesn't make any sense.

MR. CLARK: Your Honor, I'm only saying what was told to the parties at the time that we had oral argument on this, which was if any of the parties was aggrieved by the ruling they would be given an opportunity to file supplemental testimony.

JUDGE MATUSCHAK: I think the purpose of that statement was that Staff especially wanted to submit further alterntives to modification if we permitted the modification that was suggested by PECo. And that was the purpose of our statement in regard to providing an opportunity for further testimony.

Since we didn't permit the modification of the ECR and didn't think that we had the assignment to modify the ECR by the $20 million cap or any other suggested method, we don't see where that statement has any purpose here at this time.

MR. CLARK: I'm not asking for an opportunity to suggest a modification of the 80/20 ECR. At the time of oral argument Your Honor suggested that each party proceed as they chose and, depending on how Your Honor ruled, we could file testimony in response to that ruling.

JUDGE MATUSCHAK: We meant by that statement that if any party was prejudiced by our ruling insofar as the ECR was concerned that we would permit further testimony on further modifications of the ECR. We didn't intend to open up this whole case all over again. The motion is denied.

Is there anything further?

MR. CALVERT: Your Honor, we have two more witnesses.

JUDGE MATUSCHAK: I beg your pardon.

MR. CALVERT: We have two more witnesses to fill in from what I guess we did this morning, hopefully short.

JUDGE MATUSCHAK: Very well.

MR. SELKOWITZ: If Your Honor please, one of those witnesses is Dr. Stephen Feldman, and specifically his surrebuttal testimony which we have previously distributed. It is UP/UUC Statement 2A. Since there is no cross-examination contemplated of Dr. Feldman, he is no longer with us today, and I ask that this be moved into evidence upon agreement of the parties and there be no need to have

him present to authenticate it since there is no questioning contemplated.

JUDGE MATUSCHAK: Will counsel stipulate to that?

MR. CALVERT: We so stipulate, Your Honor. To save time we allowed Mr. Feldman to leave.

JUDGE MATUSCHAK: Do you want to make the motion?

MR. SELKOWITZ: Yes. I move the admission of UP/UUC Statement 2A into the record.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document was marked as UP/UUC Statement No. 2A for identification and was received in evidence.)

MR. RAINEY: Your Honor, while we are discussing stipulations, it is my understanding that none of the parties present have any cross-examination for Mr. Gregory Palast, who was scheduled to testify next week.

JUDGE MATUSCHAK: Who?

MR. RAINEY: Mr. Gregory Palast, who was scheduled for Monday, March 17th. In that event, in order to save the City of Philadelphia the cost of his traveling back to Harrisburg only to authenticate his testimony and have it placed into the record, I would also ask that the parties stipulate for the authentication of Gregory Palast's surrebuttal testimony, which is City Statement Number 2A.

MR. MacGREGOR: That is acceptable to the company,

Your Honor.

JUDGE MATUSCHAK: Very well; make your motion.

MR. RAINEY: Your Honor, I would move at this time for the admission into evidence of City Statement Number 2A, the surrebuttal testimony of Mr. Gregory Palast.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document was marked as City Statement No. 2A for identification and was received in evidence.)

MR. MacGREGOR: Your Honor, there is one matter in terms of tomorrow's schedule. I believe we have available tomorrow Mr. Hill, Mr. Helwig, Mr. Boyer, Mr. Sproat, and Mr. Rosenthal and Mr. Dougherty from the Staff.

I don't know how much cross-examination there is for the company witnesses. I have spoken with Mr. Hall this morning and he has indicated that he did not have lengthy cross-examination for Mr. Rosenthal and Mr. Dougherty, but he would prefer to conduct that cross-examination right after lunch, so I think there is no reason to begin early tomorrow.

I think we could certainly begin at 10:00, and if there is not substantial cross for these other witnesses we might be able to begin after lunch to give the parties some additional time to review the remaining testimony

that the company is filing tomorrow morning.

JUDGE MATUSCHAK: What is the position of other counsel?

MR. POPOWSKY: May we go off the record?

JUDGE MATUSCHAK: Off the record.

(Discussion off the record.)

JUDGE MATUSCHAK: Back on the record. Let's proceed. We will defer ruling on that.

MR. CALVERT: Your Honor, Dr. Shink has not appeared before, so he needs to be sworn.

Whereupon,

GEORGE R. SCHINK

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. CALVERT:

Q Dr. Schink, could you please state your full name for the record?

A My name is George R. Schink.

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

A My business address is Wharton Econometric Forecasting Associates at 3624 Science Center, Philadelphia, Pennsylvania 19104. I am Vice-President for Research and Development at that firm.

Q Dr. Schink, you have before you a document of

some 15 pages entitled "Rebuttal Testimony of George R. Schink," PECo Statement Number 38; is that correct?

A Yes, I do.

Q Do you also have in front of you a document of some 21 pages entitled "Sur-surrebuttal Testimony of George R. Schink," PECo Statement Number 38A?

A Yes, I do.

Q Are these documents your rebuttal and sur-surrebuttal testimonies in this case?

A Yes, they are.

Q Were they prepared by you or under your direction?

A Yes.

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

A There is a minor typo in 38A on page 16, line 17. The word after "supplemented" should be "his" rather than "this." That was the only one that I found.

Q If I were to ask you the questions set forth in your rebuttal and sur-surrebuttal testimony, would your answers be as they appear therein, subject to the correction you just made, and would those answers be true and correct at this time?

A Yes, they would.

Q As part of your rebuttal and sur-surrebutal

testimonies, did you submit any exhibits and appendices?

A Yes, I did.

Q In your rebuttal testimony you have Exhibit GRS-1; is that correct?

A That is correct.

Q And in your sur-surrebuttal testimony you have Appendix A and Exhibits GRS 2 through 4; correct?

A That's correct.

Q With the exception of GRS-4, were these exhibits and appendix prepared by you or under your direction?

A Yes, they were.

Q What is Exhibit GRS-4?

A It is a response to an interrogatory by Dr. Schinnar.

Q And I believe the second page is a response to an oral data request?

A Yes, it is.

MR. CALVERT: Your Honor,at this time I move the rebuttal and sur-surrebuttal testimonies of Dr. Schink as corrected be admitted as part of the record of this proceeding, and identified as PECo Statement Numbers 38 and 38A, and that the exhibits and appendix be admitted as part of the record and identified as Exhibits GRS-1 through GRS-4, and Appendix A.

JUDGE MATUSCHAK: Subject to any timely filed objections or motions to strike.

(Whereupon, the documents were marked as PECo Statements Nos. 38 and 38A, Exhibits Nos. GRS-1 through GRS-4, and Appendix A for identification and were received in evidence.)

MR. CALVERT: Your Honor, if I might, with the Court's indulgence, Dr. Schinnar has recently produced some additional material that was produced sufficiently close to the time that the sur-surrebuttal testimony was prepared that a discussion of it couldn't get into the sur-surrebuttal testimony.

I have a couple of direct questions I would like to ask Dr. Schink to flesh out his response to that, if I might.

JUDGE MATUSCHAK: You may proceed.

BY MR. CALVERT:

Q Dr. Schink, beginning on page 16 of your sur-surrebuttal testimony, you indicate that Dr. Schinnar has recently provided additional information about the development of the STARLOC Model. Would you please explain the circumstances under which this additional information was provided?

A Yes. Dr. Schinnar notified PECo late on Wednesday, March 5th --

MR. RAINEY: Your Honor, I would object. I think

that Dr. Schink's testimony speaks for itself with regard to that particular matter. I would think that he would only be rehashing something that has already been stated in written form, and this is repetitive.

MR. CALVERT: Your Honor, I don't think that's the case, but I'm happy -- what we are trying to establish is the circumstances under which we learned of the additional information and what we did in response to that, and I think although there is some reference to it in the sur-surrebuttal --

JUDGE MATUSCHAK: The objection is overruled. You may proceed.

THE WITNESS: Dr. Schinnar notified PECo late in the day on Wednesday, March 5th that materials were available relating to the construction of STARLOC for review at his offices. I called Dr. Schinnar on the morning of March 6th to arrange to come to his office to see these new materials.

He said at that time these materials weren't in fact ready to review and that Dr. Schinnar still had to finish arranging or organizing his materials. Dr. Schinnar asked if I could wait until March 10th, which was Monday.

I explained to him that I really needed to complete my testimony in time to be submitted on Friday,

March 7th.

Dr. Schinnar indicated a time when he had to leave the office in the early afternoon, and couldn't have the materials ready until Friday, March 7th, but this was too late for me to be able to review the material and incorporate it into my comments, into my written testimony.

I did spend from 2:00 to 5:00 p.m. on Friday, March 7th at Dr. Schinnar's offices reviewing the materials, and I left at 5:00 because Dr. Schinnar indicated that this was the time his business closed and he wanted to go home.

BY MR. CALVERT:

Q What documents were you shown during that review?

A The materials can be grouped I think into three types. There was a stack of computer output, which was about two inches thick and contained about 300 pages of output, and it was related to estimating the energy demand model component of STARLOC.

There was a stack of six to eight inches of Manila file folders; there were 16 separate folders containing source data and written notes and some typed draft materials.

And finally there were four government publications related to providing data for STARLOC.

The material assembled by Dr. Schinnar was really in a raw and, I would say, disorganized state. In fact, most of the material in these files did not really appear to be very helpful in the evaluation. The materials seemed related to STARLOC, but a lot of them seemed to be hand-written notes by the authors to themselves reminding them to do something, and they were really of very little help to an outsider.

There was also a series of what I would call mathematical derivations and equations covering many pages without really any written explanation of what I was supposed to be looking at.

The material did include a limited amount of type-written material, approximately 75 pages. The rest tended to be hand-written or government source documents.

Q Did any of the typewritten material relate to efforts to update the original source data to 1981?

A There were two memos totaling I think something less than ten pages, the title of which seemed to suggest they related to it.

Q Were you given enough information to determine how the raw data was translated into the data file and the parameters used in STARLOC?

A No. The material provided were, I would say, largely raw data, rough notes and a few sort of preliminary

or partial memos. What was missing were the specific computer procedures or programs that had to be used to translate this raw data from its original state into input files for the STARLOC Model or to calculate the parameters that were used by the model.

The computer procedures probably represent the only precise and concise description of exactly how the STARLOC Model was assembled, and if this is the case our APL Programmers would have to be allowed access to these routines to determine in fact how the model was put together.

Q Did any of the documents that were produced appear to have been in existence for any length of time?

A Yes, they did. I think I can illustrate it best by example. There was draft of some materials that had been included in a technical report which we received in January of 1986, which then had been presented to the City on June 26, 1985, which would have been useful if we had obtained them earlier than we did.

Also it appears that the material provided in a technical report was in some cases a summarization of more detailed materials. As an example, there was a draft report on the residential energy demand model, which contained 26 pages, and had a lot of detail on the equations which were used in the model that was not

contained in the technical report.

I did verify that they, in fact, pertained directly to that used in the report by comparing coefficients where I had overlap, but the material was boiled down to nine pages when it was included in the report, and many of the statistics we had asked for and so on earlier were in this memo that was in the files.

Finally, my review of the material uncovered about 4900 pages of typed materials in the form of memos, which would appear from their titles and a quick review to provide at least a partial explanation of the procedures that were used by Dr. Schinnar.

They, I think, were not sufficient in the sense that I would still need the computer code, but it would have been helpful if they had been made available, and they weren't as voluminous as one would expect, given that we had to go over there to see them.

Q Could you tell from those typed pages whether or not they had been in existence for some period of time?

A The typed pages appeared to have been around for some time in the sense that they were somewhat dog-earned and they had scribbles in the margins.

MR. RAINEY: Your Honor, I would object unless the expert is an expert in the area of --

JUDGE MATUSCHAK: Objection sustained.

BY MR. CALVERT:

Q Dr. Schink, was there any documentation provided of the intermediate calculations?

A No, there was not.

Q Have you determined how long it would take to analyze the STARLOC Model structure using the documents provided last Friday?

A Yes. If we were given access or our APL Programmers were given access to the computer code that was used to translate this raw material into the model input, we estimate that it would take at least about four weeks to validate the procedures that have been used.

However, in the past when we have asked for access to the computer code we have been told we couldn't have it. So it would take much longer if in fact we had to work without that code.

Q Did the information provided by Dr Schinnar on March 7th cause you to change any of your testimony in this proceeding?

A No. Indeed, it confirms my belief that STARLOC cannot be validated in the context of this proceeding.

MR. CALVERT: Your Honor, Dr. Schink is available for cross-examination.

JUDGE MATUSCHAK: Mr. Rainey.

MR. RAINEY: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. RAINEY:

Q Good afternoon, Dr. Schink.

A Good afternoon.

Q Dr. Schink, with respect to your meeting with Dr. Schinnar on March the 7th, did you ask of him any questions with regard to the supplemental notes which he provided?

A I asked him a question as to what the content of some of the computer output meant, and he answered my question.

Q So that when you asked him a question about this raw data he did answer that question; is that correct?

A When I asked a specific question he gave me a specific answer, yes.

Q So in fact you did receive explanations to the materials so that it became clear to you exactly what it pertained to?

A In this one instance, yes.

Q How many questions did you ask him that he did not respond to and give you an explanation?

A I only in the time asked him the one question. He was out of the office for about an hour during the time I was there and --

Q You stayed --

MR. CALVERT: Mr. Rainey, will you please let the witness complete the answer before you interrupt?

THE WITNESS: He was out of the office for about an hour during the time that I was there, and I, in essence, spent the time cataloging what was available.

BY MR. RAINEY:

Q But you stated that you were with him from 2:00 to 5:00 on March the 7th; is that correct?

A I was in an office where he had assembled the materials, which was on the third floor of the building, and he was in his office on the second floor.

Q So you were in his Modeling Policy Workshop for three hours, an hour of which you said that he was away, and then in the two hours' time you asked him one question about the notes,which you said that he responded to; is that correct?

A That's correct.

Q I would like to refer your attention at this time, Dr. Schink, to your Statement Number 38A, your surrebuttal, on page 15, lines 26 through 34. Would you read into the record what it says there please?

A "Dr. Schinnar did let me look at a printed listing of the STARLOC computer code. I told him, however, I am not an APL Programmer and could not learn much from my access to the code. I studied the printout for two

hours to determine the relative importance of electricity in total costs by industry. These data are shown in PECO Exhibit 25."

Q Okay; so, in other words, you say that the computer code was not provided to you, and then you say that you can't read the computer code. Which is it?

A The computer code was not provided to our APL Programmers who in fact can read the code. I am not an APL Programmer.

Q Dr. Schink, did you bring with you to any of the meetings, either February 10th through 12th or March 6th an APL Programmer?

A No, we did not. We were told -- we had asked if a computer programmer could in fact have access to the code, and we were told no, and I was surprised when I was given it. We had asked to see a listing of the input/output matrix. When I was given it it was a listing of the entire code. I really hadn't expected to see it when I came over there because I had not requested directly to see that.

Q Just to be clear, Dr. Schink, when you initially met with Dr. Schinnar was it on February 10th?

A It was February 10th.

Q It was on February 10th, and you came along with how many associates representing PECo in this case?

A There were I think four of us in the morning and then Dr. Hogan joined us in the afternoon.

Q So there were five altogether?

A Yes.

Q And no one of you was an APL Programmer?

A That is correct.

Q So that you came there, all five of you, without one person who was able to read a computer code; is that correct?

A That's correct.

Q And were you previously told that you would not be able prior to your coming there on March the 10th that you would not be able to have access to the computer code?

A We had asked that our programmers be allowed access to the code, so they could in fact print this code on our own computer account. We were told that it was proprietary and we couldn't have access to it.

Q You were told by who?

A Dr. Schinnar.

Q Are you familiar with the agreement that was reached with respect to our visit with Dr. Schinnar in that it was said that you would have access to the computer code, but that could not be taken out of the Wharton Policy Modeling Workshop?

A We were -- my understanding was that in fact we were not -- we could not allow our programmers to have access to it. If it was misunderstood, it was misunderstood, but that was our understanding.

Q Did you sign the protective agreement, Dr. Schink?

A Yes, I did.

Q Did you read what you were signing?

A I read it, but I'm not a lawyer, so perhaps I may have misunderstood the details.

Q Well, I don't think the language there is legalese.

I would like to show you a copy of the protective agreement in this case. I would ask if your signature appears thereon.

(Document handed to witness.)

Does it appear thereon, your signature?

A Yes, it does.

Q I would now like to refer you to the last paragraph on the first page, and would you read that paragraph please?

A "The information and data are" -- starting there?

Q Yes.

A "The information and data are the model code which was used in the preparation of City Statement 1 and

is being made available for inspection and use only at Wharton PMW, and (2), the data bases and computer printouts of Wharton PM which were used in preparation of City Statement 1 and are being made available at Wharton PMW."

Q Is that legalese?

A I'm reacting more to what I was told prior to going into it, that our programmers were not going to be allowed access to --

Q You were told --

A -- the code.

Q -- by who prior to going?

MR. CALVERT: Mr. Rainey, that's the second time, or the third time you have done it. Please let the witness finish his answer before you proceed with your next question.

THE WITNESS: I was told that by the company, that in fact they had requested access of computer programmers who could in fact do something with it, and were told that they could not have that access on a computer account where they could take --

BY MR. RAINEY:

Q So you were --

A -- advantage of it.

Q -- told by the company, not Dr. Schinnar; is

that correct?

MR. CALVERT: Your Honor, once again Mr. Rainey is not letting this witness have the courtesy of finishing an answer.

JUDGE MATUSCHAK: I think he finished his answer there.

BY MR. RAINEY:

Q Would you answer the question, Dr. Schink?

A I personally was not told that we couldn't do it, but I asked specifically if we could arrange for our programmers to look at the code, because that was was the only way I could figure it out, and I was told no.

Q You were told by the company, not Dr. Schinnar; is that correct?

A That is correct.

Q And you stated previously that you felt that certain materials that appeared at Dr. Schinnar's Policy Modeling Workshop were available to the City on June the 25th?

A June 26th, I think it was.

Q You think it was. What is the basis for your statement?

A There was a note attached to this material saying: presented to City June 26, 1985.

Q But you don't know that that in fact was

presented to the City; is that correct?

A All I know is what I read in the note.

Q And what specifically was that that you read the note that said it was presented to the City?

A There were a number of tables and charts that appear in the STARLOC technical document.

Q And so this was material that you had already been provided with in the technical report; is that correct?

A They were the materials that were made available to us in late January, yes, of this year.

Q Dr. Schink, did you originally set up a 10:00 meeting on the 7th of March, 1986 with Dr. Schinnar?

A Yes, I did.

Q However, you postponed that meeting until 2:00; is that correct?

A That is correct.

MR. RAINEY: I have no further questions, Your Honor.

JUDGE MATUSCHAK: Is there any further cross-examination of this witness?

MS. CHESTNUT: Staff has none.

JUDGE MATUSCHAK: Is there any redirect?

MR. CALVERT: Your Honor, could I have must a moment? I think I might have just a few questions.

(Pause.)

MR. CALVERT: Thank you, Your Honor.

Your Honor, I have just a couple very quick questions.

REDIRECT EXAMINATION

BY MR CALVERT:

Q Dr. Schink, during the cross-examination Mr. Rainey asked you why during the two hours that Dr. Schinnar apparently was available on March 7th when you were reviewing this new group of documents you only asked him one question.

Why was it you only asked him one question?

A I wanted to get through the materials, and in fact I only reached one point where I wasn't able to at least determine what it was, and that's what I wanted to ask him. I certainly would have a lot more questions if I really had to go through and start doing the work.

Q You had indicated on page 15, line 31 -- there is the reference that Mr. Rainey made to your access to the computer code for the STARLOC Model; do you see that?

A Yes.

Q Earlier when I was asking you on direct examination you had indicated that what was missing from the documents that you were given on March 7th was a computer procedures or program that was needed to calculate the parameters used by the model.

Are those computer codes the same as the computer

code that you referenced on page 15 of your Statement 38A?

A No, the code referenced in my sur-surrebuttal testimony refers to the code actually used to solve the model once it was constructed. The code that was missing, in my evaluation of the materials used to construct the STARLOC were in fact the computer procedures used to translate this raw data into the parameters or data file that was used by the model.

There are really two separate codes, one to solve it when -- or to exercise it once it is built, and then another set of procedures which were used in essence to build the model, itself. I wasn't shown the ones used to build the model.

MR. CALVERT: That's all I have,Your Honor.

Thank you.

MR. RAINEY: I have just one follow-up question, Your Honor.

RECROSS-EXAMINATION

BY MR. RAINEY:

Q Isn't it correct, Dr. Schink, that the computer code which you say wasn't available on the 7th of March was not something that you had asked for?

A Well, we asked for documentation on how the model was put together, and was --

Q I'm referring specifically on that page, the

questions that you posed to Dr. Schinnar.

A We asked for complete documentation --

Q Well, when you say "we" now --

A I --

Q -- were there more people who met with Dr. Schinnar on March 7th than yourself?

A In response to the interrogatory, which --

Q That's not the question that I'm asking.

A I was --

Q Who was --

A I was the only one who was there.

Q Did you ask for the computer code on March the 7th?

A No, I did not.

MR. RAINEY: Thank you.

JUDGE MATUSCHAK: Is there any other cross-examination?

(No response.)

JUDGE MATUSCHAK: Any other redirect?

MR. CALVERT: No.

JUDGE MATUSCHAK: Thank you.

(Witness excused.)

MR. RAINEY: Your Honor, at this time I would like to call Dr. Schinnar to the stand. Dr. Schinnar has been previously sworn, Your Honor.

Your Honor, prior to authenticating Dr. Schinnar's surrebuttal testimony in this particular case, there is the matter of an errata sheet which we had promised when Dr. Schinnar was previously cross-examined on February 13 that we would provide to the parties.

He had made all of the numerical changes into the record itself on the date on which he presented his direct testimony; however, we stated we would put that, as well as changes to typographical errors, in the form of an errata sheet.

We would like to have authenticated what we have made as an exhibit. We have, in fact, sent that to all parties, so they are aware of it.

JUDGE MATUSCHAK: Very well.

Whereupon,

ARIE P. SCHINNAR

having previously been duly sworn, testified further as follows:

DIRECT EXAMINATION

BY MR. RAINEY:

Q. Good evening, Dr. Schinnar.

A. Hello.

Q. Would you state your full name and business address for the record?

A. My name is Arie Schinnar. My address is The Wharton School, University of Pennsylvania, Philadelphia.

Q. For whom are you testifying in these proceedings?

A. I am testifying on behalf of the City of Philadelphia.

Q. Did you previously submit City Statement No. 1 in these proceedings?

A. Yes, sir.

Q. During your direct examination on that testimony, you stated that you would submit an errata sheet with regard to that testimony; is that correct?

A. Yes, sir.

Q. Do you have that errata sheet in front of you?

A. Yes, sir.

Q. Did you prepare it?

A. Yes, sir.

MR. RAINEY: Your Honor, I would like to have the errata sheet marked for identification as City Exhibit No. 1-1.

JUDGE MATUSCHAK: Very well.

(Whereupon, the document was marked as City Exhibit No. 1-1 for identification.)

BY MR. RAINEY:

Q. Does this errata sheet encompass the corrections to your direct statement submitted in this case?

A. Yes, sir.

MR. RAINEY: Your Honor, I would like at this time to move for the admission into evidence of City Exhibit No. 1-1, the errata sheet to Dr. Schinnar's direct testimony, subject to any timely motions or objections raised by the parties in this case.

MR. CALVERT: Your Honor, I have no objection, assuming it is the one that was contained in Mr. Rainey's letter of March 5.

MR. RAINEY: That is correct.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the document marked as City Exhibit No. 1-1 was received in evidence.)

BY MR. RAINEY:

Q. Dr. Schinnar, do you also have before you today a document entitled "Surrebuttal Testimony of Arie P. Schinnar"?

A. Yes.

Q. Does it contain 30 pages of testimony, including an appendix?

A. Yes, sir.

Q. Was this document prepared by you or under your

direct supervision?

A. Yes.

MR. RAINEY: Your Honor, I would like to have the document marked for identification purposes as City Statement No. 1A.

JUDGE MATUSCHAK: So marked.

(Whereupon, the document was marked as City Statement No. 1A for identification.)

BY MR. RAINEY:

Q. Dr. Schinnar, do you have any corrections which you would like to make to City Statement No. 1A at this time?

A. Yes. There is an errata page that was circulated with the previous errata page that contains all the corrections.

Q. Do you have that errata page in front of you?

A. Yes, sir.

MR. RAINEY: Your Honor, I would like to have the errata sheet with regard to Dr. Schinnar's surrebuttal testimony marked for identification purposes as City Exhibit No. 1A-1.

JUDGE MATUSCHAK: Very well.

(Whereupon, the document was marked as City Exhibit No. 1A-1 for identification.)

BY MR. RAINEY:

Q. Was this errata sheet prepared by you, Dr. Schinnar?

A. Yes, it was.

Q. Does it encompass all the corrections to your City Statement No. 1A?

A. Yes, it does.

Q. With those corrections contained in Exhibit No. 1A-1, is your testimony true to the best of your knowledge, information and belief?

A. Yes, sir.

Q. If I were to ask you the questions as appear in City Statement No. 1A, with the corrections in your errata sheet, would your answers be the same as appear therein?

A. Yes, they would be the same.

MR. RAINEY: Your Honor, I would like at this time to move for the admission into evidence of City Statement No. 1A and Exhibit No. 1A-1, subject to any timely motions or objections by any parties to these proceedings.

JUDGE MATUSCHAK: The motion is granted.

(Whereupon, the documents marked as City Statement No. 1A and Exhibit No. 1A-1 were received in evidence.)

MR. RAINEY: Your Honor, Dr. Schinnar is available for cross-examination.

JUDGE MATUSCHAK: Mr. Calvert.

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CROSS-EXAMINATION

BY MR. CALVERT:

Q. Good evening, Dr. Schinnar. If you would turn to page 11 of your surrebuttal testimony, please. As I understand, what you are doing on that page is you are making adjustments to Dr. Perl's calculations in the Lukens case to obtain some estimates for the Philadelphia area; and in order to do that, you made certain adjustments.

One of the adjustments, as I understand it, is near the bottom of that page. It is entitled, "Second," several lines up from the bottom, and it indicates that you "reduced the employment elasticities of manufacturing industries in Philadelphia from -0.14 to -0.134 to adjust for the fact that the average share of expenditures on electricity in Philadelphia is 1.15 percent, compared to a national average of 1.2 percent;" correct?

A. That's correct, which was based on Dr. Schink's figure.

Q. Yes; you give that reference.

Now, were Dr. Perl's elasticities that he used in the Lukens case of -0.14 -- that was for Pennsylvania; correct?

A. That's correct.

Q. Why did you not use the figure for the average share of expenditures on electricity in Pennsylvania for

purposes of your comparison, as opposed to comparing it to the national average?

A. There is no information comparable that I know of about the State of Pennsylvania.

Q. Did you seek to determine or to make an estimate of that information yourself?

A. To the best of my knowledge there is no readily available such information. The only information that I am aware of in terms of shares of cost are the national figures that Dr. Schink has reported and the specific figures that we have constructed for the Philadelphia region.

Q. For purposes of this calculation, though, I take it that you didn't attempt to establish figures for Pennsylvania in order to make a comparison between the Philadelphia number and the Pennsylvania number?

A. That's correct.

Q. Is it fair to say that the average share of expenditures on electricity in Pennsylvania should be higher than in the nation as a whole, generally speaking?

A. I don't see any reason why it should.

Q. You don't see any reason why it should, why there might be more electric-intensive industry and users in an industrial northeastern state like Pennsylvania, as compared to the rest of the nation?

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A. As far as I know about the nation, if you look at the relationship between non-manufacturing employment or services employment and manufacturing, the split is about 70 percent for services and non-manufacturing, and 30 percent for manufacturing.

In Philadelphia the division between non-manufacturing and manufacturing is 80 percent/20 percent.

From what I have seen in Philadelphia, the non-manufacturing is more electricity intensive. It is less energy intensive as a whole, but more electricity intensive.

Indeed, in the rebuttal and surrebuttal testimonies that I have seen by PECo experts, nobody has challenged this relationship as far as I know.

So based on that, because Philadelphia was more service intensive than the nation, and because the share of expenditures in services on electricity is higher in non-services, I would have expected that, if anything, the average would be higher.

Indeed, as Dr. Schink has shown in his calculation, the average expenditures on electricity in Philadelphia is 1.37 percent.

Q. Dr. Schinnar, I don't think you are answering my question. What I am trying to determine is the average share of expenditures on electricity in Pennsylvania for the manufacturing sector versus the nation. So we're

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talking manufacturing now. I think your answer perhaps got off into some non-manufacturing areas.

All I am saying is, wouldn't you expect that Pennsylvania on the whole would have a higher percentage than would the nation, being a northeastern industrial state?

A. The only portion of data that I saw on Pennsylvania pertains to Philadelphia, which is about 36 percent of manufacturing in the state, according to Dr. Perl. Based on these figures, I obtained a share of 1.15, which is slightly below the national average.

I cannot see that varying significantly. It seems to be very close to the 1.2, which is the national average.

Q. What efforts, if any, did you make to determine the data on the average share of expenditures on electricity in Pennsylvania? What efforts did you make to determine if that information was available?

A. I have been in the business of input/output, model building, for many years, and I am not aware of any recent input/output table for the State of Pennsylvania.

Q. Did you check the 1982 Census of Manufacturing, which I understand provides data on output by state, in order to determine the Pennsylvania figure versus the national figure?

A. No, but I know from that census that the electricity sector, to the best of my knowledge based on the

construction of Philadelphia tables, is not pulled out from the total energy sector.

Q. If, indeed, the average share of expenditures on electricity in Pennsylvania were to increase, were higher than the national average of 1.2 percent, am I correct then that the elasticities of manufacturing industries in Philadelphia would be reduced even further than what you reduced it?

A. If we take this hypothetical scenario, then my response would be yes, under these conditions.

Q. All right. Now, on page 13 you reference, about the middle of the page, -- you say that complete access to the model was given to the PECo experts in order to run sensitivity analyses with a broad range of input parameters, to test the sensitivity of the model to different scenarios.

Do you see that?

A. That's correct.

Q. I am correct, am I not, that PECo's experts asked to make computer runs with STARLOC changing various assumptions, such as a constant real wage rate assumption in the model?

A. A constant real wage rate?

Q. Yes. In other words, they asked to have a run where the real wage rate which you hold constant was changed; isn't that correct?

A. You are referring to discussions on February 10th?

Q. In February; February 10th, 11th or 12th.

A. I don't recall such discussions on either the 11th or the 12th, but I do recall a discussion of wages, and I recall specifically Mr. Pifer asking me that question.

He pursued a discussion for some time, and his interest was in whether it would be possible to change the wage rate; his interest was in increasing the wage rate in the model, and to see how this would affect the forecast.

My response was that it would be very time consuming because wages appear in a number of places in the model, and they would have to be interlinked.

I have also learned subsequently that, according to Dr. Hogan, if there is any impact on wages, it will be downwards. So the direction of change is quite different from the one that Mr. Pifer was seeking to explore.

To answer your question, that specific question was posed to me on the 10th by Mr. Pifer, and I told him it would be a very time consuming effort to implement it.

Q. So at least in that respect, you will agree, will you not, that PECo's experts were not able to test the sensitivity of STARLOC to a scenario which included a change in the real wage rate?

A. The answer is they were not able to test that; right.

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Q. Have you utilized STARLOC to predict how electric rate increases in another SMSA other than Philadelphia would impact growth in jobs in that other area?

A. No, although a computer code could be used. The data base that was fed into STARLOC pertains specifically to the Philadelphia SMSA.

Q. Have you tested STARLOC by utilizing it to determine the effect of a previous rate increase in Philadelphia and then compared the resulting prediction to what the job growth actually was in the Philadelphia area?

A. Well, that relates to an earlier discussion that we heard this morning; that pertains to how many variables you allow to vary.

I have not done this test because the forecasts and the analysis that I have performed pertains specifically to setting or building a model that controls for a large range of variables to describe the region, holding some of them constant that appear to be constant, and varying specifically inflation rate by sector, growth rates and the electric rate increase.

That is how the model is performed. I have not applied it to any particular rate increases in the past in Philadelphia.

Q. So you are not able to benchmark your results against actual economic job growth or decline based on any

past rate increase that PECo may have obtained?

A. Yes, I am.

Q. You have done it?

A. I say I am able, and I could explain to you how.

Q. I want to know if you have done it.

A. In the following way: --

Q. I think the answer to that question is just yes or no. If you need to explain, that's all right, but my question is -- let me make sure you understand my question.

My question is: have you utilized your model to use as an input a prior PECo rate increase, and then taken the resulting projection of job growth or job growth loss, whatever it was, and compared that to what actually happened in the economy as a result of that rate increase?

A. That particular task, the way you are describing, I have not performed. One clarification question, however.

What is it that you are referring to when you say "benchmark"?

Q. Perhaps a bad choice of the word. The question that I just asked is the question that I wanted to ask, and you answered that you hadn't performed it, so you have answered my question. Thank you.

If you would look for just a moment on page 5 of your testimony, your surrebuttal, --

MR. RAINEY: I'm sorry, Mr. Calvert; what page is

MR. CALVERT: Page 5, Table 1.

BY MR. CALVERT:

Q. Do you see that's where you have your table?

A. Yes.

Q. If you then back up to page 4, the last sentence there talks about "The table below" -- Table 1 -- "sets forth four factors contributing to job growth loss, all of which are included in STARLOC."

Now, am I reading that properly to say that those four factors are the intermediate calculations that take place in STARLOC as part of the internal operations of the model, which end up with a result of the 19,000-plus figure?

A. No; I don't think that is an accurate representation.

Q. Could you explain, then, what those four contributing factors are?

A. As part of my explanation, if I may, I would like to refer you to Figure 18 in City Statement No. 1. That is on page 38.

Q. I have it.

A. As you can see, there are many factors. What I have tried to do in this table is to highlight the specific factors that Dr. Schink and Dr. Hogan expressed special interest in in their rebuttal testimonies.

Dr. Schink makes reference to the cost of doing business. Dr. Hogan makes reference specifically to the secondary inflation effect.

Given that these were the specific issues they were concerned with, then I looked at this table and asked: what is not included?

These two issues, which are the second line and the third line in Table 1 of my surrebuttal, are located exactly, if you look at Figure 18, in the third column in the third box down, which is called "Adjustment of Relative Price."

So the specific issues that Dr. Schink and Dr. Hogan were concerned with pertain directly to this box. None of the other issues were included.

I have then divided them into the demand sub-model, which is specifically energy conservation and interfuel substitution, in both the commercial sector, industrial, residential and so forth, and addressed that part. Then the remaining, the residual, if you will, is the employment multiplier, which they have not addressed in their rebuttal testimonies.

Since they were specifically concerned with a static analysis, I have not included in this table the growth sub-model, which could be included as well.

Q. As I understand what you're saying, Figure 18

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of your direct testimony, you have referenced an adjustment of relative prices as being the box in which two of the calculations were made, calculations 2 and 3 in your table?

A. Correct.

Q. So that those were made internal to your computer analysis; in other words, those were part of the computation that your program did or your model did in order to ultimately come out with your 19,000 jobs?

A. No, that is not accurate.

Q. Those were not internal calculations?

A. These calculations are made internally; that's correct.

Q. All right. That is what I was trying to establish.

A. I did not, however, enter into the model to make these calculations and then to extract them.

Q. I take it that these calculations are done automatically within the confines of the model when the static model or the static program of the model is run; is that correct?

A. And the dynamics, too.

Q. And the dynamics; okay.

A. And many other calculations as well.

Q. But, again, you recall during your direct we were using the term "intermediate calculations." I take it

that these would be examples of those intermediate calculations?

A. These and hundreds of other ones as well.

Q. Fine. Now, are these calculations, the ones in Table 1, which STARLOC could have shown or printed out at the time of your cross-examination on February 13th?

A. No.

Q. So between your cross-examination on February 13th and today, you did something to your model to allow you to obtain these internal calculations from it; is that correct?

A. That is not correct.

Q. Then how did you get these internal calculations?

A. I think in your lengthy cross-examination of me on February 13th, I explained that in order to obtain these intermediate calculations the model would have to be transported to a larger computer.

As you saw from the worksheets that I have provided, none of the printouts present directly the intermediate calculations. What they present are the exact final printouts as they were seen, the format, as they were seen by company experts on February 11th and 13th.

What I have done, in order to understand what Dr. Schink and Dr. Hogan are doing -- well, first, it never occurred to me to look at it before; second, it was never

suggested in my previous meetings with them that these particular calculations are the ones that they are interested in.

Having seen their rebuttal testimonies, I was interested in seeing how the computer would mimic the same ideas.

So what I have done was the following: first, instead of looking at the intermediate calculations, what I have done is enter in the code -- and I can point to you graphically here, if you look at Figure 11, where the box adjustment of relative prices appear, --

Q. Figure 11 now?

A. Figure 18; I'm sorry. There is an arrow that goes from real electric rate increase to that particular computation.

Q. To adjustment of relative prices.

A. Right. And what I have asked is for the computer to skip that step; not to perform the intermediate calculation, but to skip this step.

Q. Right.

A. In doing that, what has happened is the computer has skipped the computation of the cost of doing business, and it has skipped the computation of secondary inflation.

What was left then is a result, a printout, that shows the impact of the multiplier and the demand model

which includes energy conservation and interfuel substitution.

I then entered into that exact location, and what I have asked there, in a very simple statement, to skip the calculation of the cost of doing business. The result then is a printout that shows an incomplete calculation that includes in it the employment multiplier, the secondary inflation effect and the conservation effect.

This was the process that I was following. So what I was not following is the scenario that you are describing; that I entered instructions to print out the intermediate calculations, which Dr. Schink and Dr. Hogan did manually, or perhaps used a computer, entering the data that would provide it. But what I have done is performed incomplete calculations and looked: what is the impact of these incomplete calculations on the results?

This is how I constructed that table. That is why I refer to it as incomplete calculations rather than intermediate ones, as you are suggesting, and as Dr. Schink and Dr. Hogan have implied in their -- well, not implied -- have stated in their rebuttal testimony, which I think is not correct.

Q. If I understand what you just said then, Dr. Schinnar, what you have basically done is you have skipped a step and had the computer print out more than one

time. You had it print out once with a step not skipped; you then had it print out with a step skipped, and you were able then to, by comparison, in essence, determine either the exact or an approximation of what that internal calculation must have been without specifically asking that the computer print out that internal calculation.

Is that a fair rendition?

A. There is another step. I cannot remove the multiplier factor without large effort, so I had to then divide the result by 1.65, which is an average, to get the ballpark figure. So what I performed are incomplete calculations, skipping a step, as you say; but I don't get the intermediate calculations to take place in the program -- ask to take place.

Q. You don't get them to print out, but you can either estimate them or determine them by making other printouts where you skip a step, and, therefore, that must be the step; in other words, --

A. I seek the end result; yes.

Q. In order to ask your program to skip a step, or your model to skip a step, you did have to modify the computer code, did you not?

A. I had to enter a statement which says: from this line, skip to the next line. There are a number of locations where it has to do the skipping, so it takes a

while.

Q. And that is a modification of your computer code; correct?

A. That is additional statements, yes, additional computer statements into the code.

Q. Again, that is a modification of the code prior to your doing those steps?

A. I don't modify the original code. I --

Q. -- add to it?

A. -- skip certain instructions; I add to it.

Q. All right; so you add to the code.

Now, have you done any other modifications to your code, or additions to your computer code, in order to allow you to determine any other intermediate calculations, whether those be done directly or through some mathematical division and so on, as you have just described, after the printouts come out other than those set forth in Table 1?

A. The idea came really -- I would say the inspiration should go to Dr. Schink and Dr. Hogan. It never occurred to me to look at it in that way.

Q. My question is a fairly simple question. My question is simply: have you done it with any other internal calculations?

A. No.

Q. I am correct then that as of today, you still

cannot print out, for example, what we discussed last time as the internal or intermediate calculation which is F-Star?

A. The answer is no. I would like to add a short explanation.

Q. You may. I was going to ask you a series of others, but maybe you want to explain.

A. You asked me about F-Star.

Q. I asked you about F-Star. Go ahead and explain F-Star. You cannot print it out now?

A. First, the company has never run scenarios of the model where there was growth, never expressed any interest. Dr. Schink and Dr. Hogan, in their calculation, look only at the comparative study.

As it turns out, F-Star does not change in the comparative study, so there is no need to print it out; it remains unchanged.

So here is an example where such intermediate calculation is really not necessary.

Q. You have seen that it doesn't change when you were putting your model together?

A. I have instructed the model -- constructed it in such a way that it doesn't change, because there is no logical reason for it to change.

Q. But somebody from the outside can't determine that unless they can see what the internal calculation

would be; correct?

A. I make that assumption now after sitting here today and realizing that not every one of PE's experts has read my technical report, which is PECo Exhibit No. 22; if you observe F-Star, the statement is such that it will not change under static growth because it totally depends on growth.

So reading this document, it is sufficient for an expert to deduce that F-Star does not change in a static analysis.

Q. But in the dynamic analyis it would change is what you're saying?

A. Definitely.

Q. If one wanted to look at how it changed, one could not do that today; is that correct?

A. Not today.

Q. Now, direct your attention, if you would, to: can your model today print out the effect, the changes in the figures in Tables 2.2 through 2.6 of PECo Exhibit 22, which is your draft technical report?

MR. RAINEY: Could you give me those pages again, Mr. Calvert?

MR. CALVERT: It is not the pages; it is the tables. It is Table 2.2 through 2.6, which are at the back of PECo Exhibit 22, the draft technical report.

THE WITNESS: I was asked about it on February 10th, and I will give you the same answer. The answer is no.

BY MR. CALVERT:

Q. And the price factor, that is another intermediate calculation that can't be printed out; isn't that correct?

A. The price factor?

Q. Yes.

A. Which one are you referring to?

Q. Basically, any of them, how the prices of output change when electricity prices change.

A. Dr. Hogan computed it himself.

Q. Right.

A. It is available in one of his exhibits.

Q. But your model doesn't allow one to view that internal calculation?

A. There are constraints on the memory of the model. The data was provided, and it can be done outside the model.

Q. But it can't be looked at inside the model?

A. Presently, no. But I have looked at it before, as I said in my previous cross-examination.

Q. I understand that you have looked at it. My point is, my experts haven't.

A. And I haven't challenged their computation, as you have noticed.

Q. Would you turn, please, to your appendix of your surrebuttal testimony, page 26 specifically, down under the first answer, the first number there, "(1)." Do you see that?

A. Yes.

Q. You refer to "the cost-shares of electricity are 1.15 percent for manufacturing and 1.94 percent for the service sector."

What I want to ask you is: what do you include in the service sector? In other words, how do you define the service sector?

A. First, there is an appendix there on page 29. It is called "Appendix Endnote." I show here construction, manufacturing, transportation, utilities and commerce, services.

If you then refer to Table -- actually, I believe it is in my testimony.

Q. I think it is the last page of your direct.

A. Yes.

Q. Appendix 2.

A. Appendix 2, and observe the non-manufacturing sector, you would then remove sector 22, which is the gas utilities, electric utilities, railroads and related, and I believe sector 12, transportation, communication. So excluding these four sectors, the remaining ones would be

what I refer to in an aggregate sense as the service sector.

Q. Dr. Schinnar, turning your attention, if you would, to your supplemental responses to the interrogatory and the oral data request, and specifically to the documents that you produced on Friday, the 7th of March, when were the documents that you produced on Friday first prepared?

A. There are many documents there, as Dr. Schink testified. I recall a folder of handwritten notes that are the basis for the mathematical specifications provided in PECo Exhibit No. 22. So my handwritten notes, which were developed over the course of building the models, are there, and this material, therefore, was provided to the experts on, I believe it was, January 27; and it is included completely in PECo Exhibit No. 22.

Q. Just focusing on your handwritten notes for a minute, these were notes that you made as your working papers, I guess, or work papers, throughout the time that you developed this model, throughout the course of your development at various times?

A. That is correct, and these were mostly in the form of instructions to my staff members to build specific portions of the model.

Q. What else that were produced, when were those other documents prepared?

A. What Dr. Schink has inspected is a -- I believe

he counted 300 pages or so of computer printouts, of estimates, of the residential demand model. That residential demand model is reported in Section 5 of my technical report.

As you can see on page 2 of that section, there is a complete list of variables.

In the printouts, what Dr. Schink saw are the estimates of the parameters for these variables, of which the pertinent ones that we use in the model are reported in Table 5.1.

Now, this was the only question that Dr. Schink asked me. He took the printouts, and he had a question with respect to exactly how do you construct the coefficients here, and I clarified.

So this was available -- let me point out that this is part of a larger project where we estimate residential behavior, energy behavior, electricity, gas and fuel oil, in nine regions. There is a much larger stack than the one that Dr. Schink has.

Q. But that stack of 300 pages or whatever of computer printouts was just the stack that was the backup for the pages you have referred to here in PECo Exhibit 22?

A. That's right. And I was never asked before in any interrogatories by PE experts, nor was I asked about these particular estimates during the three days of

conference with the experts.

Q. You were asked, however, were you not, Dr. Schinnar, for all your work papers that were the basis for your development of your model?

A. And I responded that there is a voluminous amount of material, and it is available at my offices.

Q. And that is the response that we received a few days ago?

A. No, no. That response -- this is a response you received to the first set of interrogatories.

Q. And you said those documents were available? Are you sure you didn't say wait to see your technical report because it would all be contained in there?

A. Well, I know that at some point -- and I talk from recollection -- I responded that any additional material would be available because it is voluminous --

Q. Well, as I understand it, the 300 pages of computer printouts in fact were what you produced when you gave your supplemental response to the interrogatory saying: I have documents for you.

A. No. I have assembled it, if PE experts would like to see that.

Q. Also, I notice on page 2 of PECo Exhibit 22, Section 5, that you indicate that STARLOC Report No. 4, which will be forthcoming, is going to discuss the items

in that section in somewhat more detail.

A. That's correct. I haven't found it, but I assume you quote it correctly.

Q. And that hasn't been prepared yet?

A. That hasn't been prepared yet.

Q. What other documents do we have? You talked about your handwritten notes. You talked about the 300 pages of computer printouts. There are some typed notes or memoranda also. When were those prepared?

A. Let me first point out at this point, these were not documents that were in my possession. These are documents that four of the staff members had, different ones.

Q. I'm sorry?

A. Different staff members of the Wharton Policy Modeling Workshop were using these documents.

Q. I see. And these were the people that assisted you in developing this model?

A. That's right. I have instructed them to assemble them specifically so that I can make them available.

Q. And they have all now been assembled, I take it, and that is what you turned over on March 7?

A. That's correct.

Q. When were those documents prepared?

A. There are different dates for different documents.

Q. Is it fair to say, to sort of cut through this a

little bit, that they were prepared at various times throughout the time that you were developing this model?

MR. RAINEY: Your Honor, I would like to object at this particular time to the extent that counsel is not being specific; he is being very general about certain matters and is asking the witness to respond to very broad-ranging questions.

To the extent he has got specific questions about specific materials, then it would be fair for the witness to respond to it.

JUDGE MATUSCHAK: We will overrule the objection.

Proceed.

THE WITNESS: The printouts that Dr. Schink inspected --

BY MR. CALVERT:

Q. I think we are beyond the printouts now. I'm talking now about the memoranda, the typed memoranda, which I understand were memoranda prepared by you and others in the modeling staff that assisted you in developing the model, correct, at various times?

A. None of the memoranda that Dr. Schink inspected were prepared by me.

Q. All right; they were prepared by others on your staff that were assisting you to develop this model?

A. At stages where my staff was assisting me in

preparing the model, they were keeping notes and documenting exactly what was going on.

Q. In other words, they were documenting exactly how the model was being put together?

A. That's correct.

Q. How far back did that go? When would the first such document have been drafted or prepared?

A. I can't give you a date on that, because it was not until ten days ago that I have seen them all together. Some were, as you mentioned earlier, in typed form, because some of my staff keep their notes on a word processor. Others were in handwritten form; there were many, many folders which had handwritten notes, as Dr. Schink pointed out.

Q. When did you begin developing this model, roughly?

MR. RAINEY: I'm sorry; could the question be read back, please?

MR. CALVERT: I'll repeat it.

BY MR. CALVERT:

Q. When did you begin developing this model, generally, roughly?

A. I think we discussed this last time, that there was an initial structure to the model, and then a specific extension to the model made at the request of the City. I

think we are going back about a year, plus a few months.

Q. So that the notes that we're talking about, these typewritten notes, would go back a year, and maybe a little bit further?

A. I cannot put a date on the specific notes that Dr. Schink has looked at. In other words, I cannot say whether these notes were the ones that were written by somebody nine months ago, or these are notes which were compiled and summarized and provided to Dr. Schink last week.

Q. Are you saying that some of the documents that were produced were not the original notes, original work papers, but were just summaries of work papers?

A. No, I'm not saying. I'm saying that I cannot tell you whether my staff has provided the initial set of notes that they took nine months ago, or whether these are rewritten clearly for presentation, for report purposes, for reporting purposes, three months later or six months later.

Q. Is that to say that you haven't reviewed the documents sufficiently to know what exactly your staff has done in that regard?

A. No; that's not what I'm saying. I am just saying that I -- since these are other four people and I don't follow their activities 24 hours a day, I don't know

exactly which set of notes -- are they the first ones that they have written as they were sitting and adding two numbers and scribbling down that this is the sum of the first number and the second number, or is that a summary they prepared six months later, looking at their notes and saying: here is the document.

What I have asked my staff to do -- and that was after the cross-examination, which followed immediately my conference with the company experts -- is to assemble this material, and they provided that about ten days ago.

Q. Have you reviewed the material they assembled?

A. Yes.

Q. And you are not able to tell, having reviewed it, whether or not it was their original notes or a recasting of those notes in some form at a later time?

MR. RAINEY: Mr. Calvert, can you provide specifically what you are referring to? Again, you are referring to some general papers. Without saying specifically what the document is, how is he supposed to be able to respond to that question?

MR. CALVERT: It seems to me that he is responding very well, but I am happy to say that we're talking about the typewritten notes of the staff, of your staff, that were provided that detail the development of the STARLOC model that you have referred to.

MR. RAINEY: Your Honor, again, I think to the extent that he is talking about specific notes, that he can refer to Dr. Schinnar and ask him whether or not these documents represent something which were more clearly put together at a later date and whether or not they encompass earlier notes in a rougher form; then he would be able to, in a more focused manner, answer the question.

JUDGE MATUSCHAK: Do you have any objection?

MR. RAINEY: That's an objection.

JUDGE MATUSCHAK: Objection overruled.

Proceed.

THE WITNESS: Would you please restate the question?

MR. CALVERT: Could you state the last question, please?

(Whereupon, the reporter read from the record, as requested.)

THE WITNESS: My answer is that I have reviewed the notes very carefully, but I am not in a position to date them specifically as you wish me to do.

BY MR. CALVERT:

Q. Let me try it this way: with respect to the notes that we're referring to, did they exist prior to the end of 1985, some or all of them?

A. Well, for example, the computer printouts that Dr. Schink looked at were there before.

Q. But I am now referring to the notes. I want you to focus in on the notes, not the computer printouts that we talked about.

A. My handwritten notes were available before because they were the basis for writing the technical report.

Q. All right. What about these staff notes, these typed staff notes?

A. There is no doubt in my mind that some of the folders that Dr. Schink has looked at that contained the handwritten notes were prepared before January 27.

There are other notes that I cannot tell you, because they appear as Xerox or printouts of word processors that my staff are using, and I cannot tell you whether this particular document, as it was Xeroxed and provided to Dr. Schink, was done before December 31 of '85 or was done after.

I have advised your experts that we are in the process of developing the various documents, and Dr. Schink has looked at all of the material that we have that will go into these documents.

Q. Dr. Schinnar, you had indicated that you looked very closely at your staff notes, you have reviewed them closely; correct?

A. Yes.

MR. RAINEY: Your Honor, I would like to object. It

is very repetitive. He has gone over this about three or four times already. The witness has stated he doesn't know. If he doesn't know, he doesn't know.

JUDGE MATUSCHAK: We will save time by letting him proceed. Objection overruled.

BY MR. CALVERT:

Q. That is correct?

A. That's correct.

Q. I take it you were reviewing these notes very carefully throughout the time that the model was being developed and that the notes were being prepared for use in developing the model?

A. That's not correct.

Q. That is not correct. How did you know that the model was being developed properly if you didn't review the notes of the staff that was doing the work?

A. Dr. Schink has inspected my handwritten notes. They were implemented on the computer using APL computer language. I happen to know APL. I can read a code. I can see what is being implemented. I can see the government documents that Dr. Schink has seen, for example and the material that is being extracted from there.

I failed to mention that -- and I am not sure that Dr. Schink has mentioned that many of the folders included a Xerox of government documents with data which was then

transcribed, copied and then entered into the computer.

I have seen all of these operations.

Q. At various times as the model was being developed?

A. Every step I have followed very carefully.

Q. How long did it take you to assemble the documents that you actually produced on March 7?

A. As I stated earlier, after returning from my cross-examination I asked my staff to assemble their notes.

Q. That was the first time you asked your staff to do that?

A. To gather into one place.

Q. Did you, yourself, assemble the computer printouts, the 300 pages that we talked about, and your notes?

A. None of these notes are my notes.

Q. But you did have some notes that were produced on March 7?

A. The notes were not in my possession. They were notes, some of them, my handwritten notes, that were given to my staff many months ago at various stages as I was instructing them in developing the model.

Q. So that of the material produced on March 7, none of it came from your personal files; all of it came from your staff?

A. That's correct.

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Q. What about the 300 pages of computer printouts?

A. It came from my staff.

Q. Have all of the work papers relating to the development of the STARLOC model and your work in developing that model now been produced?

A. Dr. Schink has inspected it on the 7th.

Q. So that's all?

A. That is correct.

Q. Dr. Schinnar, do you have any notes, whether handwritten or typed more formally, in your files relating to the development of STARLOC that you have not produced in your March 7 production?

A. Not that I can recall.

Q. Am I also correct that there are several other technical reports referred to in PECo Exhibit 22 that are to be forthcoming in the future?

JUDGE MATUSCHAK: Just so the record is clear, which PECo Exhibit 22 are you referring to?

MR. CALVERT: PECo Exhibit 22, Your Honor, is the draft technical report of Dr. Schinnar. There is only one. PECo Exhibit 22 is one of the cross-examination exhibits, Your Honor.

JUDGE MATUSCHAK: Is that part of the record in this case?

MR. CALVERT: Yes, Your Honor, it is. It was marked

and admitted into evidence at the time of Dr. Schinnar's direct examination in February.

BY MR. CALVERT:

Q. In that PECo Exhibit 22, Dr. Schinnar, there is reference to several other STARLOC reports that you are aware of, I think Nos. 2 through 6.

Am I correct in saying that none of those have been drafted or prepared yet?

A. That's correct.

MR. CALVERT: Your Honor, that's all we have. Thank you.

CROSS-EXAMINATION

BY MR. SELKOWITZ:

Q. Dr. Schinnar, there were some questions to you regarding Table 1 on page 5 of your Statement 1A, which is your surrebuttal testimony.

Could you turn to that, please?

A. Yes, sir.

Q. I don't understand what you mean by "not included." Maybe the quickest way is just tell me what does that mean, not included, and what would be the result that you would anticipate if it had been included by whoever it was that didn't include it?

A. To answer your question precisely, if I may refer to the third column of that table headed "Schink,"

reference to Dr. Schink's calculations.

Q. All right.

A. The only number in that column is 3,555.

Q. Am I correct that that is Dr. Schink's number?

A. That's correct.

Q. And for purposes of this table, you have accepted that number as being the PECo direct impact on cost of doing business?

A. I am reporting Dr. Schink's number. This number, upon reviewing very carefully his calculation, represents exactly the cost of doing business as he computes it.

In all of his computations that are included in his rebuttal testimony, there is no reference at all to the energy conservation and interfuel substitution effect, there is no reference to the secondary inflation effect, and there is no reference to the employment multiplier, all of which are documented in my technical report. So that by "not included" I am suggesting that Dr. Schink did not include them specifically in his computations to arrive at a total impact.

Q. Are they considerations which Dr. Schink, for example, did cite to you or refer to in his testimony but did no calculation of them; is that what you're saying?

A. He does not specifically say that he is not computing these steps. There is no reference whatsoever in

his rebuttal testimony to any computations pertaining to these considerations, other than the cost of doing business.

Q. Does that general explanation also apply to the references under "Hogan"?

A. In the case of Dr. Hogan, the only reference when he computes the impact on loss of growth is to secondary inflation. He makes no reference to computing the cost of doing business. He does not make any reference to energy conservation and interfuel substitution, for example, which he discussed extensively a year ago in the hearings on Limerick 2, nor does he include in his calculation the employment multiplier, although in his testimony he does discuss my multiplier, in his rebuttal testimony; but in his calculation he doesn't make any reference to that.

Now, on the left side under the heading "STARLOC," what you see is my effort to mimic these calculations, as I explained earlier in the cross-examination, and the numbers are very close.

There are differences because Dr. Schink and Dr. Hogan use very aggregate, ballpark numbers, whereas the numbers that I obtain were obtained through computation on STARLOC model with a substantial amount of information in great detail.

Q. When you say they are close, you mean for any

given cause they are relatively close?

A. Yes; that's correct.

MR. SELKOWITZ: I have no other questions.

Thank you.

MR. RAINEY: Your Honor, may I have a minute before redirect?

JUDGE MATUSCHAK: Yes.

(Recess.)

JUDGE MATUSCHAK: On the record.

Counsel has agreed that when we close today, we will adjourn until tomorrow at 1:00.

When you are ready, Mr. Rainey.

MR. RAINEY: Thank you, Your Honor.

REDIRECT EXAMINATION

BY MR. RAINEY:

Q. Dr. Schinnar, on cross-examination by the company you were asked whether or not you had examined previous rate increases in order to judge the sensibility of the model.

Would you like to further comment on that?

A. Yes, sir.

Q. In my original testimony, I make reference to conditions under which a rate increase will not have an impact on employment, and I repeat that statement again in my surrebuttal testimony.

Specifically what I say is when a rate increase is commensurate with inflation, there will not be an impact. In that connection, for example, I am presenting an analysis under 4 percent inflation and 3 percent growth, which is very reasonable for the circumstances that we are looking at here in which a 16 percent rate increase will have no adverse impact on employment, yet will produce because of growth and other factors something on the order of a

25 percent increase in revenues.

Now, a 16 percent rate increase over three years is 5.1 percent increase annually. In this particular instance, I have looked at rate increases for Philadelphia over the past 10 to 12 years, and even if we remove for that period -- when we remove for that period, for example, the effect of the OPEC oil price shock, PECo's increases on an average were roughly one percent above inflation.

When I compared that with separate forecasts of the growth model which does not include rate increases, the numbers come out to be identical.

So something to bear in mind in evaluating the performance of the model and that I kept in mind are the circumstances under which there is no impact on employment.

In this particular analysis, I present in my computer print-outs and work sheets that accompany the City Statement No. 1A a particular set of numbers that show the circumstances for various growth rates and different inflation rates which produce no impact on employment.

So under these circumstances, I was able to judge that the model does replicate very closely the behavior on the average of the Philadelphia economy over the past 10 or 15 years.

Now, what we are facing here is a deviation from that average. We are not talking about an increase that is

about one percent above inflation rate. We're talking about an increase that is on the order of 15 or 16 percent or more than that above inflation rate.

So these are unusual circumstances that produce the adverse impact on the economy.

Q. Dr. Schinnar, you were also asked on cross-examination with regard to intermediate calculations and whether your Table 1 of your surrebuttal testimony reflects intermediate calculations.

Would you further respond to that theory?

A. I think made it rather clear that this does not include intermediate calculations. The numbers were not assembled for intermediate computations within the model. This was an attempt by me to mimic the incomplete computations of Dr. Schink and Dr. Hogan, and then I constructed that table for a comparison basis.

If anything, I did not do an intermediate calculation. I actually skipped intermediate calculations in order to obtain these results.

Q. Also, Dr. Schinnar, with respect to questions that were asked regarding the testing of your model with regard to actual data, do the figures 16 and 17 of City Statement No. 1 at all address that?

A. Mr. Rainey, I would appreciate if you could repeat the first part of your question.

Q. The question really goes to the cross-examination with respect to your look at actual data and compare that with the forecast of your model.

A. I see. Yes, as I discussed in City Statement 1, for example, the growth model that we had reviewed in the last cross-examination very closely replicates growth patterns in the Philadelphia region between 1965 and 1983, and that is a comparison of the forecasts of the model with actual data.

So in that respect I did apply it to past years and produced what I believe are very good forecasts.

Q. Dr. Schinnar, you were also asked questions with respect to supplemental material which you made available to the company on March 7th, 1986.

Would you state why you made that or how that material was made available and why it was made available?

A. It is my understanding that it is my responsibility and my obligation to provide whatever material becomes available to me or is available to me to the Court and to parties in this case.

I did not stop assembling this material when I was cross-examined or visited by company experts. My responses when asked for that material at the time were accurate and honest and as soon as material was made available -- and I've taken specific steps and quite an effort to assemble the

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material so it can be reviewed -- I have contacted the City and then the City advised the company that this material is available.

Q. Is it your understanding, Dr. Schinnar, that it is your obligation to make any additional materials available throughout the course of the case?

MR. CALVERT: Your Honor, I object to the question as being leading. Mr. Rainey is testifying, not the witness.

MR. RAINEY: I will rephrase the question, Your Honor.

JUDGE MATUSCHAK: Very well.

BY MR. RAINEY:

Q. Over what period of time, Dr. Schinnar, do you believe it is your duty to make any additional responses available?

A. Well, I must claim a little bit of innocence because I have not read the legal code in this case, but my understanding is that definitely over the period of these hearings, also as a professional in the area and a member of the faculty of the Wharton School engaged in research for many years in Philadelphia, it doesn't stop when these proceedings are over.

This is to be public material and will be available to any party, any business, any industry, any government

agency, any individual at any point in time. So the additional material is not going to stop today, or tomorrow, or last Friday. As we generate new material and more material -- Dr. Schink has made reference to some note that he saw that some material was provided to the City when it was assembled, and these were specifically the tables that were provided in this report that are, by the way, my workpapers.

MR. CALVERT: You're referring to PECo Exhibit 22?

THE WITNESS: PECo Exhibit 22. We will generate new material at any point in time when it is available. So it's not a question of retaining material and then making it available at any point in time. It is a continuous flow of material that is being made part of the public record.

BY MR. RAINEY:

Q. Dr. Schinnar, you were also asked questions with regard to the additional reports that are referenced in PECo Exhibit No. 22, your technical report.

What is the relationship of those additional reports referenced in the technical report to the technical report which you have provided itself?

MR. CALVERT: Your Honor, I think that's beyond the scope of the cross-examination. I simply asked, "Are those reports presently available," and the answer is "no."

Now he is trying to talk about the relationship to

agency, any individual at any point in time. So the additional material is not going to stop today, or tomorrow, or last Friday. As we generate new material and more material -- Dr. Schink has made reference to some note that he saw that some material was provided to the City when it was assembled, and these were specifically the tables that were provided in this report that are, by the way, my workpapers.

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MR. RAINEY: I believe the reference that was drawn by Mr. Calvert in his cross-examination was with respect to the incompleteness of the document, PECo Statement No. 22, as a result of other reports referenced therein.

JUDGE MATUSCHAK: We will overrule the objection.

THE WITNESS: I've noticed on many occasions that the company's experts make reference to the fact that that report that has been submitted to the City and to the company is incomplete and it's labelled "Draft Report." Indeed, it is labelled "Draft Report."

On February 10th, I was asked specifically by Mr. Pifer whether this is a complete documentation of the model or whether the indication that I have labelled this report as "Draft" is an indication that this is an incomplete specification of the model, and I answered unequivocally that this is a complete documentation of the model. Everything that pertains to the model is in this report.

In explaining the word "Draft," I told him that it was put together with some haste because we needed to respond to the company request for data and workpapers.

If one inspects, for example, the various figures, you can see that they are produced some by typewriter and some as computer print-outs and from different computers. So they are not consistent in format. So that will be finalized.

I also advised him there may be some minor change in language, some typos that I overlooked as this report was rushed out of my office to the City so it can be provided to the company, and for that reason it was labelled "Draft Copy;" because once I had an opportunity to make it look pretty, so to speak, and formally turn it in, it will be the final document. But at no point did I suggest that this is an incomplete report.

Now, specifically with reference to my statement on page 4 of that report that there are forthcoming other reports, that is a reference to our scholastic work at the university that has started in relation to this particular project a year-and-a-half ago and hopefully will go on for many years.

These are specific reports of papers or publications that are going to take specific sections that are completely documented here and material that was completely supplemented with all the responses to interrogatories and data requests and look at a number of other issues.

For example, using the growth model, there is a very controversial issue in Philadelphia pertaining to the City's wage tax. I intend, therefore, to use this particular part of the growth model and simulate the wage tax and how it affects growth in Philadelphia, and that will be contained in one of the STARLOC reports that looks

at the specific issue of growth.

There is a reference here, for example, to residential energy demand elasticities by region and income. Well, it is part of the study where we're looking at not just electricity but gas and oil in nine regions of the country.

There isn't much comparative literature on different responses to prices of electricity, gas and oil by income groups and by region. So we have undertaken a year ago a major study in the area, and this will all come in in a report that goes far beyond this particular study or the particular application of the model.

For example, the issue of goverment energy demand elasticity and the comment that this is STARLOC Report No. 1. We have combed the literature for many months and never could find any reference to government agencies' response to energy. It is always bundled in within the commerical sector.

We had some data provided by the City, and we have gone through a special effort to estimate these elasticities. What we intend to do is write a publication that will appear in the literature and then will be available in the future, but we have provided in this case the specific measures.

I can go through every one of these documents and point out that these are reports that go beyond the scope of these particular hearings, and all the material that was

used to either build the model or support the model has been made available. I have been made available. I just don't see what is missing at this point or was not provided to the company.

MR. RAINEY: No further questions, Your Honor.

MR. CALVERT: Your Honor, I have just a couple of folow-up, if I might.

JUDGE MATUSCHAK: Very well.

RECROSS-EXAMINATION

BY MR. CALVERT:

Q. Dr. Schinnar, you were talking about your growth sub-model, which, as I understand it, is a part of your overall STARLOC model or a component of it.

A. That's correct.

Q. And you were talking when Mr. Rainey had asked you about, "Did you look at historic data;" and as I understand your answer, what you said is, "Yes, I did; I used my growth sub-model in order to plot historic growth and to see how that model would project the growth;" correct?

A. That's correct.

Q. Now, as I understand it, when you do your static program, the program that developed your figure of 19,196 jobs, you don't use your growth sub-model, do you?

A. That's correct.

Q. You also referenced just now, gave us a lengthy

answer, about your STARLOC reports that were going to be forthcoming. You indicated that the present draft technical report, which is PECo Exhibit 22, completely documented the model and you referenced these other reports as scholastic work at the university, I believe; is that correct?

A. And further extensions of the work; that's correct.

Q. If you turn for a moment to PECo Exhibit 22, specifically if you look at page 7 of Section II, the first full paragraph that begins, "Data Sources and Parameters," it says, "Greater detail on the construction of the Philadelphia data base from which the model" -- I assume that is the STARLOC model -- "was assembed will be given in STARLOC Report 3 forthcoming;" correct?

A. Correct.

Q. If you turn now to page 2 of Section V, I note that is says there at the top, "We undertook the estimation of a residential" --

A. You're too fast. What section, please?

Q. I'm sorry; Section V, page 2.

A. I haven't even read what you said before, but it sounded right.

Q. Page 2 up at the top right after IV. The first full paragraph says, "To overcome these difficulties," it says, "we undertook the estimation of a residential energy

demand model using data from the residential energy consumptio survey (1981) which is reported elsewhere; see STARLOC Report No. 4 forthcoming;" correct?

A. That is correct.

Q. Then further on in that section, if you look at page 4 about in the middle of the page, it says, "Estimates for other variables of the model are provided elsewhere; see STARLOC Report 4 forthcoming;" correct?

A. Correct.

MR. CALVERT: That's all I have, Your Honor.

FURTHER REDIRECT EXAMINATION

BY MR. RAINEY:

Q. Dr. Schinnar, on recross-examination, you were asked by the company or the company read into the record a statement which appears in Section V of your technical report and it appears at page 2 of that Section V.

Would you like to respond to what you meant by the statement which the company's counsel read into the record?

A. Yes, sir. The first is a reference on page 2 to estimation of the residential energy demand model using the residential energy consumption survey which is reported elsewhere.

The second statement on page 4 is a reference to estimates of other variables of the model were provided elsewhere.

Let me first say that on page 4, counsel for the company has not read the sentence before it. It says, "Figure 5.1 compares the zone price elasticities with elasticities across nine regions." So it is a reference to not just this particular case but to a much larger study, and then estimates of other variables of the model are provided elsewhere.

This is a reference to parameters which were not entered into the STARLOC model in this case. All the parameters that were entered in this case are reported in Table 5.1.

The other variables that we used as controlled variables earlier in the discussion I believe in the cross-examination of Dr. Clemente--there was a reference to a whole set of other variables such as household earnings, public assistance, demographic variables reflecting age, race, gender, number of children, climate conditions, type of dwelling and other characteristics --these are all variables that one has to control for in order to estimate the response of residential ratepayers to rate increases.

One they are controlled for, then you end up with the specific parameters, the elasticities that are used in the model.

Now, none of the issues in this particular case or in this particular model were dealing with these factors.

So we have used it in estimation, but none of these parameters -- for example, how there would be change in the residential demand as the family size increase or decreases or there is a change in the type of head of household, these are really factors or issues which are beyond this particular case or were not brought up to me or I was not addressing specifically in the forecast. I wasn't considering change in the type and structure of dwellings in Philadelphia, but it was important to control for these.

I wasn't considering, for example, major changes in demographic characteristics of the population of Philadelphia, but it was important to control for that.

For that reason, this material, and there is much of it, is reported elsewhere.

Q. Dr. Schinnar, also in recross-examination reference was made to Section II, page 7. What was read into the record was the statement, "Greater detail on the construction of the Philadelphia data base from which the model was assembled will be given in STARLOC Report 3."

Would you comment on that statement at this time?

A. Yes, sir. Mr. Calvert is ignoring the fact that I provided after this report was dated which is January 24th responses to many interrogatories, a detailed list of all the data sources, many explanations of how data was handled. So in that respect, this particular section

is dated. In fact, there was a specific interrogatory that says: For each one of these tables listed on page 7 -- and I'm not quoting; I'm sort of stating from recollection -- would you explain what were the data sources and how it was assembled?

For example, I remember a data request in my cross-examination with respect to the A-matrix. It is on record that I was not able to clarify the particular date. Well, this material was provided subsequently.

The record has much more material that goes beyond that statement. So in that respect when I say that additional detail will be reported in STARLOC Report No. 3 forthcoming, much of it has already come and arrived in the company's offices and was available to the experts.

So in that respect, these statements are really outdated, because I have provided much of the material.

MR. RAINEY: I have no further questions.

MR. CALVERT: Your Honor, that's all we have at this time other than, Your Honor, I have a motion that I would like to hand up at this point, if I might. I will provide copies.

(Document handed to Judge Matuschak and all parties.)

MR. CALVERT: Briefly, this is a motion to strike the testimony of Dr. Schinnar, and it is based upon the information which was provided for the first time on

March 7th.

There are several pages. I will give Your Honor and counsel a chance to review it.

(Pause.)

JUDGE MATUSCHAK: Mr. Rainey?

MR. RAINEY: Yes, Your Honor. First of all, I would just like to say that I only received this motion a short while ago. I, therefore, have only had an opportunity to cursorily review it.

I would like to state that it seems that the focus of the motion is the City and Dr. Schinnar having presented for the first time certain information to the company on March the 7th.

I would like to state that the interrogatory responses which resulted in the company meeting with Dr. Schinnar were submitted under Section 5.404 of the Pennsylvania Code, which provides a continuing obligation of the parties to supplement responses as additional information becomes available.

Dr. Schinnar was following that particular obligation in submitting the materials which the company reviewed.

With respect to the intermediate calculation which the company has referenced in its motion to strike during cross-examination of Dr. Schinnar today, he has stated that he has not included any intermediate calculations in his

surrebuttal testimony.

He has stated on the 12th of February to the company, both its attorney as well as its witness, that the production of the intermediate calculations would be extremely burdensome in terms of manpower as well as cost, as well as time.

This was, as Your Honor recalls, also the subject of the motion to strike that the company raised on February 13th following Dr. Schinnar's direct testimony submission.

I would like to further state that the City and Dr. Schinnar have made all materials which it has been able to collect available to the company; that the company has been able to review a technical report which was put together at great burden and was provided to the company in January of this year; that the company also had the opportunity and did meet with Dr. Schinnar during the days of February 10th through 12th, as well as on March 7th.

I think it is becoming very clear that the company has had no intent on reviewing the materials in order to make a substantive attack on the testimony of Dr. Schinnar, but rather has taken the approach of: If you can't find a substantive fault, then you say you haven't had the material to find a substantive fault.

They walked into Dr. Schinnar's workshop fivefold on February 10th with nobody who was able to read the

computer code. The protective agreement which was stated on the record today shows that that, in fact, was made available to the company.

I would like to point out that the company witness who met with Dr. Schinnar on the 7th during that time stated that in three hours he only asked one question. However, he previously stated that he really didn't understand the materials he was reviewing. He stated he took the time to review it.

However, it is very curious that one would review for two hours material allegedly that one could not understand without asking any questions about that particular material.

We state that this is a sham and a ruse that the company has raised in this particular case in filing this particular motion to strike, and that, again, the City and Dr. Schinnar has only followed its continuing obligation in this case. It could have, of course, easily withheld this information as it became available in order to avoid this type of a situation. However, it did meet its obligation to continuously provide information, information which the company had available today before cross-examination so they could, in fact, complete the record in this particular case.

Therefore, I would state that the company's motion

should be denied.

MR. CALVERT: Your Honor, could I be heard just very briefly, because I think it is important to point out some of the testimony we've heard today?

JUDGE MATUSCHAK: Very well.

MR. CALVERT: I think it's important to point out two things. One is that Dr. Schinnar has modified his computer code the day before or two days before his cross-examination on his direct testimony.

He then modified his computer code again, which he testified about today, to come up with his Table 1 in his surrebuttal after his direct testimony cross-examination.

The workpapers that we're talking about here, Dr. Schinnar has indicated that a large portion of them, including a 300-page computer print-out, were available in 1985 and his notes were available in 1985. They were written then. He hadn't bothered to ask his staff to pull together the documents which he had an obligation to produce with his testimony.

The other point is that he now tells us that intermediate calculations could be available in three weeks. It would cost 20-some-odd-thousand-dollars, but they could be available in three weeks. Three weeks ago he told us they couldn't be available at all.

So he waits until the record is about to close and

now says, "By the way, here's all this information." You've heard testimony from Dr. Schink unrebutted that it will take him a minimum of four weeks to go through material that is too voluminous that had to be produced in his office, couldn't be given to us or Xeroxed. You can see his answer to his interrogatory says, "This material is so voluminous, it has to be produced in my office."

He didn't ask his staff to do anything until just on the eve of the record closing. That kind of behavior is incredible to me. I think it's a disrespect, among other things, to this Commission.

There is an obligation to produce documents. Mr. Rainey talks about supplementing a response. Of course, there is an obligation to supplement a response if the response when given was accurate and honest.

I'm not impugning the witness' honesty. I will state that for the record. Perhaps he didn't understand. Perhaps his counsel didn't inform him.

The point is the documents which are needed to validate and understand his model he produces on March 7th with the record closing 10 days later. There is no way we can utilize that information. That information has been available for months.

I think that the motion is perfectly proper and must be granted.

JUDGE MATUSCHAK: The motion to strike is denied. Counsel can argue the weight to be given to the testimony in their briefs.

(Witness excused.)

JUDGE MATUSCHAK: At this time we will adjourn until tomorrow at 1:00.

(Whereupon, at 8:00 p.m., the hearing was adjourned, to be reconvened at 1:00 p.m., on Thursday, March 13, 1986, in Harrisburg, Pennsylvania.)

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C E R T I F I C A T E

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: Sandra Milus-Brown
Sandra Milus-Brown

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